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CMP3060M-1516 PROJECT

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1. Project Summary

1.1. Introduction

Within this introduction it will briefly summarising general human interaction with video games and how this could assist in combating dental anxiety. The gaming industry is an ever evolving machine and a rapid one at that, it's safe to say what was once a house bound industry is now dominating every corner of our modern society, over 155 million American's play video game (*Entertainment software association, 2015*). So the use of video games as an intervention to help combat dental anxiety is a logical solution. Video games act as a natural distraction for a lot of people of any age with 26% being under 18 (Entertainment software association, 2015) they can be fun; educational, entertaining, relaxing and challenging, games come in many shapes and sizes and as a designer it's all about crafting the perfect game to suit its purpose. Additionally within the project it will focus on researching and referencing a series of different games features that builds the body of a video game.

***Fig 1.10**: An image of the popular mobile game Angry Birds (2009)*

It is important to research different types of games to understand what differentiates a popular game for children and to pull them apart to find out what makes them work and what doesn't. Through both study and research the analysis of these types of games should further the research and design whilst maintaining an original idea. The rest of this introduction will focus around creating a framework for the project, discussing the adaptations and analyst of the theme to support future decisions during the development.

1.1 Overview of the Video Game

1.2.1 'Fun over education' game design

"*Despite a burgeoning market filled with educational children's games and apps which aim to turn smartphones and tablets into tools for learning, when it comes to time spent actually playing games, kids are still gravitating to games that are more "fun" than instructive.*" (*Perez, 2013*) The project will focus on distraction rather than education, due to the nature of the project fun will be substituted for education. If the project title happened to be 'Teaching children about dental anxiety' then an educational game would be ideal but it was decided that the best cause would be to distract the patient from anything dental related hopefully easing their anxiety by creating a game with no relevance to dentistry and education and more of a focus around fun and immersion. The concept of the game needs to sound instantly appealing to the subject, if the game happened to turn people off or create a general lack of enthusiasm then it destined to fail.

1.2 Introduction to Dental Anxiety

"*Dental anxiety is a common condition and is ranked 5th among the most commonly feared situations.*" (*Chikkala et al, 2015*) so it's no surprise that is considered an issue in the profession. For the sake of the patient themselves it is important that they try and overcome their anxiety for not to lead to dental problems in later life because "*Avoiding the dentist may have emotional costs as well. Discolored or damaged teeth can make people self-conscious and insecure. They may smile less or keep their mouths partly closed when they speak. Some people can become so embarrassed about how their teeth look that their personal and professional lives begin to suffer. There is often a serious loss of self-esteem."(Columbia University College of Dental Medicine, 2015)* though it's sometimes not as simple as just getting on with it, anxiety or phobia is a problem that a lot of people face even though "*Dental phobia, like other mental disorders, can be treated. Without treatment, dental phobia is likely to get worse over time.*" *(Columbia University College of Dental Medicine, 2015)* and therefore best to try and treat it in its early stages.

1.3 Theoretical Environment

1.3.1 Environmental Analysis

Due to the nature of the project it is impossible to use an actual dentist to create the playing field for the artefact which is ironically the most important part of the project, every decision made will be to accommodate for this dental environment as well as the patient. The original notion for the project was to develop a mobile game that could be played by children undergoing or about to undergo dental treatment and hopefully ease their anxiety in the process. As stated before it is astronomically important that the artefact enthuses the player (Children) rather than turns them off. So it's apparent from

the start that the options are limited.

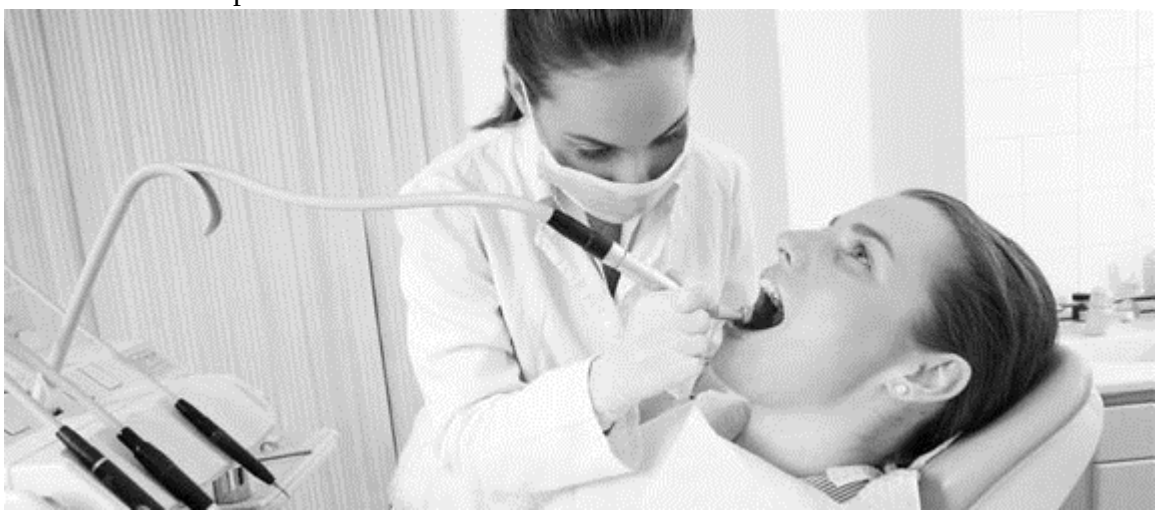


Fig 1.50*: An image of someone undergoing dental treatment (moneycrashers.com)*

1.4.2 Identifying environmental limitations and problems

Fig 1.50 shows the general set up for experiencing this kind of treatment. Keep this image in mind for this situation shall play host to many of the early problems faced when planning the initial concept. As stated before this hypothetical environment is by far the most import part of the planning mainly because it will shape and continue to shape the entire project. The plan for the game is to be played whilst they are being treated, due to the fact that this is the situation in which their anxiety will either trigger or peak, so naturally it is the best circumstance to counter it. "*The current study shows that perception of injection and surgical treatment provoked the highest anxiety in a dental setting."* (Wong et al, 2015) Problems start to accrue as soon as you begin to think about this scenario; typically you would hold a mobile phone in front of you so that you get a clear view of what going on. This isn't practical while being attended to, seeing that the dentist would have to continuously navigate around your hands which isn't partially suitable. The artefact can't impair the dentist's ability to work; if the game is a burden for either subjects then it's not very practical. So having both the mobile device held and seen is virtually impossible. This now leaves two options either-or, either have the device held but not seen or seen but not held.

1.4.3 Environmental and technological Adaptions

"*Often the most exciting moment in design are when you get a radically different idea that allows you to satisfy several apparently contradictory constraints.*" (*Alan J. Dix. 2003*) it's only natural to adapt and evolve an idea, the project will no longer to utilising mobile technology instead it will be using a PC. Decision can be made for the purpose of simplicity or diversity, the use of a PC based video game can employ a whole array of

different peripherals allowing for a more diverse concept.

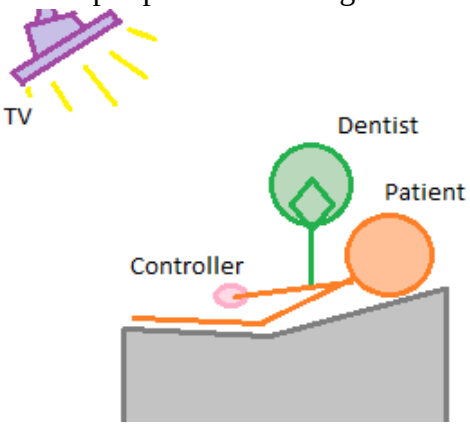


***Fig 1.5.30**: A simple diagram showing the intended setup for the environment.*

Fig 1.5.30 shows the intended setup for the new-born project, as demonstrated the patient will now have access to a wireless controller allowing for a more familiar and comfortable experience. A mounted TV allows for the patient to view the action with ease whilst keep their hand away from the area of work. This set up allows the dentist to perform his intended task without an inconveniences or interferences, while also allowing full control and perception of the artefact. Most importantly the diversity of the artefact is greatly vaster than it had been before allowing for the use of multiple controller buttons that can drive the dynamic of the game, this type of diversity allows for more innovative and immersive design to enthuse and distract the player. It is never ideal for a designer to have constraints because they design the game and can only predict the experience, the wider the canvas the less restricted the pallet becomes, experience is always and will continue to be subjective so it is important that you can attempt manipulate that experience in the direction you feel works, just as Schell specified "*It is wonderful to talk about the design of experiences. Creating great experiences is indeed our goal. But we cannot touch experiences. We cannot manipulate them directly. What a game designer can control, can get his hands in, is the game. The game is your clay, and you will shape it and mold it to create all kinds of fabulous game experiences*" (*Schell. J. 2008*)

2 Identifying Aims and objectives

The most desirable outcome to this project would be to have created a video game and theoretical environment that supports the theory of combating dental anxiety. Using research and common knowledge to create a dental, gaming hybrid environment that hopefully feels familiar and comfortable for children undergoing dental treatment.

2.1 Aims

- The aim of the project is to create an artefact that supports and answers the theory of video game based distraction to ease children going through dental treatment suffering from dental anxiety.
- To dive into the world of dental anxiety and create a suitable and enlightening body of work that supports the discussions made and to transcribe the process of doing so.

- To conclude the finished result and justify whether video games belong in a dental environment and if so, could this work really help fight children's dental anxiety in the future.

2.2 Objectives

- To have created a game that is fun and entertaining for children to play
- To have created a game that is quick to learn for children.
- Developed a concept for an environment which is logical and realistic.
- To have backed up all decisions made with reasoning or research.
- To perform a valid user study to collect both quantitate and qualitative feedback data.
- To test and review the artefact regularly to ensure a polished product.
- To research the effects of dental anxiety amongst children so to influence my every decisions.
- To develop a compelling artefact to distract and immerse the patient
- To transcribe a solid body of research, development and evaluation.

3 Literature Review

3.1 Introduction

The idea of this literature review is to form a knowledgeable and coherent body of research to aid with the intervention towards combating denial anxiety using video games, it will use available and relevant sources to provide the substance and inspiration that will ultimately mould the game. This review will dive the depth of general video game structure and production that will form the basis of the dental anxiety game.

3.2 Dental Anxiety and phobia

Dental Anxiety is defined as the fear of going to the dentists, though this is not the same as dental phobia. Dental phobia is a more serious condition than anxiety. It leaves people panic-stricken and terrified. People with dental phobia have an awareness that the fear is totally irrational, but are unable to do much about it. (webmd.com, 2015) this project will only be dealing with anxiety in adolescence, dental phobias can possibly derive from a traumatic past experiences and there for the patient will do anything to try to avoid it. This will be dealing with anxiety which is said to derive from a more unknown source, this could be the fear of having to experience something new or simply never been before. (dentalfearcentral.org, 2015). Therefore this project will only focus around non-medical anxiety, such as the fear of the changed and unknown. This section focuses on support sites available to anyone, The next section will concentrate on published articles that have studied and evaluated the effect of dental anxiety on children.

3.3 Dental Anxiety in adolescence 'Review one'

A study undertaken and performed by Chikkala et al (2015) suggests that there isn't any real understanding of anxiety in children, they staged a study were they took 444 children aged 6-

13 to participate, out of the 444 children they were separated into 4 different groups based on their background and environment varying from those from private schools to those at government ran Orphanage. The participants were asked to fill out a biographical form as well as a CFSS-DS (See **section 3.5.1**) and a MCDAS (See **section 3.5.2**) all which were supervised by teachers or guardians. The results were as followed "anxiety in children is poorly understood, but three main mechanisms have been suggested:" (Chikkala et al, 2015) they start by stating that negative past experience can factor in, second is a poor real world understanding of how dentistry works having this stereotypical or general view that happened to be voiced by people close to them. Final they say that personal trait can easily factor in, saying that people especially children are generally envious or anxious individuals which has a greater tendency to cause dental anxiety. This tells use just like in section **3.2** that most anxiety derives from the unknown or inexperience, by this alone we can conclude that the game need simply to feel; Familiar, comfortable and to provoke enthusiasm and by hopefully achieving all of this will allure the patient into a calm state of mind that gently eases their anxiety.

3.4 Dental Anxiety in adolescence 'Review Two'

When talking about a condition such as anxiety it's important to ensure that the data and information collected is as diverse as possible, this can be achieved by guaranteeing that multiple reviews are conducted from different professionals. The next study was done by Newton et al (2012) who dives further into some of the conditions that may cause anxiety. One condition they wrote about is distraction, believing that distractions such as audio taped stories, cartoon videos and specifically states video games as being valid can asset in aiding a child through there procedure. The other condition is that of the dental environment claiming that changing or adapting the environment to be more children friendly can also relieve their anxiety, this addition can take effect in both the waiting room and the operation room. The last point worth mentioning is the enhancement of self-control, the lack of control over the environment can indeed factor into anxiety. Newton et al furthers this by referencing Richardson et al (2012) and stating that the addition of a stop signal could be a simple solution as it had before in Richardson's study "*Both the distress experienced during the intervention and the level of state anxiety immediately afterwards were significantly lower among those patients to whom the stop signal had been made explicitly available, than among control group patients who were going through the previously standard clinic procedures*" (Richardson et al, 2012) Distraction is key, all the artefact can do is distract so it's important that the game is fun to play and distracts the player to the point of total Immersion. (See Section BLANK) The other factor is environment, though the artefact will be played during the treatment the addition of advertising the game in the form of a leaflet, television based montage or even both could accumulate their interest which naturally could calm their anxiety. This could also teach them how to play allowing them to jump straight into the game without the frustration of learning how to play. Lastly there is control, as mentioned the lack of control can factor in though due to the addition of a controller peripheral is could allow of a button that pauses the game as well as another that could display a distress signal if the patient feel uneasy.

3.5 Dental Anxiety Measuring methods

There are a series of different ways to transcribe dental anxiety in children for use in a study, two of them are in forms of surveys known as CFSS-DS and MCDAS, this section will dive into the rudimentary foundations of each survey and explain who they are performed.

3.5.1 CFSS-DS

The CFSS-DS (Children's Fear Survey Schedule-Dental Subscale) is the most used measurement survey of dental anxiety in children. The questionnaire consists of 15 related items to dental treatment. The CFSS-DS is preferred over surveys such as the VPT and Dental Anxiety Scale and claimed by El-Housseiny et al (2015) That "It has better psychometric properties, measures dental fear more precisely and covers more aspects of the dental situation." They also go ahead and praise its reliability and diversity and even support this in their conclusion.

3.5.2 MCDAS

The MCDAS (Modified Child dental Anxiety Scale) is another form of dental anxiety surveying; it contains eight questions to determine a child's level of anxiety about individual procedures. The survey typically includes questions about dental anaesthetics, dental procedures and analgesia. This particular survey comes in the form of a Likert scale which typically uses a five point scoring system ranging from 'relaxed' to 'very worried' (Howard, 2007) for an example of the MCDAS questionnaire see **Appendix 1**. These questionnaires are important to know because it allows for an insight into the process of evaluating dental anxiety; the game could implement an end questionnaire if the research intended to go further. Because the artefact will be tested on peers it's no necessary to test, though it could still be implemented as part of the overall experience of playing the artefact in a theoretical dental environment.

3.6 Immersion

The first thing worth talking about is immersion, because immersion is more of an outcome rather than a decision and is used as a degree to judge the players involvement in the game and Brown et al (2004) goes on and says that immersion isn't simply a binary state of mind, there are a different number of immersive levels that a player can experience. "*The experience of immersion is often critical to game enjoyment and is made or destroyed by game characteristics*" (*Brown et al, 2004*) as a designer it is vitally important that the game you've created immerses, you want the player to feel connect; to the characters, to the story and even to the world. Though it is said that the game needn't be realistic, games that ground their story and their characters don't always achieve complete immersion. The first level the Brown *et al* analysis is 'Engagement' described as the lowest level of immersion but the level that occurs before any else and is said to be subjective to the player usually taken effect or not based on personal preference to the genre or style. Secondary it can take effect based on the fluency of the controls, if the controls happen to be correspondent and appropriate then this will factor into this level of immersion. When the player loses track of time it is said they become intensely more immersed and focused in the game. This can also relate to 'effort', the overall effort a user might put into playing and is expressed that the game should reward the

user according to the amount of effort assigned and that this whole concept of chancing the reward can keep a player in deep engagement.

The next division is engrossment and is described to have a much greater emotional impact than 'engagement'. This could derive from features such as; interesting tasks, beautiful visuals, unfolding of the plot and even from Passion. *"Gamers could tell when a game was well constructed and could see when designers had put effort into construction. This added to their sense of respect for the game." (Brown et al, 2004)* There are negatives that come with this level of immersion, players can apparently become so emotional invested that they spend several hours playing only to leave them 'emotionally drained' once they stop playing. The next division of immersion take it from a virtual playing ground to a physical one this is classed as total immersion.

When the player starts to perform physical sets to play the game, you know you have achieved total immersion, this can range from turning of the lights to play, turning up the volume and even wearing headphones to full indulge the games sound. "*Participants described being cut off from reality and detachment to such an extent that the game was all that mattered."* (*Brown et al, 2004*) Total immersion is the final level like quoted it is described as being fully indulged into the game to the point where everything going on around you suddenly seem insignificant. This is said to be achieve by atmosphere and empathy and when the player becomes attached to the main character so much so that they sympathise with their story and fear for them in certain situations. This is a basic outline to Brown *et al's* breakdown of immersion levels, judging from this we can assume that different users will experience these levels individually based on preferences as stated before. As a designer you have no say in the level of immersion you want everyone to experience, though it's not to say you can't influence it.

3.6.1 What does this tell us? (Immersion)

This tells us the artefact needs to be engaging this degree of immersion is idea because it allows the player to be distracted without becoming too attached; we want the patient to be able to put the game down as soon as the treatment is finished so engagement is ideal. Controls need to feel fluent and comfortable just as the game needs to have a balanced reward system. Most importantly it needs passion though it comes under the engrossment level it should really be the priority for any designer, if time and passion is imbedded in your final product then immersion should naturally follow.

3.7 Flow

Flow is the theory of happiness on a physiological level, this flow concept was first introduced by Mihaly Csikszentmihalyi, but this idea of flow is easily translated into the gaming world as shown by the works of Chen (2007). During flow the user is fully immersed in the game and a player that is in the zone of flow is experiencing the perfect balance of challenge and skill. (See **Fig 3.7.1**) if a player is experiencing low challenge yet has an overwhelming amount of skill the situation could perhaps become boring for the user who feels as if their surplus of skills could be redundant. Whereas the opposite side of the

spectrum being an extraordinary challenge with low skill could create a feeling of anxiety or frustration.

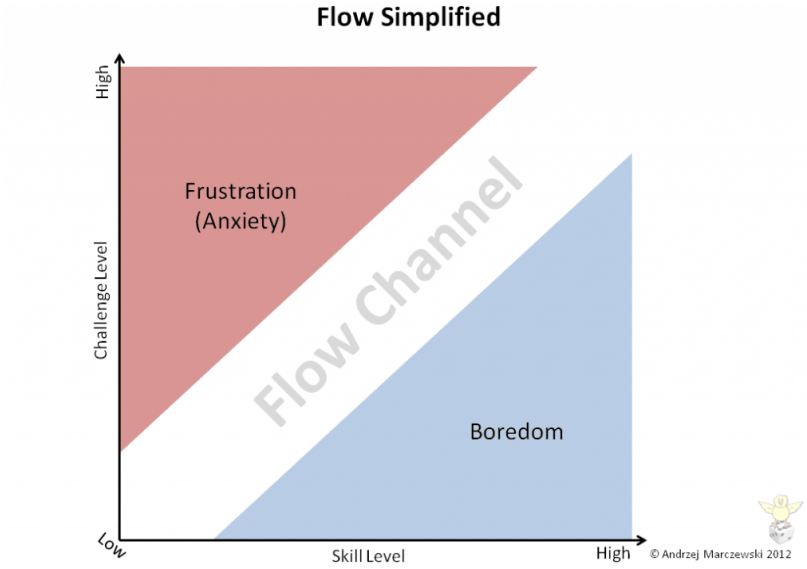


Fig 3.7.1 Image of the Flow channel for video games (Andrzej Marczewski, 2012)

The flow theory was created to insure that the average user is constantly having a fun experience. Chen (2007) does go one set further though saying that this channel of flow can be adapted depending on the player type. Novice or Casual player may want to have an easier time so the correlation may be less on the challenge and more on the skill whereas hard-core players may want more challenge and less skill as seen in *Dark Souls (FromSoftware, 2011)*

3.7.1 What does this tell us? (Flow)

In terms of flow it is important to remain in constant equilibrium, if the game happens to be too easy it may become boring for the player, they will probably lose attention and start to think about something else, perhaps the treatment they're undergoing? If it ends up being too challenging the user could become frustrated which could result in not wanting to play the game or inadvertently articulating that frustration. Due to the nature of dental treatment duration it isn't easy to construct this gradual increase in flow during the game. Instead it is easier to have a difficulty setting, allowing the user to choose their own point on the flow diagram. Ask the patient whether they have played the game before would be a good way to make sure they don't choose a difficulty too high, if they haven't played before the game will automatically stick them on the easiest difficulty, if they have the game before it will allow them to choose. The next section will concentrate on theme, researching what themes are suitable for children and review existing material.

3.8 Theme

"*Sounds easy, but what is a theme? The theme is what your game is about. It is the idea that ties your entire game together — the idea that all the elements must support.*" (Schell. J. 2008) Within Schells work 'The Art of Game Design' there is a lot of valuable information on the process and skill of creating games, for this section it will solely concentrate on his interpretation of video game based themes. It starts by addressing the utility of a single theme and how the elements of that theme help create this aesthetic and consistency that marks a

well-designed game, if the theme is either unclear or non-existent; say having a game about dinosaurs that go around shooting spacemen; mushrooms and xylophones then this might put of the player or at best just leave them completely bewildered. Identifying the theme early Schell state can helps move and inspire the design process of the game and can also act as a catalyst for furthering the mechanics of the game. A single example given is 'Pirates' most people knows about pirates so most people can identify with them, they come up in books, films, games and all other places. This isn't to say you must stick to a singular theme, as a designer we have the ability to mix things up a little to merge themes together. Look at *Lego Star Wars II: The Original Trilogy (Traveller's Tales, 2006)* this was an ideal theme for children because it mixes both *Lego (Denmark B, 1932)* and *Star Wars (Lucas G, 1977)* into one well executed family friendly game. Unfortunately this project doesn't come with likes of any commercial licences such as the ones mentioned before, though there are many more generic themes that appeal to kids. This area will be explored more in the latter sections as development for the artefact initiates.

3.7.1 What does this tell us? (Theme)

The artefact must have a coherent theme that appeals to children, it was decided that a dental based theme wasn't be suitable as the artefacts intent is to ease the patients mind of anything dental related. The theme will also be age appropriate meaning that certain themes such as extreme violence must be absent from the game though this doesn't cover all types of violence. Even *Super Mario Bros ds (Nintendo EAD Group No. 4, 2006*) have you jumping on innocent creature's cranium, squashing them to the point where all their entrails are tightly confined. As stated before this will be further explored as the project continues forward.

4 Risk Matrix

4.1 Introduction

Risk matrices are a failsafe for hazardous events that could occur during the task, they are ranked by risk and likelihood which are estimated subjectively. For this specific matrix it will be assessed by; low, medium and high though numerical values are also a common way of structuring a risk matrix. *(Baybutt, 2015)* This risk matrix will identify and examine the risked associated with this specific task and introduce both the possible reasoning and a contingency plan to ensure maximum proficiency if any were to occur.

4.2 Risk Matrix

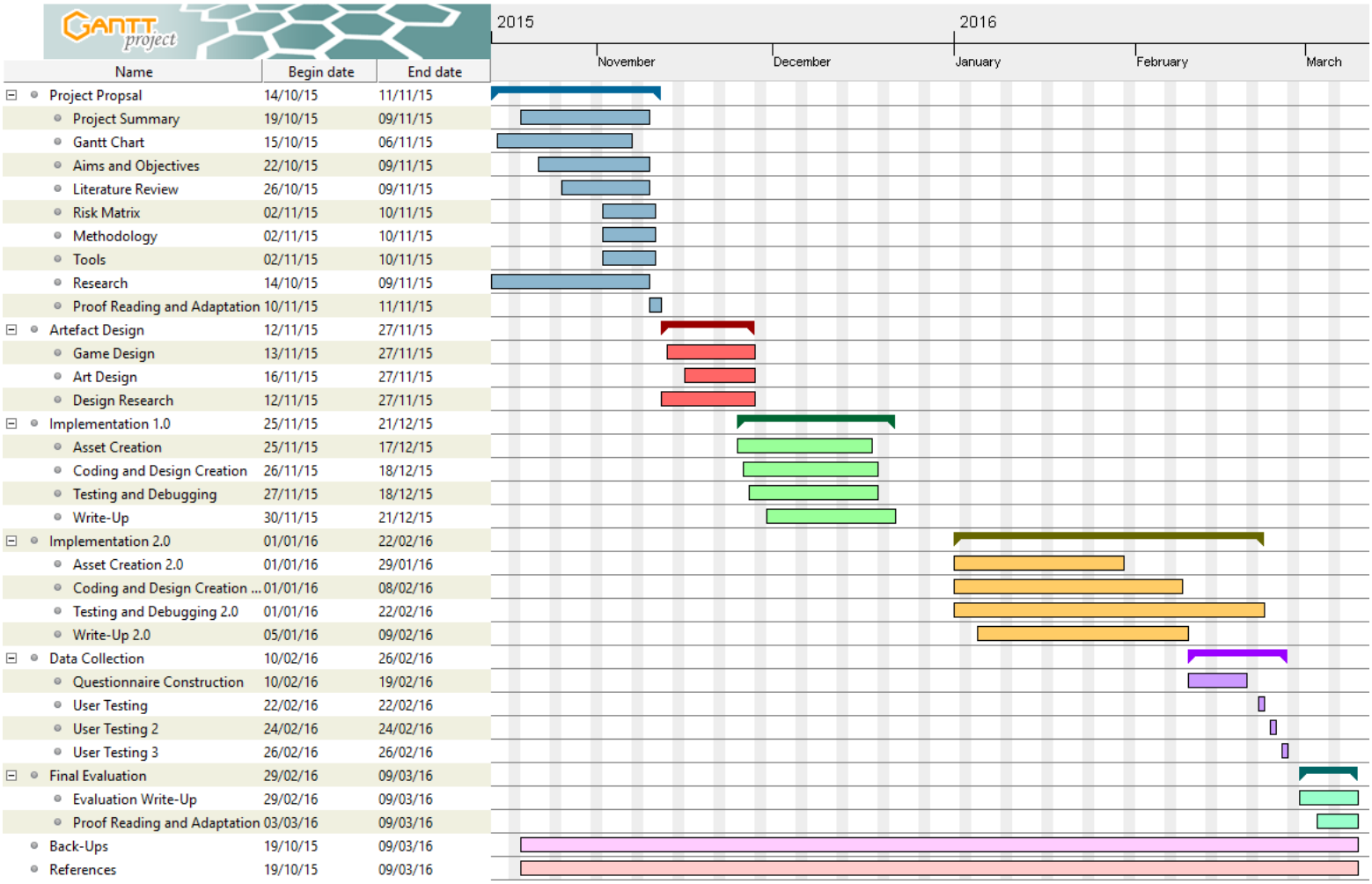
Risk ID	Risk	Likelihood	Impact	Influence	Contingency Plan
R1	Engine Software Issue	Medium	Medium	Software being out of date could make specify code redundant causing errors	Keep the software up to date and update it if needs be.
R2	Mild Hardware Issue for Home PC	Low	Low	Anything from the USB to the Audio Jack malfunction could put testing on hold	Always have backup work saved online or external hard drive so testing

					can be done on an external PC.
R3	Major Hardware Issue for Home PC	Low	High	If the motherboard or power supply were to malfunction all production at home will be delayed	Always have backup work saved online or external hard drive so that progress can be done on an external PC
R4	File Issue with external PC	Medium	Low	The artefact file may be out of date or not compatible with specific operating systems	Always have a spare computer handy and always check the requirements.
R5	Missing or Corrupted game file	Low	High	The files for my artefact could randomly become corrupted or accidently deleted resulting in having to start again.	Backups should be made often to insure that no work is lost.
R6	Broken Version of the Artefact	Medium	Medium	Sometimes implementing something new can break the entire artefact forcing you to backtrack and try to fix it.	Doing source control for ever version of the game so that previous versions can be accessed allowing for greater flow of work
R7	Loss of Asset for Artefact	Low	Low	Would require the creation of that asset or assets to be done again.	Backups of everything including assets should be made constantly.
R8	Lack of skill with the engine	Medium	High	Using the Unity engine can be fiddly and coding intensive, if the skill required to completed the desired mechanics then either time management would collapse or cheap alternatives found resulting in a reduced overall quality	A back up engine is in place for if this happens, meaning that if this were to happen early on then switching to an easier and quicker engine wouldn’t impact Time management a great deal.
R8	Artefact not compatible with testing software	Medium	Medium	If the file isn’t compatible with the version on the testing Pc then this would delay the testing	Either fined a different computer with the required software or delays the testing and use a personal laptop.
R9	Personal Mild illness	Medium	Low	Having a cold, the flu or any other mild	Time management needs to be

				illness can leave you unmotivated or worse, bed borne this could result in a lack of work done.	adaptable so that more work can be done when you no longer feel ill.
R10	Personal Major illness	Low	High	If the illness happens to be more than the common cold some that might require days of rest and checks ups then this will result in little work done.	Time management needs to be adaptable so that more work can be done when you no longer feel ill and making sure that your supervisor is well aware of this issue so that adjustments can be made.
R11	Personal Mild Injury	Medium	Medium	Injuries can spring out of nowhere, if you happen to injury your hand or sprain an ankle than this can become incontinent to specific tasks	The time management is designed so that other tasks can be completed in substitution to one another.
R12	Personal Major Injury	Low	High	If the injury happens to be chronic then this could put a huge hole in the time management of the project.	Time management needs to be adaptable so that more work can be done when you recover and making sure that your supervisor is well aware of this issue so that adjustments can be made.
R13	Unusable questionnaire results.	Medium	Medium	If the questionnaire results are unusable this could affect the final evaluation resulting in a less defined conclusion.	A series of different tests will be done with a series of different people. If the first results are unusable then the next two will be adapted.
R14	Evaluation	Medium	High	If the design of the artefact overruns its recommended duration then it may not allow time for a thorough evaluation resulting in poor quality.	The Gantt chart allows for a good section dedicated for evaluation, if the design overruns it will move the evaluation back as it doesn't

					match with the end date.

5 Gantt Chart



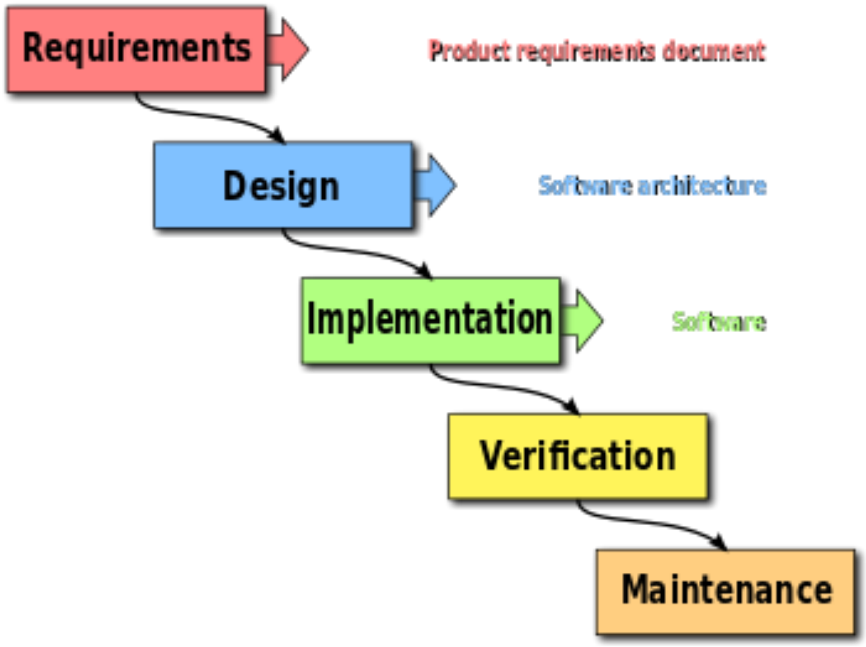
6 Methodology

6.1 Introduction

This section will identify and clarify the methodology best suited for this particular task. It will Evaluate the pros and cons of the selected methodology and construct a clear understanding of why it has been chosen over any others model.

This project will be using the original Waterfall model methodology, the waterfall methodology is classed as a conventional, linear, sequential or traditional life cycle it is considered to be easy to use and clearly defined milestones to thrive towards. (Maheshwari S, 2012) The waterfall model contains six phases; Project Planning, Requirements Definitions, design, Development, Integration and test, installation & acceptance. And each phase comes after the other until the end has been reached. Waterfall is ideal because of its linear structure;

the implementation of the game will be done in its entirety because the use gets hold of it, this doesn't include testing though once testing start it will signify the end of the game implementation and will act as the final step of the process.



An image of the commonly used unmodified waterfall flow (Wikipedia, 2015)

7 Tools

7.1 Documentation Tools

Microsoft Word 2013

The project documentation will be done in Microsoft word, it is the perfect tool for creating exciting and engaging documents and with its array of options at your disposal it is quick at doing so. It is the easiest and most familiar word processing tool for completing a project of this calibre.

Microsoft Paint

Microsoft paint is a simple computer graphics program that is included in all Microsoft windows operating systems, Microsoft Paint will be used to simple cut down and save images that can be later imported onto the word document. Microsoft paint is being used over programs such as Adobe Photoshop because it is much quick and much less effort for the simpler tasks.

7.2 Artefact Development Tools

Unity 5 Engine

Unity 5 is a complex and flexible development tool for creating multiplatform game of both 2D and 3D, Unity 5 has its own inbuilt selection of tools though development is still driven by either C# or Java programming language which can make it very unfriendly for those who have little experience on coding. Unity 5 will be the engine originally used for the project.

Game Maker Studios

Even though Unity 5 is being used, Game maker studios is there as a failsafe. Game maker Studios is a much simpler engine than Unity 5 and specialises in its own easy to use language GML (Game Maker Language). Games can be created much quicker and much easier than they can in Unity.

7.3 Asset Tools

Adobe Photoshop

Adobe Photoshop will be used for creating Assets such as sprites and backgrounds for the artefact. Adobe Photoshop is much more diverse than programs such as Microsoft Paint and allows for the creating of truly beautiful assets. It contains a set of in house tools for the user and allows for endless artistic articulation.

7.4 Backup/ Source Control Tools

GitHub

This project will be using GitHub for both source control and backups, GitHub is a powerful tool that allows the user to upload and share source material with people around the world.

Google Drive

Google drive will be used as a means to backup work or transport it from one computer to another. Google Drive is an online cloud storage tool that allows the user to quickly upload content to their cloud simply by dragging and dropping the folder into their drive.

N.A References

Alan J. Dix. (2003) Human-Computer Interaction. 3rd ed. edition. GB: Pearson Education. Available from http://lists.library.lincoln.ac.uk/items/696BEFD6-2AF1-758C-F5CE-CA8D434C9388.html?referrer=%2Flists%2FC28158C1-090B-1A2A-719D-A88F220347F1.html%23item-696BEFD6-2AF1-758C-F5CE-CA8D434C9388 [Accessed 06 November 2015]

An image of the commonly used unmodified waterfall flow (2015) [Image] Available from https://en.wikipedia.org/wiki/Waterfall_model

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N.A Appendices

1 (Relaxed/Not Worried)
2 (Slightly Worried)
3 (Fairly Worried)
4 (Worried a lot)
5 (Very Worried)

How do you feel about...					
Going to the dentist generally?	1	2	3	4	5
Having your teeth looked at?	1	2	3	4	5
Having your teeth scraped and polished?	1	2	3	4	5
Having an injection in the gum?	1	2	3	4	5
Having a filling?	1	2	3	4	5
Having a tooth taken out?	1	2	3	4	5
Being put to sleep to have treatment?	1	2	3	4	5
Having a mixture of 'gas and air' to help relax you?	1	2	3	4	5

Appendix 1 – An example of an MCDAS questionnaire.