**Chapter 2**

**REVIEW OF RELATED LITERATURE AND SYSTEM**

**Technical Background**

People play games on portable devices and most of them plays on android devices. According to McKay (2013), statistics show that the number of smartphone users in the Philippines are estimated to reach 27.5 million. Because of this the demands of people for games rise. Different kinds of games are established for the satisfaction of the user. Using development tools like Unity 3D helps developers to create a more exciting and challenging game. Unity 3D is a powerful cross-platform 3D engine and a user-friendly development environment. Easy enough for the beginners and powerful enough for the experts. This game engine should interest anybody who have passion and wants to start developing a game and application particularly 3D for mobile devices, desktop, web and consoles. According to Zamojc (2012), unity application is a complete 3D environment suitable for laying out levels, creating menus, doing animations, writing scripts and organizing projects. In creating a game, C# is one of the best programming language that is used. Rouse (2016) explained that this programming language is designed to make things easier for developers. C# is an object-oriented programming language from Microsoft that aims to combine the computing power of C# with the programming ease of Visual Basic. It simplifies programming through its use of Extensible Markup Language (XML) which allows access to a programming object or method without requiring the programmer to write additional code for each step. Because programmers can build on existing code rather than repeatedly duplicating it, C# is expected to make it faster and less expensive to get new products and services to the market. Another important thing to android development is the saving of data. Essentially, where computers are concerned, a database is just a collection of data. Specialized database software like MySQL are programs that let a program to store and retrieve data as efficiently as possible.

Drawing objects from scratch is somehow daunting for the developers, especially if they are trying to create something highly complex. Blender is a software used for creating 3D Models. With Blender, you can model using a preset mesh object. These are tricks to learn to perfect adding textures and patterns and even changing colors. Also, an image editing software is used. The Adobe Photoshop software allows user to manipulate, crop, resize and correct the color of digital photos. The software is particularly popular amongst professional photographer and graphic designers.

In creating an adventure game, it is necessary to have an interaction between characters. According to Tegmark (n.d.), artificial intelligence today is properly known as narrow AI. It is designed to perform a narrow task like facial recognition, internet searches or driving a car. Artificial intelligence may outperform humans at a specific task. In game development, a prototype is built for demonstrating purposes or as part of the development proves. A basic version of the system is built, tested and then reworked as necessary until an acceptable prototype is finally achieved from which the complete system or product can now be developed.

Throughout the development of a game, different elements are needed to have successful and working game. One of these elements is algorithm. What is algorithm? The first step towards understanding algorithm is by defining exactly what algorithm is. According to one of the popular textbook Introduction to Algorithms by Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, “an algorithm is any well-defined computational procedure that takes some value, or set of values, as input and produces some value, or set of values as output." This simply means that algorithms are like a bridge on finishing and accomplishing a given task. That is why the proponents will be applying and using some computer science algorithms on finishing their proposed game. One of the algorithms that is going to be used is a pathfinding algorithm. Paths describe a line the player can follow to get to the desired position without walking through walls, tables, etc. Determining how to move around on a map is an interesting problem. There are a lot of approaches that can be used, ranging from simple to the complex approach. This will operate a graph that describe where the player can walk. A graph is made up of nodes and the connections between them. One of the pathfinding algorithm that will be used is Breadth First Search. Breadth First Search explores equality in all directions. This is helpful not only for regular pathfinding but also for procedural map generation, flow field path finding and other type of maps. Dijkstra’s Algorithm which is also a pathfinding algorithm will also be applied. This algorithm prioritizes which path is going to be explored. Instead of exploring all possible paths equally, it favors lower cost paths. This is going to be used on some stage of the game. A Search algorithm which is also a part of some pathfinding algorithms will also be applied. This is for finding or searching paths between two nodes. This is essential for navigation and for computing at which path the user will go to easily finish the given task on a particular stage. Other algorithms that will be used fall under the heading of just plain math. This includes knowing how to convert angles to vectors or vice-versa. Numerical integration for physics also. A sorting algorithm will also be applied. It is an algorithm that simply puts elements in a list into a certain order. This is essential for alphabetizing the items on the NPC shop.

**Related Literature**

In an article by Bronstring (2012), for over 30 years, adventure games have been the most story-driven computer game genre. Since its inception in 1977 with Advent, many have found adventure games to have a true immersive quality that can be compared to reading a book or watching a movie. Adventure games are all about unraveling stories, exploring worlds and solving puzzles. Adventure games usually require exploration to some degree, depending on the type of interface. According to a study entitled “A Study On Mobile Learning as A Learning Style in Modern Research Practice” by Robert Joan (2013), Mobile learning is a kind of learning that takes place via a portable handheld electronic device. It also refers to learning via other kinds of mobile devices such as tablet computers, net-books and digital readers. Mobile devices can be used not only to convey information but also used as a modern comprehension. Progression in mobile communication skill will push more educational atmosphere in which the interactive society is interested. In present day information and technology has a very important role in developing a game. It is essential for the betterment of the project that will be developed and the study of others that can used by the proponents of the project. This can help the proponents to understand more about the technology that will be used.

According to Habib (2016), the game Age of Pirates is a having a unique adventure on it. Take the ship to different land in search of fame. Explore the seas and trade at the markets with treasure over 120-towns. Almost the entire game will take place on the sea. The player can leave from the port and sail around the Caribbean until you run out of food. The only major activity in Age of Pirates is taking over cities. The ultimate goal is to capture every single city. The player does not have to aim high with the random mission structure of the game, they could be just as satisfied as working with a nation for dozens of hours on end. Though mission get a little repetitive, there is always something to spend money on that the player want to earn just one more paycheck.

A researched by Yusoff et al. (n.d.), game attributes are those aspects of a game in which support learning and engagement. Age of Pirates and iChoose Philippines share the same goal, the goal is to make an adventure through travelling on different places. Like the tourist spots in the Philippines. Food also have a major role in the game, it will serve as a booster for the player to continue the game. But, in the game the player should have an aim to finish every mission to go to the next destination to get the reward. In the game attributes practicing and having drills provides a repeating learning activities with increasingly harder tasks for better achievements. On the contrary, based on a research by Ceric (2012), game attributes are changeable values that are stored along with a game. Meaning, the game attributes that will be made in the can be changed when updating the game.

According to Shaul (2012), Inbetween Land is one of those games that either draw players or lose them entirely based on its story alone. It places the player in the role of an average woman, sent to a floating island in the sky where she is challenged to save her comatose best friend, whose spirit is inexplicably floating around. Fragmented hidden object scenes give images of items that they need to find about a single scene. Once they find the missing pieces for a particular tool of item, it will place back into the environment in an interactive context in between fragmented object scenes. They will find dozens of “key items,” that are scattered around environments, but will only be given the slightest of opportunities to combine these items into something more useful.

According to Crowder (n.d.), user control is the extent t which the user can direct their learning activities within the game, providing self-study and self-exploration to their own pace and experience. In iChoose Philippines its objective is to promote the Tourism in the Philippines. It is similar to the game Inbetween Land, they both have a mission to save the ones that matters. Like the tourist destinations in Philippines that are really important to the Filipinos not just because it serves as source of their income but also it gives pride to them if they will be able to share and promote it. As mentioned above the game has key items, iChoose Philippines will be having their own version of the key item. The key items that the player will find is something that is popular in the tourist destinations.

According to Alpha (2014), Alien: Isolation, fifteen years after the events of Alien, Amanda enters a desperate battle for survival on a mission to unravel the truth behind her mother disappearance. The player will navigate through an increasingly volatile world. Unpowered and unprepared, they must improvise to survive. Hack system, scavenge for vital resources and craft items to deal with each situation.

Capability is one of the modules in the framework that was presented. In a study by Gilbert (n.d.), capability refers to the cognitive and affective skills of the player. These cognitive skills involve, recall, analysis, synthesis and evaluation while in affective skills, it includes identifying, adopting, and valuing. The player of the game in iChoose Philippines will be different from the player in the game Alien: Isolation. The player will come prepared and it is the duties player to manage all the provided items that they have in order to survive while traveling. If these item are all used and empty, the player should start a new game. This will serve as a learning for the player to be resourceful in order to survive the game. This will prove that the player in the game iChoose Philippines will be able to use the capabilities that they have.

Research by 3D Critics (n.d.), The Sims 3: World Adventure, players can take their Sims on new journeys to famous real-world inspired destinations around the globe for the first time ever and seek out new adventures. While exploring the landmarks of an exotic city, there is no telling what the Sims will find. From mastering martial arts in Shang Simla, China, discovering rich culture and famous landmarks on a romantic getaway to Champs Les Sims, France or exploring the depths of ancient tombs in Al Simhara, Egypt, players can take their Sims on a journey that will change their Sims’ lives. Players can accept challenges to search for secret treasures, learn new skills and chase down new personal opportunities, meet new Sims with unique personalities, share their culture and bring them home, discover new styles on their travels, and share everything they encounter on their adventures with the world through personal photographs, movies, and stories.

Instructional content is really important in playing a game. According to Wills (n.d.), instructional content is the subject matter that is intended for the user to learn. Also, according to Gilbert & Gale (n.d.), state that contents can be classified into four types: facts, procedures, concepts and principles. iChoose Philippines have similarities to Sims 3: World Adventure. Both of this games involve exploring different landmarks. The only difference is that the focus of the game is the tourist spots in the Philippines. But they will have same experiences like having new personal opportunities, meet Filipinos using their different languages, sharing also the culture and serves as a learning to them, and discover new styles while they are travelling. This gives the player the feeling of being guided throughout the entire game.

  Dora the Explorer World Adventure, it is hard for little kids to grasp the enormity of their own neighborhood, much less the world -- and yet Dora makes it easy by taking players with her to France, China, Russia, and Tanzania. The software is full of subtle multicultural lessons as Dora teaches kids how to speak in foreign languages, how to dress, and what each country looks like. Kids will even hear music that reflects the country's culture (Anonymous, 2011).

Both Dora the Explorer World Adventure and iChoose Philippines have the intention to teach players on sharing the country’s culture. The easiest way is through understanding the language of a certain place in other to have a well communication. In game the player will be able to learn some of the terms that are used in the different tourist destinations. This clearly shows the intended learning outcomes that the player gained in playing the game. In a research by Yusoff et al. (n.d.), Learning outcomes are goals to be achieved form playing the serious game. It is an intended learning. It is very important to have this module in order to test if the player have learned something from the game.

A research by Bassem (2014), Amazing Adventures Around the World, pieces of ancient stone tablet have been started turning up around the globe and the museum needs the help of the player to locate the pieces and find the most expensive gem ever known. Under the direction of the Museum, the player must immediately begin the global seek and find adventure. Travel to 25 unique and exotic locations around the world finding 2100 hidden objects in 3 different game modes.

According to Gilbert & Gale (n.d.), the activity should involve learning materials that are appropriate and challenging for the target user and seeking competency at a level slightly above that of the user current competency. iChoose Philippines also needs help in promoting the tourism in the country like in the Amazing Adventure Around the World. While exploring the tourist spot the player has to find items that will help in understanding more why is that place considered as one of the tourist destination in the Philippines. In contrary to game, iChoose Philippines will be having 5 unique tourist spots passing different regions in the country. There they experience on riding different vehicles in the Philippines. Learning activity is the activity designed to keep the user tied up and learning in the game. Same as learning how to ride these vehicles while they are travelling in the Philippines.

Mr. Bean in the World, the hero of this game for the android Mr. Bean goes to circumnavigate the globe. It UK, US, India, Australia and help run the city streets in other countries. Gold beans and bonuses are collected. Help the hero to destroy jump over obstacles and pedestrians. Balloon will help the hero fly for additional gold beans (Anonymous, 2015).

A good game genre is applied to the game. According to a research by Crowder (n.d.), game genre is the type or category of the game played. All of the games have its own item to collect and in iChoose Philippines the player will not just experience the culture but also they will be familiar on the different foods that Filipinos eat especially the foods that are popular in the place. This will provide them more energy to travel like what Mr. Bean is collecting. This strategy game developed is for learning purposes according to game genres.

**Related Study**

**Adventures in Games Research**

According to Fernandez-Vara (2011), adventure games have also pioneered the creation of simulated fictional worlds that the player can inhabit and explore. The simulation in an adventure game encourages exploration, which can consist of talking to the characters in the game, reading documents, and examining or manipulating objects to figure out how they work. Exploration can also take the form of traveling through different spaces, be it island to island. Same as the proponent’s game, by exploring the maps the player can do what they want inside the game and have fun. The proponent’s game will be developing and will able to play in the near future.

**Advertisements for Real-World Products and Companies in Video Games**

According to Cronan (2013), the study found that in-game advertising is used often, and continues to be used in video games throughout 2008 to 2012.The advertisements appeared throughout the video games in different formats; Posters, Billboards, Banners, Virtual Remakes, Vending Machines, and Logos. The proponent’s game will be implementing the advertising of the different Filipino culture and tourist spot. Unlike these study, the proponent’s game will focus on immersing the player making it seem everything is real in the game.

**Authoring and Re-Authoring Processes for Educational Adventure Games**

A study by Mehm, Gobel, & Steinmetz (2012), Educational Adventure Games attempt to combine positive features of the adventure game genre such as captivating story lines, interesting puzzles and character interactions with educational content”. The proponent’s game is also an educational game in a way that it helps to promote tourism in Philippines and make the player learn about Filipino culture. Unlike these study, the proponent’s game will be based on Philippine and it is the first time to make the game.

**The Impact of Adventure Video Games on Foreign Language Learning and the Perceptions of Learners**

According to Chen & Yang (2013), this study aimed to examine the effects of a commercial adventure video game on foreign language learning and learners’ perceptions toward this game. The results showed that students considered the game helpful in improving their language skills and motivation. Students also reported they enjoyed playing the game because of the intriguing game design. The findings in this study suggest that adventure video games such as BONE can provide useful input to help college students enhance their English listening, reading, vocabulary skills and learning motivation. The proponent’s game helps player to learn more about some of Philippines tourist spots and at the same time they are enjoying the game. Unlike these study, the proponent’s game will improve the player awareness of different tourist spots in the Philippines, which not only makes the player want to play the game but also visit the said places in real life.

**Advanced Learning Technologies for E-learning in The Enterprise: Design of an Educational Adventure Game to Teach Computer Security**

The study conducted by Chang (2015), advanced didactical material that exploits gamely design should increase engagement by creating a product that has the spirit and not just the mechanics of a good game. The proponent’s game also aims to create not just a simple game but also an educational game that makes the player eagerly play the said game. Unlike these study, the proponent’s game focuses on the game design to make the game much more realistic and much more enjoyable.

**An Exploration of Computer Game-Based Instruction in the “World History” Class in Secondary Education: A Comparative Study in China**

This study by Z.Yu,W.Yu, Fan & Wang (n.d.), combining both quantitative with qualitative research methods, possibly compensated for this regret. The study compared data collected from two randomly selected classes (out of 13 classes) under computer game-based instruction (CGBI) and non-computer game-based instruction (NCGBI), respectively in a senior high school located in Nanjing, Capital of Jiangsu Province in China. The participants were 103 students, composed of 52 boys and 51 girls (aged 17-18 years old). The following conclusion was reached: (1) participants under CGBI obtained significantly greater learning achievement than those under NCGBI; (2) participants were significantly more motivated by CGBI compared with NCGBI; (3) there were no significant differences in learning achievement between boys and girls; although (4) boys were significantly more motivated by CGBI than girls”.The proponent’s game is also an exploration game that helps the player learn more about some Philippines landmark and get to know more about Filipino culture. Unlike these study, the proponent’s game will be based on the Philippines and will be developed in mobile phones.

**Summoning Hearts**

Hernandez and Guevarra’s ” Summoning Hearts SY 2013-2014 teaches the player to learn more things about moral lessons in life. Like the game Summoning Hearts, the proponent’s game also teaches lesson about Filipino culture and help to promotes tourism. Unlike the proponent’s game, the player enables to choose between male and female to play and roam around the map.

**Pinoy Super League**

Mendoza, Pangalinan and Publico’s” Pinoy Super League SY 2011-2012”,

promotes Filipino culture and values through an android mobile game. The proponent’s game also promotes Filipino culture like Filipino dishes that enables player need to eat to gain stamina. Unlike the proponent’s game, Pinoy Super League is only limited in 2D and not able to roam freely around the map.

**Into the Castle’s Peak**

Dela Cruz, Ramirez and Templo’s “Into the Castle’s Peak SY 2012-2013” employs nonlinear gameplay and quest selection that allows the player the freedom to choose any map. Same as the proponent’s game the player can freely roam around the map and able to accept quests throughout the game. Unlike the said study, the proponent’s game is more on exploration and adventuring, also the game, “Into the Castle’s Peak” were limited only in 2D graphics while the proponent’s game is on 3D.

**Fight for Freedom**

Guinto, Concepcion and Balbuena’s “Fight for Freedom SY 2015-2016” shows the history of the Filipino during the time of colonization of the Spaniards, by defending the town’s gate. The relevance of the study to the proponent’s game is that the player learns more about the culture in the Philippines and history of the different places that the player will be visiting inside the game. Unlike Fight for Freedom, the proponent’s game will be more focus on graphics on every maps and also the player will have the freedom to roam around the maps.

**Minotaur’s Lair**

Chavez, Laygo and Solis’ “Minotaur’s Lair SY 2015-2016” has game objects like treasures that may contain key for opening other treasures, bonus stats points, food/potions that may help the main character in game. Same as the proponent’s game the player need to destroy objects in order to complete certain quests and gain gold coins in order to buy food to increase the player stamina. The proponent’s game will be focusing on the exploring maps and makes the player learn more about the Filipino dishes in the said place.

**80 Days**

According to Jules (2104), 80 Days, the players job is to manage Fogg’s money, schedule, and health in his quest to win a wager. Travel around the world. London to London, in just 80 days. Collecting an item in Europe that’s valuable in Asia is an example of its many interesting risk/reward opportunities, which arise every few minutes.; the player might sell it for a profit that funds speedier travel at the expense of going out of the way. If the player health starts to deteriorate, they may need to decide between expensive, warmer clothes, or just staying more nights at a hotel, which may lead to missing a train that only runs a few days a week.

Rules are very important. According to Yusoff et al. (n.d.), game mechanics and game rules define the details of the game.The games 80 Days and iChoose Philippines have their similarities like travelling. But on the game 80 Day the player has to finish it within 80 Days and has to prepare a schedule in order to go to the next destinations. While in iChoose Philippines, the player has no time limit to finish the game it is the player’s decision if they will travel now. They were the ones to buy their own tickets in order to go to the next spot. This gives the proponents to design a better game that will suit the different styles of learning activities for the user.

**No Man’s Sky**

According to Parkin (2015), No Man’s Sky, the player will play as an astronaut, piloting the kind of nimble craft that once flew on the covers of Isaac Asimov paperbacks. The game offers a curiously nostalgic vision of the future. Every player will start their journey on an undiscovered planet; they will be the only person to have walked its surface. From there, you can board your ship, take off, break the atmosphere and begin to tour the galaxy.

According to Yusoff et al. (n.d.), game achievement is the level of learner achievement playing the game. The similarities of IChoose Philippines and No Man’s Sky is they both have to travel using a vehicle. The No Man’s Sky has a space ship while iChoose Philippines will be having a Calesa, Tricycle, Jeepney, Bus, Boat and other vehicles that are used in the Philippines. This is the way of iChoose Philippines to bring the players to the next destination through riding the vehicles in the Philippines. Game achievements indicates the level of knowledge of the user while playing the game.

**Synthesis**

The research that will be conducted by the proponents will be similar to each and every related literature and related studies that are searched by the group. The proponents have a comparison and contrast on the different studies based on the scope of the study. The research conducted by Bronstring (2012) and Joan (2013) have a huge part in terms of applicability in an adventure game and mobile learning but it can be observed that not all the studies found are alike the game that will be developed. This proved that this study will not be a duplication of any other studies. And, the researchers will prove that the project will be unique and helpful for the user specially in the learning part. The proponent’s game will be on 3D game adventure game that is not like any other 3D games. The proponent’s game will be focusing on the map or the destination of the game, adding colorful background that will draw out attention to make the player excited in visiting some tourist spots in the Philippines. The player will be able to roam around the map, collecting necessary items in order to gain gold coins and buy food to gain stamina. The food that the player will be eating or collecting will depend on the current location of the player. The gold coins that the player will gain will be use in transportation inside the game and in order to buy different costumes. This studies will be a great help to achieve the objectives of the study.

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