Research Article

The Development of Polymedia Adventure Game As a Digital Promotion Media for Campus Orientation

Yeni Nurhasanah, Deddy Stevano H. Tobing, and Yuyun Khairunisa

State Polytechnic of Creative Media, South Jakarta, Indonesia

Corresponding Author: Yeni Nurhasanah; email: nurhasanah_yeni@polimedia. ac.id

Abstract.
The increasing number of study programs is of course commensurate with the support of the facilities and infrastructure owned by the Creative Media State Polytechnic campus. These facilities were built to support both academic and non-academic activities. This research aims to develop the first 3D game as a digital promotional media orientation on the introduction of the Polimedia campus. Games are a digital medium that continues to develop, especially during the 2019 Covid pandemic. Game is a combination of multimedia and interaction that has proven successful in attracting user attention compared to other digital media. This research was developed with the following stages, namely initialization consisting of game idea research. Research on appropriate game genres, pre-production, production which consist of programming and modeling, and testing including functional testing and testing on users who have the potential to use this game for validation. Based on the data obtained, the overall value of positive perceptions is 70.68%, while negative perceptions weigh 29.32%. This percentage shows that from a user perspective, the game being developed meets user expectations and its objectives. This game is quite capable of motivating users to play and gain a learning experience, exploring campus in a fun way.

Keywords: development, game, promotion, campus, orientation

1. Introduction

Creative Media State Polytechnic, better known as POLIMEDIA is the only State Polytechnic in the Special Capital Region of Jakarta which is under the auspices of the Ministry of Education, Culture, Research and Technology. Polymedia, which is a restructuring of Pusgrafin (Indonesian Graphic Center), is increasingly developing here. The study programs at Polymedia now consist of D3 and D4 levels. The number of study programs currently recorded at PD DIKTI is 20 study programs consisting of 14 Diploma III level study programs and 6 Diploma IV level study programs. For many study programs, the challenges, and costs of promoting these study programs are becoming greater. In response to these needs, effective and efficient digital media should be developed to assist promotional activities and orientation of study programs at POLIMEDIA.

The promotional media used must of course be interesting media that can be used by the target audience. The promotional media developed should contain elements of fun and entertainment but convey a message to promote the study program. The most effective promotional media in this case is to use games. Figure 1 showed that The gaming market increased significantly during the COVID-19 pandemic. Research from the New zoo site regarding the gaming market in 2021 shows a quite significant increase [1] .
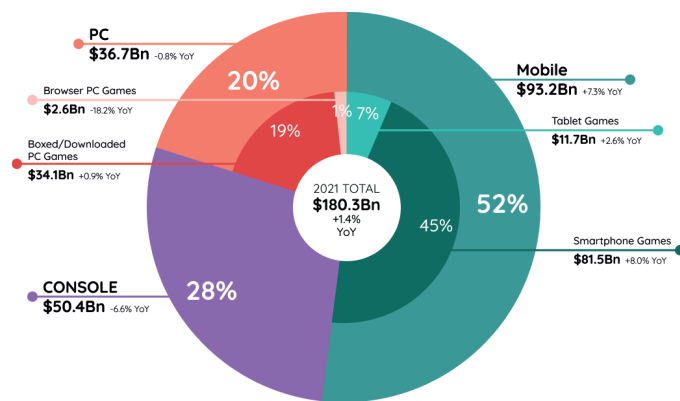

Figure 1: Global Game Market [1].

Games are a combination of multimedia and interaction. Game users are increasing, especially during the pandemic. This can be an opportunity to use games as a promotional medium for prospective students as well as introduce Polymedia products, which are polytechnics based on entrepreneurship and the creative industry, of course, they must always upgrade the abilities of their educators to be able to adapt to the needs of society. Prospective students currently under 18 years of age belong to Generation Z, known as the digital generation. Generation z is a generation that likes technology, is flexible, intelligent, and very tolerant of cultural differences [2] Gen Z is very proficient in using smartphones and has grown up with the sophistication of computer technology. so this game is very suitable to be used as a promotional medium for the target audience who often use games as an entertainment medium.

Games are a cultural phenomenon, so the definition of games continues to evolve along with changes in the surrounding culture [3]. Games are designed of course to be played by the players. Games have developed from traditional to games played using digital devices, so we know video games. Video games are computer programs designed to entertain that can be used through various media such as game consoles, computers, or smartphones. The evolution of video games began in 1950 and became known among the public [4]. Viewed from mathematics, a game can be described in one of three ways: in extensive form, normal, or characteristic function [5].

Game-based campus orientation promotional media provides an interactive and immersive experience with users. The activities built into the game will take the user towards a defined goal. The challenges given; the visual presentation that is close to the real world will make users feel the sensation of being on campus. Users can explore the campus using a controller according to the platform aimed at developing this game. Research conducted [6] showed that participants who played the simulation game, namely Sakura School Simulator, found that the behavior presented by the characters in the game was able to be imitated and influenced the behavior of the players. The experience in the school simulation game gained from playing the game influences the behavior of the players. The players copy, imitate and absorb very effectively the information conveyed by the developers of the games they play.

The development of a 3D game to introduce the Malang State University campus environment has produced a media game with a file size of 174 MB with two modes, namely Road Tour and Time Race starting from the environment, buildings, and existing facilities. Alpha tests or testing were carried out and gave results that the game could run quite well even though it was not perfect. From the beta testing results, it was found that when the game was run on a computer with general specifications with very low-quality settings, the game was able to run very well [7]. The development of games to serve as a campus introduction media has also been carried out at the Muhammadiyah Sidoarjo University (UMSIDA) campus. The game developed is a Game Controller with a simulation game genre that provides an experience of recognizing building objects, places, and rooms on UMSIDA Campus II. This game also conveys information about the UMSIDA campus [8].

Based on this background, the author and the team from the game technology study program intend to develop a game aimed at introducing orientation to the POLIMEDIA campus environment. In developing this game, the role of various talents is needed to support the creation of quality games with support from the Business World and Industrial World who have collaborated with the game technology study program.

2. Material and Methods

This research aims to develop a game that can be used as a promotional medium for campus introduction orientation. The research stages were carried out by following the game development life cycle methodology. The first thing to do in this research is initialization. At the initialization stage, preliminary research is carried out. Preliminary research related to the game idea to be developed. The research idea was inspired by

problems encountered on the Polymedia campus and the research output is expected to be able to answer these problems. After finding a problem, the next step is to research the type or genre of game that is suitable to be part of the solution to the problem found. The second stage is the pre-production stage. At this stage, the game concept is designed. The output of this activity is a Game Design Document. This stage is the result of initialization which is documented in a game design document that includes player design, target audience, game genre, mechanics and gameplay, level design, assets and resources, story, storyboard, onion design, and features that will be developed in the game. The third stage is the production stage. During the production stage, the process of creating assets and implementing the game design into the game program is carried out. Game programming in this research includes a character controller, collision system, artificial intelligence, map system, and user interface. Functional testing is carried out iteratively at the production stage. After the production stage is complete, user testing is then carried out to validate the product against the design. From the test results, data was obtained regarding games that had been developed using a questionnaire. The data from the questionnaire is processed using a Likert scale and then conclusions are drawn regarding the games that have been developed.

3. Results and Discussions

The research resulted in the first version of a polymedia game. In this initial development, the features developed were a campus map feature, a character selection feature, a conversation feature between player and non-player characters, a mini-quest feature in the game technology. study program, and a campus exploration feature.

Figure 2 shows the pop up for character controllers. The navigation pop-up has been successfully developed. The game being developed is built into the PC platform. Therefore, the control character used is the WSDA button. The enter button is used to display conversation text with NPCs. The tab button is used to display the POLIMEDIA campus map. The shift button is used to provide running movement to the player. The space button is used for the jump character. This selection is in accordance with general habits that apply to PC-based games so that by using these generalities, players will not experience confusion in controlling or navigating characters and navigating in the game.

Figure 3 shows the Game User Interface. The user interface is made simple. This simple theme was chosen because this is a serious game developed for a target age of 15 -20 years.
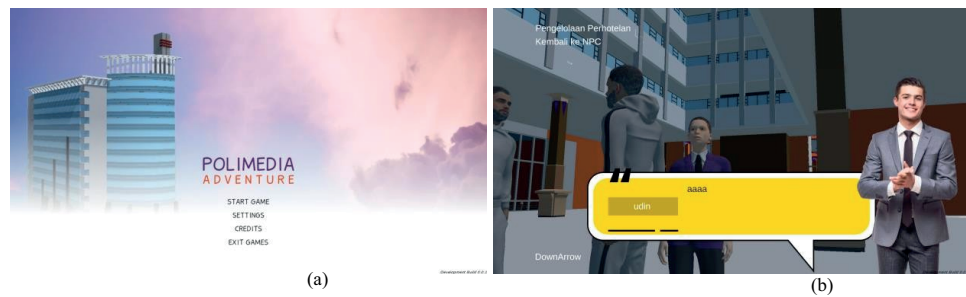
Figure 2: Character Controllers.

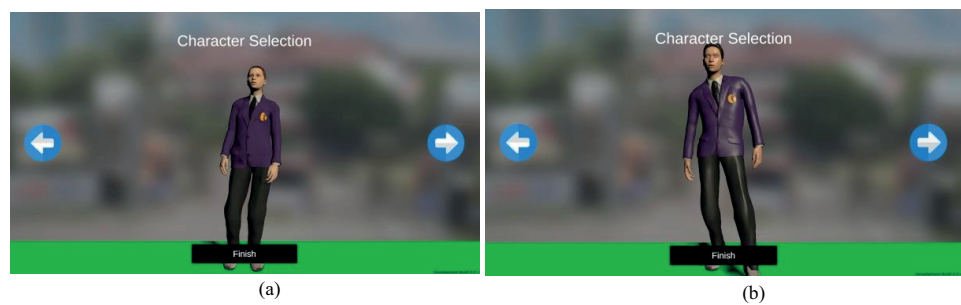**Figure** 3: (a) Home User Interface (b) conversation.

Figure 4: (a) Female Character (b) Male Character.

Figure 4 showed the character selection feature. The character selection feature has been successfully developed. Users can choose characters according to the user's gender. The ornaments on the characters are adapted to the attributes of Polymedia students which are displayed with characters wearing Polymedia alma mater jackets. It is hoped that the introduction of alma mater jackets through this character can make players know from the start the identity of Polymedia students based on their alma mater jackets.
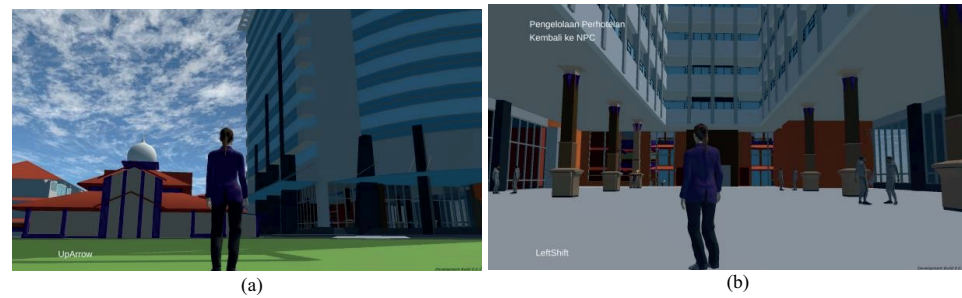
Figure 5: (a) outdoor exploration (b) indoor exploration.

Figure 5 shows exploration features. The next feature developed is the campus exploration feature. The buildings created can be explored by players to find out what the buildings on the Polymedia campus are like, whether used for learning activities or other academic activities. Artist 3D developed this building asset using Blender software and it has been successfully integrated into the game. After testing, the buildings that have been built can be explored by players so that players can find out the condition or atmosphere of their study place.

Figure 6: (a) conversation player with NPC (b) sample mini quest.

Figure 6 shows the conversation and mini-game features. The conversation feature with NPCs has been successfully developed. Players can find out the information they need by approaching the NPC and the system will display a pop-up dialogue. The information displayed in the pop-up can be in the form of instructions that help players to solve problems they encounter in the game.

Figure 7 shows the mini-game feature. The mini-game feature has also been successfully developed. In this initial development, the minigame that was developed was a game that aimed to introduce the game technology study program. The strategy used to introduce this game technology study program is that players are given a quest to look for devices related to game development.

Figure 8 shows the map's feature. The next feature that has begun to be developed is the map. This map was created to make it easier for players to see the campus layout in

Figure 7: (a) Mini game feature (b) exploration to find the answer of mini quest.

Figure 8: 2D Polimedia's map.

2 dimensions. Apart from that, the system also makes it easy for players to go to a place by accessing this map feature. This map feature is still in the development process.

Next, data is taken from target users who have the potential to use this game using a questionnaire. Users download games and play them using their respective laptops. The number of users involved in this user testing was 19, n = 19. Data from user testing results can be explained as follows.

From the questions contained in the table, we can explain them as follows:Are the in-game navigation features working properly? Of the 19 respondents, 14 answered yes and 5 answered no, this means getting a good response of 73.3% and a bad response of 26.3%. Did you find it easy to navigate the character? Of the 19 respondents, 14 answered yes and 5 answered no, this means getting a good response of 73.7% and a bad response of 26.3%. Is the game concept interesting to play for new students? Of the 19 respondents, 17 answered yes and 2 answered no, this means getting a good response of 89.5% and a bad response of 10.5%. With the example of the mission in-game technology for introducing study programs, is it enough to help new students

_{TABLE} 1: User Testing Questions.

Question	Yes	No
Are the in-game navigation features working properly?	14	5
Did you find it easy to navigate the character?	14	5
Is the game concept interesting to play for new students?	17	2
With the example of the mission in-game technology for introducing study programs, is it enough to help new students recognize and prepare for the needs that must be prepared in each study program?	14	5
Do you think this game design meets its objectives?	15	4

recognize and prepare for the needs that must be prepared in each study program? Of the 19 respondents, 14 answered yes and 5 answered no, this means getting a good response of 72.2% and a bad response of 27.8%. Do you think this game design meets its objectives? Of the 19 respondents, 15 answered yes and 4 answered no, this means that they got a good response of 78.8% and a bad response of 21.1%. In your opinion, who is the target user of this product? Judging from the target age for this game, 47.4% are 15-20 year olds. The percentage is the largest compared to other age ranges and this is in accordance with the target users of this game, namely 15-20 years.

Based on this data, the overall value of positive perceptions is 70.68%, while negative responses have a weight of 29.32%. This percentage shows that in terms of user experience the game being developed meets user expectations and is in line with its objectives. This game is quite capable of motivating users to play and gain learning experience, exploring campus in a fun way.

The results of this study are in accordance with the results conducted by [9] which showed that stimulation of cognitive processes through serious games had a statistically significant impact on learning outcomes, although factors such as enjoyment, flow of experience, or self-perceived benefits in playing did not have a significant impact on the acquisition of knowledge about work. Campus orientation games also show that alternative reality games can elicit positive emotions in new empowerment program students and help them create friendships at university. This impacts their sense of connectedness, a factor considered important for success in higher education. The results of this research are also in line with the results that the implementation of games in campus introductions provides an alternative means for new students to get to know

the surrounding environment [10]. Games have also been implemented to improve the quality of learning in universities in the health sector. Research [11] shows that during the Campus Game, there was a 4.9% increase in access to intranet pages containing information about Quality and Patient Safety and an 8% increase in access to Hospital Policies and Procedures.

4. Conclusion and Recommendation

The conclusion of the research on game development for campus orientation was that the game developed was sufficient to meet the user's expectations for getting to know the campus. so that this game can be continued in its development according to its aim, namely as a promotional medium for introducing campus orientation. Users get the experience of getting to know the campus and also getting to know the study program based on the mission they are carrying out. The game design is in accordance with its objectives and also in accordance with the intended user target. It is quite easy for users to navigate the characters and missions in this game, which is enough to recognize and prepare the needs that must be prepared by new students according to their respective study programs. The design of this game is in accordance with its aim, namely as a game-based promotional media for campus introduction orientation and also this game is interesting to play for new students.

The recommendation for this research is because the score has not yet reached 80%, which means it can still be improved, so to improve the user experience it is necessary to review the appearance of this game again so that it is more attractive according to the target user, namely users aged 15 to 20 years so that users will be more comfortable. and feel at home learning to recognize the campus by playing this game.

Acknowledgments

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