Alpas ng Kasaysayan: A 3D Adventure Game about the Philippine Heroes

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Abstract: **The purpose of this project is to provide excellent entertainment and encourage the younger generation to learn more about major and pivotal events in Philippine history. This study is a third person point of view desktop application; a 3D game designed to educate and entertain the younger generation. The application developed is supported in Windows operating system only. The study develops an adventure game that implemented a 3Dperspective view using the Unity 3D application for the game engine, C# for the programming language, Blender and Adobe Photoshop for creating 3D objects and user interface. A mixed method was used in the study and a pre-survey distributed to a total of 34 individuals. The majority of the participants preferred the application to be implemented as a desktop game. Functionality and compatibility tests were used as test cases. ISO 25010 standard was used for the evaluation which included ten IT experts, thirty end-users and two Social Science teachers. The PC Game Application received positive feedback from respondents. The Compatibility and Functionality test conducted by 5 IT Experts yielded scores ranging from 97.30% to 100%. The Evaluation Test, which involved IT Experts, End Users, and Social Science teachers, received an overall mean score of 3.56 and a standard deviation of 0.22, indicating it was considered "Highly Acceptable." Evaluators found the performance satisfactory, with clear visibility, easy navigation, and intended functionality.**

Keywords: **Philippine History, 3D Game, Desktop, Adventure Game, National Heroes.**

I. INTRODUCTION

In today's society, video games are one of the most popular forms of entertainment for the young generation with 90% of them playing video games of any kind through computer, console, or mobile games (Anderson & Jiang, 2018). According to Oppenheimer Funds (2018), video games are generating plenty of revenue than TV, music and flicks did, the gaming industry's sales are growing at an annual rate of 10.7% while different kinds of entertainment are seeing reductions (TV revenue dropped by 8% last year). The fastest increase is seen in a number of the newer markets, like China, where game sales are increasing by 14% annually. The increase within the popularity of gaming created opportunities for the investors where before, games adapted Hollywood movies but now, Hollywood movies adapted video games for instance, Uncharted, Assassin's Creed and Resident Evil.

According to Tan (2018), the explanations why the young generation hate history are because they find it boring; they think that History is simply about dead people; they think that it's just memorization of individuals, places and dates; they think it's just text reading; and that they think that History isn't relatable and think that they're going to not use it in their lives.

In order to respect the ancestors and the nation itself, it needs to teach future generations about significant and crucial events in Philippine history. Creating an imaginative and adventurous game that tells the tale of Philippine culture and nation which can be learned and enjoyed by playing is the most practical and interesting method that the younger generation today

can appreciate and show interest. Playing this adventure game develops leadership skills, the ability to act quickly, patience, and the capacity to handle unanticipated circumstances. Understanding Philippine History strengthens the sense of nationality, shapes their sense of self, and prevents them from thinking in colonial terms. This game will introduce Philippine History through a game in order to assist young Filipinos in becoming more familiar with it. Filipinos would benefit from this game, especially the younger generation who are more accustomed to utilizing electronic devices than books and the like.

The proposed project aims to help the young Filipinos specifically aged 7 to 24 familiarize themselves with Philippine history by playing the national hero in that specific time period through the use of a video game. The proposed game will align to accounts of famous Philippine national heroes as a foundation for the story and theme of the game. This game will be beneficial mainly to Filipinos, especially younger generations since they are more used to using modern methods of obtaining information such as electronic gadgets than traditional methods such as reading a history book.

The game will be built using the Unity Platform, which has its own game engine. The 3D asset models will be created or modified using Blender 3D software. It will be a 3D platformer game with the help of C# as a programming language. The game will be playable on the Windows Platform, specifically Windows 10. The player will be the young Filipinos and the game will run as an Executable file and can be downloaded.

The game setting will be based on the Philippines. For the content, it will be Single player, up to 3 heroes to choose from, and original cutscenes based on the Philippine history to fully immerse the player. All the references such as books and information about history will be validated by history experts and by using a valid and official history book for the k-to-12 curriculum.

The proposed game will not cater to other historical events and characters that are not included in the development of the game. The proposed game will not cater to other historical events that happened in other countries. The proposed game will be only limited to 3 heroes which are Lapu-Lapu, Jose Rizal, and Andres Bonifacio.
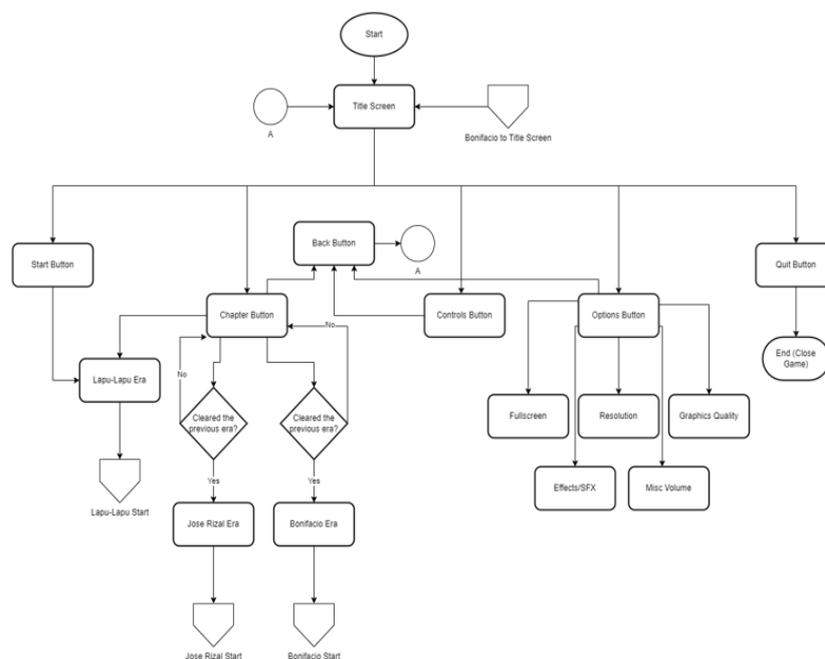
II. METHODOLOGY

Fig. 1. Program Flowchart for Title Screen of Alpas ng Kasaysayan

Shown in figure 1 is the Program Flowchart for the title screen of Alpas ng Kasaysayan. The user will see the title screen and the main menu with different buttons, the start button where the user can play the game through Lapu-Lapu era first, chapter button which the user can choose among three heroes' era if they finished it all, Controls, Option to adjust the resolution, graphics quality, the effects and music volume and the Quit button.
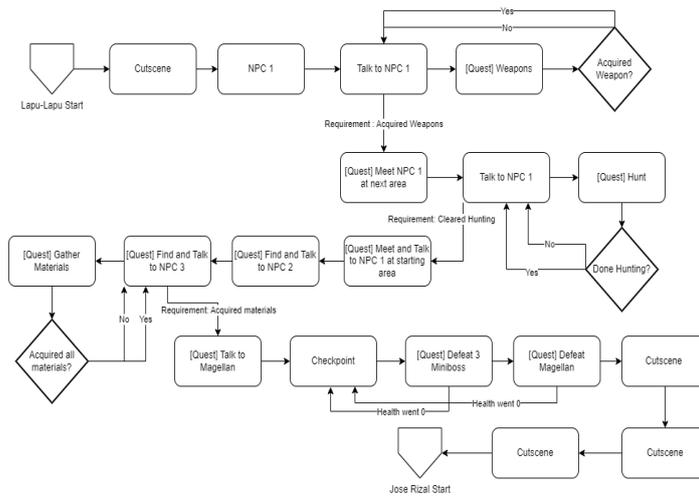
Fig. 2. Program Flowchart for Lapu-Lapu

Shown in Figure 2 is the Program Flowchart for Lapu-Lapu. The user will start the game and it will show first a cutscene showing the place of Lapu-Lapu's era and he wakes up then the game will start. The user will go through the first NPC to talk and acquire a weapon that serves as the first quest. After acquiring weapons, the user will meet the NPC at the next area and will hunt at least 5 animals. After hunting the user will go back to the starting area and meet NPC1. The user will find and talk to NPC2 and 3 to gather materials. Next quest is to talk to Magellan and after that it will serve as a checkpoint and the user will need to defeat 3 enemies to proceed and fight Magellan. After defeating Magellan, it will show cutscenes and the user will proceed to Rizal's era.
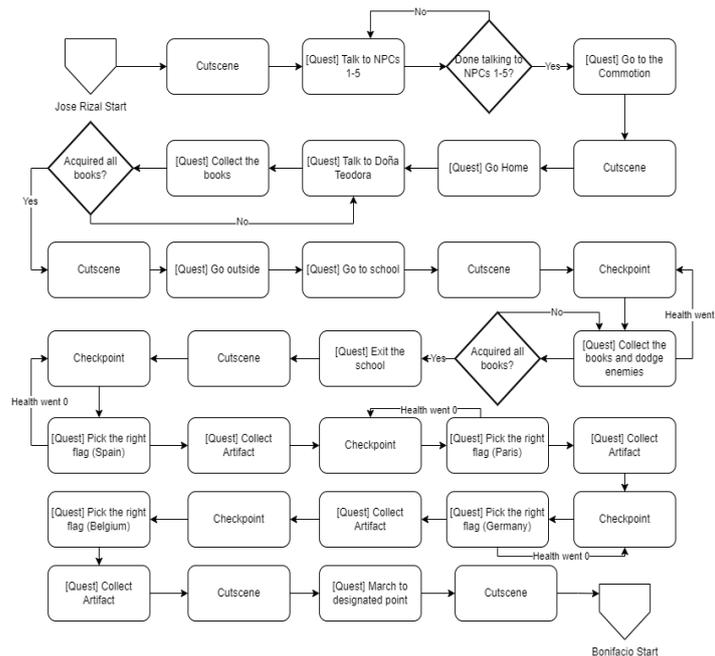

Fig. 3. Program Flowchart for Jose Rizal

Shown in Figure 3 is the Program Flowchart for Jose Rizal. It will show a cutscene at the beginning then the user will find and talk to 5 NPCs as the first quest. After, the user will go to the front of the church and there will be a cutscene and next is to go home. The next quest is to talk to Doña Teodora and collect the books and another cutscene that shows Rizal growing up and then going to school. The user will collect 8 books and avoid enemies to finish the quest and exit the school. It will show another cutscene that Rizal will go to different countries to study, and it is part of the next quests also to drive the plane and pick the right flag like Spain, Paris, Belgium and Germany. After finishing every quest in a different country, the user will collect every artifact. It will show a cutscene and go to the next designated area then Rizal will die.
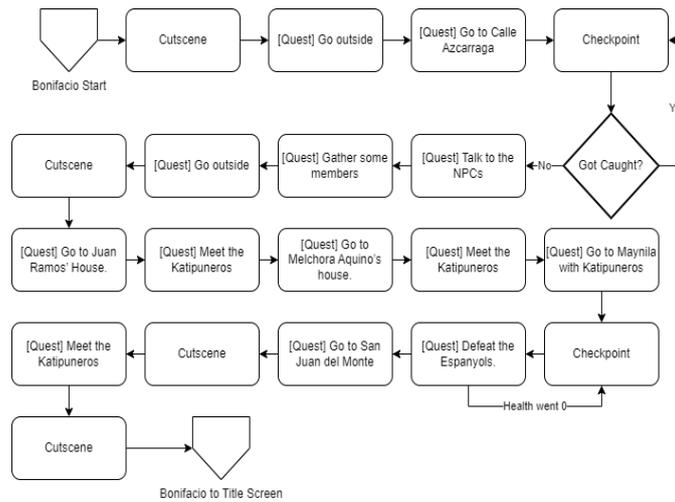
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Fig. 4. Program Flowchart for Bonifacio

Shown in Figure 4 is the Program Flowchart for Bonifacio. The user will go to Calle Azcarraga and avoid enemies. Next quest is to talk to NPCs to gather members and it will show a cutscene that Bonifacio met Emilio Jacinto. Afterwards, Bonifacio will meet the Katipuneros at Ramos and Aquino's house. The user will need to defeat the Espanyol in Manila and go to San Juan del Monte then it will show a cutscene that Katipuneros are successful in their invasion in different places.

Evaluation

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

Fig. 5. Likert Scale

Score	Interpretation
3.26 - 4.00	Highly Acceptable
2.51 - 3.25	Acceptable
1.76 - 2.50	Fairly Acceptable
1.00 - 1.75	Unacceptable

Fig. 6. Scoring System

Table 2 shows the levels of acceptability of the software. From "1.00" to "1.75" represents "Unacceptable", which means that the system has failed to carry out its main functions. "1.76" to "2.50" represents "Fairly Acceptable", it means that the system has carried out some functions but lacks consistency to function well. From "2.51" to "3.25" represents "Acceptable", which means that the system has carried out almost all functions. And from "3.26" to "4.00" represents "Highly Acceptable", it means that all functions have been achieved and the system is working smoothly.

Evaluation Procedure. This discusses the step-by-step process of actual evaluation.

1. An evaluation form has been prepared for the evaluation of the game application.

2. The evaluation form was distributed to the evaluators by sending a link or providing a hard copy in person, consisting of ten (10) IT experts, two (2) social science teachers, and thirty (30) end users.

3. Depending on the availability of the evaluators, the developers either demonstrated the game application via video, phone, or in person.

4. The evaluators tested the application and evaluated it accordingly.

5. The evaluation forms were collected.

6. The results were tallied and analyzed.

III. RESULTS AND DISCUSSION

Fig. 7. Main Menu of Alpas ng Kasaysayan

In Figure 7, the Main Menu has 6 buttons in the first install and open of the application, and after playing, when you restart the game, it displays 7 buttons; Start to play the game; Chapter for the selection of three heroes; Controls for guidelines in hero movement; Options for adjusting the resolution and volume, and a Quit button to exit the game.

Fig. 8. Chapters of Alpas ng Kasaysayan

Figure 8 shows the Chapters consist of three heroes from the era of Lapu-Lapu, Jose Rizal and Andres Bonifacio.

Fig. 9. Terminology of Alpas ng Kasaysayan

Figure 9 shows the terminology used in the game with its description.

Fig. 10. Controls of Alpas ng Kasaysayan

Figure 10 shows the Controls to guide the users on the movement of heroes.

Fig. 11. Options of Alpas ng Kasaysayan

In Figure 11, options display the adjustment of resolution, graphics quality, and music volume.

Fig. 12. Save Game of Alpas ng Kasaysayan

Figure 12 shows the Save Game option to save your checkpoint place and has a 3 slot.

TABLE 1: TEST RESULTS USING THE COMPATIBILITY TEST

Test Respondents	Pass	Fail	Test Criteria	Percentage
IT Expert 1	3	0	3	100%
IT Expert 2	3	0	3	100%
IT Expert 3	3	0	3	100%
IT Expert 4	3	0	3	100%
IT Expert 5	3	0	3	100%

Table 1 displays the test results using compatibility tests from five (5) IT Experts. It shows that from all IT Experts tests, the application runs 100 percent in Windows 8, 10, and 11.

TABLE 2: TEST RESULTS USING THE FUNCTIONALITY TEST

Test Respondents	Pass	Fail	Test Criteria	Percentage
IT Expert 1	37	0	37	100%
IT Expert 2	37	0	37	100%
IT Expert 3	36	1	37	97.30%
IT Expert 4	37	0	37	100%
IT Expert 5	37	0	37	100%

Table 2 displays the test results using functionality tests from five (5) IT Experts. It shows that the performance and features of the game are working 100 percent as intended. IT expert number 3 has one fail in tests due to the game automatically loading the player without the splash screen due to the speed.

TABLE 3: EVALUATION RESULT FROM THIRTY (30) END-USERS

Criteria	Mean	SD	Interpretation	Rank
Functional Suitability	3.81	0.42	Highly Acceptable	1
Performance Efficiency	3.66	0.56	Highly Acceptable	6
Compatibility	3.77	0.50	Highly Acceptable	2
Usability	3.71	0.55	Highly Acceptable	4
Reliability	3.68	0.56	Highly Acceptable	5
Maintainability	3.71	0.52	Highly Acceptable	3
Portability	3.66	0.56	Highly Acceptable	6
Average Mean and Standard Deviation	3.72	0.52	Highly Acceptable	

Table 3 displays the evaluation results from thirty (30) end-users. The criterion of functional suitability is ranked 1 with a mean of "3.81" followed by Compatibility with a mean of "3.77" and Maintainability with a mean of "3.71". The lowest criteria are Performance Efficiency and Portability, with a mean of "3.66". The total Average Mean and Standard Deviation are "3.72" and 0.52," respectively. The total interpretation of the table is Highly Acceptable. The criterion of security has been omitted due to its not being relevant to the application. The reason the Functional Suitability is the highest is because the evaluators believed that all the features and functions had been accomplished. While the reason for Performance Efficiency and Portability being the lowest are because the application can sometimes use a lot of resources to run and it can only run on one platform, which is the Windows PC respectively.

TABLE 4: EVALUATION RESULT FROM TEN (10) IT EXPERTS

Criteria	Mean	SD	Interpretation	Rank
Functional Suitability	3.7	0.47	Highly Acceptable	1
Performance Efficiency	3.6	0.50	Highly Acceptable	3
Compatibility	3.65	0.49	Highly Acceptable	2
Usability	3.57	0.56	Highly Acceptable	6
Reliability	3.5	0.60	Highly Acceptable	7
Maintainability	3.58	0.49	Highly Acceptable	4
Portability	3.57	0.50	Highly Acceptable	5
Average Mean and Standard Deviation	3.57	0.52	Highly Acceptable	

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Table 4 highlights the results of the evaluation from ten (10) IT Experts. The highest criterion is Functional Suitability with a mean of "3.7" followed by Compatibility with a mean of "3.65" and Performance Efficiency with a mean of "3.6". The lowest criterion is Reliability with a mean of "3.5". The Average Mean and Standard Deviation is "3.57" and "0.52" respectively, with a total interpretation of Highly Acceptable. Security has been omitted again due to it being irrelevant to the application. The highest criterion is Functional Suitability because the IT Experts saw that all the functions and features has been achieved in the application. The lowest criterion is reliability because the IT Experts believe that the application has a tendency to run sluggish and slow at times.

TABLE 5: EVALUATION RESULT FROM TWO (2) SOCIAL SCIENCE TEACHERS

Criteria	Mean	SD	Interpretation	Rank
Functional Suitability	3.33	0.52	Highly Acceptable	2
Performance Efficiency	3.33	0.52	Highly Acceptable	2
Compatibility	3.25	0.5	Acceptable	4
Usability	3.33	0.65	Highly Acceptable	3
Reliability	3.5	0.53	Highly Acceptable	1
Maintainability	3.5	0.53	Highly Acceptable	1
Portability	3.33	0.52	Highly Acceptable	2
Average Mean and Standard Deviation	3.40	0.53	Highly Acceptable	

Table 5 shows the overall result of the evaluation of two (2) Social Science teachers. Maintainability and Reliability are tied as the highest criterion based on the results with 3.5 mean and 0.53 standard deviation. The reason that Maintainability and Reliability are the highest is because the respondents believed that the system is effective and efficient in modifying itself based on the hardware specifications of the game. The respondents also believed that the system is reliable due to the application being stable at all times. The lowest criterion is Compatibility, for which it scored 3.25 with a 0.5 standard deviation, which is acceptable. This is due to the fact that the game is not compatible with other hardware such as controllers. Overall, the average mean is 3.40 with a standard deviation of 0.53, which is interpreted as Highly Acceptable. The teachers have also given comments, such as adding more information through labels for certain individuals and places in the game that would facilitate easy reference for the player.

Table 6: Overall Evaluation Result from thirty (30) end user, ten (10) IT experts, and two (2) Social Science teachers

Criteria	Mean	SD	Interpretation	Rank
Functional Suitability	3.76	0.45	Highly Acceptable	1
Performance Efficiency	3.63	0.55	Highly Acceptable	5
Compatibility	3.71	0.50	Highly Acceptable	2
Usability	3.65	0.56	Highly Acceptable	4
Reliability	3.63	0.57	Highly Acceptable	6
Maintainability	3.67	0.52	Highly Acceptable	3
Portability	3.61	0.55	Highly Acceptable	7
Average Mean and Standard Deviation	3.67	0.53	Highly Acceptable	

Table 6 shows the overall result from thirty (30) end users, ten (10) IT experts, and two (2) Social Science teachers. Functional Suitability is the highest criterion with a mean of 3.76; this is due to the fact that all of the features and functions are working and have been implemented into the system. While the lowest criterion is Portability with a mean of 3.61, this is due to the fact that the application can only be installed and played on a Windows platform as of now. The total Average Mean and Standard Deviation of the table are 3.67 and 0.53, respectively. The final interpretation is highly Acceptable.

IV. CONCLUSION

"Alpas ng Kasaysayan" is developed to provide learning experiences and student engagements, which makes the subject more engaging. The project developed is based on the book, story and heroes, and it includes the following features: Hero Era selection and Quests. "Alpas ng Kasaysayan" was created to make history more fascinating for kids to learn and to be utilized as a more interactive teaching tool for younger generations or students and teachers. The game was developed according to its objectives, features, and functions, and it works as intended and has easy navigation. It is a 3D game, and the map design is appropriate to Philippine History for a better experience with trivia and cut scenes in every Hero Era: Lapu-Lapu, Jose Rizal, and Andres Bonifacio. The players will experience different game mechanics like combat and collecting items, and by having a quest system, they will be guided in the game. The project has accomplished the following objectives: design the game with features such as Single player, cut scenes, three heroes, a quest system, a 3-dimensional game, map design, low poly design, loading chapters, combat and collecting mechanics, and skipping cut scenes. The game was created using Unity 3D as the development platform and C# as the backend, where it will run on Windows. The system is tested using functionality and compatibility tests and evaluated using ISO/IEC 25010.

REFERENCES

[1] Abidin, M. K. Z., & Ismail, A. (2021). Developing a 3D Action-Adventure Game Called "Code - E" for Learning C++ Function Codes. Journal of Information and Communication Technology in Education, 2(1), 45-56. https://ojs. upsi.edu.my/index.php/JICTIE/article/view/6128/3242

[2] Agapito, J., Manahan, D. M. A., Moreno, Ma. M. L., Beraquit, J. I., & Herras, I. Y. (2020). Development and Field Testing of a Narrative-Centered Digital Game for English Comprehension. Ateneo de Manila University. https://archium.ateneo.edu/education- faculty-pubs

[3] Agcaoili, Fornasidoro, Martos, Saunar, & Villaflores. (2018). Who Are You?: A Bullying Awareness PC Game in 3D Environment for Windows.

[4] Agustin, A. J., Benedicto, J. P., Metrillo, J. M., & Rom, P. A. N. (2018). Chronicles of Bakunawa: Filipino Folklore Mythical Creature Game.

[5] Alyami, H., Alawami, M., Lyndon, M., Alyami, M., Coomarasamy, C., Henning, M., Hill, A., & Sundram, F. (2019). Impact of Using a 3D Visual Metaphor Serious Game to Teach History-Taking Content to Medical Students: Longitudinal Mixed Methods Pilot Study. JMIR Serious Games, 7(3), e13748. https://doi.org/10.2196/13748

[6] Anderson, M., & Jiang, J. (2018). Teens, Social Media & Technology 2018. Pew Research Center. https://www. pewresearch.org/internet/2018/05/31/teens-social-media- technology-2018/

[7] Bodwell, L., Jacobson, C., Moriarty, B., & Zizza, K. (2022). GeoBlade: An Audio-Driven Action-Adventure Game. Worcester Polytechnic Institute. https://digital.wpi.edu/concern/student_works/3j333567v?locale=en

[8] Britannica. (2022). Adobe Illustrator | Definition, History, & Facts. Encyclopedia Britannica. https://www.britannica.com/technology/Adobe-Illustrator

[9] Bulaon, Clemente, Delas Alas, Hinayon, & Mañalac. (2019). C# AKO: A 3D Adventure PC Game in C# Programming.

[10] Buttice, C. (2021, October 20). What Is C++ Programming Language? Techopedia. https://www.techopedia.com/definition/26184/c-plus-plus-programming-language

[11] Cerda, C. M. C. (2021). Towards a "Filipino" Video Game: Teaching Filipino Culture and Identity for Video Game Development. Todigra Journal, 5(3),1-10. https://doi.org/10.26503/todigra.v5i3.122

[12] Chand, M. (2020). What Is C#. C# Corner. https://www.c-sharpcorner.com/article/what-is- c-sharp

[13] Claudio, L. E. (2018). Jose Rizal: Liberalism and the Paradox of Coloniality.

[14] Computer Hope. (2022). What Is a Game? Computer Hope. https://www.computerhope.com/jargon/g/game.htm

[15] Dionio, Domalaon, Resterio, & Sarinas. (2019). MARAGTAS: A 3D Pre-Colonial Philippines Inspired Real-Time Strategy Game on PC.

[16] Dizon, Erenio, Gatdula, Perea, & Salamera. (2018). Dakila: A Visual Adaptation for PC. Finnan, S. (2018). Educational Game for Forestry: Creating Unity 3D Game Äkräs Mini-Game Development.

[17] Flores, K. M. A., Namoca, J. H. R. (2021). Mga Alingawngaw Sa Mactan: Isang Pagdalumat Sa Mga Alingasngas Tungkol sa Bayaning Lapulapu.

[18] Francisco, K. N. B., Concepcion, J. D., Mojica, A. R., & Montes, S. A. B. (2019). Philippines First: An Edutainment 3D Game for Android Mobile Platform Using Separating Axis Theorem (SAT) Algorithm.

[19] FutureLearn. (2022). National Heroes of the Philippines. FutureLearn. https://www.futurelearn.com/info/futurelearn-international/national-heroes- philippines

[20] Gao, Y., Liu, C., Gao, N., Khalid, M. N. A., & Iida, H. (2022). Nature of Arcade Games. Entertainment Computing, 41, 100469. https://doi.org/10.1016/j.entcom.2021.100469

[21] Hamilton, T. (2022). What Is Functional Testing? Types & Examples. Guru99. https://www.guru99.com/functional-testing.html

[22] Hamilton, T. (2022a). Agile Methodology: What Is Agile Model in Software Testing? Guru99. https://www.guru99.com/agile-scrum-extreme-testing.html

[23] Hamilton, T. (2022b). What Is Functional Testing? Types & Examples. Guru99. https://www.guru99.com/functional-testing.html

[24] Hartmann, T. (2020). What Is Blender (Software)? – Simply Explained. All3DP. https://all3dp.com/2/blender-simply-explained/

[25] Hemmendinger, D. (2022). Computer | History, Parts, Networking, Operating Systems, & Facts. Encyclopedia Britannica.

[26] Hosch, W. L. (2018). Electronic Adventure Game. Encyclopedia Britannica. https://www.britannica.com/topic/electronic-adventure-game