Cyberspace: Jurnal Pendidikan Teknologi informasi
Volume 8, Nomor 2, Oktober 2024, hal. 61 - 68
ISSN 2598-2079 (print) | ISSN 2597-9671 (online)

PENGEMBANGAN GAME SINGLE PLAYER " COOKING CHAOS" BERBASIS ANDROID

Meivi Kartikasari[1], Aulia Wahida Hilmi[2]

[1]Departement of Information System, Sekolah Tinggi Informatika & Komputer Indonesia, Malang, 65146, Indonesia
[2]Departement of Information Technology, Sekolah Tinggi Informatika & Komputer Indonesia, Malang, 65146, Indonesia
E-mail: Meivi.k@stiki.ac.id

Abstract

Cooking is the process of preparing food from its raw state until it is ready to be served, using heat to make it easier for the body to digest. However, nowadays, many teenagers lack an understanding of how to cook due to limited practice and a tendency to buy food from outside, which is considered more convenient. High levels of activity outside the home also contribute to the decreasing frequency of cooking among teenagers. Additionally, the convenience offered by food delivery applications, coupled with various attractive promotions, further contributes to the decline in interest in cooking. To address this issue, an educational single-player game application based on Android was developed, utilizing Unity 3D as the game engine and Blender for 3D object modeling. This application is designed to provide a more detailed cooking experience by offering 11 recipes that users can learn. Moreover, there is a mini-game in the form of a quiz to test users' understanding of the cooking process. Testing results show that this application successfully increased users' interest in learning to cook by 80.3%.
Keywords: *Cooking; Educational Game; Unity 3D;, Blender; Single Player Game*

Abstrak

Memasak merupakan proses pengolahan bahan makanan dari kondisi mentah hingga siap disajikan, dengan penerapan suhu yang membuat makanan lebih mudah dicerna oleh tubuh. Namun, pada masa kini, banyak remaja yang kurang memahami cara memasak, dikarenakan minimnya praktik serta kecenderungan untuk membeli makanan di luar yang dianggap lebih praktis. Tingginya aktivitas di luar rumah juga berperan dalam menurunnya frekuensi memasak di kalangan remaja. Selain itu, kemudahan yang ditawarkan oleh aplikasi pesan antar makanan, ditambah dengan berbagai promo menarik, turut berkontribusi dalam penurunan minat memasak. Untuk mengatasi permasalahan ini, dikembangkan sebuah aplikasi game edukatif single player berbasis Android yang memanfaatkan teknologi melalui Unity 3D sebagai game engine dan Blender untuk pemodelan objek 3D. Aplikasi ini dirancang untuk memberikan pengalaman memasak yang lebih mendetail, dengan menyediakan 11 menu masakan yang dapat dipelajari. Selain itu, terdapat mini game berbentuk kuis untuk menguji pemahaman pengguna terhadap proses memasak. Hasil pengujian menunjukkan bahwa aplikasi ini mampu meningkatkan minat belajar memasak pada pengguna hingga 80,3%.
Kata Kunci: Memasak; Game Edukatif; Unity 3D; Blender; Game Single Player

1. Introduction

Cooking is the process of preparing food from its raw state to a ready-to-serve condition, where heat application is used to make the food easier for the body to digest [1]. Meanwhile, according to Sihite, cooking is the process of applying heat to food ingredients to transform them into tastier, more digestible food and to kill germs [2]. Nowadays, many teenagers do not know how to cook due to a lack of practice and the tendency to buy food outside, which is more convenient. The busy lives of teenagers, who are active in various sectors and have high engagements outside the home, make cooking a less frequent activity [3].

The rapid development of the culinary industry is driven by the culture and attitude of society, where people are getting used to consuming food and drinks outside the home. This phenomenon is worsened by the current lifestyle, where the tendency to purchase food, both offline and online, is increasing, supported by attractive promotions provided by food delivery apps [4]. Additionally, the availability of food delivery services contributes to the decline in teenagers' interest in cooking. According to research conducted by Populix, involving 3,138 respondents from Generation Z (aged 11-26) and Millennials (aged 27-42), 57% reported buying food more frequently than cooking themselves [5].

Teenagers who are not taught to be independent from an early age may lack the time to practice essential life skills, even though adolescence is a period of rapid physical and mental development. If this development is not nurtured positively, these teenagers may not acquire essential life skills. Therefore, a medium that can help teenagers train their life skills, particularly in cooking, is necessary. The selection of a target audience aged 12 and above is based on the importance of adolescence, as stated by psychology expert Elizabeth B. Hurlock in the journal by Adikoesoemo et al., 2018 [3].

Based on the problems outlined, there is a need for a medium that can serve as a solution, namely by developing a cooking game for teenagers. Thus, a game with a culinary theme called *Cooking Chaos* was created. The content of *Cooking Chaos* provides information on basic cooking techniques, the introduction of ingredients, how to process them, and time management.

2. Research Methodology

The development process of the game *Cooking Chaos* adapts the Game Development Life Cycle (GDLC) method, which is a game development method that prioritizes the interactive aspect. GDLC consists of six development phases, starting from the initiation or concept creation phase, followed by pre-production, production, testing, beta testing, and release [6]. The GDLC stages can be seen in Figure 1.

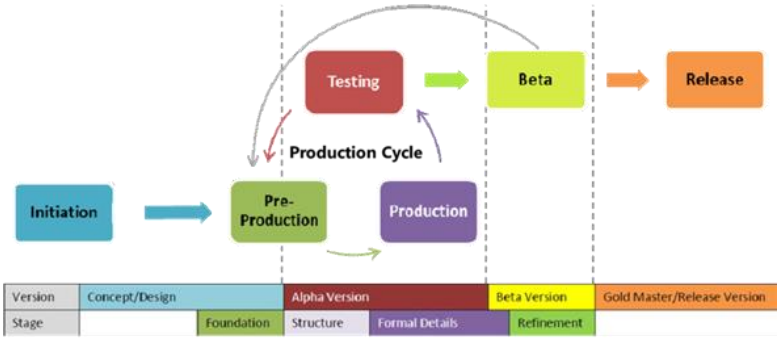

Figure 1. Game Development Life Cycle Diagram

During the initiation process, several concepts were developed for the *Cooking Chaos* game, including the adapted menu items, target users, application scope, and system goals. The next stage was pre-production, which involved creating the game prototype and core gameplay. To support the creation of the game prototype, data was collected during the pre-production stage through interviews, observation, and literature review. The interview data collection technique was conducted by distributing preliminary research to 31 students at SMP Pesantren Nurul Falah to identify various elements needed to design the *Cooking Chaos* game. The observation stage involved directly examining several previous games with similar themes. Furthermore, a literature review was conducted, which is a method of obtaining information by using journal sources or scientific articles that must align with the issues and objectives being researched.

In the process of developing the core gameplay, a use case diagram was required to illustrate the scope of the system under discussion and how the system interacts with subsystems and external systems [7]. In the *Cooking Chaos* game application, this diagram highlights key features such as Play, Mini Game, Choose Character, Recipe & Tutorial, Highscore, and more. The use case diagram can be seen in Figure 2.

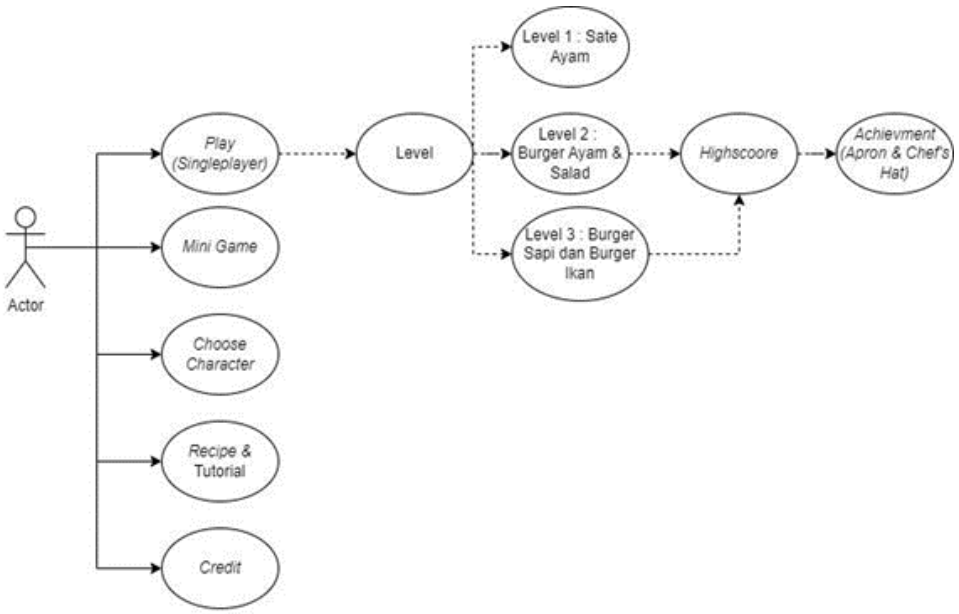

Figure 2. Cooking Chaos Use Case Diagram

The production stage is the core process following pre-production, where assets and source code are created. The next step is testing, which is used to evaluate the functionality of the *Cooking Chaos* game application that has been developed. This stage employs Equivalence Partitioning, a black box testing method, to ensure that users will not encounter any errors while using the system [8].

Beta testing is conducted after the initial testing phase, involving direct user testing through several testers. If the testers find any deficiencies in the application, it will be sent back to the pre-production stage for further processing.

The final stage is release, if the application meets the requirements after the black box and beta testing, *Cooking Chaos* will be officially released to users.

3. Results and Discussion

3.1 Results

The result of this study is a single-player game application called *Cooking Chaos*, an Android-based game that can serve as an alternative for teenagers to learn how to cook the most popular dishes based on the preliminary research conducted earlier. The player can start the game by selecting a menu from the main menu, as shown in Figure 3.

Figure 3. Main Menu

In the main menu, a player can choose Play, Mini Game, Choose Character, Quit, Recipe, Credit, Apron, or Chef's Hat.

A player can choose the menu to be cooked, whether it is the variation of chicken satay or the variation of burger, as shown in the Figure 4.

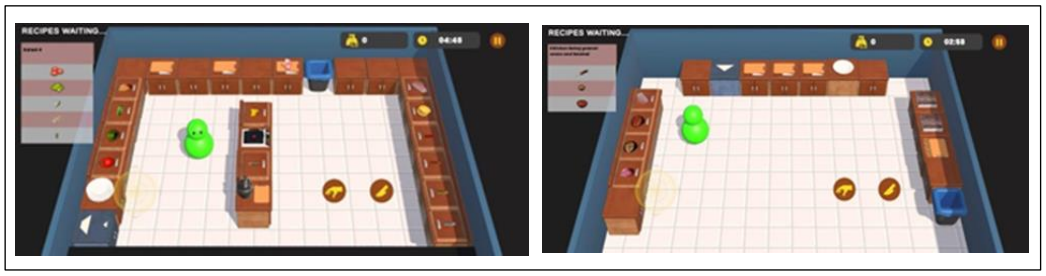

Figure 4. The cooking display for chicken satay and chicken burger

A player can cook variations of the Beef Burger and Fish Burger menus. These menus appear randomly ordered, and the player can serve them through the serving counter, as shown in Figure 5.

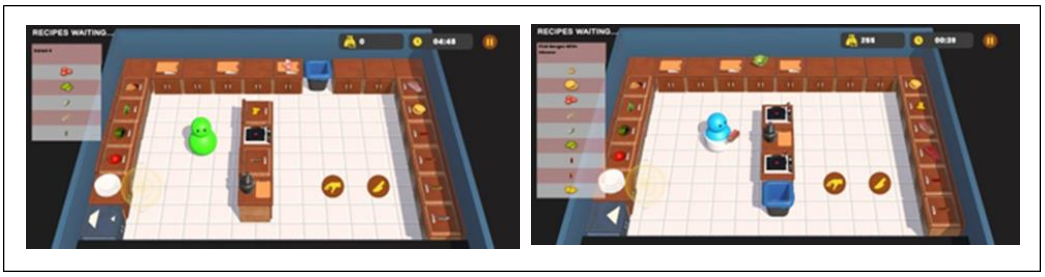

Figure 5. The cooking display for beef burger and fish burger

When a player selects the Mini Game button, the system will display questions related to the dishes in the game, as shown in Figure 6.

Figure 6. Mini Game / Quiz

Players can choose a character from the Choose Character menu, as shown in Figure 7. The selected character can be used throughout the game.

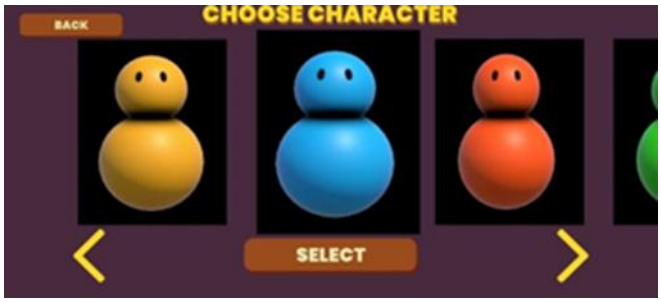

Figure 7. Character selection

Players can read the gameplay guide and recipes by accessing the '?' icon. There are three main recipes: Chicken Satay, Salad, and Burger. In addition to serving as a guide during gameplay, the listed recipes can also be applied in real life as they are based on the Homemade Beef Patty Burger recipe [9], Madura-style Chicken Satay [10], and Salad [11], all of which have been recreated by Cookpad users. These recipes are shown in Figure 8.

Figure 8. Recipe

3.2 Testing Result

This section explains the testing conducted on the developed product. Software testing can be carried out in a real environment or by using the black box method. he results of the testing on the users are shown in Table 1.

TABLE 1 SYSTEM TESTING

Type of Testing	Testing Scenario	Result
Launcher Testing	Click on the Cooking Chaos game icon	Yes
Play Button Testing	Click on the play icon	Yes
Mini Game Button Testing	Click on the mini game icon	Yes
Answer Choice Button Testing	Click on answer choice icons a, b, c, d	Yes
Choose Character Button Testing	Click on the choose character icon	Yes
Quit Button Testing	Click on the quit icon	Yes
Level 1 Button Testing	Click on the Level 1 icon	Yes
Level 2 Button Testing	Click on the Level 2 icon	Yes
Level 3 Button Testing	Click on the Level 3 icon	Yes
Joystick Button Testing	Player moves the joystick	Yes
Take-Drop Button Testing	Click on the take-drop icon	Yes
Cut-Stab-Chop Button Testing	Click on the cut-stab-chop icon	Yes
Pause Button Testing	Click on the pause icon	Yes
Menu Button Testing	Click on the menu icon	Yes
Apron Button Testing	Click on the apron icon	Yes
Chef's Hat Button Testing	Click on the chef's hat icon	Yes
Gameplay Testing	Player moves the chef character	Yes
	Character interacts with objects	Yes
	Character places cooking ingredients on the Clear Counter	Yes
	Character takes ingredients from the Container Counter	
	Character cuts, stabs, and chops ingredients on the Cutting Counter, Skewer Counter, and Chopper Counter	Yes
	Character grills and fries ingredients on the Stove Counter and Grill Counter	Yes
	Character takes a plate from the Plates Counter and arranges the ingredients on the plate	Yes
	Character disposes of cooking ingredients in the Trash Counter	Yes

Type of Testing	Testing Scenario	Result
	Character places the plate with food on the Delivery Counter	Yes
	Character completes the order	Yes
	Player dresses or undresses the character in an Apron and/or Chef's Hat	Yes
	In the mini game, the player selects answers from the presented quiz questions	Yes

In addition to system testing, it is also necessary to gather feedback from the user's perspective regarding the Cooking Chaos game to determine whether it meets the objectives for which it was created or not. Therefore, an online survey was conducted through Google Forms, distributed to 66 respondents from various age groups with different activities. The survey results indicate that 80.3% of users feel that playing Cooking Chaos has helped them improve their cooking skills in real life, as shown in the Figure 9.

Figure 9. Survey Results

4. Conclusion

The conclusion that can be drawn from the implementation and discussion of the Android-based Cooking Chaos game is that the Cooking Chaos cooking simulation game has been successfully developed and serves as an enjoyable alternative for users to learn cooking. Based on the results of the black box testing using the equivalence partitioning method, it can be concluded that all menus and functions of the game system operate well as expected. Additionally, 80.3% of users feel that it has helped them improve their cooking skills in real life.

References

[1] H. Minantyo, Dasar-dasar Pengolahan Makanan (Food Product Fundamental). Yogyakarta : Graha Ilmu, 2011.

[2] R. Sihite, Dasar-dasar Tata Boga. Surabaya: Surabaya. SIC, 2000.

[3] R. Adikoesoemo, C. A. Artawan, and A. T. Wahyudi, "Perancangan Buku Ilustrasi Memasak Tingkat Pemula Bagi Perempuan Usia 15-17 Tahun," J. DKV Adiwarna, vol. 1, no. 12, p. 10, 2018.

[4] D. Aulianida, S. I. Liestyasari, and S. R. Ch, "Mediatisasi Layanan Pesan Antar Makanan di Indonesia Melalui Aplikasi Go-Food," Islam. Commun. J., vol. 5, no. 1, pp. 114–124, 2020.

[5] D. Alessandrina, "Populix: Mayoritas Gen Z dan Milenial Suka Beli Makan di Luar," 31 Mei 2023. Accessed: Nov. 11, 2023. [Online]. Available: https://www.marketeers.com/populix-mayoritas-gen-z-dan-milenial-suka-beli-makan-di-luar/

[6] A. Zahmi and M Aryadinata Zaiyen, "APPLICATION OF THE GDLC (Game Development Life Cycle) METHOD IN BUILDING AN EDUCATIONAL GAME APPLICATION INTRODUCING HOME EQUIPMENT FOR EARLY CHILDREN," J. Sci. Res. Dev. , vol. 5, no. 2, pp. 945–953, 2023, [Online]. Available: https://idm.or.id/JSCR/inde

[7] S. Pranoto, S. Sutiono, Sarifudin, and D. Nasution, "Penerapan UML Dalam Perancangan Sistem Informasi Pelaporan Dan Evaluasi Pembangunan Pada Bagian Administrasi Pembangunan Sekretariat Daerah Kota Tebing Tinggi," Surpl. J. Ekon. dan Bisnis, vol. 2, no. 2, pp. 384–401, 2024, [Online]. Available: https://qjurnal.my.id/index.php/sur/article/view/866

[8] M. Sholeh, I. Gisfas, Cahiman, and M. A. Fauzi, "Black Box Testing on ukmbantul.com Page with Boundary Value Analysis and Equivalence Partitioning Methods," J. Phys. Conf. Ser., vol. 1823, no. 1, 2021, doi: 10.1088/1742-6596/1823/1/012029.

[9] A. Hanifa, "Homemade Beef Patty Burger," 15 April 2024. Accessed: Apr. 15, 2024. [Online]. Available: https://cookpad.com/id/resep/17012951-homemade-beef-patty-burger?ref=search&search_term=burger

[10] F. Kitchen, "Sate Ayam khas Madura," 15 April 2024. Accessed: Apr. 15, 2024. [Online]. Available: https://cookpad.com/id/resep/17096964-sate-ayam-khas-madura?ref=search&search_term=sate ayam madura

[11] Yayaaa, "Salad Sayur Wijen Sangrai," 15 April 2024. Accessed: Apr. 15, 2024. [Online]. Available: https://cookpad.com/id/resep/17176553-10-salad-sayur-wijen-sangrai-diet?ref=search&search_term=salad+sayur