Journal of Educational Sciences
Journal homepage: https://jes.ejournal.unri.ac.id/index.php/JES
P-ISSN 2581-1657
E-ISSN 2581-2203

Designing an Educational Game Based on Role Playing Game for The Subject of Algorithms and Programming

Celine Aloyshima Haris*, Ahmed Jhordy
Faculty of Education and Teacher Training, Mulawarman University, Samarinda, 75123, Indonesia

ARTICLE INFO

Article history:

Received: 24 Aug 2025
Revised: 31 Aug 2025
Accepted: 10 Oct 2025
Published online: 23 Oct 2025

Keywords:

Algorithms and Programming
Educational games,
Role Playing Games (RPG)

** Corresponding author:*

E-mail: celine@fkip.unmul.ac.id

Article Doi:

https://doi.org/10.31258/jes.9.5.p.4765-4778

This is an open access article under the CC BY-SA license.

A B S T R A C T

The rapid advancement of technology has significantly affected children's learning. Consequently, many children become absorbed in online games and feel disengaged or bored with study. Moreover, monotonous teaching methods further contribute to this disengagement. In response to this need, this research aims to develop an RPG-based educational game designed to boost students' interest and facilitate their understanding of Algorithm and Programming material. To achieve this, the research employs the MDLC method using a waterfall model. In the testing phase, the main menu and gameplay functionality received a score of X = 1, which was categorized as "Feasible". Media experts' assessments scored 93.7% and the material expert assessment scored 93.3% for usability testing, each of which fell into the "Very Suitable" category. The student satisfaction reached 79.9% in the "Satisfied" category. Based on these findings, the RPG-based educational game is considered suitable for use as learning media, thereby increasing students' motivation to learn. Student responses to the RPG-based educational game were positive, as indicated by questionnaires given to students. On average, students described the RPG-based educational game as interesting, easy to understand, and helpful in grasping Algorithms and Programming concepts.

1. Introduction

Education in the digital age plays a major role in shaping character and developing students' potential. Rapid advances in digital technology present significant challenges for education. Maintaining students' interest in learning has become harder. Today, students grow alongside digital technology and have learning styles very different from previous generations (Sujana et al., 2021). Learning games can be used as a medium to increase students' interest in learning. Educational games serve both formal and non-formal education (Hidayatulloh et al., 2020). The development of educational games makes it easier to attract students' interest.

Educational games must contain learning materials that are relevant to the learning process so that they can facilitate student learning (Fortuna & Hermawan, 2023). The use of technology-based learning media in delivering learning materials will make students more interested, thereby making the learning process more effective (Aulia et al., 2025).

According to a survey by the Indonesian Internet Service Providers Association (APJII) in 2024, 35.97% of Generation Z (aged 12-27) in 2024 use the internet to access games. Online games attract children through visuals, themes, graphics, and storylines. As technology develops, more children become addicted to online games. In short, the more appealing a game's theme and storyline, the more fans it gains. An online game is a multiplayer game connected via the internet (Rompas et al., 2023). As the popularity of online games grows among Generation Z, it is important to consider how these trends can influence educational approaches. Given the popularity of online games, game-based learning can bridge the gap between students' digital preferences and learning needs. However, Setiawan & Santosa (2021) stated that RPG edugames attract student interest due to engaging audio, visuals, motion, and AI. Developing RPG learning games is promising, as it combines narrative, exploration, and learning in one interactive platform. Games can make players feel happy and comfortable, so they are accepted by society (Pahrizal et al., 2022).

Information technology education plays a strategic role in equipping students with 21st-century skills. These skills include programming, data management, and an understanding of information technology. Furthermore, as technology develops, students must also master critical thinking, communication, collaboration, and creativity. These competencies should be integrated with learning to improve student abilities (Mahmudah et al., 2024). Therefore, this shows the importance of Information and Communication Technology (ICT) in learning to achieve 21st-century skills. As times change, the use of technology in education becomes inevitable (Yunita & Nirawana, 2025). Digital transformation has changed how the younger generation interacts with information and technology. This is clear at Samarinda Junior High School 7, where most students show strong interest in games like Mobile Legends, Free Fire, and open-world games. These games succeed in attracting students' attention with attractive visuals, strong narratives, and reward systems. Many students are interested in open-world games or exploration. This creates a need for games that combine educational elements, such as finding and assembling pieces of learning material. Teachers must create a learning atmosphere that attracts students and makes technology use in learning interactive and relevant to today's needs (Prayogo et al., 2024). Good interaction between teachers and students in class makes learning easier and more interesting for students, emphasizing the vital role of teachers (Pratama et al., 2024).

At Samarinda Junior High School 7, programming lessons for 7th grade students have not been implemented optimally due to a lack of supporting tools to help students participate in learning activities. Interviews with grade VII ICT teachers at Samarinda Junior High School 7 reveal that programming is viewed as too difficult for students at this level, so lessons focus on Microsoft Word instead. Although

programming will be taught in grade IX, teachers remain concerned about students' abilities to understand the material. Observations indicate students lack enthusiasm for ICT lessons, but their interest increases with game-based learning methods like Quizziz. Some students expressed interest in programming and hacking and suggested forming a study group. Currently, Samarinda Junior High School 7 lacks a specific program and has limited computer facilities and lab space. The Academic Deputy Principal confirmed students feel bored due to repetitive teaching methods, highlighting the need for innovative approaches to improve engagement.

An RPG game is a type of game that requires players to play and develop a character, allowing them to act according to their own will or follow the game's storyline, which enables players to feel like they are the characters in the game (Ardiansyah et al., 2023). Fantasy RPG games are set in imaginary worlds, such as magical realms, fairy worlds, kingdoms, monster worlds, or even modern-day war worlds. To reach the end of the story, players must level up. They do this by completing missions or hunting monsters, enemies, or villains that are available or appear along the way. Strategy RPG games require strategic thinking. Players must decide what equipment is needed to fight a particular monster or opponent, which heroes are best to use in certain battles, and what resources are necessary to carry out the story. These are major factors in the development of the game's story. Several specific features distinguish RPG games from other games. The main characteristics found in RPG games are: Character Development, Storyline, Non-Playable Characters (NPC), Characters, Missions, and Open World.

Interviews with seventh-grade students at Samarinda Junior High School 7 revealed their enthusiasm for using games in learning, finding them fresher and more engaging than traditional methods. Building on these findings, this research aims to develop an RPG-based educational game that helps students grasp Algorithms and Programming while boosting interest in these subjects. Additionally, the research assesses the game's feasibility and examines student satisfaction. In the game, students complete quests, collect educational materials, and acquire simple Python code through challenges, then compile these into a complete set, reinforcing their understanding through interactive play.

2. Methodology

This research uses the MDLC (Multimedia Development Life Cycle) method, which outlines steps for building multimedia projects, and follows the waterfall model, a process where each stage is completed before proceeding to the next. MDLC divides development into sequential stages: designing (planning the structure and visuals), developing (creating the actual media elements), testing (evaluating for errors), and implementation (launching the project) (Hernanda & Aji, 2024). To clarify, the waterfall model specifically organizes software work into six stages: analysis (defining project needs and requirements), design (planning the structure and components), implementation (building the working product), testing (examining for bugs or issues), and maintenance (resolving or improving after launch) (Wahid, 2020). In the analysis stage, system requirements are identified. In

the design stage, the flow and components of the game are detailed, including diagrams (drawings or charts that illustrate system flow and logic), storyboards (visual sequences depicting gameplay progression), buttons (clickable features that trigger actions), and backgrounds (visual settings for the game). Once the design is finalized, implementation is completed using RPG Maker MZ version 1.9.0, a software for creating role-playing games. Testing involves collecting feedback through questionnaires, observations, or interviews to identify issues or areas needing improvement. Maintenance then addresses any problems found during or after testing, such as fixing bugs or refining features. The waterfall model can be seen in Figure 1 below.

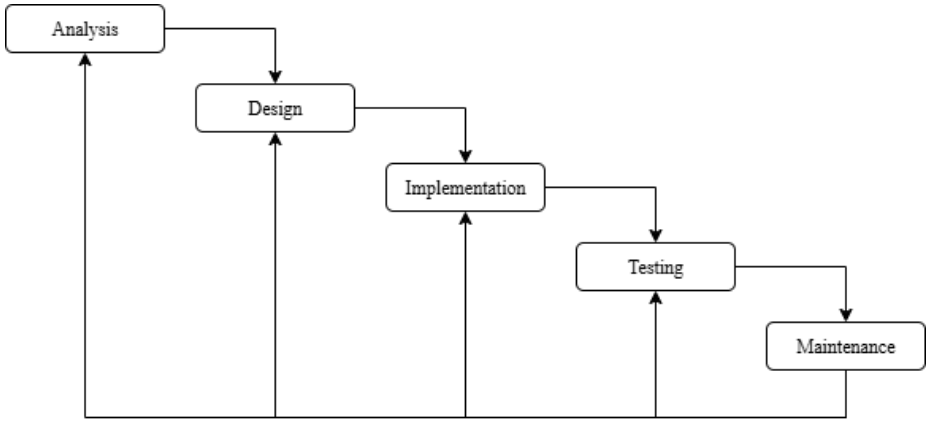

Figure 1. Waterfall Model

This research used RPG Maker MZ software version 1.9.0 to develop an educational game. The game was exported for use on Android devices running version 14.0 or later. It is a role-playing game created for the Algorithm and Programming subject in grade VII, with a file size of 130 megabytes. RPG Maker MZ is a game engine that is user-friendly for game development (Fitriyani & Nita, 2021). The research involved 41 seventh-grade students from Samarinda Junior High School 7, three media experts, and one subject matter expert. Game testing consisted of two stages: functionality testing, which utilized black-box testing focused on the main menu and gameplay, and usability testing, done by experts and with student satisfaction questionnaires using a 1-5 Likert scale.

Functionality Testing

Functionality is a test to measure the extent to which the functions in the system can be implemented and run as expected by the creator or designer (Noviani et al., 2020). In this context, functionality testing aims to test all functions in the educational game using black-box testing. Specifically, the testing was conducted on the main menu and gameplay aspects, with each tested three times to ensure that the corresponding system functions were working properly. To guide these evaluations, ISO 9126 provides a standard rule in software quality measurement. This standard helps define the quality, characteristics, models, and metrics in software that can be used to test, evaluate, and set quality standards for a software

product (Simatupang & Effiyaldi, 2024). The formula used to calculate functionality can be seen below, and after calculating using the formula, the result will determine whether the system is considered acceptable or not. The system will be considered acceptable if X is greater than 0.5 and close to 1 (Dermawan et al., 2025).

$$X = 1 - \frac{A}{B}$$

Explanation:
X = Functionality
A = Total number of non-functioning functions
B = Total number of functions

Usability Testing

Usability testing is a quality test that examines and assesses whether a software interface is easy to use (Noviani et al., 2020). In this research, Usability testing was conducted to validate both experts and students who utilize educational game. To assess the perspectives of these groups regarding educational games, the formula used to calculate usability is presented below (Rahmawati et al., 2022). The data obtained from the validation responses of both experts will be processed and analyzed using Microsoft Excel. Upon completion of the expert validation scoring, the results will be categorized based on a Likert scale to determine the appropriateness of the media. The Likert scale for expert suitability validation can be seen in Table 1 below.

$$\text{Score (\%)} = \frac{\text{Total Score}}{\text{Maximum Score}} \text{ x } 100$$

Table 1. Likert Scale for Expert Suitability Validation

Percentage	Category
0,20%	Very Unsuitable
21-40%	Unsuitable
41-60%	Fairly Suitable
61-80%	Suitable
81-100%	Very Suitable

Source: Kurniawati & Judisseno, 2022

Data from student responses were processed and calculated using Microsoft Excel to determine satisfaction with the educational game. To categorize student responses, students will be given a questionnaire scored with a Likert scale: strongly agree, agree, somewhat agree, disagree, and strongly disagree. Responses will be classified as positive (favorable) or negative (unfavorable). The favorable category assigns the highest score to supporting responses, while the unfavorable category gives the highest score to opposing responses (Rifandi et al., 2021). The Likert scale for student response to educational game can be seen in Table 2 below.

Table 2. Likert Scale for Student Response to Educational Game

Rating Scale	Score	
	Favorable	Unfavorable
Strongly Agree	5	1
Agree	4	2
Somewhat Agree	3	3
Disagree	2	4
Strongly Disagree	1	5

Source: Istivarati & Roesdiana, 2023

To measure student opinions regarding the object being studied, after student respondents answered according to the scores that had been previously set for each alternative answer to the student satisfaction response based on the student satisfaction instrument scoring guidelines in Table 2 above, the data that had been collected were then tabulated using the usability formula below. The data obtained from student responses will be processed and categorized into a satisfaction Likert scale to assess the level of student satisfaction with the RPG-based educational game. The Likert scale for categories of student satisfaction scores can be seen in Table 3 below.

$$\text{Score (\%)} = \frac{\text{Total Score}}{\text{Maximum Score}} \text{ x } 100$$

Table 3. Likert Scale for Categories of Student Satisfaction Scores

Percentage	Category
81-100%	Very Satisfied
66-80,99%	Satisfied
51-65,99%	Somewhat Satisfied
35-50,99%	Not Satisfied
0-34,99%	Very Dissatisfied

Source: Dari & Sellyana, 2022

3. Results and Discussion

Educational Media

The final result of this research is an educational role-playing game. It aims to help students learn the Algorithm and Programming subject in grade VII at Samarinda Junior High School 7. The game was developed using the waterfall model, consist of five stages. The main menu of the educational game is shown in Figure 2 below. The game includes a menu called “CodeEditor”. Here, students can create program code based on the material they have learned. The “CodeEditor” menu display is shown in Figure 3 below. The game also has three short essay quizzes for players to answer after studying each material. The quiz menu display is shown in Figure 4 below. Players can review what they have learned through the “Library” menu. The “Library” menu display is shown in Figure 5 below.

Figure 2. The Main Menu of the Educational Game

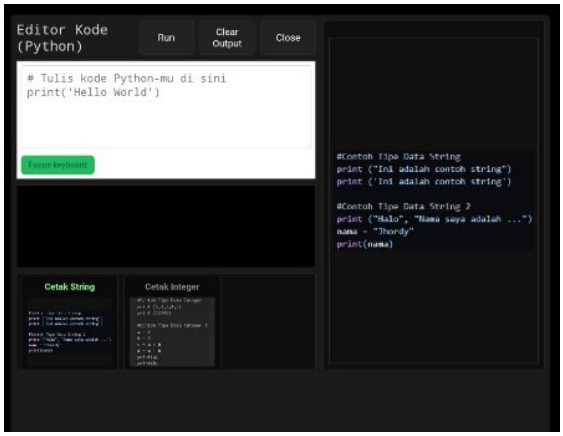

Figure 3. The "CodeEditor" Menu Display

Figure 4. The Quiz Menu Display

Figure 5. The "Library" Menu Display

Result of Functionality Testing

For functionality, the black-box testing method was employed, which was divided into two testing methods, namely main menu testing and gameplay testing. In the main menu, black-box testing was conducted to verify the correct functioning of critical user actions, including entering the game, pressing the "New Game" button, pressing the "Load Game" button, pressing the "Options" button, pressing the "Exit" button, and pressing the "Save" button. The results of the functionality research on RPG-based educational games using RPG Maker MZ in Algorithms and Programming show that the main menu testing aspect obtained a functionality value of X = 1. The results of the main menu testing can be seen in Table 4 below.

Table 4. Results of the Main Menu Testing

Aspects	Expected Results	Result 1	Result 2	Result 3
Enter the game	Display the main menu page, turn off the game background music on the main menu	Valid	Valid	Valid
Press the new game button	Display the character selection menu. After selecting a character, enter the game opening,	Valid	Valid	Valid
Press the load game button	Able to perform game loading and deletion properly.	Valid	Valid	Valid
Press the options button	Display within the game and function properly.	Valid	Valid	Valid
Press the exit button	Can save progress well.	Valid	Valid	Valid

At the same time, the gameplay testing aspect also obtained a functionality value of X = 1. These results indicate that the educational game is good in terms of the main menu and gameplay. This is because the value X = 1 exceeds 0.5 or is close to 1, meaning that the design of the role-playing game-based educational game for the subject of Algorithms has passed the functionality test. For gameplay testing, black-box methods were applied to the game screen and the navigation buttons, such as back, left, right, up, down, and A. The results of the gameplay testing can be seen in Table 5 below.

Table 5. Results of the Gameplay Testing

Aspects	Expected Results	Result 1	Result 2	Result 3
Select the game page	When the menu is clicked, it will start.	Valid	Valid	Valid
Press the back button	When the back button is clicked, the game display will return.	Valid	Valid	Valid
Press the left button	When the right button is pressed, the character will move to the left.	Valid	Valid	Valid
Press the right button	When the right button is pressed, the character will move to the right	Valid	Valid	Valid

Press the up button	When the up button is pressed, the character will move up	Valid	Valid	Valid
Press the down button	When the down button is pressed, the character will move down	Valid	Valid	Valid
Press the A button	When the down button is pressed, the character will do interaction.	Valid	Valid	Valid

Result of Usability Testing

Regarding usability, two perspectives were assessed: the evaluation by validation experts (three media experts and one subject matter expert) and the assessment by students. The media experts' assessment focused on appearance, text, images, technical operation, colors, animations, and audio in the RPG-based educational game. Media experts from the Faculty of Education and Teacher Training at Mulawarman University validated the media. The results of the media experts' validation showed a score of 93.7%, which falls into the "Very Suitable" category. The results of the media experts can be seen in Table 6 below.

Table 6. Results of the Media Experts

Media Experts	Score				
	5	**4**	**3**	**2**	**1**
Media Expert 1	13	4	0	0	0
Media Expert 2	8	9	0	0	0
Media Expert 3	14	3	0	0	0

Assessment by a subject matter expert focused on evaluating the curriculum, content, visuals, and language used in the educational game. Subject matter expert from the Faculty of Education and Teacher Training, Mulawarman University, conducted a systematic review of the materials. Each component of the material was examined to ensure its accuracy and relevance to the seventh-grade Algorithms and Programming subject, using a validation instrument. The validation result by the subject matter expert showed a score of 93,3%, which falls into the "Very Suitable" category. The result of the material expert can be seen in Table 7 below.

Table 7. Results of the Material Expert

Material Experts	Score				
	5	**4**	**3**	**2**	**1**
Material Expert 1	6	3	0	0	0

Student satisfaction was verified by forty-one students in class VIIB at Samarinda Junior High School 7 using a student response validation tool in the form of a questionnaire with a 1-5 Likert scale. From the validation results, the data were processed and recalculated using Microsoft Excel to determine student satisfaction with the educational game, resulting in a student satisfaction rating of 79.7%, which falls into the "Satisfied" category for the role-playing game (RPG) in the subjects of Algorithm and Programming. The results of students' responses can be seen in Table 8 below.

Table 8. Results of Students' Responses

Aspects	Score					Description
	5	4	3	2	1	
I am satisfied with this game.	12	25	3	0	1	*Favorable*
I feel skilled and satisfied using this game.	8	24	8	0	1	*Favorable*
I am interested in the story of this game.	13	22	5	1	0	*Favorable*
I find this game enjoyable.	20	14	7	0	0	*Favorable*
This game puts me in a bad mood.	0	1	1	24	15	*Unfavorable*
I think this game is difficult to play.	1	2	7	23	8	*Unfavorable*
I forget about my surroundings.	0	2	6	24	9	*Unfavorable*
I feel bored.	0	0	3	25	13	*Unfavorable*
I feell successful playing this game.	5	24	10	1	1	*Favorable*
I feel imaginative.	7	23	9	1	1	*Favorable*
I feel satisfied when exploring various things in this game.	16	18	6	0	1	*Favorable*
I enjoy this game.	20	17	3	0	1	*Favorable*
I feel challenged when playing this game.	2	28	9	1	1	*Favorable*
I feel very focused when playing this game.	5	19	15	1	1	*Favorable*
I feel that this is a valuable experience and am very satisfied.	7	24	9	1	0	*Favorable*
I feel disconnected from the outside world.	0	0	4	32	5	*Unfavorable*
I try hard when playing this game.	3	8	23	7	0	*Favorable*
I feel excited again.	3	26	9	3	0	*Favorable*
I feel confused when playing this game.	0	5	5	28	1	*Unfavorable*
I find this game easy to understand.	7	25	6	2	1	*Favorable*
I find this game difficult to play.	0	1	2	31	7	*Unfavorable*
I regret playing this game.	0	1	0	22	18	*Unfavorable*
I want to play this game again.	15	16	9	1	0	*Favorable*
I find it interesting.	17	13	9	1	1	*Favorable*
It makes me bored quickly.	0	0	2	24	15	*Unfavorable*

Discussion

Functionality was tested using the black-box method in two parts: the main menu and gameplay. Each was tested three times to ensure the educational game worked well. The main menu testing scored X = 1, and gameplay testing also scored X = 1. The results show the game performed well in both areas. These results indicate that the RPG-based educational game developed by researchers has met the functional criteria as described in the ISO 9126 standard. Functionality is defined as the ability of an application or software to provide functions that meet user needs. Therefore, this game can be categorized as functional because it can display available features such as the main menu, save game, load game, buttons, and navigation between menus or scenes without any obstacles or bugs.

These findings align with the research conducted by Anwar & Sukirman (2024), who developed an RPG-based educational game for learning computer systems. In their research, the functionality aspect obtained excellent results because all features worked according to the design that had been made, and no program errors were found, which reinforces that the application of RPG-based educational games as a learning medium provides good system stability because the structure of RPG-

based educational games uses precise event mechanisms. Furthermore, these results align with research by Sholichah et al. (2022), which states that the functionality aspect of the RPG-based educational game is especially relevant in the context of interactive learning. Based on the test results conducted by the researcher, RPG-based educational games in Algorithm and Programming subjects have met the functionality indicators in terms of the system. They are therefore suitable for use in teaching and learning activities.

Usability was evaluated from two perspectives: validation experts (media and material experts) and students. Media experts' assessment score of 93.7% and the material expert assessment score of 93.3% fall into the 'Very Suitable' category. This indicates that the design, navigation, and content suitability of this game meet the criteria for educational media development. Additionally, also found that RPG-based educational games for computer systems have high functional and visual suitability after being validated by experts. This similarity confirms that when developing games, it is essential to pay attention to various aspects such as design, instructions, and the interface structure of educational games. These findings align with those of Anwar & Sukirman (2024), who also found high functional and visual feasibility in the RPG-based educational game validated by experts. This reinforces the need to consider design, instructions, and interface structure when developing educational games.

The usability was assessed by the student, who measured satisfaction with the educational game, resulting in a score of 79.7%, which falls into the "Satisfied" category, indicating a positive response to the educational game. However, it is slightly lower than the expert assessment. According to the student assessment, a satisfaction score of 79.7% was obtained, which falls into the "Satisfied" category, indicating a positive response to the educational game. This finding is generally in line with Putri et al. (2024), who obtained high validity results but emphasized the importance of field testing because different conditions for implementing research can affect the user experience.

In addition, research by Sholichah et al. (2022) found that educational RPG games can increase student motivation to learn to a level of 'Very Appropriate' with an average of 95%. The study that the researchers examined obtained a student satisfaction score of 79.7% in the 'Satisfied' category, which also shows a positive response from students. Thus, the results of this research reinforce the evidence that RPG-based educational games can potentially increase student engagement and satisfaction in the learning process. Based on this comparison, it can be concluded that from the tests conducted by the researchers, the assessment score of RPG-based educational games in Algorithm and Programming subjects shows that these educational games are in the 'Highly Suitable' category based on validation by media and material experts, as well as in the 'Satisfied' category based on student satisfaction responses. Therefore, this research meets the usability indicators of suitability and satisfaction, making it suitable for use in teaching and learning activities and capable of satisfying students.

During the research process, researchers encountered several obstacles, one of which was during the game application installation process, where some students were unable to download or install the game application from the website because the security system considered applications installed from the web rather than from the Play Store to be dangerous. Therefore, even though the game application was successfully downloaded, it could not be installed on the device. Additionally, the system within the game was quite complex according to the researchers, making the game application process quite time-consuming.

4. Conclusion

This research concludes that the process of developing the RPG-based educational game on Algorithms and Programming material has yielded positive results in terms of both functionality and usability testing. In functionality testing, the RPG-based educational game falls into the "Suitable" category in terms of function, meaning that they have passed the functionality test. In usability testing, the assessment conducted by three media experts and one subject matter expert yielded excellent results, placing the RPG-based educational game in the "Very Suitable" category in terms of media and subject matter. In addition, student satisfaction levels were quite high, placing them in the "Satisfied" category. Based on these results, the RPG-based educational game is considered suitable for use as learning media, thereby increasing student motivation to learn. Student responses to the RPG-based educational game showed positive results, as indicated by the questionnaires given to students in class VIIB. On average, students stated that the RPG-based educational game was interesting, easy to understand, and helpful in understanding Algorithms and Programming material. The percentage of student responses indicates that the educational game can attract students' interest in learning, making it easier for them to understand the material on Algorithms and Programming inside the educational game.

References

Anwar, T. G. D., & Sukirman. (2024). Pengembangan Game Edukasi Dengan Genre Role Playing Game Untuk Mendukung Pembelajaran Sistem Komputer. *Jurnal Pendidikan Teknologi Informasi*, 4(1), 290–300. http://dx.doi.org/10.51454/decode.v4i1.353

Ardiansyah, Risnita, & Jailani, M. S. (2023). Teknik Pengumpulan Data Dan Instrumen Penelitian Ilmiah Pendidikan Pada Pendekatan Kualitatif dan Kuantitatif. Jurnal IHSAN : Jurnal Pendidikan Islam, 1(2), 1-9. https://doi.org/10.61104/ihsan.v1i2.57

Aulia, F. N., Areni, S., & Yudhiono, S. B. (2025). Pemanfaatan Teknologi dan Media Pembelajaran Kreatif Untuk Meningkatkan Motivasi dan Prestasi Belajar Siswa Sekolah Dasar. *Jurnal Multidisiplin Ilmu Akademik*, 2(1), 419-431. https://doi.org/10.61722/jmia.v2i1.3366

Dari, P. W., & Sellyana, A. (2022). Studi Kelayakan Kepuasan Pelanggan PAMSIMAS Bagan Keladi Berbasis Web Menggunakan Metode CSI

(Customer Satisfaction Index). *Jurnal Teknologi Komputer Dan Informasi (JUTEKINF)*, 10(02), 46–53. https://doi.org/10.52072/jutekinf.v10i2.436

Dermawan, S., Hisyam, A. A., Untoro, E. K., Butar, B. B., & Atmojo, W. T. (2025). Implementasi Software Quality Assurance Pada Website Praditainfo Menggunakan Model ISO 9126. *JITET (Jurnal Informatika Dan Teknik Elektro Terapan)*, 13(3), 1784–1798. https://doi.org/10.23960/jitet.v13i3.6592

Fitriyani, R. E., & Nita, S. (2021). Implementasi Game Edukasi "BaCovi" Basmi Covid Berbasis Android Dengan RPG Maker Engine. *Seminar Nasional Teknologi Informasi dan Komunikasi*, 4(1), 507–519.

Fortuna, N. A. D., & Hermawan, H. D. (2023). Media Pembelajaran Huruf Hijaiyah untuk Siswa Sekolah Dasar berbasis Augmented Reality. *Edumatic: Jurnal Pendidikan Informatika*, 7(1), 88–97. https://doi.org/10.29408/edumatic.v7i1.13373

Hernanda, A., & Aji, A. S. (2024). Pemanfaatan Aplikasi Augmented Reality Untuk Pembelajaran Organ Tubuh Manusia Di Sekolah Dasar. *Jurnal Teknologi Dan Sistem Informasi Bisnis*, 6(1). https://doi.org/10.47233/jteksis.v6i1.1166

Hidayatulloh, S., Praherdhiono, H., & Wedi, A. (2020). Pengaruh Game Pembelajaran Terhadap Peningkatan Hasil Belajar Pemahaman Ilmu Pengetahuan Alam. *JKTP Jurnal Kajian Teknologi Pendidikan*, 3(2), 199–206. https://doi.org/10.17977/um038v3i22020p199

Istivarati, H., & Roesdiana, L. (2023). Analisis Disposisi Matematis Siswa Pada Masa Pembelajaran Luring Setelah Pandemi Covid-19. *Jurnal Didactical Mathematics*, 5(2), 208–216. https://doi.org/10.31949/dm.v5i2.5637

Kurniawati, D., & Judisseno, R. K. (2022). Penggunaan Skala Likert Untuk Menganalisa Efektivitas Registrasi Stakeholder Meeting: Exhibition Industry 2020. *Seminar Nasional Riset Terapan*, 10(1), 142–152.

Mahmudah, F. N., Setyaningrum, W., & Faisal, M. (2024). Tren Penelitian Integrasi ICT Dalam Pembelajaran Matematika Untuk Meningkatkan Keterampilan Abad 21. *Jurnal Program Studi Pendidikan Matematika*, 13(3), 895–906. http://dx.doi.org/10.24127/ajpm.v13i3.8635

Noviani, Herdiansyah, M. I., & Diana. (2020). Analisis Kualitas Perangkat Lunak Penilaian Kurikulum 2013 Menggunakan Standar ISO/IEC9126-1:2001. *Jurnal Pengembangan Sistem Informasi Dan Informatika*, 1(1), 34–49. https://doi.org/10.47747/jpsii.v1i1.62

Pahrizal, Deslianti, D., Sonita, A., & Sumardi. (2022). Game Edukasi Ragam Budaya Indonesia Berbasis Android. *Journal of Technopreneurship and Information System (JTIS)*, 5(2), 27–32. https://doi.org/10.36085/jtis.v5i2.3676

Pratama, A., Rosita, D., & Haris, C. A. (2024). Perbangingan Model Pembelajaran Kooperatif STAD dan TGT terhadap Hasil Belajar Siswa pada Materi Perangkat Lunak di SMP Negeri 4 Kota Samarinda. *Nuris Journal of Education and Islamic Studies*, 4(2), 146–153. https://doi.org/10.52620/jeis.v4i2.76

Prayogo, M. A., Prayitno, P. P. I., Sudinugraha, T., Romisa, F., Akhyar, R. M., Always, A., & Lestari, F. P. (2024). Pelatihan Pemrograman Flutter Untuk Pengembangan Aplikasi Android Bagi Guru TIK Kota Samarinda. *Jurnal*

Pengabdian Kepada Masyarakat Nusantara (JPkMN), 6(1), 241–247. https://doi.org/10.55338/jpkmn.v6i1.1.5088

Putri, W. C., Musril, H. A., Derta, S., & Okra, R. (2024). Perancangan Game Edukasi Menggunakan Role Playing Game (RPG) Pada Pembelajaran Informatika di SMPN 2 Sungai Pua. *JATI (Jurnal Mahasiswa Teknik Informatika)*, 8(6), 11914–11921. https://doi.org/10.36040/jati.v8i6.11688

Rahmawati, T. I. N., Fajriyah, K., & Ysh, A. Y. S. (2022). Pengembangan Media Flipbook Berbasis Kearifan Lokal Kabupaten Jepara Tema 8 Subtema 3 Kelas IV Di Sekolah Dasar . *Jurnal Ilmiah PGSD STKIP Subang*, 8(1), 647–658. https://doi.org/10.36989/didaktik.v8i1.337

Rifandi, H. K., Palit, H. C., & Aysia, D. A. Y. (2021). Dampak Pembelajaran Online Secara Psikologis pada Siswa SMA. *Jurnal Titra*, 9(1), 41–48.

Rompas, Y. F., Zakarias, J. D., & Kawung, E. J. R. (2023). Pengaruh Game Online Terhadap Interaksi Sosial Di Kalangan Mahasiswa Fakultas Ilmu Sosial Dan Politik Universitas Sam Ratulangi. *Jurnal Ilmiah Society*, 3(1), 1–11.

Setiawan, M. N. P., & Santosa, A. B. (2021). Studi Literatur Edugame RPG UntukMeningkatkan Hasil Belajar Mata Pelajaran Komputer dan Jaringan Dasar. *Jurnal Pendidikan Teknik Elektro*, 10(01), 27-34. https://doi.org/10.26740/jpte.v10n01.p27-34

Sholichah, A. F., Gunarhadi, G., & Musadad, A. A. (2022). Role-Playing Game (RPG) to Increase Student's Learning Motivation. *Journal of Education Technology*, 6(4), 694–703. https://doi.org/10.23887/jet.v6i4.45471

Simatupang, J. D. J., & Effiyaldi. (2024). Evaluasi Sistem Informasi Kepegawaian Dengan Standar ISO/IEC 9126 Pada Universitas Jambi. *Jurnal Manajemen Sistem Informasi*, 9(1), 51–65. https://doi.org/10.33998/jurnalmsi.2024.9.1.1687

Sujana, I. P. W. M., Sukadi, Cahyadi, I. M. R., & Sari, N. M. W. (2021). Pendidikan Karakter Untuk Generasi Digital Native. *Jurnal Pendidikan Kewarganegaraan Undiksha*, 9(2), 518–524.

Wahid, A. A. (2020). Analisis Metode Waterfall Untuk Pengembangan Sistem Informasi. *Jurnal Ilmu-Ilmu Informatika Dan Manajemen STMIK*, 1(1), 1-5.

Yunita, E., & Nirawana, I. W. S. (2025). The Effect of Think Pair Share Learning Model on Informatics Learning Outcomesof Junior High School Students. *Cetta: Jurnal Ilmu Pendidikan*, 8(4), 1–9. https://doi.org/10.37329/cetta.v8i4.4369

How to cite this article:

Haris, C, A., & Jhordy, A. (2025). Designing an Educational Game Based on Role Playing Game for The Subject of Algorithms and Programming. *Journal of Educational Sciences*, *9(5)*, 4765-4778.