



Implementation of Rhythm Mechanics into Turn-Based Rpg Genre

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Abstract— This research paper is to identify what people prefer in video games. There are many genres which has their own characteristics, some people like one and dislike the other. To determine what are the popular genres that are like by many, questionnaire is used on a group of people who have experience of gaming and get their opinions on fast-pace genre and slow genre.

1. Introduction

Game concept

“Lullaby” which is the name of the game is a 2D style turn-based rpg mix with the concept of rhythm mechanics. “Lullaby” is based in a fantasy world which music plays an important role in the story and the combat, player will use music to defeat enemies along the way and may find different music which give them different kinds of attacks. Players encounter enemies by exploring the world maps and battle against them which is very similar to those old-school turn-based rpg like the best example which is “Final Fantasy” or “Earthbound” but instead of using the original old-school style which is press and wait, “Lullaby” provide a chance for players to do some button pressing during the attack process so that player will feel the interaction towards the game.



Figure 1.1A. Final Fantasy V Exploration



Figure 1.1B. Earthbound Exploration

In these two figures, the difference is that in Figure 1.1A, the enemy does not show up on the map, players will encounter enemies by walking around the map which will trigger the combat scene while on Figure 1.1B, the enemy will be shown roaming around at one spot, when players approach it, it will automatically runs towards the player and once it collides together, the combat scene will be triggered. So, these are the two

inspirations for the enemy encounter mechanics that “Lullaby” will be taken from.

The audio that are going to be implemented in the game is more of an 8-bit style rather than using classical instrument the reason why is because to match the art style and atmosphere for the game. The game environments are more to grass field, blue skies kind of environment, this kind of environment provide players a more relaxing feel when they play it. In conclusion, “Lullaby” is a fantasy turn-based music game which the environment set in a grass plain field, allowing players to explore the levels, experience different art assets that will be implemented in the game and different enemy’s fighting style, at the same time provide different music when player attack with the rhythm mechanics so that player will look forward to the different music that the game has to offer.

Gameplay and Background

Gameplay

“Lullaby” combines the old-school turn-based rpg with rhythm mechanics. What is old-school turn-based rpg? It is basically players will have to wait for their turn to do actions with their characters by using given commands, like attacks, defends, magic, escape and many other actions commands. Once player execute the individual commands, the outcome of the actions will be determined by a “random number generator” system. Some skills will have high damage output but low chance of success rate and some produce low damage but high success rate. All of these things are also implemented for the enemies as well in order to make it “fair”. Old-



Figure 1.1C. Final Fantasy V combat scene

school turn-based rpg has been around for a long time which many still likes it but none are unique as it follows the same rule. So, in order to make it more unique and interactive, a rhythm mechanics will be implemented.

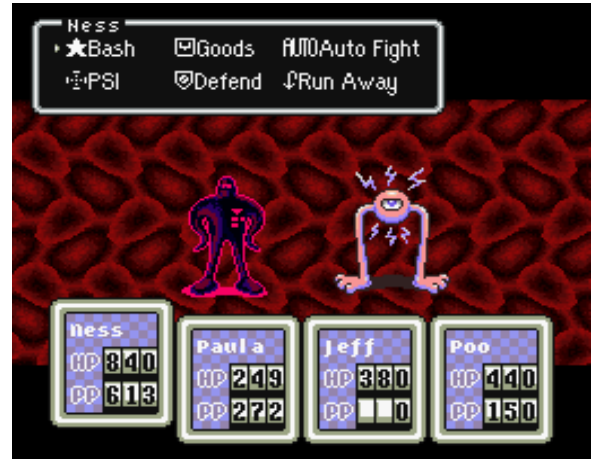


Figure 1.1D. Earthbound combat scene

In the above figures, the commands have unique actions like in **Figure 1.1C**, the “Black” command is to use black magic and “Summon” is to summon powerful monster to help the player to deal massive damage to the enemies. These special commands are depending on the classes of the characters like the “Black” and “Summon” are usually for casters, warrior classes will not have these special commands but maybe other special commands that will go with class. In “Lullaby”, these special commands are considered if there are extra time because many things need to be considered like the types of skills, the amount of damage, and maybe the animations as well.

Player will be experiencing almost like the old-school turn-based rpg which player will be walking around the map and randomly encounter enemies or having the enemy that will be visible by player and roam around one particular spot which will approach player when its near. When the player encounters an enemy, the game will take players from map scene to battle scene where battling between player and enemy will be happening. While player is in a battle scene, a set of commands will be display and so does the other important UI’s like both players and enemy’s health bars. Here is where it differs from

the old-school turn-based rpg, when player select attack command, a rhythm-like UI will pop up and a set of notes will move according to its beats so in this case players have to hit the notes accordingly in order to deal damage to the enemies. Players can do normal damage by hitting the notes without it being perfectly press when notes arrive the hit point and as for critical damage, let's say there are 5 incoming notes, players have to hit 3 /5 notes in order to satisfy the requirement. So, the damage outcome will be determined by how well players press the notes.

Enemies will also get a chance to attack the player but when an enemy attacks, the rhythm UI will pop up as well, so in this case enemies sends in the notes as seems like enemies is shooting projectiles while players have to press the incoming notes to reduce the damage taken or completely dodge the attacks. This way player won't feel like the "random number generator" system is controlling the battles instead the game now provides an opportunity to allow players to decide some situations. There are three kinds of enemies, normal, speed, and heavy. Normal enemies, when they attack, the notes they send in will have normal speed, not fast yet not slow. As for speed-type enemies, the notes will be faster but deal less damage to player. Lastly, the heavy-type enemies will send in notes that are fast at the start and gradually slow down the speed when it almost reaches the hit point. Heavy-type enemies will deal slightly more damage than normal and speed-type enemy.

When outside the battle scene, players will get to explore around the map, see different scenes, interact with npcs, and so on. This is a story-based game so players have to go around in order to progress the game and such.

Background



Figure 1.1E. Exodus Ultima III

Computer Turn-Based RPG (CRPG) has been around for decades, plenty of RPG games has been made in history but none turns out to be as appealing to the audience but one game that influence the other developers to make CRPG which is called "Ultima III". Soon, few games decided to have the same concept as Ultima III like "Excalibur" and "Dragon Quest". "Dragon Quest" was created in 1986 by Yuji Horii. Dragon Quest was considered a JRPG, Japanese Role-Playing Game, it was famous among the Japanese but not so well for the western audience. After the 4th series, Dragon Quest 5 had a competitor, the competitor had a similar style of gameplay mechanics and the game is called "Final Fantasy". Final Fantasy is created by Hironobu Sakaguchi, who thought that his game will be the final game but little did he know that Final Fantasy blew up in the market. Then after the success of Final Fantasy, the series of Final Fantasy became larger and larger which until now, the year 2020, there are 15 series. Along the way, many titles got influenced by it which then CRPG become famous and have multiple subgenres which have different play styles.

Rationale for selection of Game Mechanics

Normal old-school turn-based rpg battle system can feel slow because player must wait for their turn to select an action and if a certain skills requires 2 turns wait time, that means players will need to find another way to survive until that particular turn and some battles have a certain rotation to follow in order to defeat the enemies/boss like for example, players can only damage the boss main health if the player destroy its arm so once the arm is destroys its arm, the player will be given a short amount of turns to deal damage to the boss until the arm regenerates. The rotation will not be consistent as well because sometimes player will not deal critical damage which increase the turns to defeat the boss or player have to sacrifice a turn or two to heal if the boss deals heavy damage.

So, in order to make these slow progressions in battle scene for turn-based rpg games to be more

engaging and interesting, developers will have to mix something else so that during these slow progression players can actually enjoy it like, take Undertale for example. It mixes bullet hell elements during the battle scene and also a story-based element as well. Player can actually choose not to kill enemies and convince them to stop fighting by choosing the “Act” command but this will be more challenging as convincing will take many turns and every time players fail to convince, enemy will attack with the bullet hell mechanics which depending on what kind of enemy, each enemies attacks pattern will be different. This will provide challenge to the player as player will control its character to dodge the bullet hell elements from the enemy. So as things have been mentioned, Undertale provide a fun and challenging way to play the game, it mix story-based and bullet hell elements into a turn-based rpg genre so that players feel more interaction with the games and characters.

So, adding some actions in a turn-based rpg can actually make the game more engaging, fun and challenging and rhythm genre is a good choice. Rhythm genre creates a fun and exciting mood for the player and player will want that satisfaction when every note is hit properly.

Potential Benefits

Tangible Benefits

- Save cost money and resources as physical copies is not needed.
- Improve strategy planning skills as players need to plan when encounter the enemies
- Improve concentration for the player as they need to focus on the rhythm mechanics all the time
- Provide less probability system

Intangible Benefits

- Giving player a fun, challenging and exciting experience
- Provide a healthier way to gaming, for example, no toxicity
- Provide a faster-pace battle system so that player will be more interest

Target users

The target users that will be question and observe will be around age 18 - 30 as there are more gamers at this range of age and they could provide me more in-depth opinion since they have more experience.

Scope and objectives

Game Genre and Platform

There are plenty of interesting and fun genres like hack-and-slash, shooter, fighting and so on, that can be used in “Lullaby” but because of how popular these genres are, it is no surprise when a new hack-and-slash or shooter game release in the market. People would be excited for this kind of games either it is a sequel of the game or because of how flashy it looks in trailer. The developers had probably already experiment with every genre, what suits and what is not. So, coming out a newly exciting hack-and-slash with different mechanics idea would be hard to satisfy the people now as there are so many existing good games, this is why turn-based rpg genre is pick. Turn-based rpg has always been the same for decades now and seeing a new mechanic in that genre will raise some doubts that whether it is good or fun but some are able to pass by that doubt like Undertale, which uses bullet hell genre in combat, Fallout uses turn-based elements in shooter genre and many other more games. So, seeing these games that make turn-based interesting inspires “Lullaby”. “Lullaby” will be a turn-based rpg mix with rhythm genre. Rhythm genre is also one of the most famous genres and can always be seen in arcades. Rhythm genre creates tension and people like to challenge themselves to get full combos on a very hard difficulty songs which if they succeed, it awards them that satisfactory feeling and make players want to challenge even harder levels. So, by taking a slow-pace game and a fast-paced game, it might balance out the slowness in turn-based and fastness in rhythm so that any kind of player can enjoy it.

Many gaming platforms have been developed through out these past few years, there are 3 main categories which is consoles, handheld, and PC. Consoles which are basically requires to connect to a television screen in order to view graphics and each brand consoles have their own unique design of controllers so consoles requires this controllers to play, most games require

controllers but some games might require special kinds of controllers like Virtual Reality (VR) games requires VR headset to play. Handheld platform is just portable consoles but is limited to play some heavy graphic games and PC is almost similar to consoles. “Lullaby” is a 2D pixel game which does not require a high-end gaming platform to support so handheld and mobile devices is being considered and another gaming platform is being considered as well which is PC since PC is accessible to almost anyone nowadays.

Game Objectives and Win Conditions

Every video game must have an objective to fulfill in order to progress. Objectives can be viewed as milestones, once players finish one of the main objectives, they will be rewarded with either items, weapons or skills to progress further. In “Lullaby”, the main objective is to find all four ancient music notes to form the legendary music note to restore peace in the game world which currently is controlled by a powerful demon lord. When players get one of the ancient music notes, the player will be awarded a new powerful skill which can be use in battles. Most rpg games will include side objectives which does not relate to the main story line but some side objectives may reward things to help player to progress the main objective easier and some may have their own little stories to tell which in the end it is all depending on what player decides to do. In “Lullaby”, side objectives are not an option because it would require more time to produce it, especially the writing part.

Winning condition will be very straight forward which is to defeat the final boss but if we narrow down the scope, then that would be to defeat the enemies that the player encounters. Since this game, “Lullaby” is considered a story-based game, the winning condition will take player more time to achieve it as players have to “grind” levels in order to get stronger to defeat the final boss. Some games require just a short amount of time to achieve the winning condition like, for example fighting games which players have to defeat their foes to win the round and this takes only a few minutes while rpg games tend to be longer as it is story driven game which

player require some time to reach the final part of the story to defeat the final boss. Most rpg tend to be 30 - 50hours long.

Deliverables - Functionality of the proposed Game Concept

Rhythm mech

“Lullaby” provides players a fun yet challenging gameplay experience so that any kind of gamers could enjoy like the rhythm mechanics that is going to implement in combat for “Lullaby”. This change to a different way of playing a turn-based rpg game which increases the difficulty of players handling characters attacks but yet enjoyable since most people like to challenge themselves.

Controls

This game also offers freedom for players to control the situation in battle. For example, during an enemy attack, a different way is provided for players to defend themselves which also uses the rhythm mechanics unlike the old-school way which players have to rely on the “random number generator” system. In this game, the more enemy notes player hit, the lesser the damage received by enemies so this way it makes it more realistically in a way.

Enemy type

There will be different kinds of enemies which affects the way that the movement of the notes. The types will be normal, speed and heavy. The movement for the normal type enemies will have the normal speed and damage. As for the speed type, the movement of the notes will be slightly faster than the normal speed but damage output will be lesser than normal. Heavy-type will have a unique way of movement which is the notes will be faster from the start and gradually becomes slow when it reaches the player hit points. Heavy-type can deal more damage than normal.

Audio

“Lullaby” also offers different kinds of audio; it is a rhythm-based game after all. When the

player's character's attack successfully hit all notes, it will combine the note's audio and play the full music to let player listen to how it sounds like. This may trigger some players to be excited to hear more music from what the game has to offer.

Nature of challenge

Competitors

There are tons of video games have been developed which means most ideas have been thought of and used on their own games, which also means that the mixture of turn-based rpg and rhythm genre exist somewhere in the market. After some exploration through the net, a game that was developed in 2016 named 'The Metronomicon' have the similar idea as "Lullaby" but it has a multiplayer feature which allows 3 more players to join the party. On Steam, 'The Metronomicon' gets a 9/10 rating and people's reviews are mostly positive. Because of how well this game does and have similar features, it is difficult to convince that "Lullaby" is better than 'The Metronomicon' unless most features in "Lullaby" have to change to be more different and better than 'The Metronomicon'.

Music/Audio

As I have no experience in playing any music instruments, no studies on music theory and such so let alone composing any music, it will be a very hard challenge to compose something that suits the game style. Since it is a pixel 2D art style, 8-bit music should be considered. A lot of references should be used and studies on other pixels games in order to achieve the correct style.

Pixel arts

Pixel drawing is clearly different from traditional way of drawing because a certain style must be followed in order to draw a good pixel art. So in order to do so, a special software is a must to use in order to produce a good quality pixel art and animation like this software, called 'Aseprite' which provides many tools and functionality to help artists to produce good

pixel arts and animations. In this case, using 'Aseprite' will be considered but as an inexperienced artist many references and practice is needed to achieve this.

Technical part

The rhythm mechanics can come in a vary form of styles but the one that is chosen to be in "Lullaby" will be the most simplest ones which is there are 4 press points and each press point have their own individual lane to take care of so when the player press attack, this rhythm hud will pop out and notes will spawn one by one in each lane on different timing so it won't spawn at the same time. Once the note reaches one of the press points, players have to hit the required button to register the note. This is the ideal mechanic but due to lack of knowledge in coding and tutorials that are beyond my understanding, it is a challenge to achieve this as well.

Some other challenges like enemy spawn randomly when players walk on the map and the transition between map scene and the battle scenes which require more time on researching and experimenting which same goes to making a save system.

Overview of this Investigation report

Chapter 1 - On this chapter, readers will understand what is the game about with details of game concepts, gameplay, mechanics and so on, so that readers get the idea of how will the game look like.

Chapter 2 - This chapter is talking about the research on other people's research. It will be researching what similarities that people had on their system compared with mine and also the same topic that I am researching on.

Chapter 3 - This part will be talking about the technical side to develop the game. Contents such as the game's level and UI design, what kind of operating system and platform will the game port it on, and some other things like descriptions on the characters that will be in this

game and also the story. So, everything that is related to making the game can be found here.

Chapter 4 - While on this chapter, it will be talking about game methodologies. The two methodologies that are picked for this project is SCRUM and Waterfall. It will have a brief overview on both of the methodologies and also the comparison of these two which then it will be decide which methodology will be used for this project.

Chapter 5 – Chapter 5 talks about the research methodologies and what are the research methodologies that are going to be used. It also explains in details and how is it helpful to this propose project.

Chapter 6 – Chapter 6 talks about the data that has been gather and how does it provide usefulness to the researcher. It provides the respondents responds as well as the statistics.

Chapter 7 – This chapter includes content such as conclusions and reflections of what needs to be improve and what can be improve.

Project Plan

Gantt Chart for FYP Sem 1

Task Name	Duration	Start	Finish
1.0 Planning	15 days	Thu 11/7/19	Thu 11/28/19
1.0.1 Thinking ideas	3 days	Thu 11/7/19	Mon 11/11/19
1.0.2 Write down the propose idea for PPF	5 days	Mon 11/11/19	Fri 11/15/19
1.0.3 Sketch out the idea (Game characters, environment, battle scene)	4 days	Tue 11/19/19	Fri 11/22/19
1.0.4 Write in depth details of the propose idea	3 days	Tue 11/26/19	Thu 11/28/19

(Game mechanics, level design, gameplay)			
2.0 Initiating	51 days	Wed 12/4/19	Wed 2/12/20
2.0.1 Meeting supervisor to discuss propose ideas	1 day	Wed 12/4/19	Wed 12/4/19
2.0.2 Design Game UI	3 days	Thu 12/5/19	Mon 12/9/19
2.0.3 Draw game character arts	3 days	Fri 12/13/19	Tue 12/17/19
2.0.4 Program the game mechanics using Unity and the designed UI	10 days	Mon 12/9/19	Fri 12/20/19
2.0.4A Do online research/ tutorials for the ongoing game mechanics	10 days	Mon 12/9/19	Fri 12/20/19
2.0.4B Redesign the UI	1 day	Wed 12/18/19	Wed 12/18/19
2.0.5 Write the Project Specification Form (PSF)	6 days	Fri 12/13/19	Fri 12/20/19
2.0.6 Meet supervisor for a second time for updates on game mechanics	1 day	Wed 1/8/20	Wed 1/8/20
2.0.7 Write about the redesign of the game mechanics	1 day	Wed 1/8/20	Wed 1/8/20

2.0.8 Write about Investigation Report (IR)	34 days	Fri 12/27/19	Wed 2/12/20
2.0.8A Write about the chapter 1	7 days	Fri 12/27/19	Mon 1/6/20
2.0.8B Research on Domain research	2 days	Tue 1/7/20	Wed 1/8/20
2.0.8C Write about chapter 2 and prepare Questionnaire	4 days	Wed 1/8/20	Mon 1/13/20
2.0.8D Write about chapter 3	3 days	Tue 1/14/20	Thu 1/16/20
2.0.8E Write about chapter 4	2 days	Fri 1/17/20	Mon 1/20/20
2.0.8F Write about chapter 5	3 days	Tue 1/21/20	Thu 1/23/20
2.0.8G Prepare Gantt chart for FYP semester 1	1 day	Sat 12/21/19	Sat 12/21/19
2.0.8H Write about chapter 6	8 days	Fri 1/31/20	Tue 2/11/20
2.0.8I Write about Chapter 7	1 day	Mon 2/10/20	Mon 2/10/20
2.0.8J Finalize the report	2 days	Tue 2/11/20	Wed 2/12/20

This is the Gantt chart of the fyp progress throughout this semester. The first month which is November, the task that I have accomplished are mostly documenting my proposed idea instead touching the technical part. After submitting my proposal idea and discussing it with my supervisor on December, right after that I started to work on the game mechanics prototype. During this process, I also did some

UI design to use it for the prototype. I did some research on things that I do not understand while working on the prototype, some parts I got stuck which I spend more time to find a solution. Once I got tired from coding, I did some art for my game's enemy.

After few weeks, the prototype is done but there are still false which will fix in future, later on I put my focus on completing the PSF which is due on 20/Dec/2019. I spent 6 days on completing PSF and during the two weeks Christmas break, I did not do much work until the last few days of the first week of holiday, I manage to start doing my Investigation Report (IR) but only a little bit. During the second week of holiday, I manage to finish most of chapter 1 and after the following weeks I organize each chapter will be finished in that week and if I had extra time, I will start to do other chapters or check the previous chapters for errors.

2. Literature Review Domain Research

Enduring design challenges in WRPG

(Ralph, P., Monu, K., 2017) provides an overview on Western role-playing games (WRPG). WRPG, which is one of the subgenre from Role-playing games (RPG) is more different compare to the other existing subgenres because of how much freedom that is provided for the player to explore in the virtual open world, interactions with non-playable characters (NPC), and objects to a much further extent than the other subgenres. WRPG provide such freedom in a way which player is able to create their own character, choose what classes they want to be and roleplay as them throughout the game. There are 3 challenges which can be identified in WRPG design according to (Ralph, P., Monu, K., 2017), one of which is the bipolar morality scales inhibit ethical reasoning. In most WRPG, the player's character's morale is depending on the choices you made during the progression of stories, morale might change the game's outcome like, for example Fallout 3, constant good actions will gradually decrease the bad actions and vice versa. There are also other WRPG that have their own Bipolar

Morality Scales that affect their own games. The issue here is if a game provides rewards by choosing one side of the bipolar morality scale, that means the play is encouraged to pick a side and without thinking too much, player just pick whichever options that leads to that particular side for the rest of the game. So, this would seem that players do not care much about the morality if it wasn't for the rewards. This would raise the question, why is morality mechanics is introduced and used for so many WRPG.

The next challenge that is mentioned in this journal is Quest Hubs Inhibit Exploration. In RPG in general, quest is a list of tasks that players have to complete accordingly in order to progress further into the game and by the end of a quest, its rewards players on in game money, items or skills. In WRPG, quest can be divided into many small sections such as main quest, side quest, minor quest, and unmarked quest (Ralph, P., Monu, K., 2017). When it comes to placing quest to a starting point, it is very important and sometimes difficult as well because quest can be act as a guide for players to progress the main event. In an open world, especially WRPG, player will sometimes find themselves lost while exploring the world so some games may provide navigation tools such as compass and minimaps to indicate where the main quest is to remind player. There is another issue to be considered while implementing quests in a game which is too many quests may interrupt the main story of the game, because players might want to grab as many side quests that can be delivered on the way to the main quest which then player's focus will be lost in these side quests rather than the main story quest.

Lastly, (Ralph, P., Monu, K., 2017) talks about the difficulty scaling in WRPG and the problems of some games handles it. Difficulty scaling can be found in most genres of games but for WRPG, the difficulty scaling differs from one game to another, each has their own unique way on managing the difficulties. One common way is to have player to select the difficulty themselves but this would raise the issue of "this game is too hard" or "this game is too easy". The other way of scaling the difficulties is enemies leveling is depending on player's levels but the

problem with this is that the player will become weaker without a proper leveling strategy and player will be killed by a very strong enemy that look weak.

Understanding Computer Role-playing games

(Stenstrom, C.D., Bjork, S., 2013) Computer Role-playing games (CRPG) can be complex when it comes to defining its subgenres as there are so many which might confuse the developers when they categories their work. (Stenstrom, C.D., Bjork, S., 2013) decided to provide an overview to find the common gameplay features of the subgenres of CRPG and the difference of these individuals subgenre's combat system to have a better understanding on the subgenres. A method called 'gameplay design pattern', is used to analyze the subgenres. This method will be running in iterations, first iterations few famous CRPG titles were picked and clusters will be formed and name the cluster based on the playstyle and after each iteration some other CRPG titles is then added in to form more clusters which means more subgenres. After the end of the iteration, 40+ clusters of subgenres were found, these clusters were formed is because of the commonality in gameplay.

Similar system

BoomChaCha: A Rhythm-based, Physical Role-playing Game

BoomChaCha is a mixture of rhythm and rpg elements that works differently from any computer role-playing games. There are few games that mix these two elements together which are fun and loved by people, such as Patapon, and Crypt of the NecroDancer. These two games require player to press the correct buttons to match the background music beats in order to successfully attack. The longer they continue the beat, the more rewards they will get but one thing about these games is that it is not cooperative, players can complete the game without any additional help from another player (Zhu et al., 2016). BoomChaCha is created to fill that gap which makes the game more challenging and fun. BoomChaCha uses a

special made controller which players have to physically wave the controller to execute the actions in the game unlike the typical CRPGs which uses the console's controller. There will be 3 different controllers for 3 different classes which is warrior to attack the enemies, defender to defend the whole team, and mage to heal the team's health. Whenever an enemy attack, the whole team will be affected and not individually and whenever the team attack, defend or heal, it will all be affected at the same time. During the player's turn, a background music with six-beat pattern will be playing and there will be two stages provided which are decision and execution stage. When all the players decided what to do, they have to wave their controllers in the first 3 beats and the next 3 beats, players will experience the character's actions.

The Design Process for prototyping a New Game with an Innovative Combat System

(Jesse P. Ravensbergen, 2014) design a realistic turn-based rpg combat system to make it more of 'skill-based' rather than level-based. Usually in classic rpg, the character performance is depending on what levels they are, the higher the level they are, the stronger they are in combat. So, instead of a level-based combat system, (Jesse P. Ravensbergen, 2014) want players to play depending on how skillful they are. This element removes a lot of "random number generator" (rng) system which almost every rpg has it. Rng is basically everything will be depending on probability, such as player attacks accuracy, critical hit, enemies' attacks, and so on. So, in order to remove this rng element, this skill-based combat system will determine how well can the player play in terms of attacking and dodging enemies attacks. When it is the player's turn, the whole game will freeze for the player to make a decision on what kind of actions to choose so that player can be more strategize.

A definition of creative - based music games

(Thomas et al. (2018)) is very interested is video game music which led them to create a

'creative-based music games', an early prototype of the game which is called 'Evomusic'. Evomusic is a music game that is having the concept of mutating cells and evolutions. The main concept for this game is that players will have to connect the 'music cells' to grow the population of the 'music cells' which then produces a music 'piece'. Each cell when generate, they will be assigned with a sound effect using a probability system. The sound effect can be varied, such as a lobe piano pitch, a short hi-hat rhythm, synthetic bass drone, or others sound effects like a creaking door sound. So, the bigger the population of the cell, the more organic the music will be heard.

The music cells will be displayed as a colored-circle on the screen and floating around random direction. The color represents classes for the cell such as, 'SFX' as blue, 'Percussion' as green, 'Pitch-short' as yellow, 'Pitch-long' as pink and lastly 'Bass' as red. The game basically starts with a music cell which the class is chosen by the player themselves. After that, the music cell will begin to float around the screen and after a period of time which is 10-15 seconds, the music cell will begin to grow which will then divide itself into two more cells of the same class, one of the cells will keep the same attributes from the parent and the other will have different sound effect of the same class. Then this process will be continued and within this process it will have a 30% of mutation which means it will become a different class. There are also abilities in this game which is 'Lock', 'Mutate', and 'Destroy'. These abilities allow players to compose a song. To summarize the gameplay, it is basically a sand-box kind of game which uses music as the core element. This allows players to explore and compose many different kinds of music randomly or intentionally.

Summary

In conclusion, the domain research is mostly about researches of the variety of rpg and their uniqueness which can be helpful for the researcher to understand more on rpgs while in similar system, the researches are mostly about the similar projects that people have done which the researcher could use it as references. The

similar system is either have similar features or similar elements which the researcher is able to see how the other researcher use it on their project so that the researcher is able to implement on its own project.

3. Materials & Method

Storyline and Characters

Storyline

In a world named “Aonea”, once live in peace together with the diversity of races. They communicate by talking, obviously, but one mysterious issue arise in “Aonea” is that when they talk, it will always be monotone. Not only talking, but when an object contacts with another object, it produces a monotone sound as well. Basically, every sound can be heard in “Aonea” will always be monotone. There are rumors about music being heard in “Aonea” long ago and it was caused by a powerful orb called “Mue”. There are many different kinds of hand-drawn pictures of “Mue” not only that, there is also no official written reports that prove that “Mue” exist, all the reports can be found are just people’s theories but because of these beliefs, this “Mue” thing is considered fake by most of the people in “Aonea” but not for the explorers. The explorers which is founded by a legendary adventurer and recruited some of the most adventurous people around “Aonea” to find “Mue”. They had achieved many things during their years of expeditions, they would always bring back amazing treasures. So, after returning from one of the expeditions, they heard about the rumors and decided to do research on it and embark this journey to find “Mue”. They were told that to spot “Mue”, one must notice a powerful golden light and music will be heard. They do not know what music sounded like but at least they have another hint to spot “Mue”. So, after a few weeks of researching, they packed and depart into the largest forest in “Aonea”.

After weeks of exploring the forest, slowly the explorers got separated and little do they know they were alone. One of the explorers named ‘Charlotte’ found a shrine and curiously she went in. It was dark and cold; with only her torch she can at least see anything within the radius of

the light. She carefully walks and check for any traps or holes. After some time, she managed to reach an open stone door with some patterns carved on it, she stood in front of it to observe the patterns but soon later she heard something, something that is not monotonous. She was shocked and quickly run pass through the door and soon later he encountered a strong golden light and the magical tone gets louder. She followed the tone which then leads her to a golden orb which was floating on a stone platform. She stood in front of the orb for a very long time and finally snap out of it and slowly reach for the orb but the closer she got to the orb; she saw a silhouette. She squinted her eyes and slowly realize that the silhouette is one of her explorer mate. Without hesitation, her explorer mate grabs the orb and suddenly the music was gone, the light got dim, the room turn dark. Not long later, a horrifying tone start playing and a dark aura start to creep out from “Mue”. The explorer mate throws the orb away with fear but the aura aims at him and rushed towards him and surround him. ‘One who fails the ritual to awaken “Mue” will be consume by the evil spirit of “Eum”, a deep voice said. Which then, the possessed body flew out of the shrine and start to spread its aura to consume the world with its dark power. Once Charlotte snap out of it, she realizes there is a floating harp behind where “Mue” was. She then read the carving on the walls about performing rituals to the spirit of song. Charlotte started to followed the instruction and soon later the harp flew towards Charlotte and a faint yet soft voice is talking in her head, telling her to save the world from “Eum”. Which is there, the journey of Charlotte starts.

Characters

Main character



Figure 3.2A. Charlotte sketch

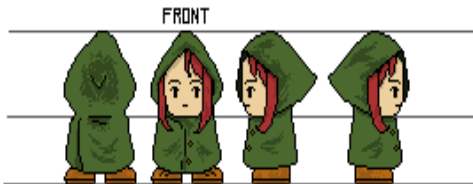


Figure 3.2B. Charlotte sprite sheet

This is a sketch of the main character for this game which is still not finalized yet. Her name is Charlotte, a 16-year-old girl who got separated from her explorer group which then found a legendary harp after the evil “Eum” has awoken by one of her explorer mate. She is then having the responsibility to save the world from “Eum”. This sketch is just to show how she looks like in details but in pixel art she would look different because pixel art will reduce the details of the character.

Main villain



Figure 3.2C. Eum sketch

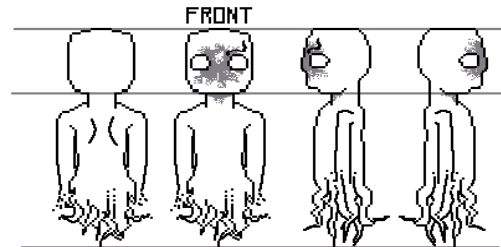


Figure 3.2D. Eum sprite sheet

Both figures that is shown above is the sketch for the main villain in the game story. It is still work in progress and subject to change. Its name is “Eum”, an evil spirit that has been asleep for many years and soon awoken and plan to conquer the world. There are 2 images which the first one is to show a more detail illustration of “Eum” while the other one is the game art which it is still consider to implement in the game.

Enemies

Monster 1



Figure 3.2E. Sleg: Lullaby monster 1

The first ever monster that is created for this game which is “Sleg”. Sleg is a slime monster with legs. The crown does not mean anything, the story is just that it steals it from people who wore it. Slime kind of monsters can be found in many rpg games but to me I would like to keep the tradition and design one on my own since this game is going in the old-school style direction.

Monster 2



Figure 3.2F. Hypnotoad: Lullaby monster 2

The second design of this game monster will be this frog monster which its name is “Hypnotoad”. Hypnotoad is a based-on frogs which is very obvious and it hypnotize its enemies with its belly and when it successfully hypnotizes, it consumes its enemies.

Level Design and Game UI

Level Design

“Lullaby” level design takes inspiration from the old-school rpg games like Earthbound and The Legend of Zelda (TLOZ) but these two games have a similar yet different concept on level design. In Earthbound, players view the level in a top-down view. The levels are mostly linear which means there are no freedom to explore in the game world, players will always need to follow the path that is given to progress the game. While in the old-school TLOZ, players view the character in a top-down view as well but what makes it different from this and Earthbound is that in Earthbound, the map will not be cut into small pieces, it will provide the full map with many things to interact with, the only time when the game transition from the current level in to another is when players reach an interactable door, etc. The game camera will always follow the characters whenever it moves. As for TLOZ, the game camera follow character as well but the difference here is that the game level will be cut into a few smaller pieces, if player is done exploring with the current level

then they will have to move until the edge of the current level which the transition the next area level. Player is able to go back to the previous level but the enemies they defeat will be reset and this same goes with Earthbound.



Figure 3.3A. The Legend of Zelda

After analyzing the elements that these two old-school rpg had provided, “Lullaby” will be implementing some of the elements as to fit the style of the original concept. The current plan is that the level design concept will be inspire mostly from Earthbound. So, a level will contain a set of environments to create a setting, kinds of monsters will also be depending on the environment, for example if the environment is a grass field environment then the monster will most likely be frogs, slimes, rabbits and vice versa. This design provide player a more open-world feeling compared to the level design on TLOZ because of the constant transitions in TLOZ had is sometimes unpleasant when it comes to exploring, people might get confused and forgetful very easily. The enemies’ character will be display roaming around at one spot and when player approach them it will rush towards the player which will trigger the battle scene. The battle level design is going to take Earthbound as inspiration again and another game which is old-school Final Fantasy. The way that both of these games battle level designs are very similar but the only difference is the way that each game displays their UI and characters but other than that, they flow of the combat is similar. Another similar element that they have is that there will be a storytelling during the process of battling. “Lullaby” won’t be implementing all of these elements,

especially the story-telling part but the flow of battle is considered.

Game UI

UI is one of the most important elements in video games because it shows users information about the characters health, energy, name, levels, etc., information about the level/map as well such as minimap, compass or quest indication. In old-school Final Fantasy, the UI is not as appealing as it seems, it was very simple but yet informative. In order to design an appealing UI, a few things must be considered, for example theme, audio, exaggerations and etc., but if the design is too exaggerated and messy, the information might not deliver to the player properly because the design will cover up the information and also very distracting to player which confuse them on where to look. For “Lullaby”, the UI will be simple and straight forward which is the opposite of what makes the UI attractive, the reason why is because the lack of time and knowledge to produce UI with these features may take some more time but it will be considered when there is extra time. But not only that, a simple UI has its own attraction which some people might like because of nostalgia and retro style. Sometimes, game art design can be simple yet beautiful in their own way which do not require fancy art style.

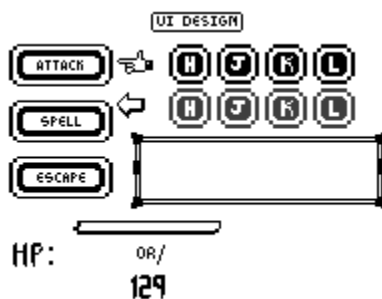


Figure 3.3B. Lullaby's UI examples

Operating System and Platform

Operating System

Windows 10 will be chosen to carry on this project as Windows is the most popular OS right now and most people are using it. I personally have been using Windows for many years so to switch to other OS is a little hassle which is also unnecessary since other than Windows, other OS like Linux is not very user-friendly and MacOS hardware which is the MacBook or iMac is not powerful enough to support powerful games and it is very expensive too. So, to reach to a wider audience, Windows is the winner from the other two OS.

Platform

The reason why the PC is the first to be considered is because it is easier to get access to PC nowadays. Most homes will at least have a PC or two and games that does not require powerful specifications can be easily publish on a platform called “Steam”. PS4, Xbox, and Nintendo Switch are platforms that provide games that have great graphics and because some of the features that PC couldn't have

Summary

In conclusion for Chapter 3, this chapter talks more about the games concept and design. 3.2 is about the storyline of the game and the introductions of some of the characters, the story is very linear which can be summarized as an explorer is out to find a legendary treasure but with a false way to handle the treasure it awakes a demon which then possessed the person who awoke it and now it wants to conquer the world. As for the characters, only a few characters like the main character, main villain, and 3 other enemies will be introduced with concept arts and descriptions. 3.3 will touch about the level design of “Lullaby” and game UI. The level designs and user interface are mostly inspired by the old-school rpg titles, the level design is intentional but UI is not because to draw the UI to fit the style of the game properly might take some more time and research. As for 3.5, operating system shall be used is Windows 10 because of user-friendly and to reach a wider audience while the platform is obviously is going to be PC because of the chosen OS.

Game Development Methodology

SCRUM METHODOLOGY

The methodology that is picked for this project is SCRUM methodology and the alternative will be Waterfall methodology. While both methodologies have a slight difference but the goal will always be the same, which is to get the project done. SCRUM methodology are usually used on software development because of its iteration functions. SCRUM is a self-organize, adaptable, cooperative approach to fulfil the task given. The one that separates SCRUM from Waterfall methodology is the iteration trait. SCRUM breaks the project in an iterative way so in every iteration, the system can be tested and identify the problems or add extra features. This way, the team is able to be more adaptable since every iteration something will change and also improve their workflow. Every 2 or 3 weeks, the team will have to participate in SCRUM meetings to discuss the current task and feedback will be given, so this will provide more motivation because software constantly change due to client's demand, this methodology is very effective. The reason SCRUM is the first choice is because the flexibility that this methodology provides. Since I am developing a game, which means many changes will be made and every few weeks I would be meeting my supervisor, the supervisor will sometimes ask for changes or add extra features and so on. So, this allows me to list down what to change and what to do add in my SCRUM board so I would know what to do next.

First, an initial SCRUM meeting will be held with Scrum master, team members and product owner. During the initial meeting, the product backlog will be created for the project. Product Logbook is a list that contains the client's requirements and the task that will be distributed is depending on this list and once that is done, the estimation time frame of the distributed tasks will be planned, the Product Owner and Scrum Master will be responsible for all these. During this process, a Sprint meeting will be held. Sprint meeting which provide an estimation time schedule and a sprint backlog which contains the tasks that is needed to be done in this Sprint. Sprint

is basically a time period, usually around 2 - 4 weeks, for the teams to complete their task, once the Sprint is done, it will hold another Sprint meeting to discuss the future task and such.

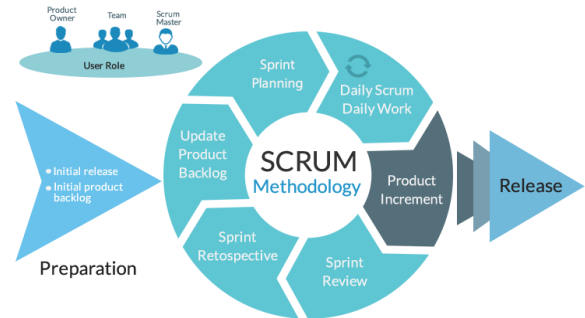


Figure 4.1A. SCRUM methodology structure

After the initial meeting, the Sprint process starts. During the Sprint, a Sprint Deliverables is to be expected, usually a Scrum Board is used to organize the task, for example, there will be several sections on the board which the team will use it to organize which task is done, which task needs to be fixed and so on, so that the team is more aware of what is going on.

During the Sprint, a daily meeting will be held to update the progress from each team members, so team members can provide feedback during this meeting and also product backlog will constantly update so whenever it updates, another meeting will be held to discuss on the updated product backlog.

A Sprint Review Meeting will be held once the Sprint is over, the Scrum Team is then to show the Sprint Deliverables to Product Owner to get approval of the work that has been done during the Sprint. Once the Sprint Review Meeting is over, the Scrum master and the team will meet up and discuss about the feedback that the Product Owner had given so that it can be applied in the future. Once the project is done, the Scrum team and stakeholders will have a meeting to agree on the completion of the project that is deliverable to the client.

WATERFALL METHODOLOGY

While for Waterfall methodology, the work flow is very linear which means another stage cannot

start when the current stage is yet to be complete but once the team move on to the next stage, they cannot revert back to the previous stage unless it is still in a very early period. If any issues that needed to be fixed, especially in the late stage, the team cannot revert back unless they restart the whole process from stage 1 so by using this in software development it is not the best choice however it is very organize because each stage is planned properly before the project starts.

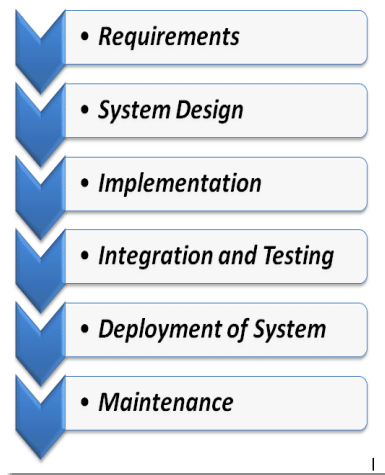


Figure 4.2B. Waterfall methodology structure

The first stage which the team will be discussing about the requirements of the system like the design, the purpose, and so on. During this stage, nothing in depth will be discussed as it is a brief introduction on the project so that everyone will be aware of the system's specifications. The next stage which is the system design. From the previous stage, we had a brief discussion of the system design while in this stage it will be explaining in detail about the system design like what hardware and software will be required to build this system, the overall blueprint of the system design, and codes to be written and so on. Once the team decided on the specifications of the system, the system will be developed unit by unit first which then needs to be integrated and test, this testing is called "Unit testing". So, once every unit is tested, it will be integrated into the system and go through several system testing which any flaws and errors should be solved before delivering it to the client for installation. Lastly, maintenance is to be made once installment is done by client to improve the performance and modify the system. These modifications will be made is because of client's request. The client will go through several

maintenance to make sure that the system is well function and protected.

The reason SCRUM is picked for this project is because of the flexibility that it provides. Every few weeks, I will meet my supervisor for updates on the game which then a lot of feedback and advice will be given to improve the game so by using SCRUM, I could always adjust the mechanics and features for the game and also fix anything that does not go with the game. Not only that, my supervisor will help me narrow down what I should focus on first in order to make my workflow smoother so in the future, I could have time to add additional features or modify some of the mechanics to make it even better. So, this whole process can relate to SCRUM which is why SCRUM is the best fit for this project and not Waterfall because of the constant change Waterfall is not suitable for this, there is no clear vision yet of how the game will be.

Research Methods

Introduction

Research methods are a way to gather data for research which there are quite a few methods but the most common ones are interview, observation and questionnaire. These research methods have their own unique ways of gathering the data which entirely depends on the researcher's work. In this research, the motive is to make turn-based rpg into a more interesting genre which hopefully many people will love the genre more. Turn-based rpg has been around but not many people are fond of it and this is why research methods are useful here which is to identify what are the actual thoughts of the people on this genre, what do most people enjoy these days, what kind of things that people want in a game, and etc. These data are very crucial for the current research as it can be used for changing the things in the particular genre, such as the game mechanics which people are more sensitive in since game mechanics is one of the core elements in video games.

So, in this research, questionnaire had been chosen for this research. Questionnaire allows the researcher to gather a large quantity of data. There are many people who play video games but not

everyone likes the same thing so in order to find out what are the common things that these people like, questionnaires could help the researcher to figure out the problem. Questionnaire allows the researcher to gather a huge amount of data in a short amount of time but the bad thing is that not all people will reply honestly because the respondent does not feel any pressure from the Surveyor unless the questions does not require the respondent to think for a long time. In this case, because the research is about video games genre, the questions will mostly be selection based instead of writing based so questionnaire is suitable for this research but of course there will be some writing based questions because the researcher needs to know people's opinions on certain things such as game mechanics, game genres that they like and dislike, and etc.

Questionnaire is one of the research methodologies which consists of multiple questions which the motive is to gather feedback from the respondents. Questionnaire can be conduct by meeting face to face, sending through telephone or computer or even handing it out as paper. Questionnaire provide a very efficient and fast way of collecting data which is suitable to gather data from a large group of people but one downfall of using questionnaire is that not all answers from respondents are truthful, some may lie just to build a good image of themselves. Questionnaire consist two different ways to collect the data, closed questions and open questions.

Closed questions are usually very direct which does not require respondent to think too much about it. The answers for closed questions are prepared for the respondent to choose based on the questions. The answers that has been collected from the respondent can be easily convert into quantitative data, such as forming a statistic analysis like pie chart but the data can be lacking in information because the answers are all fixed which respondents are only allow to answers from that.

Open questions provide an opportunity for respondents to express their own opinions. This allows them to provide a more detailed written answer. Open questions usually take more time to answer it because the questions can be complex and it requires respondent to think and discuss. The good thing about open questions is that it provides

good quantitative data because the answers are more detail therefore more information can be obtained from that but the bad thing is that it consumes a lot of time which it is not suitable for quantitative data.

Design

Observation

- The way they behave on their favorite genre and worse genre
- The way they react on genre that they have yet seen

Previously, questionnaire is already mentioned that it will be use to conduct this research. So, I had prepared a set of questions that are going to be sent out and the group of people that is chosen are to be asked first that if they have any experience with video games before handing them the questionnaires.

Question 1

What genres interest you the most? *

Can be more than 1 genre.

- Action
- Adventure
- Bullet Hell
- Sports
- Hack-and-slash
- Music/Rhythm
- Turn-based Strategy
- Role-playing game
- Shooter
- Fighting
- Other...

Question 1 ask about what are the respondent's interest in game genre. The reason for this is to identify the most famous genre which is the majority of genre that the respondents chose.

Question 2

Turn-based rpg is a genre which is famous for its turn-based combat system and character progressions. Player will have to wait for their turns in order to execute actions during battles. To get stronger, player will have to level-up and such. Have you ever play any turn-based rpg before? *

e.g. Final Fantasy, Chrono Triggers, Dragon Quest

Yes

No

If 'yes', do you enjoy the combat system and why?

Long answer text

Question 2 describes what is a Turn – based rpg which then proceed to ask if the respondents whether they have any experience with Turn – based rpg. Because Turn-based rpg is consider to be a slow pace genre which not many people prefer so to see if whether people now are still enjoying, the researcher needs to know if anyone actually enjoys the combat system of turn-based rpg because combat system is one of the main attractions in action games to people and the researcher also need to know why people dislike the combat system as well so that the researcher is able to customize it into something unique and interesting.

Question 3

Other than the combat system, what are the things that most likely makes you keep playing?

Story telling

Art style

Level design

Music design

Other...

Question 3 ask about what are the things except the combat system in turn-based rpg that keep the player playing turn-based rpg. The aim is to identify what other elements that attracts people other than the combat system which is important

Do you enjoy slow-pace games in general? *

e.g. Final Fantasy, Civilization

Yes

No

so that the researcher know what elements to keep

If 'yes', what are the things about it that you enjoy?

Story

Art

Music

Battle system

Level design

Other...

If 'no', what are the things about it that you do not enjoy?

Story

Art

Music

Battle system

Level design

Other...

it as it is to not ruin the aesthetic of turn-based rpg.

Question 4

In question 4, it asks the respondent whether they enjoy slow-pace game in general. There are various types of slow-pace game but most of it are turn-based genre. This question's aim is to find out what other thing that people like or dislike about slow-pace game and not just turn-based rpg so that the researcher is able to do research on other slow-pace game based on the likes and dislikes so that it can or cannot be apply some of the elements.

Question 5

Do you enjoy fast-pace games? *

e.g. Devil May Cry, Street Fighter, Counter Strike

Yes

No

If 'yes', what are the things about it that you enjoy?

- Story
- Art
- Music
- Battle system
- Level design
- Other...

In question 5, it is almost similar to question 4 but in this case, it is asking about fast-pace games instead of slow-pace games. Fast-pace games are usually the main attraction in the

game community especially these genres, action, shooter and hack-and-slash genre. So, to find out what people actually like about this type of genres, this question is aim for this purpose. Since, the propose idea is to change the combat system of the turn-based rpg, the researcher may refer to this data.

Question 6

...

What are the things that you will look into when it comes to choosing new games to play? *

- Genres
- Art style
- Game play mechanics
- Story telling
- Music
- Other...

The aim for Question 6 is to identify what are the things that people look into when choosing a new game to play so by majority, the researcher would know what to focus on the propose game idea. Because the propose idea is a brand-new game which no one had done before, so it is important that this propose idea have the game elements that people are looking forward to.

Question 7

Do you agree that a game is more fun when it is more challenging/ difficult? *

- Yes
- No

The aim for question 7 is to identify whether people enjoys a more challenging games or casual games. If majority choose 'yes', that means the default difficulty needed to be slightly harder than normal. It is confusing

If 'no', what are the things about it that you do not enjoy?

- Story
- Art
- Music
- Battle system
- Level design
- Other...

sometimes to balance the game difficulty because we do not know if that is difficult for the players or too easy so in order to avoid the confusion, this might help to balance the game.

Question 8

In your own opinion, what consider a game boring? *

Long answer text

This last question provides a chance to the respondent to express themselves. The previous questions had similar question but it scopes only in that particular genre. So, in this case, the respondent would give opinion on something else which they are not obligated to have any particular genre in mind. The researcher may obtain information that are not mentioned in this survey before which can be used for this research.

4. Result

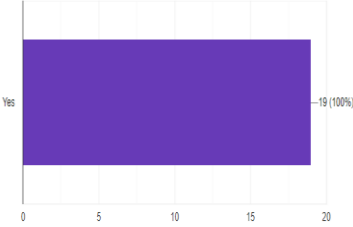
Requirements Validations

Analysis of Data

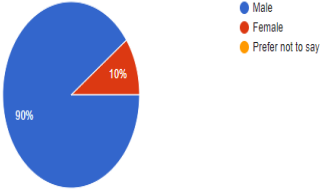
Questionnaire

A total of 30 respondents did the survey. From those 30 respondents, most of them are still students that are undergoing their degree. This survey is made in Google Form which is then sent through using social media like WhatsApp, and also face-to-face. The respondents is then to volunteer to participate this survey.

1) Consent form

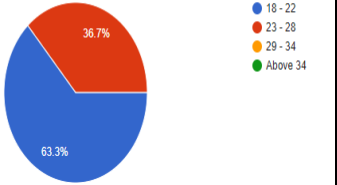
<p>Graph</p>	<p>Please read the Information Sheet very carefully before filling up the Consent Form. You may withdraw your participation anytime during the study without question. Any questions you have can be kindly asked to the researcher of the project.</p> <p>19 responses</p> 
<p>Result</p>	<p>This resulted 19 respondents to sign this consent form. This is later on put into this survey as the researcher realize it was not there which resulted only 19 people had filled. The previous 11 respondents agree and volunteer to participate this survey.</p>
<p>Analysis</p>	<p>There are total 30 respondents agree to participate this survey on their own will which is why it is resulted 100%.</p>
<p>Conclusion</p>	<p>As mentioned, that the consent form is later on apply in this survey, the other 11 respondents agree to participate without filling the consent form because to edit their responses, it will discard their previous answers.</p>

2) Gender

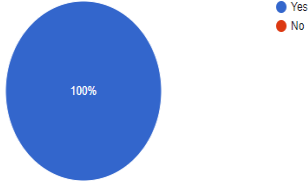
<p>Graph</p>	<p>What is your gender?</p> <p>30 responses</p> 
<p>Result</p>	<p>A total of 30 respondents fill up this survey and resulted 90% male (27 respondents) and 10% female (3 respondents).</p>

<p>Analysis</p>	<p>It is obvious the difference in this statistic which that the gender male is more than female by 90%.</p>
<p>Conclusion</p>	<p>To conclude this, it seems that the researcher is to focus on the gender male rather than female as the pie chart shows that there are more males play videogames than females.</p>

3) Age

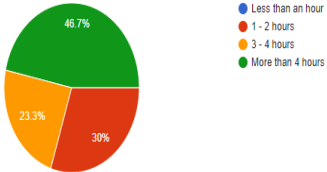
<p>Graph</p>	<p>What is your age?</p> <p>30 responses</p> 
<p>Result</p>	<p>The result for this question shows that majority of the respondents are in the age of 18 – 22 which then follow up by the age of 23 – 28, while the age 28 is empty.</p>
<p>Analysis</p>	<p>There are more younger people which is the age 18 – 22, there are around 19 (63.3%) respondents falls under this age group, as for the age of 23 – 28, there are around 11(36.7%) respondents that falls in this age group.</p>
<p>Conclusion</p>	<p>In conclusion, there are more younger people who are more interested and experience in video games than the slightly older people and adults. The researcher will be focusing on the younger audience interest and feedbacks.</p>

4) Video games in free time

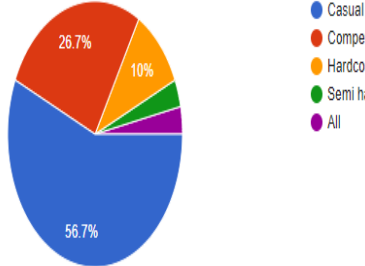
<p>Graph</p>	<p>Do you play video games during your free time? 30 responses</p>  <p>A pie chart with a single blue slice representing 100%. The legend indicates 'Yes' in blue and 'No' in red.</p>
<p>Result</p>	<p>The result is obvious that every respondent that participate this survey do play video games in their free personal time</p>
<p>Analysis</p>	<p>100% of the respondent play video games in their video games which then all 30 respondent's feedback will be seen throughout this survey</p>
<p>Conclusion</p>	<p>In conclusion, everyone that participate in this survey do play video games in their free time regardless of the gender and age. This question is actually just to confirm that the respondent is a gamer so that this survey will not fill with things that does not related to video games and etc.</p>

<p>Analysis</p>	<p>This shows that majority of the respondents spend more than 4 hours in one sitting of playing video games while for people who spends 1-2 hours on playing video games, there is a 16.7% difference compare to 'More than 4 hours' and 13.3% difference from '3-4 hours' which is equally difference, not too far off. As for people who spend 3-4 hours on videogames have 13.3% difference compare to '1-2 hours' and 23.4% difference compare to 'More than 4 hours', as you can see that there is a huge difference gap between the comparison of '1-2 hours' and 'More than 4 hours.'</p>
<p>Conclusion</p>	<p>In conclusion, there are more respondents who spend more than 4 hours on video games, if compare to respondents that spend 1-2 hours on video games, there is slight difference of 16.7%. While if compare to respondents that spend 3-4 hours on video games, there are more difference of 23.4%.</p>

5) Time spent on video games

<p>Graph</p>	<p>If 'yes', how long would you spend on playing video games? 30 responses</p>  <p>A pie chart with three slices: a green slice (46.7%), a red slice (30%), and an orange slice (23.3%). The legend indicates: Less than an hour (blue), 1-2 hours (red), 3-4 hours (orange), and More than 4 hours (green).</p>
<p>Result</p>	<p>The result shows that 46.7% (14 respondents) of the respondents spend more than 4 hours on playing video games whereas 30% (9 respondents) spend 1 – 2 hours on playing video games and follow by 23.3% (7 respondents) spend around 3 – 4 hours on playing video games.</p>

6) Types of gamers

<p>Graph</p>	<p>What kind of gamer are you? 30 responses</p>  <p>A pie chart with five slices: a large blue slice (56.7%), a red slice (26.7%), an orange slice (10%), a green slice (3%), and a purple slice (3%). The legend indicates: Casual (blue), Competitive (red), Hardcore (orange), Semi-hardcore (green), and All (purple).</p>
<p>Result</p>	<p>The result shows that majority of the respondents falls under the 'Casual' category which is 56.7% (17 respondents) while there are 26.7% (8 respondents) of the respondents falls under the 'Competitive' category, 10% (3 respondents) of the respondents falls</p>

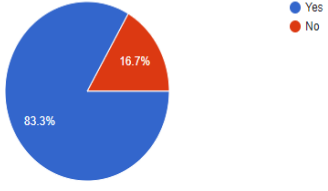
	under the ‘Hardcore’ category, 3.3% (1 respondents) of the respondents falls under the ‘Semi hardcore’ category and the last 3.3% (1 respondents) of the respondents falls under the ‘other’ category.
Analysi s	It is obvious that most respondents categorize themselves as casual gamer. The difference between the ‘Casual’ category and the other categories have a huge difference while the difference of other categories between among themselves are not that big compare the ‘Casual’ category.
Conclu sion	In conclusion, there are more casual gamers among these 30 respondents then follow up competitive gamers, hardcore, semi-hardcore and others. Since there is a huge difference gap, it is obvious that the researcher will focus on researching the needs and behavior of casual gamers.

Analysi s	By looking at this graph, many of the respondents prefer the mainstream genre such as the ‘Action’, ‘Adventure’, and ‘Shooter’ genre over the not so mainstream genres which is expected by the researcher. The surprising fact is that the ‘Hack-and-slash’ got lesser percentage than ‘Turn-based Strategy’ as the researcher is expecting the opposite.
Conclus ion	In conclusion, this graph shows that the mainstream genres are still very strong in the market over the decades which is to be expected while the underrated genres remain the same, not many will prefer them but there are some people still play them on and off.

8) Turn-based rpg

7) Genres interest

Graph	<p>What genres interest you the most? 30 responses</p> <table border="1"> <thead> <tr> <th>Genre</th> <th>Count</th> <th>Percentage</th> </tr> </thead> <tbody> <tr><td>Action</td><td>25</td><td>83.3%</td></tr> <tr><td>Adventure</td><td>22</td><td>73.3%</td></tr> <tr><td>Shooter</td><td>22</td><td>73.3%</td></tr> <tr><td>Role-playing game</td><td>21</td><td>70%</td></tr> <tr><td>Turn-based Strategy</td><td>18</td><td>60%</td></tr> <tr><td>Hack-and-slash</td><td>16</td><td>53.3%</td></tr> <tr><td>Fighting</td><td>14</td><td>46.7%</td></tr> <tr><td>Sports</td><td>10</td><td>33.3%</td></tr> <tr><td>Music/Rhythm</td><td>8</td><td>26.7%</td></tr> <tr><td>Bullet Hell</td><td>4</td><td>13.3%</td></tr> <tr><td>RPG Action Adventure</td><td>1</td><td>3.3%</td></tr> <tr><td>MOBA</td><td>1</td><td>3.3%</td></tr> <tr><td>MOBA (eg Dota)</td><td>1</td><td>3.3%</td></tr> <tr><td>Simulators</td><td>1</td><td>3.3%</td></tr> </tbody> </table>	Genre	Count	Percentage	Action	25	83.3%	Adventure	22	73.3%	Shooter	22	73.3%	Role-playing game	21	70%	Turn-based Strategy	18	60%	Hack-and-slash	16	53.3%	Fighting	14	46.7%	Sports	10	33.3%	Music/Rhythm	8	26.7%	Bullet Hell	4	13.3%	RPG Action Adventure	1	3.3%	MOBA	1	3.3%	MOBA (eg Dota)	1	3.3%	Simulators	1	3.3%
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Result	This result shows that majority of the respondents pick the ‘Action’ genre which is 83.3% almost all the respondents, while ‘Adventure’ and ‘Shooter’ is equally on the 73.3%, follow by ‘Role-playing game’ which is 70%, ‘Turn-based Strategy’ which is at 60%, ‘Hack-and-slash’ which is at 53.3%, ‘Fighting’ genre 46.7% of the respondents are interested, ‘Sports’ genre have 33.3% of respondents who are interest, ‘Music/Rhythm’ genre which is 26.7%, the ‘others’ category have 16.5% and lastly, ‘Bullet Hell’ which is 13.3%																																													

<p>Graph</p>	<p>Turn-based rpg is a genre which is famously for its turn-based combat system progressions. Player will have to wait for their turns in order to execute actions in battles. To get stronger, player will have to level-up and such. Have you ever experienced turn-based rpg before?</p> <p>30 responses</p>  <p>A pie chart with a legend. The legend shows a blue circle for 'Yes' and a red circle for 'No'. The blue slice represents 83.3% and the red slice represents 16.7%.</p>
<p>Result</p>	<p>The result shows that majority of the respondents which is 83.3% (25 respondents) says that they experience Turn-based rpg genre before while 16.7% (5 respondents) says that they do not experience Turn-based rpg before.</p>
<p>Analysis</p>	<p>By looking at this pie chart, majority of the respondents had experience Turn-based rpg at least once before which Turn-based rpg are quite common in the older generation of gaming while some have yet to experience Turn-based rpg assuming that these group of people play lesser games but only play the games that they play often/ comfortable with.</p>
<p>Conclusion</p>	<p>In conclusion, this allows the researcher to understand what to change in a Turn-based rpg for the respondents who answer 'Yes' and what to keep for the respondents who answer 'No' as they need to experience the original aesthetic of Turn-based rpg but also experience the new elements that is about to implement by the researcher.</p>

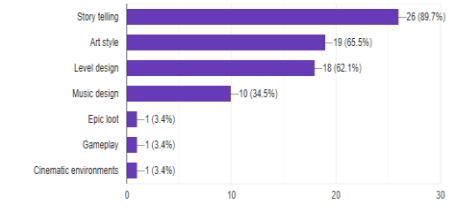
9) Enjoyment of combat system of Turn-based rpg

<p>Graph</p>	<p>If 'yes', do you enjoy the combat system and why?</p> <p>24 responses</p>  <p>A screenshot of a scrollable list of 24 text responses. The responses are: Nostalgic; Yes and No. Yes because it give you time to strategize your move and your options. No because its slow.; No, its boring to wait for the turns; No,imo it's too slow for me; It's calming and players can strategize their next moves better.; Yes as it helps to made decision on who do I attack and how should I plan for the next attack.; Its fun and player have time to think what to do next; Yes because player can plan out his own strategy and doing it step by step to defeat the enemies; Yes, usually turn based games are complex and requires thinking; Yes, its gives a sense of achievement; Some of them have been really interesting and i fun it fun.; I dont really need to perform the action quickly, i can think longer and have a more casual pace; Yes because it gives a sense of getting stronger; Yes i do enjoy as some quests requires better skills to complete; Sometimes i dont enjoy as it can be time consuming and annoying to wait.; Yes; Yes and i do not enjoy the combat system because its normal as others?; Level-based; Not really; Having a such time to think what should i do next. For example should i attack the npc, should i block or should i run? compare to real time combat system where you just need to spam the button.; Yes, because it requires you to strategise more.; I do, it creates an uneven feeling that you are safe yet still in the danger zone because it is the enemy's turn; Slowpaced & strategic; Planning your next move which results to a more strategic and unique gameplays.</p>
<p>Result</p>	<p>The result shows that 24 respondents that had answer 'Yes' from the previous questions had provide their feedback on this current question. The missing 1 respondent might have misread or mistaken the questions intention and ignore it.</p>
<p>Analysis</p>	<p>By reading through the feedback list, some have provided detailed answers and some provide simple and direct answers. Both kinds of answers can be helpful for the researcher on their work.</p>

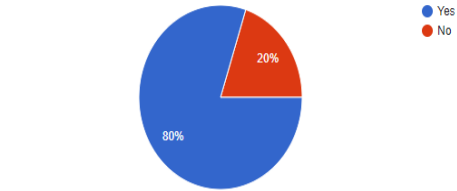
Conclusion	In conclusion, these feedbacks provide information of what people actually thinks about the combat system of Turn-based rpg which can be use to determine how the researchers propose idea's combat system will be like.
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Conclusion	In conclusion, as the figures shows that the researcher need to put more time on writing a good story because people will expect a good story based on this graph while other elements is too consider like the art style and level design.
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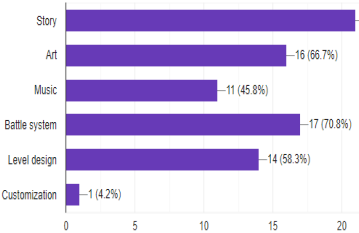
10) Other game elements that player like for Turn-based rpg

Graph	<p>Other than the combat system, what are the things that most likely makes you keep playing?</p> <p>29 responses</p>  <table border="1"> <thead> <tr> <th>Element</th> <th>Count</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Story telling</td> <td>26</td> <td>89.7%</td> </tr> <tr> <td>Art style</td> <td>19</td> <td>65.5%</td> </tr> <tr> <td>Level design</td> <td>18</td> <td>62.1%</td> </tr> <tr> <td>Music design</td> <td>10</td> <td>34.5%</td> </tr> <tr> <td>Epic loot</td> <td>1</td> <td>3.4%</td> </tr> <tr> <td>Gameplay</td> <td>1</td> <td>3.4%</td> </tr> <tr> <td>Cinematic environments</td> <td>1</td> <td>3.4%</td> </tr> </tbody> </table>	Element	Count	Percentage	Story telling	26	89.7%	Art style	19	65.5%	Level design	18	62.1%	Music design	10	34.5%	Epic loot	1	3.4%	Gameplay	1	3.4%	Cinematic environments	1	3.4%
Element	Count	Percentage																							
Story telling	26	89.7%																							
Art style	19	65.5%																							
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Music design	10	34.5%																							
Epic loot	1	3.4%																							
Gameplay	1	3.4%																							
Cinematic environments	1	3.4%																							
Result	The result shows that 89.7% of the respondents love the 'Story-telling' in most Turn-based rpg and follow by the 'Art style' which there are 65.5% respondents love it, while 'Level design', there are 62.1% of the respondents enjoys it and as for 'Music design, there are 34.5% of the respondents enjoys it. Lastly, the 'other' category, only few 10.2% of the respondents, have some other things about Turn-based rpg that are not mentioned enjoys it.																								
Analysis	This question is answer by people who answer 'Yes' in question 8. It shows that other than combat system, people prefer story telling the most in Turn-based rpg while art style and level design have only 1 respondent difference which can be consider equally prefer. The respondents do prefer music design as well but no as much as the others. Other elements are mentioned, to show what that the other elements impact the respondents so much in Turn-based rpg.																								

11) Slow-pace games

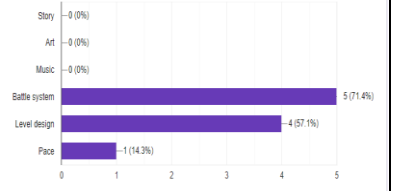
Graph	<p>Do you enjoy slow-pace games in general?</p> <p>30 responses</p>  <table border="1"> <thead> <tr> <th>Response</th> <th>Count</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td>24</td> <td>80%</td> </tr> <tr> <td>No</td> <td>6</td> <td>20%</td> </tr> </tbody> </table>	Response	Count	Percentage	Yes	24	80%	No	6	20%
Response	Count	Percentage								
Yes	24	80%								
No	6	20%								
Result	The result shows that 80% (24 respondents) of the respondents do enjoy slow-pace games while 20% (6 respondents) do not enjoy slow-pace games.									
Analysis	While in previous question which most respondents pick the fast-pace genre, it is surprising that there is still so many respondents do enjoy slow-pace games and the difference between people who do enjoy and people who don't is huge.									
Conclusion	In conclusion, slow-pace games are still loved and played by many people. The researcher may need to do some research on some of the slow-pace games on what makes it so interesting that people love it.									

12) If 'Yes', what elements do they enjoy?

<p>Graph</p>	<p>If 'yes', what are the things about it that you enjoy?</p> <p>24 responses</p>  <table border="1"> <thead> <tr> <th>Element</th> <th>Count</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Story</td> <td>21</td> <td>87.5%</td> </tr> <tr> <td>Art</td> <td>16</td> <td>66.7%</td> </tr> <tr> <td>Music</td> <td>11</td> <td>45.8%</td> </tr> <tr> <td>Battle system</td> <td>17</td> <td>70.8%</td> </tr> <tr> <td>Level design</td> <td>14</td> <td>58.3%</td> </tr> <tr> <td>Customization</td> <td>1</td> <td>4.2%</td> </tr> </tbody> </table>	Element	Count	Percentage	Story	21	87.5%	Art	16	66.7%	Music	11	45.8%	Battle system	17	70.8%	Level design	14	58.3%	Customization	1	4.2%
Element	Count	Percentage																				
Story	21	87.5%																				
Art	16	66.7%																				
Music	11	45.8%																				
Battle system	17	70.8%																				
Level design	14	58.3%																				
Customization	1	4.2%																				
<p>Result</p>	<p>The result shows 87.5% (21 respondents) of the respondents that had previously answer 'Yes' enjoys the story of slow-pace games. As for the 'Battle system', 70.8% (17 respondents) of the respondents enjoys it while playing slow-pace games. 66.7% (16 respondents) of the respondents enjoys the 'Art' elements and as for the 'Level design' elements, 58.3% (14 respondents) of the respondents enjoys it. Whereas, there are 45.8% (11 respondents) of the respondents enjoys the 'Music' aspect of slow-pace games. Lastly, there is 4.2% (1 respondent) of the respondent enjoys something else that is not mentioned.</p>																					
<p>Analysis</p>	<p>This graph shows that most of the respondents enjoys story in slow-pace games while battle system is 16.7% (4 respondents) behind compare to 'Story'. As for 'Art', the difference is 20.8% (5 respondents) compare to 'Story' while the 'Level design' have a 29.2% (7 respondents) difference compare to 'Story'. Whereas, 'Music' has a huge difference of 41.7% (10 respondents) compare to 'Story'. Lastly, the 'others' shows that what other game elements that respondents enjoys other that the ones that are mentioned which only 1 respondent answer and that leaves an 83.3% difference compare to 'Story'.</p>																					

<p>Conclusion</p>	<p>In conclusion, slow-pace games are enjoyed mostly because of the story-telling while other aspects are important as well especially the 'Battle system' and 'Art' which comes second after 'Story'. The researcher will have a focus topic on what to research based on this questions outcome.</p>
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13) If 'No', what elements do they not enjoy?

<p>Graph</p>	<p>If 'no', what are the things about it that you do not enjoy?</p> <p>7 responses</p>  <table border="1"> <thead> <tr> <th>Element</th> <th>Count</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Story</td> <td>0</td> <td>0%</td> </tr> <tr> <td>Art</td> <td>0</td> <td>0%</td> </tr> <tr> <td>Music</td> <td>0</td> <td>0%</td> </tr> <tr> <td>Battle system</td> <td>5</td> <td>71.4%</td> </tr> <tr> <td>Level design</td> <td>4</td> <td>57.1%</td> </tr> <tr> <td>Pace</td> <td>1</td> <td>14.3%</td> </tr> </tbody> </table>	Element	Count	Percentage	Story	0	0%	Art	0	0%	Music	0	0%	Battle system	5	71.4%	Level design	4	57.1%	Pace	1	14.3%
Element	Count	Percentage																				
Story	0	0%																				
Art	0	0%																				
Music	0	0%																				
Battle system	5	71.4%																				
Level design	4	57.1%																				
Pace	1	14.3%																				
<p>Result</p>	<p>This result shows that respondents who answers 'No' on question 11, most of them answers 'Battle system' is the most unpleasant experience in slow-pace games while 'Level design' is the second most unpleasant experience and lastly, will be the 'others'.</p>																					
<p>Analysis</p>	<p>Based on the graph above, 'Battle system' can be seen as the most answer in this question and if compare to 'Level design', it is just 14.3% difference which is 1 respondent less. While, on the 'others' category, there is only one respondent that answer which makes the differences the biggest when comparing with the other two elements.</p>																					
<p>Conclusion</p>	<p>In conclusion, the researcher knows what to focus on to improve based on the outcome. Not only 'Battle system', but also 'Level design' needs to be considered as the differences is just a slight different which can almost be consider as equal.</p>																					

14) Fast-pace game

<p>Graph</p>	
<p>Result</p>	<p>As for this question, the results show that 96.7% (29 respondents) of the respondents do enjoys fast-pace games while only 3.3% (1 respondent) do not enjoy fast-pace games.</p>
<p>Analysis</p>	<p>By looking at this chart, almost every respondent enjoys playing fast-pace games which resulted a huge difference between people who enjoys and people who do not.</p>
<p>Conclusion</p>	<p>In conclusion, fast-pace games attract many people because of its game elements which fast-pace games have but slow-pace games do not have which allow the researcher to research and understand what is it that makes fast-pace games so attractive.</p>

<p>Result</p>	<p>This result shows that 89.7% of the respondent who had previously respond 'Yes' enjoys the 'Battle system the most. As for the 'Story', 65.5% of the respondents find enjoyment while playing fast-pace games whereas there are 62.1% of the respondents who likes the 'Level design'. Next, there are 55.2% of respondents likes the 'Art' and follow up by 'Music' which attracts 44.8% of the respondents. Lastly, there are 'others' game elements which there are 10.2% of the respondents enjoys it.</p>
<p>Analysis</p>	<p>This question is answer by respondents who responded 'Yes' previously. This graph shows that the 'Battle system' is the main attraction among the other game elements while the 'Story' have a 24.2% difference compare to 'Battle system' and that makes it the second most attractive game elements. After that, 'Level design' have a 27.6% difference compare to 'Battle system'. Meanwhile, a 55.2% of the respondents enjoy the 'Art' of fast-pace games. As for the 'Music', a 44.8% of the respondents answer that they enjoy it while playing fast-pace games. Lastly, the 'other' category</p>
<p>Conclusion</p>	<p>In conclusion, the researcher is able to understand what are the things that people mostly enjoy while playing fast-pace games so that the researcher is able to research and implement on their work.</p>

15) If 'yes', what elements do they enjoy?

<p>Graph</p>	
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16) If 'No', what do they not enjoy?

<p>Graph</p>	
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Result	This result shows that 100% of the respondents do not enjoy the 'Level design of fast-pace games while there are 50% on both 'Music' and 'Battle system'.
Analysis	This question is answer by the respondents that answer 'No' in question 14. The 'Level design' has the most dislikes compare to 'Music' and 'Battle system' both with 50% differences.
Conclusion	In conclusion, the majority do not enjoy 'Level design' in fast-pace games while the other elements are not so far off as it is only 1 respondent less. The researcher able to use this outcome and do research on why does some people dislike fast-pace game's level design as well as the other elements that are mentioned.

Analysis	In this graph, 'Genres' got the most attention when it comes to choosing new games then follow up by 'Gameplay mechanics' which have a slight difference of 6.6%. The 'Story telling' element is not too far off as well with just a difference of 13.3% while 'Art style' have a difference of 26.6% when it compares with 'Genres'. As for 'Music', there is a 60% difference. Lastly, the 'Others' which has the biggest difference of 80%.
Conclusion	In conclusion, the researcher understands more of what people are interested in when browsing for new games. This is important as it gives a good first impression so that the people won't click away immediately.

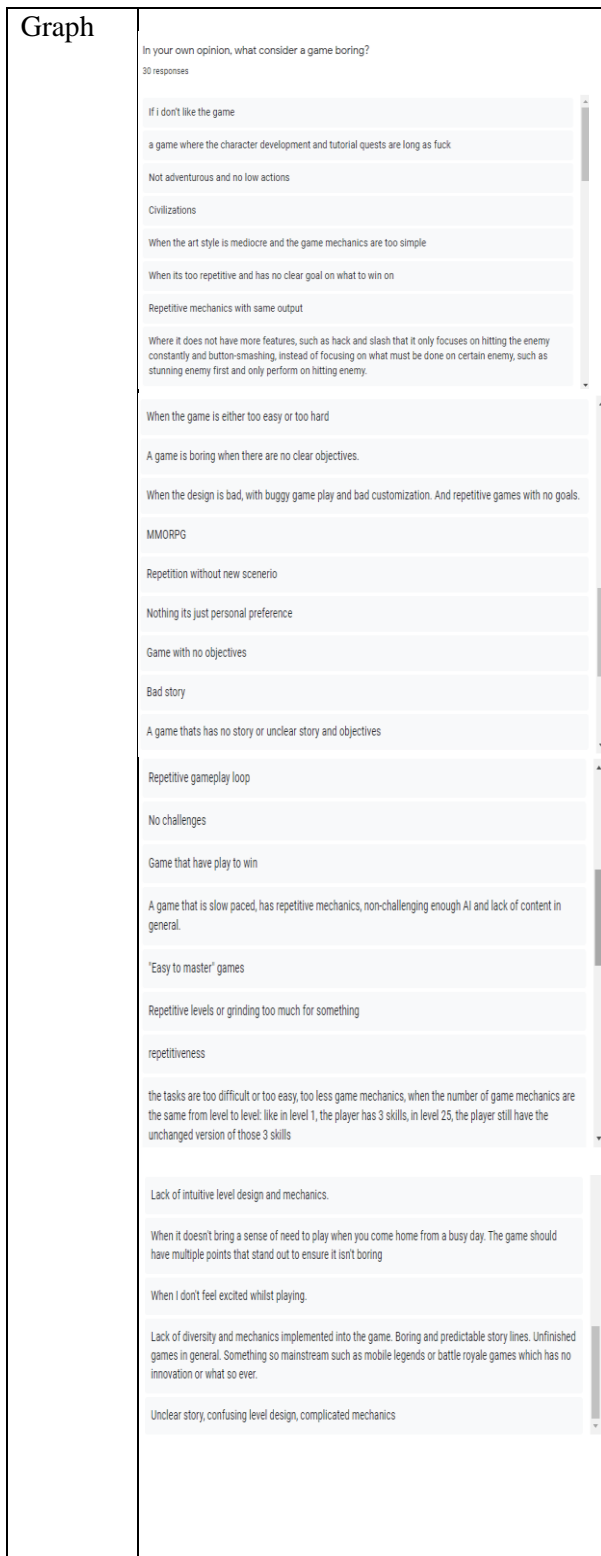
17) Things to look into while finding new games

Graph	
Result	The result shows that 83.3% of the respondents will prioritize 'Genres' when it comes to finding new games. As for 'Gameplay mechanics', 76.7% of the respondents are more interested in when browsing new games. Then, the following will be 'Story telling' which 70% of the respondents will look into, 'Art style' which there are 56.7% of the respondents will look into, and 'Music' will be the minority which resulted 23.3% of respondents will look into. Lastly, the 'others' category which there is 3.3% of respondent mentioned some other elements that they will look into.

18) Is challenge equals fun?

Graph	
Result	The result shows that 90% of the total respondents agree that more challenge makes a game more fun while 10% of the total respondents do not agree on the statement.
Analysis	By looking at this chart, the difference is huge between the 'Yes' and 'No'. So, this shows that people enjoy more challenging games while only few disagree it.
Conclusion	In conclusion, the researcher needs to provide a more challenging gameplay experience as most people likes the challenge/ difficulty.

19) What consider a boring game?



Result	This result shows that all of the respondents gave their own feedback.
Analysis	All the respondents gave their own opinions based on the questions given while some answers can be long and detailed, and some are short yet informative.
Conclusion	In conclusion, there are 30 responses which some are unique and some can be common. Both types can useful to the researcher as it allows the researcher to be aware of something that is not commonly mentioned and also aware of the common game elements that are implement in existing games which the developers tend to ignore.

Summary

From the findings from the questionnaires, most answers are almost the same as what the researcher expected. The researcher found out that the combat system for Turn-based rpg, some would find it fun because of the strategy element and some would find it boring because it feels slow. The researcher is able to use these feedbacks to balance the propose game idea which will still have the strategy elements whereas there will be fast-pace actions implement into it so that it do not feel slow as well as the player is able to take time to strategize their next move.

As for the aesthetic for the game, the researcher also found out that most respondents prefer the story-telling of Turn-based rpg and follow by art style then level design. The researcher now has a clear idea on what aesthetics to focus on first so that it could make the game more attractive and interesting. As for difficulty, most respondents agree that games with harder difficulty is more fun than games without hard difficulties. In this case, the researcher is able to balance the games default difficulty to become slightly harder which provides a challenging experience for the players. So, these are some of the examples that could

help enhance the game experience so that people are actually interested.

5. Conclusion

Conclusion and Reflections

In conclusion, the project is being develop while the report is being written but only small parts of the project had been done. One of the game mechanics which is the music mechanics had been done with self-drawn pixel art. The researcher also did some game art along the way which are going to be implement in the game later on. The story is also written but it is still considered if the game is going to be made that long as it will take a very long time to actually implement the story. So, these are the things that had been achieve as there are still more things to work on.

While doing this investigation report, there are quite a few things that have been achieved. First thing, is that the data analysis. The researcher is able to gather people's opinions on what is being research on, it is very important because there are no statistics about this particular topic in Malaysia so to have this data gathered, it can prove some facts in the problem statement. Second thing is that, the researcher is able to decide on what game development methodology to use. Game development methodology is important no matter if it is a big or small company or one-person project because everyone has to have a way to manage their work to work efficiently and effectively. Last thing is that, the researcher is able to study on others researcher's similar work and research on various rpg. The researcher is able to use it as reference

Definitely there are few gaps especially in the Literature Review part which currently is lacking on research materials for the researcher to refer on. The other thing that is lacking is that the research methods which the researcher could have use a few more to enhance the quality of the reports but because of restrictions such as lack of time that is preventing the researcher for doing so. These are probably the few important things that may reduce the quality of this report. The design of the game especially the characters design is lacking which the researcher is determine to improve it. Other

than that, nothing in particular needs to improve nor change as it is what the researcher's intentions.

6. References

Literature Review

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Game development methodology

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