

HaPinoy: Reviving Filipino Culture and Traditions through Android Application for Grade 1 to 6 Pupils

Joven Cajigas¹, Lynette Cortez², Ciara Mae Bañares³, Aaron Ezekiel Canding⁴,
Ma. Clarisa Fernandez⁵, Gio Regor Gregorio⁶

^{1,2,3,4,5,6}Lyceum of the Philippines University Cavite, General Trias City, Cavite, Philippines

Abstract: The project “HAPinoy: Reviving Filipino Culture and Traditions through Android Application for Grade 1 to 6 Pupils” aimed to teach elementary students from Grade 1 to 6 about Filipino culture by providing alternative ways to recall the cultural and traditional living of the Filipinos. The categories of topics presented are *Bahay Kubo*, *Karinderya*, *Paaralan*, and the *Pinoy Fiesta*. The application was created using C# programming language and Unity. The developers used Conformance Testing to verify application implementation conformance and Functionality Testing to test the performance of the game application. The evaluation was conducted by forty-five (45) respondents, which consist of ten (10) IT Experts, ten (10) *Araling Panlipunan* Teachers and twenty-five (25) elementary pupils assisted by their parents. This successfully garnered an average mean of “3.54” and “0.57” Standard Deviation which interpreted as “Highly Acceptable”. This proved that the application is appreciated and can be used as a tool to disseminate information about Filipino Culture and Traditions.

Keywords: Filipino Culture, Elementary Pupils, Araling Panlipunan, and Mobile Application.

I. INTRODUCTION

The Philippines has a rich culture that are from the influence of countries like Spain, Japan and America. This includes the beliefs, traditions, values, and heritage adapted from the said groups and races. Filipino cultures are being taught and introduced as early as Grade 1 level. This is presented in the *Araling Panlipunan* subject with the topics including history, geography, society, economics, values, and traditions. (deped.gov.ph, 2017)

At present, dissemination of information can be done using the technology specifically in the form of a mobile application. Lessons given in a mobile app for children makes the learning process fun and easy as posted by Roy (2017) in the elearningindustry.com. Furthermore, the various app features to boost engagement through knowledge-oriented activities. According to smore.com as cited from edutopia.org (2015), the use of smartphones and tablets by K-12 students has increased dramatically in the last few years. In connection with this, teachers take this technological advancement in improving the teaching strategies and learning experience of the children. The combination the utilization of mobile app with the traditional teaching style make lessons more interactive and engaging. The said statement also explained by Savvidis (2016) about the benefits of using technology in teaching and disseminating information to children.

The project entitled, "HAPinoy: Reviving Filipino Culture and Traditions through Android Application for Grade 1 to 6 Pupils" predominantly can help the elementary students to know about Filipino culture. The said android application incorporates pinoy environment such as the traditional house or the *bahay kubo*, stores like *karinderya*, *paaralan*, and *Pinoy fiesta*. The content and facts of the application are based on the books and articles that are being used by students in the Philippines in subjects such as *Sibika and Kultura and Araling Panlipunan*.

A. Objectives of the Project

The project will develop "HAPinoy: Reviving Filipino Culture and Traditions through Android Application for Grade 1 to 6 Pupils".

Specifically, the project aims to:

1. Design a game that has the following features:
 - a. Character selection of male and female. The game provides character selection which is the male and female. The male character namely *Noy* and *Hapi* is the female character.
 - b. User-friendly Control. It includes instructions and tutorials for the user to understand a certain button.
 - c. Topics like *Bahay Kubo* (Nipa Hut), *Karinderya* (Eatery), *Paaralan* (School) and the *Pinoy Fiesta* (Philippine Feast).
 - d. Voice and Text Narration are provided for the user convenience to listen and read the topics.
 - e. Pop Quiz for the user. For the assessment of how much do they learned about the topics given.
2. Create the project using C# programming language and Unity.
3. Test and improve the performance of the system.
4. Evaluate the acceptability of the application and measure it based on Mobile Application Rating Scale Criteria (MARS):
 - a. Engagement;
 - b. Functionality;
 - c. Aesthetics; and
 - d. Information;

B. Scope and Limitation of the Project

The target user of the project is the Grade 1 to 6 pupils aligned with the textbook Pamana Lahing Malaya by Richelda O. Divina et al. [2009] and Suhay Wika at Pagbasa by Mary Jane S. Burce et al. [2012] that are recommended by DepEd in the subject of Sibika at Kultura. It provides a Pinoy themed environment like the *Bahay Kubo*, *Karinderya*, *Paaralan* and the *Pinoy Fiesta* with a combine animation and a *Pinoy* character named Hapi and Noy. The game provides character selection which is the male and female. It also provides two looks for each character. The said environment serves as the category of the topics. Each category has a certain topic to discuss and have a variety of pop quizzes. In *Pinoy Fiesta*, it includes games like *Palosebo*, *Paluang Palayok*, *Habulang Baboy*. The user can play against the program. In *Paaralan*, different activities were given such as complete the song lyrics. For *Bahay Kubo*, Filipino traits and values are also be tackled and lastly, for the *Karinderya*, Filipino cuisine shown and the user needs to answer the name of the Filipino cuisine given. It also has a fruit and vegetable quizzes, the user must listen to the discussion about the Fruits and Vegetables before proceeding to the pop quiz. It is available for any Android devices such as tablet and smartphones with Ice Cream sandwich 4.0 and up. The application can be downloaded through the Google Play Store.

The application cannot cater to all topics in Filipino culture and traditions like the religious belief because of the diversity of the religion of the Filipinos. It is only limited on subjects such as a traditional house, food and some facts about the Philippines. The application is only available offline and can be played only using mobile devices like smartphones and tablets with Android operating systems.

C. Significance of the Project

The project developed is made intentionally for education and entertainment purposes. This game showcases facts about the Filipino culture and traditions that can be used by the pre-school and grade school students.

The following are the beneficiaries of the system:

Elementary Pupils. The game predominantly helps them to retrospect Filipino culture.

Parents. The game gives an alternative way of teaching Filipino culture to their children.

Teachers. Educators also benefit from the said application. It will help the instructors in teaching Filipino culture.

Future Researchers. The game serves as a reference for the future developers to make a game like this or make an improvement of the said system.

II. METHODOLOGY

A. Design

This section provides an illustration or diagram that describes the processes in the study. This includes the Program flowchart of the study.

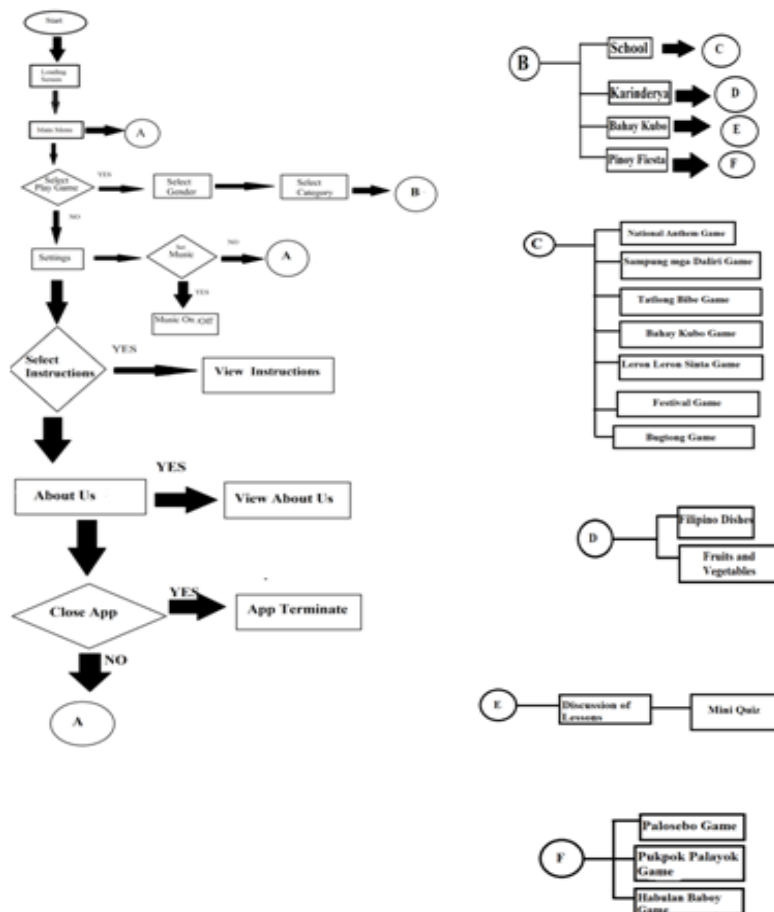


Fig1. Program Flowchart of HAPinoy

Fig 1 shows the process of the entire game. After the application is launched, the user will see the loading screen, next is the main menu screen. The user can either turn on or turn off the music that is shown in the settings or play the game. If the player chose the play game, the user needs to select a gender of the character. A selection of a category is available in the game. The School, Pinoy Fiesta, Bahay Kubo and Karinderya are the categories. Each category has a corresponding discussion and also a mini-game. The School or the “Paaralan” category consists of Guess the lyric game, True or False and Riddles or “Bugtong”. The “Karinderya” category consists of Guess the image and a pop quiz about the fruits and vegetables and their nutrients. The “Bahay Kubo Category” consists of narrations about Filipino Traditions and a pop quiz after the discussion to test their knowledge about Filipino Traditions. In “Pinoy Fiesta” category consists of Filipino Games such as Palosebo, Pukpok Palayok, and Habulan Baboy.

B. Development

This section confers the development of the project using different software, hardware and the programming environment used in developing the project.

The developers used the Iterative (Incremental Model) in developing the software. The main concept of an Iterative process is that it has versions. The development of the projects starts at the main part or requirements of the software. The important parts are implemented first in the process before expanding the said project. During each iteration, the development process goes through the requirements, design, development, validation, integration and testing phases. Each iteration improves the versions of the project until it has been completed. If the project is still incomplete, the iteration goes back to requirements phase, design and then testing phase again. The process continues until the system is ready and it is final. The result of both input and process is a 2D Android mobile game entitled “HAPinoy: Reviving Filipino Cultures and Traditions through Android Application for the Grade 1 and Grade 6 Pupils”. After meeting all the requirements, the application is ready for evaluation using the evaluation instrument called Mobile Application Rating Scale.

The developers used Windows Operating System and Unity 3D Game Engine in creating the interface of the proposed project. Photoshop CS5 in creating designs like buttons, characters and other designs and an Android Operating System minimum of Ice Cream Sandwich 4.0 or higher as a platform for the mobile game application. A laptop with Intel® Pentium® CPU 3825U @ 1.90 GHz with 4GB installed Memory (RAM) and a desktop with an AMD Athlon™ II X2 255 Processor 3.10 GHz with 4 GB RAM. For mobile hardware specification, the android devices that was used is at least 4.0 inches Multi-Touch screen display, and also had 512 MB RAM or higher for better performance, and a display resolution of at least 480x800 pixels.

C. Test

The application HAPinoy: Reviving Filipino Cultures and Traditions through Android Application performance was assessed based on the Conformance, and Functionality. Conformance Testing was used to check whether the project complies with the Android Core App Quality Standards. Functionality evaluates whether the game application is from bugs and its function is working properly.

The researchers used Conformance Testing to verify the application’s quality in terms of installation, functionality and user interaction through set quality criteria and standardized tests. This was based on the prescribed standards provided by the Android Core App Quality. While the researchers exploited Functionality Test to ensure all functions of the application complied with the expected outcomes. The test phase was participated by a technical critic and four (4) elementary teachers handling *Araling Panlipunan* (topics include Society, Culture, and Economy of the Philippines).

D. Evaluation

This phase measures the user’s acceptability level of the application based on the Mobile Application Rating Scale (MARS). The criteria in which the study needs to pass are the following: Engagement, Functionality, Aesthetics, and Information. In the Engagement, the overall interaction and interest and the app must be entertaining for the target users. In the Functionality criterion, all functions specified in the specific objectives of the project must be met and all features must perform as expected. In the Aesthetics criterion, the overall layout and GUI of the app must be visually pleasing to the eyes and is easy to use/navigate through. Lastly, in the Information criterion, the app must meet the information written in the description of the application in the play store. The evaluation was participated by forty-five (45) respondents comprised of ten (10) *Araling Panlipunan* teachers, twenty-five (25) elementary pupils with their parents, and ten (10) IT experts particularly in the field of mobile app design and development. The raw data of evaluation was computed using weighted mean and standard deviation. Also, the final score was interpreted using a recommended Likert scale and scoring system (See table 1 and 2). Finally, the

TABLE I: LIKERT SCALE

| Range | Equivalent |
|-------------|-------------------|
| 3.26 – 4.00 | Highly Acceptable |
| 2.51 – 3.25 | Acceptable |
| 1.76 – 2.50 | Fairly Acceptable |
| 1.00 – 1.75 | Unacceptable |

Table 1 shows the Likert scale as the basis of the interpretation from the raw scores gathered in the evaluation process. In able to get the highest user’s acceptability assessment, the raw score should meet the range of “3.26” to “4.00” which is

interpreted as “Highly Acceptable”. For the application to pass the evaluation, the acceptability should be within “2.51” to “3.25” which is interpreted as “Acceptable”. The project passes the assessment if the adjective equivalent is “Fairly Acceptable” with the range from 1.76 to 2.50, however, this can have major recommendations for the application to completely meet the user’s preferences. The application should be thoroughly improved and be modified accordingly if the raw score garnered ranges from 1.00 to 1.75 with the interpretation of “Unacceptable”.

TABLE II: SCORING SYSTEM

| Numerical Rating | Equivalent |
|------------------|-------------------|
| 4 | Highly Acceptable |
| 3 | Acceptable |
| 2 | Fairly Acceptable |
| 1 | Unacceptable |

The table above shows the rating that the game application could receive from the evaluator which varies according to the acceptability of the application. Each numerical rating has a corresponding equivalent which is then used to classify the acceptability of the software in each criterion.

III. RESULTS AND DISCUSSIONS

A. User Interface Design



Fig 3. Main Menu of HAPInoy

Fig 3 contains the main menu HAPInoy. It includes settings, play and about us, instruction and exit.

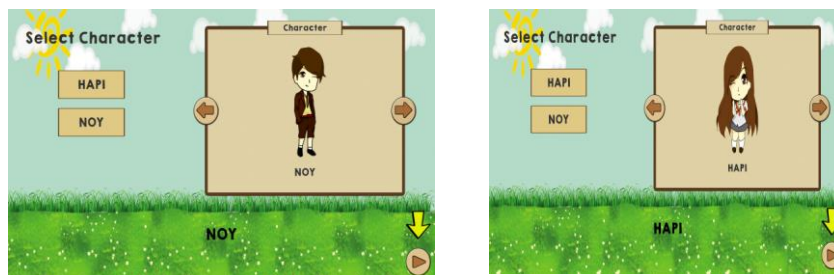


Fig 4. Character Selection of HAPInoy

The application has two characters to choose, a male namely Noy and a female namely Hapi. The player can choose the looks of Hapi and Noy. There are two choices of their looks.

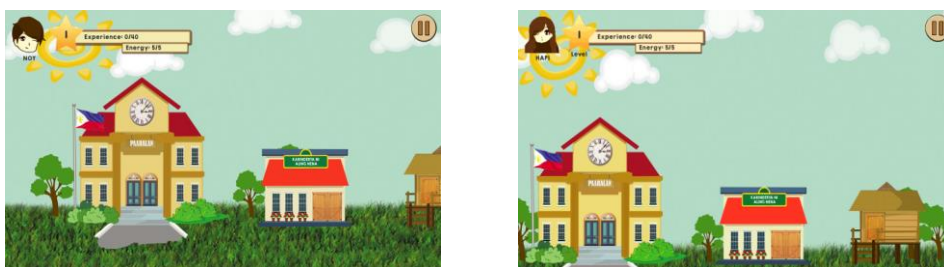


Fig 4. Category Selection Screen 1 of HAPInoy

Fig 4 shows the School and *Karinderya*. The school consists of topic such as National Anthem, Festivals, *Tatlong Bibe*, *Bugtong*, etc. The *Karinderya* consists of topics such as *Ulam* and Vegetables and Fruits. The game has a narration that discusses a certain topic and after the narration, it will have a mini-game that is related to the topic. The second category shows the *Bahay Kubo* and Playground. The *bahay kubo* consists of topics such as Good Moral and Right Conduct such as respect and hospitality. The Pinoy Fiesta consists of popular traditional Filipino games (*Laro ng Lahi*) like *Palosebo*, *Paluan Palayok*, and *Habulan Baboy*.

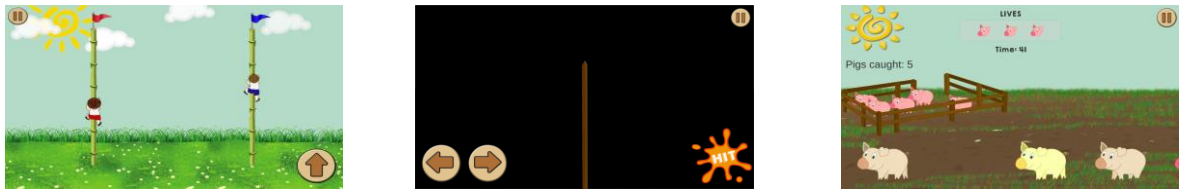


Fig 4. Mini games promoting the traditional games in the Philippines like the Palosebo, Paluan Palayok and Habulan Baboy (from left to right)

The application has mini games that showcase the *Laro ng Lahi*. This has the *Palosebo* where the user needs to tap the up button to get to the top beat the program, *Paluan Palayok* game's goal is to hit the clay pot with blind fold , and *Habulan Baboy* is to catch the pig first.

B. Test Results

TABLE III: TEST RESULTS FOR FUNCTIONALITY AND CONFORMANCE TESTING

| Testing | Pass | Fail | Total No. Of Criteria | Percentage |
|---------------|------|------|-----------------------|------------|
| Functionality | 45 | 2 | 47 | 98% |
| Conformance | 17 | 1 | 18 | 99% |

The Test Results for Functionality and Conformance Testing was participated by a Technical Critic and four (4) *Araling Panlipunan* teachers. In the Functionality Testing, the developers have a total of 47 criteria. The testers interpreted the Functionality Testing with 47 passes and 0 fails. In the testing period of the developers from the technical critic, the developers fixed the bugs that the test respondents encountered in the game application. In the Conformance Testing, the developers have a total of 18 criteria. The testers interpreted the Conformance Testing with 17 passes and 1 fails. The reason for the failed criteria is that the developers failed to upload the game application in the Google Play Store during the Test Period. Overall, the percentage of the Testing is passed and the developers must fix the failed criteria to proceed to evaluation.

C. Evaluation Results

TABLE IV: EVALUATION RESULTS FROM FORTY-FIVE (45) RESPONDENTS

| Criteria | Mean | SD | Interpretation | Rank |
|----------------------------|-------------|-------------|--------------------------|------|
| Engagement | 3.55 | 0.57 | Highly Acceptable | 3 |
| Functionality | 3.64 | 0.51 | Highly Acceptable | 2 |
| Aesthetics | 3.67 | 0.52 | Highly Acceptable | 1 |
| Information | 3.32 | 0.60 | Highly Acceptable | 4 |
| Average Mean and SD | 3.54 | 0.57 | Highly Acceptable | |

Table IV shows the result of the evaluation of the game application performed by forty-five (45) respondents composed of ten (10) IT experts in the field of mobile app design and development, ten (10) *Araling Panlipunan* teachers and twenty-five (25) elementary pupils from Grade 1 to 6 assisted by their parents . For the criteria of "Engagement", the application got an average mean of "3.55" and an average standard deviation of "0.57" which ranked 3rd and interpreted as "Highly Acceptable". In the second criteria, "Functionality" the application got an average mean of "3.64" and an average

standard deviation of “0.51” which ranked 2nd and interpreted as “Highly Acceptable”. For the next criteria, “Aesthetics” the application got an average mean of “3.67” and an average standard deviation of “0.52” which ranked 1st and interpreted as “Highly Acceptable”. Lastly, “Information” the application got an average mean of “3.22” and an average standard deviation of “0.60” which ranked 4th and interpreted as “Highly Acceptable”. The Aesthetic criteria got the highest rank in the reason that most of the respondents like the GUI of the game application. Functionality criterion got the second highest rank in the reason that the game application is working without bugs and crashing. The third rank in the criteria is Engagement in the reason that the respondents enjoy the game application but recommending additional mini-games aside from the *Palosebo*, *Paluan Palayok*, and *Habulan Baboy*. The last in the rank is the Information criterion in the reason that the evaluators are looking for other relevant and significant information that they want to be included in the application like the different religions in the Philippines, the *Pamahiin* or beliefs of the *Filipino* and the History of the Philippines.

Overall, the evaluation from End Users got an average mean of “3.54” and an average standard deviation of “0.57” which is interpreted as “Highly Acceptable”.

III. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

The project has successfully met all the objectives in developing “HAPinoy: Reviving Filipino Cultures and Traditions through Android Application”. This was designed with the following features such as Character Selection, Guess the Lyric, Guess the Image, Palosebo Game, Pukpok Palayok Game, Habulan Baboy Game and True or False. This includes topics like *Bahay Kubo* (Nipa Hut), *Karinderya* (Eatery), *Paaralan* (School) and the *Pinoy Fiesta* (Philippine Feast). The application has a user-friendly control that includes instructions and tutorials for the user to understand a certain button. The said contents are seen in every category of the game. The application provided voice and text narration for the user convenience to listen and read topics. The application also has a pop quiz for the user’s assessment of how much do they learned about the topics given.

The software was created using development tools such as Unity 3D as the game engine. Adobe Photoshop CS5 for designing the environment and logos, MonoDevelop for coding the scripts of the game.

The application has undergone testing and improve through Conformance with the Android Core App Quality Criteria and Functionality test. The result of the test was used to improve the application’s overall performance. The evaluation was conducted to achieve the application’s acceptance using Mobile Application Rating Scale (MARS) using the criteria such as Engagement, Functionality, Aesthetics, and Information. The evaluation was participated by ten (10) IT Experts and thirty-five (35) End-Users such as twenty-five (25) elementary pupils guided by their parents and ten (10) Teachers handling *Araling Panlipunan* subject. The application garnered an overall mean of “3.54” with “0.57” standard deviation and interpreted as “Highly Acceptable”. The results of the evaluation indicate that the game application can be used as a tool to disseminate information about Filipino Culture and Traditions through an Android mobile app.

B. Recommendations

The following are the recommendations made for the future improvement of the project.

1. iOS compatibility for the availability of the application in different platform.
2. Add more Games like Patintero, Hilahang Lubid and Sipa for the Pinoy Fiesta Category for added engagement for the users.
3. Add more Trivia for the Bahay Kubo Category so that the users can learn more about Filipino traditions.

REFERENCES

- [1] Abundo, Cecil (2015) Filipino Culture Retrieved from www.vigattintourism.com/tourism/articles/Filipino-Customs-and-Tradition
- [2] Magna Kultura (2012) The Importance of preserving traditional Filipino Games Retrieved from www.team13boom.blogspot.com/2012/07/importance-of-preserving-traditional.html
- [3] Palosebo Retrieved from <http://en.wikipilipinas.org/index.php/Palosebo>

- [4] Pukpok Palayok Retrieved from http://en.wikipilipinas.org/index.php/Pukpok_Palayok
- [5] Habulan Baboy Retrieved from <http://www.batangas-philippines.com/traditional-games.html>
- [6] Jisc (2010) Introduction to E-Learning Retrieved from www.jisc.ac.uk/guide/introduction-to-elearning
- [7] M-Learning Retrieved from <http://www.virtual-college.co.uk/mobilelearning/mobile-elearning.aspx>
- [8] Beal, Vangie (2016) M-Learning Retrieved from <http://www.webopedia.com/TERM/M/mobile-learning-m-learning.html>
- [9] Edutainment Retrieved from <http://www.igi-global.com/dictionary/edutainment/9152>
- [10] Vera, Maria (2014) App for Preschoolers Retrieved from <http://pbs.org/about/blogs/news/pbs-kids-releases-thomas-friends-app-for-preschoolers/>
- [11] Onguard Online (2011) Mobile Application Retrieved from www.onguardonline.gov/articles/0018-understanding-mobile-apps
- [12] Christensen, Clayton (2010) Mobile Operating System w/ Android Retrieved from <http://timreview.ca/article/221>
- [13] Enger, Michael (2013) Game Engines: How do they work? Retrieved from www.giantbomb.com/profile/michaelenger/blog/game-engines-how-do-they-work/101529/
- [14] Quora (2016) Unity 3D Retrieved from <https://www.quora.com/What-is-unity-game-engine>
- [15] Rockwell, Ken (2011) Adobe Photoshop CS5 Retrieved from www.kenrockwell.com/adobe/photoshop-cs5.htm
- [16] Schuller, Daniel (2011) Game Programming: For Serious Game Creation, Course. Technology.
- [17] McShaffry & Graham (2013) Game Development Retrieved from www.gamecareerguide.com/features/529/what_is_a_game.php
- [18] Mobile Game Retrieved from www.techopedia.com/definition/24261/mobile-games
- [19] Deathhawk Two Dimensional (2D) Game Retrieved from www.giantbomb.com/2d/3015-1427/
- [20] Two Dimensional (2D) Modeling Retrieved from www.pveducation.org/pvcdrom/characterisation/2d-modeling
- [21] Artificial Intelligence (AI) Retrieved from <http://searchcio.techtarget.com/definition/AI>
- [22] Iterative (Incremental Model) Retrieved from www.tutorialspoint.com/sdlc/sdlc_iterative_model.htm
- [23] Hides et al. (2014) Mobile Application Rating Scale (MARS) Retrieved from <http://eprints.qut.edu.au/71733/>
- [24] Abella et al (2016) Development of “Bright Pupils”: An Edutainment Android Game Application, Lyceum of the Philippines University – Cavite
- [25] Dalag et al (2016) Bayan ni Juan: A 3D Philippine Historical site M-Learning
- [26] Autriz et al (2016) Pinoy: An Android Game Application, Lyceum of the Philippines University – Cavite
- [27] Azuma et al (2016) Pearl of the Orient Tales: Philippines’ Famous Folktales Three Dimensional (3D) Mobile Game Application, Lyceum of the Philippines University – Cavite
- [28] Bawalan et al (2016) AJOO!: An E-Learning Android Application for Pre-schoolers, Lyceum of the Philippines University – Cavite
- [29] Monzon et al. (2016) Maestra: A Mobile Learning Android Application for Beginner Reader in Filipino, Lyceum of the Philippines University – Cavite
- [30] Datu et al (2014) Integration of a Three-Dimensional design using unreal development kit to the development of a single player “Sepak Takraw”, Computer Game
- [31] Almazan et al (2014) Pipeth Larong Pinoy: 3D Game Application with online multiplayer system, Lyceum of the Philippines University – Cavite

- [32] Dimaano et al (2014) Batang Juan: An Educational Software for Presenting Philippine Values among Filipino Children Retrieved from www.research.uic.edu.ph/ojs/index.php/cloud/article/view/674
- [33] Barlis et al (2014) Jump without Hesitation: A 2D Android Phone Game Application Based on a Traditional Luksong Tinik Retrieved from www.research.uic.edu.ph/ojs/index.php/cloud/article/view/697
- [34] Delingero et al (2014) Flop em' Up: A 3D Game Application Based from the Traditional Filipino Tumbang Preso Game Retrieved from <http://research.uic.edu.ph/ojs/index.php/cloud/article/view/700>
- [35] Colinares (2014) An Enhanced Interactive Filipino-Based Role Playing Game for Storytelling Retrieved from <http://research.uic.edu.ph/ojs/index.php/cloud/article/view/701>
- [36] Damala, Areti (2009) Edutainment Games for Mobile Multimedia Museum Guidance Systems: A Classification Approach Retrieved from <http://cedric.cnam.fr/fichiers/RC1829.pdf>
- [37] Genuino et al. (2013) The Development of Filipino Mobile Learning Made Easy, Lyceum of the Philippines University- Cavite
- [38] Farmer, Ben (2016) Parents' smart phones harming children's ability to hold conversation, say teachers Retrieved from <http://www.telegraph.co.uk/education/2016/05/09/parents-smartphones-harming-childrens-ability-to-hold-conversation/>
- [39] K to12 Gabay Pangkurikulum, Araling Panlipunan, Baitang 1 –10 Retrieved from <https://www.deped.gov.ph/>
- [40] Application to Supplement Student Learning, Edutopia (2015), as cited from <http://www.edutopia.org/pdfs/guides/edutopia-mobile-learning-guide.pdf> Retrieved from <https://www.smores.com/amehk-elementary-science-apps>.
- [41] Savvidis, Pano, February 18, 2016 Benefits of Using Technology in the Classroom, Retrieved from <https://www.webanywhere.co.uk/blog/2016/02/top-6-benefits-technology-classroom/>
- [42] Roy, Samuel, August 26, 2017, Benefits of Using Mobile Apps in Education, Retrieved from <https://elearningindustry.com/mobile-apps-in-education-5-benefits>