

Game Development Of Ibong Adarna Visual Novel

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Abstract: Computer games are becoming a main entertainment. But this research tackles about Visual Novel a kind of game that has extremely minimal game-play, story-driven, usually have multiple or branching storyline and is commonly developed and released in Japan. The proponents made a game based on a story tackled in high school, after they developed it; the high school students compared it with a Visual Novel that is made and popular in Japan. The results are; the Ibong Adarna Visual Novel has the advantage with a difference of .08 in the over-all weighted mean but after the statistical treatment, this score is not significant with the score of .017.

Index Terms: Branching Storyline, Game, Game Development, High School Students, Ren'Py Visual Novel Engine, Story-driven, Visual Novel,

1 INTRODUCTION

In this past decade, computers revolutionized the way of living. Computers make our work faster, more reliable and more accurate. Computers can be in different form like mobile phone, tablet PC, or in the form of desktop computer. Computers help us in numerous ways; communication, transportation, education, entertainment and many more. While computers have entered millions of families in most countries, computer games also became increasingly popular and the main entertainment during leisure time among family members [9]. Today, there many kinds of games from personal computer games like Plants vs. Zombies and Angry Birds to local area network games like Warcraft III, and Counter-Strike up to online games like Special Forces and Audition. And it really becomes the one of the main entertainment in and out of the family.

There is a kind of game called, visual novel. It is usually composed of images with texts, sounds, music and even voice to add more dramatic effects in the game. It is a story-driven game with a gameplay which is extremely minimal; by simply clicking to keep the game moving. These kinds of game are usually developed and more popular in Japan. The usual visual novel uses multiple storylines; this is to achieve different endings of the story. Decision points are available for the player to select and alter the story. But the decision points in the game, its corresponding options to select and events are still handled and created by the authors of the game.

1.1 Background of the Study

In reading a novel or watching a drama series or a movie on the television or in the cinemas, you may notice that they are always having linear storylines and its major drawback is the lack of flexibility and possibilities for personalisation and adaptation [4]. Unlike the usual novels, drama series or movie, most visual novels use multiple storylines to achieve different endings, which turns into non-linear action of story and freedom of choice for the player. The game used the story of Ibong Adarna, an epic poetry. Ibong Adarna is about the adventure of three sons of the king of Berbania. Ibong Adarna is part of the high school curriculum that was currently in use. The story is tackled on first year high school students. The students are only using their books on studying Ibong Adarna. How about using a game in making their studies more interesting? Its more common today that girls like computer games. But gender equality is still an issue on the game development; most of the games are designed for the male players. In her study, she said that gender difference indeed exist in the game industry. Males like competitive games; confrontations, actions or fighting games. But for females, they like romance or RPG [9].

1.2 Objective of the Study

General Objective. The main objective of the study is to develop a visual novel game with multiple story branches and can also be educational. This game has extremely minimal gameplay and uses static images, background music, sounds and dialogues. It can also be thought as a novel with graphics and sound.

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Specific Objectives. The specific objective of the study that is needed for the completion of it is as follows:

1. To design a visual novel game.
 - a. To create a script that will be the basis of the story and dialogues.
 - b. To create character images that will act in the game.
 - c. To create background images that will show the current settings of the plot.
 - d. To create background music that will add emotion to the game.
 - e. To create voice recordings that will add realistic effects on the game.
2. To program the game.
 - a. To program or integrate the game proper; the dialogues, images, music and voice recordings.
 - b. To use save, load and settings functions which are prebuilt in the Ren'Py Visual Novel Engine.
3. To test and debug the game if all the functions and choices are functioning properly.
4. To evaluate the game by the respondents, to know the reliability, user-friendliness, portability and accuracy.

1.3 Statement of the Problem

- 1.3.1 How do the respondents evaluate the existing game, Clannad in terms of the following:
 - a. Reliability
 - b. User-friendliness
 - c. Portability
 - d. Accuracy
- 1.3.2 How do the respondents evaluate the proposed game, Ibong Adarna Visual Novel in terms of the following:
 - a. Reliability
 - b. User-friendliness
 - c. Portability
 - d. Accuracy
- 1.3.3 Is there any significant difference between the existing (Clannad) and the proposed game (Ibong Adarna) in terms of the following:
 - a. Reliability
 - b. User-friendliness
 - c. Portability
 - d. Accuracy

1.4 Hypothesis of the Study

There is no significant difference between the existing and the proposed game in terms of the following:

- a. Reliability
- b. User-friendliness
- c. Portability
- d. Accuracy

1.5 Scope and Limitation

The game is called visual novel, the researchers adapted the

story of Ibong Adarna. Filipino language was used in the script and dialogues. The game has the following functions: save, load and settings. Save, a function that enables the player to save a point where he or she is currently in the game. Load, a function that enables the player to continue his or her saved game. Preferences or also known as settings is a function that enables the player to set his or her preferred settings on how to play the game; sound or music volumes, display type and skipping options. . The game includes a simple battle system that is usually used in the fights of two characters. The game also reminds if the player has been playing for more than 2 hours. The game also integrates a mini game; a battle system for battle scenes found in the story of Ibong Adarna. And the game can also be played in multiple platforms; Windows, Linux and Android. The game is limited to clicking to keep the images and sounds moving and making decisions of where the player wants the story to go or to end. The voice feature or the feature that the player can hear the characters' voices, the recordings are not clear and the character of the kawal (soldiers), taga-pagsilbi (servant) and manggagamot (doctor) are also not voiced. The game was not tested in MacOS X and other operating systems not mentioned.

1.6 Significance of the Study

High School Students. Since the researchers used the story of Ibong Adarna, this game may benefit the students in high school especially the first year students. This game may help their studies in Ibong Adarna, this can be their reference. They may enjoy while studying.

Filipinos who likes watching drama series, reading novels and playing computer games. Since, visual novels are commonly produced in Japan and it is not popular and not known by the Filipinos; this study may contribute in the awareness of the Filipinos about this kind of game. Also, since, in watching a telenovela, or a drama series or reading a novel has a linear kind of story and visual novels have a branching kind of story, users may personalize the story and may therefore adding more exciting twists in the story.

1.7 Definition of Terms

Accuracy. The game is provides the desired output that is free of errors.

Android. An operating system developed by Google Inc. and Open Handset alliance that is usually used in smartphones and tablet computers.

Clannad. A Japanese visual novel. The researchers will be using this game for data gathering and comparison.

Drama Series. A televised series of episodic drama show.

Game. Refers to the computer games. It may also refer to the game developed by the researchers.

Game Engine. A system designed for developing games.

Ibong Adarna. An epic poetry, used as the story of the game developed by the researchers.

Linux. Different unix-like operating systems that is usually free and open source.

Load. To play the saved game.

Mac. A series of graphical interface operating system developed by Apple Inc. and it is exclusively running only on Macintosh computers. Also known as OS X and formerly known as Mac OS X.

Multiple Storyline. Refers to the branching of story or plot, having multiple possibilities available for the player to choose. May also refer to branching storyline.

Novel. A prose narrative work of fiction with considerable length.

Philippine Visual Novel. A visual novel that is made by Filipinos.

Platform. Also known as operating system.

Portability. The game can run on different platforms.

Reliability. The game is consistent on producing desired results.

Ren'Py. An open source visual novel engine that is used to make visual novel games. The visual novel engine used by the researchers.

Ren'Py Language. A scripting language that is used in making visual novel games in Ren'Py.

Save. A point in the game where the player wants to continue the game when he or she plays again.

Telenovela. A televised soap opera usually in Latin-American countries.

User-Friendliness. The game is easy to navigate, use and understand.

Visual Novel. A kind of game normally consists of static images of anime-style art or live-action stills; it also has an extremely minimal gameplay that is limited to clicking to keep the text, graphics and sounds moving.

Windows. A series of graphical interface operating system developed by Microsoft Corp.; its popular operating systems are: Windows XP, Windows Vista, Windows 7 and Windows 8.

2 METHODOLOGY

2.1 Research Design

Research Design states the method of research used by the researchers in their study, the respondents of it, the tools they needed to, and the system design of the game.

2.1.1 Method of Research Used

Methods of research used tell about the methods used by the researchers. To achieve the accuracy of this research the

researchers used the Library Method, Internet Method, and Descriptive Method.

Descriptive Method - it is the method used by the researchers to describe data and characteristics of the game that is being proposed.

Library Research Method - it is a method that includes searching in the library and reading some books to get valid and verifiable source about on the researchers proposed game.

Internet Method - a method that it includes surfing in the net to find more accurate and knowledgeable information about on any studies of visual novel game that used by the researchers

2.1.2 Respondents of the Study

Since the game can be played by almost all, the researchers preferred to have a 34 (thirty-four) respondents who are in high school students. These are students of Holy Rosary School of Science and Technology.

2.1.3 Data Gathering Tools

Data gathering tools it is the most crucial of this study, it tells the tool used by the researchers, to know the way that they have used to conduct their research it includes the Interview, Observation, Questionnaire, Survey and etc. but in this study the researchers used only the Questionnaire Tools.

Questionnaire Tools – the researchers used the questionnaire tools which include an instrument which includes a series of question for the respondents for the purpose of gathering information.

2.2 Tools Used in the Analysis

2.2.1 System Flow Chart

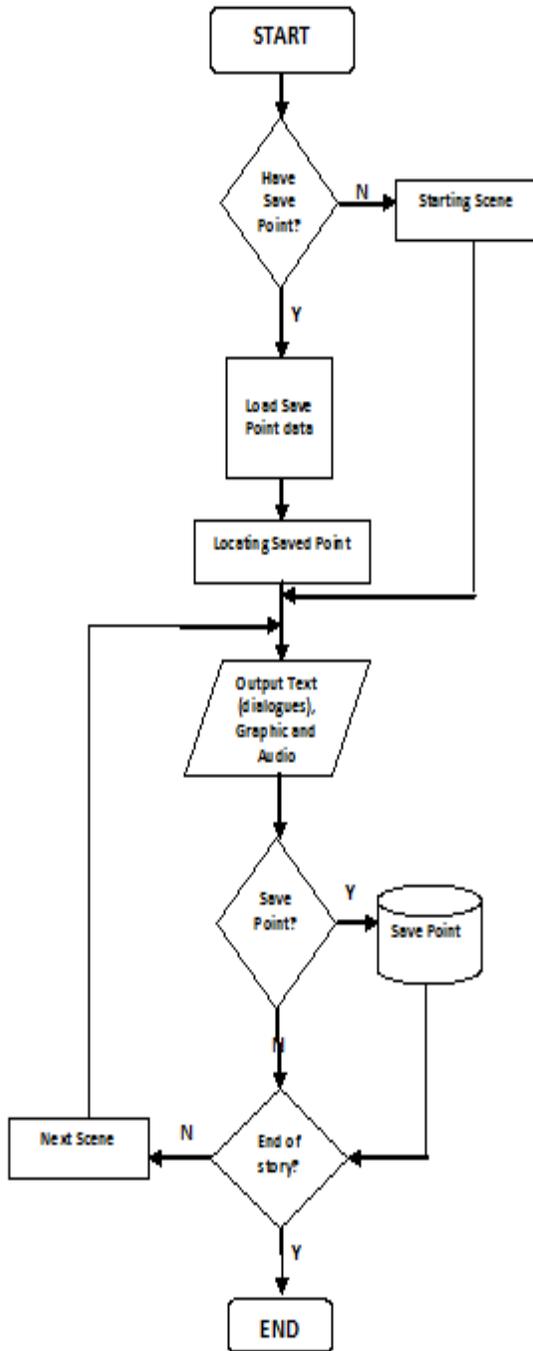


Figure 3.1. System Flow Chart of the visual novel game.

2.2.2 Conceptual Framework

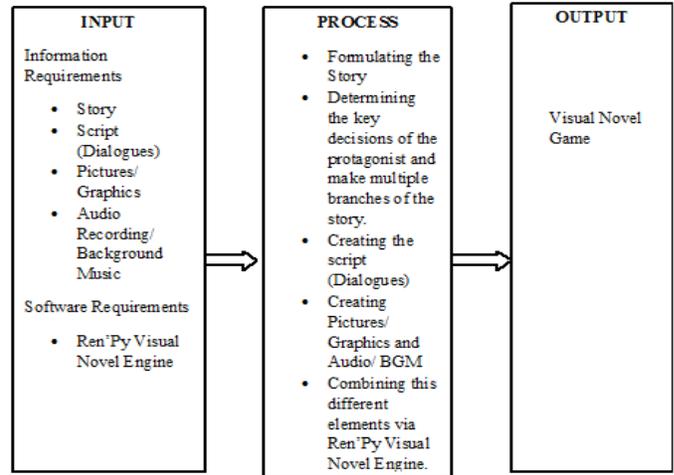


Figure 3.2. Conceptual Framework

Conceptual Framework of the proposed system of the researcher, shows the Input, Process and Output of the proposed system. Input is the Information and Software requirements needed to do the designing the interface, creating the database and programming to get the output of the said proposed system.

2.3 System Design

System Design tackled about the development of the system, the analytical used in the system and the methods used for evaluation in the proposed system by the researchers.

2.3.1 Planning – This is the first phase in making the game. Determining the problems that need to be solved and formulating ways on how to deal with in the entire research. In planning it includes identifying the problems, creating our objectives and creating our scope and limitations. The researchers make a brain storming in order to identify the problems that the other visual novel have. They also create their objectives in making the game which is the visual novel of the Ibong Adarna and at the same time they also create their scope and limitations in order for them to limit the things that the game can do.

- a. **Developing the Script** – Creating a dialogue that the researchers are going to use in making the game. Since the propose game is visual novel, the player will became more attracted to the game if they can see and if they are informed about the happenings in the game. In developing the script, the researchers read the story that they are going to make as a game, writing down the dialogues and arranging the dialogues. One of the researchers made the linear story of the novel which is the Ibong Adarna and the other members make their own branching story.
- b. **Creating, Background, Music, Voice and the Character** – In this phase of planning the researchers will look for an artist who will create the characters of the propose game which is the

Ibong Adarna visual novel game that are needed to insert in the said game. The researchers also look for the best music that will fit in the scene that is portrayed. The researchers get the background pictures from the internet and in order for the picture to become more appropriate in the characters the researchers edit the picture in Adobe Photoshop CS4 and make it in water colour form. In making the background music the proponent get the music also from the internet and in order for the music and the sound become more suitable to every scenes the researchers edit the sounds and music in the MAGIX 17 premium download version. And the character that has been used in the game is made by the artist that the researchers deal with.

the other visual novel engine cannot run on every operating system.

2.3.2 Programming – in this phase of system design the researchers will use a tool, visual novel engine called, Ren'Py. This is also the part where the programming language, the Ren'Py 6.13.12 Language will be use and encode the program code in order for the Visual Novel game which is the Ibong Adarna to run and turn into a visual novel game. One of the researchers encodes the whole game in order for the game will not mix its content. The researchers use Ren'Py because it is open source and free of charge. It can also run on both Linux and Windows Based computer with the ability to port the finished game to Android. It is also easy to code.

2.3.3 Testing and Debugging – In this part, the game that has been made will run until the researchers found an error or a bug in the game and deal with it. The researchers will repeat the steps until the game is fully furnish. In testing and debugging it includes running the game, look for the error or bug and creating the solutions about the error.

2.3.4 Evaluating the System – This is the part where the researchers and the respondents will judge the game that has been made by playing it. The researchers used questionnaires to measure the game on various aspects. It includes playing the game and its counterpart, Clannad and comparing them. The game will be evaluated by some selected students from the Holy Rosary School of Science and Technology. The method that will be used is Purposive method.

a. **Statistical Tools** – tools that are needed to gather the respondents that are going to evaluate the game that has been propose.

i. **Weighted Mean** – the most common type of average, where instead of each of the data points contributing equally to the final average, some data points contribute more than others.

$$X_w = \frac{\sum xiwi}{\sum wi} \quad (1)$$

ii. **Fisher Sign Test** – used to compares two correlated samples. Used the difference between each pair of observations..

$$Z = \frac{|D| - 1}{\sqrt{N}} \quad (2)$$

a. **Designing the GUI (Graphical User-Interface)** – In this part of programming the researchers will design what will be the output of the game in order for the player to feel more attracted on the game. This also includes making character and backgrounds, the styles, inserting fonts, and colours the texts used in the game. The Designing of the GUI or the Graphical User – Interface is being made in an Engine called Ren'Py. Ren'Py is a Visual Novel Engine where the researchers can design the graphical user – interface and code the program at the same time. The version of Ren'Py that the researchers will use is 6.13.12 because the researchers think that this version is much easier to use and it has less bugs than the other version that has been made and is the latest stable release upon the start of the development. The Ren'Py 6.13.12 is also an open source and free of charge software. It can also run on both Linux and Windows Based computer with the ability to port the finished game to Android. It is also easy to code.

2.3.5 Implementation – In this phase of system design the game will be introduce to the people for them to see what the game is all about. The game will be distributed to those people who are interested via Compact Disk (CD).

b. **Coding the Game Proper** – In this part, the researchers encode the script, images, sound effects and background music in the Ren'Py visual novel engine with the version of 6.13.12 with their corresponding codes. Also in this part, the transitions and effects on images, sounds and background music are programmed. The researchers use the Ren'Py because it is an easy code – based visual novel maker and it can work on both mac and windows base computer even in an open source operating system like linux and it is free and open source, while the other visual novel maker needs a lot of effort for you to create your own visual novel and pricey, and

3 PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

The results gathered data is presented in this chapter. The proponents used survey form to gather feedback as well as reactions from respondents , after a series of validation and evaluation of the results that gathered and analysed, the proponents were able to came up the results between the existing and the proposed game based on the survey that answered by the respondents. The proponents chose high school student to be the respondents. They are the high school students of Holy Rosary School of Science and Technology. The proponents received 34 filled questionnaires as a turn-out and used it as a population.

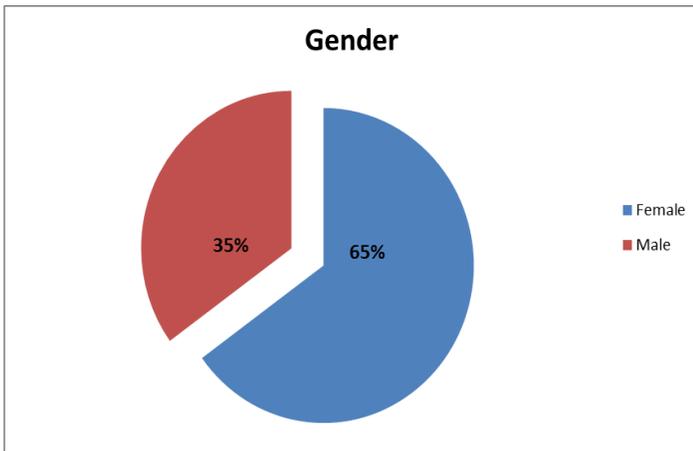


Figure 4.1. Distribution of Respondents According to Gender.

Figure 4.1 shows the distribution of respondent according to gender. 65% or 22 students of it are female respondents and (35%) or 12 are the male respondents, it means that the proponents has more female respondents than male.

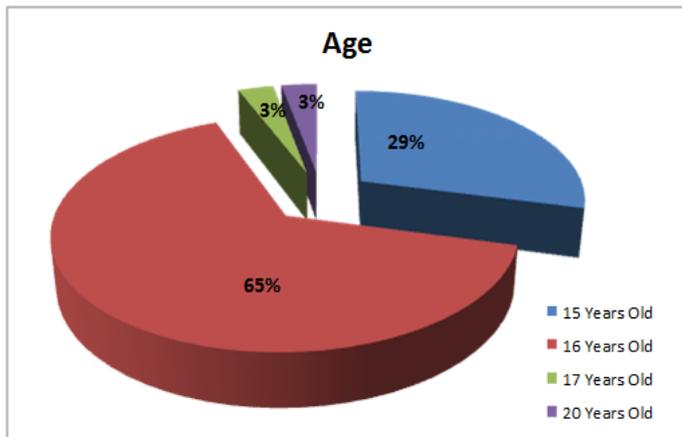


Figure 4.2. Distributions of Respondents According to Age.

Figure 5 shows the distribution of respondents according to age red one represents the sixteen years old respondents which had a 65%, the blue one is for fifteen years old which had 29%, and the green and violet one are for seventeen years and twenty years old which had 3%. Data were classified and sorted according to show the verbal interpretations of the game between the existing and the proposed game with the total number of 34 respondents. Range between 1.00-1.80 means poor, 1.81-2.60 fair, 2.61-3.40 satisfactory, 3.41-4.20 good, and 4.21-5.00 very good. Tables below show the results between existing game (Clannad) and the proposed game (Ibong Adarna).

Criteria	Weighted Mean	Verbal Interpretation
Reliability	4.06	Good
User-friendliness	4.10	Good
Portability	4.05	Good
Accuracy	4.15	Good
Over-All	4.09	Good

Table 4.1. Evaluation of students on Clannad Visual Novel (Existing).

Table 4.1 show the results on how the respondents evaluate the existing game, Clannad in terms of the following: Reliability, User-friendliness, Portability and Accuracy. Based on the evaluation done by the students, the Clannad visual novel got its lowest weighted mean of 4.05 at the criteria of portability which still got a good mark. Next is reliability with 4.06, then user-friendliness with 4.10, and the highest is accuracy with 4.15 which still falls on the good mark. The over-all weighted mean or average that this game had is 4.09 which falls on the good mark. This means that the game acceptable to them in terms of the criteria measured. This also means that this game has the appropriate, visuals, background music and voice, the settings and the saved game was loaded accurately.

Criteria	Weighted Mean	Verbal Interpretation
Reliability	4.24	Very Good
User-friendliness	4.26	Very Good
Portability	3.98	Good
Accuracy	4.21	Very Good
Over-All	4.17	Good

Table 4.2. Evaluation of students on Ibong Adarna Visual Novel (Proposed).

Table 4.2 show the results on how the respondents evaluate the proposed game, Ibong Adarna in terms of the following: Reliability, User-friendliness, Portability and Accuracy. Based on the evaluation done by the students, the Ibong Adarna Visual Novel got its lowest weighted mean on the criteria of portability which is 3.98 that still made its mark as good. Next is accuracy with 4.21 which falls on very good mark, then reliability with 4.24 that falls on the very good mark and user-friendliness with 4.26 that falls on the very good mark. The over-all weighted mean of the game is 4.17 which fall on the mark of good. Like the existing game, the proposed games are also acceptable to them in terms of the measured criteria and have the same level. This may also mean that the proposed game is used the appropriate language, colors, sounds, text

and the settings and menu are easily accessible.

Criteria	Clannad Visual Novel (Existing)		Ibong Adarna Visual Novel (Proposed)	
	Weighted Mean	Verbal Interpretation	Weighted Mean	Verbal Interpretation
Reliability	4.06	Good	4.24	Very Good
User-Friendliness	4.10	Good	4.26	Very Good
Portability	4.05	Good	3.98	Good
Accuracy	4.15	Good	4.21	Very Good
Over-All	4.09	Good	4.17	Good

Table 4.3. Comparison on the weighted mean between Clannad Visual Novel (Existing) and Ibong Adarna Visual Novel (Proposed).

Table 4.3 shows the comparison on the weighted mean between the existing and the proposed game. Based on the evaluation done, the existing game has advantages over the existing on reliability, user-friendliness and accuracy with only small differences. But the existing game wins over the portability. But in over-all results the proposed game wins with the difference of 0.08. This means that the proposed game is slightly better than the existing game.

Level of Significance	Critical Value	Computed Value	Decision	Interpretation
$\alpha=0.05$	± 1.96	0.17	Not Significant	Accept Hypothesis

Table 4.4. Summary table on the significant difference using Fish Sign Test ($\alpha=0.05$).

Table 4.4 shows the Summary table on the significant difference between the existing (Clannad) and the proposed game (Ibong Adarna) in terms of the following: Reliability, User-friendliness, Portability and Accuracy using fish test. Based on the computation using Fisher Sign test, the result is 0.17 that does not go beyond the critical value of ± 1.96 which means that there are no significant differences between the existing and proposed game and also means that the hypothesis is correct.

4 SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

4.1 Summary of Findings

The proponents conducted a survey to get the feedback and reactions of the respondents about to the proposed game (Ibong Adarna) and the existing game (Clannad). Proponents found out that both proposed and existing game are both good on the criteria's measured with only slight difference of (.08) on over all weighted mean in favour of proposed game but after statistical treatment, the result is (0.17) which is not significant and therefore the proponents have to accept the

null hypothesis which states that there is no significant difference between the two games.

4.2 Conclusions

After the survey and the statistical treatment the proponents therefore conclude that the proposed game, Ibong Adarna Visual Novel is as good as the existing game, Clannad Visual Novel. The proponents successfully made a visual novel for Filipinos that is educational and have a multiple story branches. They are also successful in creating scripts, character images, background images, background music and voice recordings and they are also successful in integrating it and use the functions which are prebuilt in Renp'y Visual Novel Engine and it is tested and debug. The proponents are also successful in evaluating the games by the respondents.

4.3 Recommendations

The proponents recommend to the educational institution to use the game or its concept in teaching different lessons especially literatures this may serve as advancement in teaching. For the students this game may help you in enjoying, studying Ibong Adarna and this may also help to help you think of different possibilities and enhance your imagination in playing this game. For the Filipinos who like watching drama series, reading novels and playing computer games this research is an effort to combine reading novels, watching drama series and playing computer games with multiple story lines to enhance the stories flexibility, personalization and adaptation. This was also the first research about visual novels in the Philippines. The proponents therefore recommend that you may try out playing this kind of games. For the researchers' the proponents recommend that in making this kind of game make sure to use appropriate tools both on hardware and software. Enhance the voice recordings, background images, background music and sound effects and if possible add different emotions for the characters.

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