

Development of an Educational Game Visual Novel Introduction to Traditional Dance Based on Android: Case Study of Typical Dance of Lombok Island

By Helna Wardhana

Development of an Educational Game Visual Novel Introduction to Traditional Dance Based on Android: Case Study of Typical Dance of Lombok Island

Dyah Susilowati, Dian Syafitri Chani
Saputri, Abdul Rahim
Department of Information Technology
Education
Bumigora University
Mataram, Indonesia
dyah.bumigora@gmail.com,
{dian_syafitri, abdul.rahim}
@universitasbumigora.ac.id

Tomi Tri Sujaka
Department of Software Engineering
Bumigora University
Mataram, Indonesia
tomi_tri@universitasbumigora.ac.id

Helna Wardhana, Sausan Husnita,
Melati Rosanensi, Kartarina Augustin
Department of Computer Science
Bumigora University
Mataram, Indonesia
{helna.wardhana, 1901010195,
kartarina,
melati.m}@universitasbumigora.ac.id

Abstract—This research aims to produce a practical Visual Novel Game learning media. This research is development research with the Multimedia Development Life Cycle (MDLC) method, including 4 stages, namely concept, design, material collection, manufacture, testing, and distribution. The subjects in this study were elementary school students, dance teachers, and songwriters with a purposive sampling technique. The data collection instrument was a questionnaire sheet. The analysis technique uses quantitative descriptive statistics and percentages. The results of testing the functionality of the application from black box testing show the results of the Visual Novel Game learning media are appropriate. The last test on the black box using the User Acceptance Test (UAT) shows the user satisfaction with Visual Novel Game learning media with very good results. The application feasibility results show very good with a percentage of 87.76% and the usability of the application shows very good with a percentage of 90.03%. The visual novel educational game adds insight into the typical dances of Lombok Island with a score of 92%, helps students understand the meaning of the Beriuk Tinjal dance with a score of 92%, and makes learning easy and fun with a score of 92%.

Keywords—educational game, visual novel, traditional dance, android

I. INTRODUCTION

The development of technology has greatly increased over time so that the utilization of technology affects life including in education. One integration of technology is to produce visual novel game media in education to make learning interesting and interactive [1]–[3]. Visual novels are media that emphasize narrative in the game genre that focuses on interesting stories and strong characters. The storyline in visual novels follows the storyline by selecting the available icons [4]–[6].

Visual novel game as one of the creative and interactive learning media by combining game elements and narrative stories [7]. The active role taken by the player in the game affects the development of the plot and the ending of the story in making important decisions of the storyline [8]. An engaging narrative style through aesthetically pleasing visual images can make visual novel games attractive to users in improving their critical thinking, analysis, and problem-solving skills [9]. Visual novel games can improve reading skills and enrich vocabulary because users must understand

text and dialog to make the right decisions [10], [11]. This game alternative can increase learning motivation and provide an engaging learning experience for game users [12]–[14].

Visual novel game on the Android platform have had a significant impact on technological development [15]–[19]. Android is becoming a major platform with the increasing popularity of smartphones and the availability of apps in the Google Play Store for developers to release visual novels [20]–[28]. Opportunity for developers to reach a wider audience through the platform by leveraging millions of Android smartphone users around the world [29]–[34].

Android-based development through visual novel games with offers various advantages and opportunities for developers [35]–[40]. Android as an open-access platform with greater flexibility in terms of application development and distribution. Developers of media over the android platform in visual novels use developer tools such as Android Studios that test the application by using the emulator provided [35]–[41].

Relevance of visual novel game research that has been conducted on the topic of mathematics education [42], [43], biology education [44], early childhood education [45], [46], leadership education [47], oral hygiene among teens [48], literature and history [49], [50]. Previous findings show that visual novel games have been used in learning. However, there has been no research on the development of visual novel games on the introduction of typical dance of the island of Lombok.

Several other studies have developed visual novel games, such as those conducted by Kuo-Wei Kyle Lai & Hao-Jan Howard Chen [51] regarding visual games in a comparative study of the effect of VR and PC visual novel games on vocabulary learning. Furthermore, research conducted by Deli [52] regarding visual novel games in the analysis of user interfaces in English learning media with the heuristic testing method of 10 usability criteria. Then research was conducted by Jabali et al [53] on ethnomatic-based visual novel games to improve conceptual understanding of algebraic material using the ADDIE development method. Another study conducted by Anggraini et al [54] regarding visual games was to review the application of HOTS-based math game learning media. In contrast to the research above, this

research develops and determines the effectiveness of traditional Sasak Lombok dance visual novel games using the MDLC development method.

This study aims to develop a feasible visual novel game learning media on the introduction of dance typical of the island of Lombok based on android. The material displayed in the game is a dance from Lombok which is focused more deeply on the Beriuk Tinjal Dance because this dance has a meaning of gratitude, values of togetherness and the joy of the people of Lombok for the success in harvesting abundant rice.

Interactivity is an important point in the development of this video game because for elementary school children there is a combination of static and dynamic images, audio and storytelling so that each character has a sound effect so that each character in the visual novel seems alive and can speak [55], then wrapped and can be played at any time on handheld devices such as mobile phones will be more practical.

In this visual novel game, two combined genres will be applied, namely adventure and puzzle with challenging mechanisms to play with the aim that players are not bored to play this video game, and there are other mechanisms that are applied such as rewards and punishments, when the player successfully completes a certain challenge, not forgetting also for easier access and distribution, the availability of this application on digital media distribution platforms such as Google Play Store, will facilitate security, validation and access to this video game.

II. METHOD

This research is development research using the Multimedia Development Life Cycle (MDLC) method [56]. The development procedure includes concept, design, material collection, manufacture, testing, and distribution stages. The subjects in this study were elementary school students, dance teachers, and songwriters. Sampling using purposive sampling technique. The data collection instrument used a questionnaire on Visual Novel Game learning media. Data analysis techniques in this research and development are quantitative descriptive statistical analysis techniques and percentages. The development steps with the MDLC method can be seen in Fig. 1.

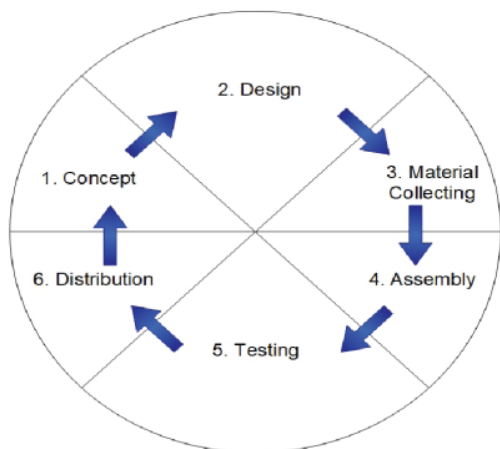


Fig. 1. Steps of the multimedia development life cycle (MDLC)

III. RESULT AND DISCUSSION

The result of the research is a visual novel educational game on typical Lombok dances. The main page in Fig. 2 of the visual novel educational game media contains the title, start button, about button, save button, gallery button, and exit button. The start menu page contains the learn button and the play button can be seen in Fig. 3. The material about the typical traditional dance of the Sasak Lombok tribe can be seen in Fig. 3, Fig. 4, and Fig. 5. Fig. 6 contains the quiz at level 1 and Fig. 7 contains the level 2 quiz.



Fig. 2. Home page



Fig. 3. Learning and play page



Fig. 4. Material page

The results of testing the feasibility of Visual Novel Game learning media using Whitebox and Blackbox methods. Testing was carried out by media experts, material experts of elementary school students. Based on the assessment aspects by material experts, all components contained in the Visual Novel Game learning media have fulfilled in terms of assessment aspects which include the correctness of the material content, free from conceptual

errors, the latest and up-to-date material, the coverage and depth of the material, the adequacy of the reference and the interest and motivation of students. The results show that there is a novelty and depth of material that increases student motivation which is very good in learning.



Fig. 5. Time Portal page



Fig. 6. Level 1 quiz game page



Fig. 7. Level 2 quiz game page

The aspect of assessment by media experts shows very good for media delivery strategies in accordance with student characteristics that can encourage students to think critically in problem solving and can increase contextuality with applications according to everyday life. Application functionality testing from black box testing shows the results of Visual Novel Game learning media are appropriate. The last test on the black box using the User Acceptance Test (UAT) has user satisfaction of Visual Novel Game learning media with very good results. The application feasibility results show very good with a percentage of 87.76% and the usability of the application shows very good with a

percentage of 90.03%. Based on the results of testing by experts, it shows that visual novel educational games deserve to be one of the teaching aids for teachers to convey teaching material, increase student creativity and increase student attention and interest in the learning process, so that students can absorb the material well. This is in line with the results of previous research which proves that the use of instructional media can help teachers save time when explaining subject matter, increase student interest in learning, focus student attention, clarify concepts explained by the teacher, as well as helping students to easily remember the subject matter taught in class [57]–[59].

The findings of this study show that this visual novel educational game can help students gain insight into the typical dances of the island of Lombok with a score of 92%. This finding is consistent with the results of previous research which stated the effectiveness of visual novel games as learning can introduce and promote the diversity of regional dances [60]–[62]. In addition, game users can feel the feel of an adventure in introducing various types of typical traditional dances [63], [64]. In addition, findings, the animated images and narration in the visual novel educational game help students understand the meaning of the *Beruk Tinjal* dance with a score of 92%. This is in accordance with the results of previous research which stated that an interesting combination of narration and visual images of dance allows users to understand the cultural background, meaning, and values contained in each dance movement [65]. The aspect of ease of learning found that this visual novel educational game made learning easy and fun by 92%. This result is supported by previous research which states that combining fun and informative learning aspects can be created through visual novel games [66], [67].

IV. CONCLUSION

The visual novel educational game has been tested by media and material experts, with the result that it is feasible to use because it has fulfilled all aspects of the test. The results of the feasibility of the User Acceptance Test (UAT) measuring user satisfaction obtained several important findings. The application feasibility results show very good with a percentage of 87.76% and the usability of the application shows very good with a percentage of 90.03%. This visual novel educational game can help students gain insight into the typical Lombok Island dance with a score of 92%, the animated images and narration in the visual novel educational game help students understand the meaning of the *Beruk Tinjal* dance with a score of 92%, and this visual novel educational game makes learning becomes easy and fun with a score of 92%.

The implication of the results of this study is that visual novel games can be an alternative learning media that can assist teachers in presenting interesting and fun learning, as well as making it easier for students to understand the material. For further research, it is necessary to conduct research that develops visual novel games for other local wisdoms.

REFERENCES

- [1] Y. Zhao, X. Wang, C. Guo, M. Lu, and S. Chen, "ContextWing: Pair-wise Visual Comparison for Evolving Sequential Patterns of Contexts in Social Media Data Streams," *Proc. ACM Human-Computer Interact.*, vol. 7, no. CSCW1, 2023, doi: 10.1145/3579473.

- [2] J. Wang, T. Gui, M. Cheng, X. Wu, R. Ruan, and M. Du, "A survey on emotional visualization and visual analysis," *J. Vis.*, vol. 26, no. 1, pp. 177–198, 2023, doi: 10.1007/s12650-022-00872-5.
- [3] A. Foka, "Forging Emotions: a deep learning experiment on emotions and art," *Artnodes*, vol. 2023, no. 31, pp. 1–10, 2023, doi: 10.7238/artnodes.v0i31.402397.
- [4] D. Lynch, "The Unwritten History of the Woman of Genius (Austen, Staël, Siddons): What She Says, Goes," *Romanticism*, vol. 29, no. 2, pp. 165–176, 2023, doi: 10.3366/rom.2023.0597.
- [5] J. Aiello, *The discursive realisation of a progressive congresswoman: Stancetaking across contexts and media*. Peter Lang AG, 2023.
- [6] N. Simonetti, "Mastering Othemess with a Look: On the Politics of the Gaze and Technological Possibility in Kazuo Ishiguro's *Klara and the Sun*," *Crit. - Stud. Contemp. Fict.*, 2023, doi: 10.1080/00111619.2023.2186773.
- [7] C.-W. Lee and Y.-L. Su, "A study of game-based learning in STEM education: A computer programming course for visual design students at a university in Taiwan," in *AIP Conference Proceedings*, 2023, vol. 2685, doi: 10.1063/5.0113688.
- [8] Y. Eva, N. M. S. Jamarun, A. B. Leo, and C. Malik, "Visual Game Character Design to Engage Generation Z in an Effort to Develop Anti-Corruption Behavior in Indonesian Society," *J. Urban Cult. Res.*, vol. 25, pp. 64–82, 2022, doi: 10.14456/jucr.2022.21.
- [9] J. Florensia and A. Suryadibrata, "7-Day Math: A Mobile Visual Novel Game for Mathematics Education," *Int. J. Interact. Mob. Technol.*, vol. 17, no. 6, pp. 197–205, 2023, doi: 10.3991/ijim.v17i06.36545.
- [10] M. Yan, Y. Li, X. Sun, X. Zhou, Y. Hui, and H. Li, "The roles of decoding and vocabulary in Chinese reading development: Evidence from a 3-year longitudinal study," *Br. J. Educ. Psychol.*, vol. 91, no. 1, pp. 300–314, 2021, doi: 10.1111/bjep.12365.
- [11] M. G. Azcárraga, M. P. Correa, and F. C. Zúñiga, "The importance of reading stories for the linguistic development of preschool children with language disorders; [La importancia de leer cuentos para el desarrollo lingüístico de preescolares con Trastorno de Lenguaje]," *Educ. e Pesqui.*, vol. 48, 2022, doi: 10.1590/S1678-4634202248233178.
- [12] A. Fauzan Dianta, A. Kusuma Nurindiyani, and Z. Maisat Eka Darmawan, "Analysis of User Experience of the Visual Novel Game Origins of Surabaya City Using the Usability Testing Method [Analisis Pengalaman Pengguna Game Visual Novel Asal Usul Kota Surabaya Menggunakan Metode Usability Testing]," *J. SAINTEKOM*, vol. 13, no. 1, pp. 67–78, 2023, doi: 10.33020/saintekom.v13i1.386.
- [13] M. F. A. Syaefullah and S. N. Huda, "Gamification of Moral Education Based on Visual Novels for Lower Grade Elementary School Students [Gamifikasi Pendidikan Akhlak Berbasis Visual Novel Untuk Siswa SD Kelas Rendah]," *Automata*, 2021.
- [14] M. A. Kusuma, D. Dwi Kusumajanto, R. Handayani, and I. Febrianto, "Active Learning Alternatives in the Pandemic Era through Game Based Learning Methods [Alternatif Pembelajaran Aktif di Era Pandemi melalui Metode Pembelajaran Game Based Learning]," *J. Kaji. Teknol. Pendidik.*, vol. 7, no. 1, pp. 28–37, 2022, [Online]. Available: <https://doi.org/10.17977/um039v7i12022p028pISSN:2548-9879%0Ahttp://journal2.um.ac.id/index.php/edcomtech>.
- [15] N. M. Ibrahim, H. S. Ez-Elarab, M. Momen, I. M. Mossad, and S. S. Eletriby, "A novel wide scale well-baby clinic mobile application: an Egyptian pilot study," *BMC Health Serv. Res.*, vol. 23, no. 1, 2023, doi: 10.1186/s12913-023-09720-0.
- [16] X. Han and C. Liu, "Design and Implementation of a Teaching System for Basic Sports Rehabilitation Courses Based on Android Platform," *Int. J. Comput. Intell. Syst.*, vol. 16, no. 1, 2023, doi: 10.1007/s44196-023-00267-w.
- [17] R. K. Jain, "Experimental performance of smart IoT-enabled drip irrigation system using and controlled through web-based applications," *Smart Agric. Technol.*, vol. 4, 2023, doi: 10.1016/j.atech.2023.100215.
- [18] S. Aurangzeb and M. Aleem, "Evaluation and classification of obfuscated Android malware through deep learning using ensemble voting mechanism," *Sci. Rep.*, vol. 13, no. 1, 2023, doi: 10.1038/s41598-023-30028-w.
- [19] H. H. R. Manzil and S. Manohar Naik, "Android malware category detection using a novel feature vector-based machine learning model," *Cybersecurity*, vol. 6, no. 1, 2023, doi: 10.1186/s42400-023-00139-y.
- [20] W. G. Hui, H.-F. Neo, and C.-C. Teo, "Novel Edutainment Learning Concept via Augmented Reality Approach," *Int. J. Inf. Educ. Technol.*, vol. 12, no. 8, pp. 719–724, 2022, doi: 10.18178/ijet.2022.12.8.1676.
- [21] Y. Elloumi, N. Abroug, and M. H. Bedoui, "End-to-End Mobile System for Diabetic Retinopathy Screening Based on Lightweight Deep Neural Network," *Lect. Notes Comput. Sci. (including Subser. Lect. Notes Artif. Intell. Lect. Notes Bioinformatics)*, vol. 13205 LNCS, pp. 66–77, 2022, doi: 10.1007/978-3-031-01333-1_6.
- [22] S. Busaeed, I. Katib, A. Albeshri, J. M. Corchado, T. Yigitcanlar, and R. Mehmood, "LidSonic V2.0: A LiDAR and Deep-Learning-Based Green Assistive Edge Device to Enhance Mobility for the Visually Impaired," *Sensors*, vol. 22, no. 19, 2022, doi: 10.3390/s22197435.
- [23] J.-Y. Kim, I.-S. Kim, D.-Y. Yun, T.-W. Jung, S.-C. Kwon, and K.-D. Jung, "Visual Positioning System Based on 6D Object Pose Estimation Using Mobile Web," *Electron.*, vol. 11, no. 6, 2022, doi: 10.3390/electronics11060865.
- [24] A. Ahmad, V. Aggarwal, D. Saraswat, A. El Gamal, and G. Johal, "Deep Learning-Based Disease Identification and Severity Estimation Tool for Tar Spot in Corn," 2022, doi: 10.13031/aim.202201193.
- [25] K. Kaur et al., "Digital Eye Strain- A Comprehensive Review," *Ophthalmol. Ther.*, vol. 11, no. 5, pp. 1655–1680, 2022, doi: 10.1007/s40123-022-00540-9.
- [26] T. Kou, J. Shen, Q. Zhang, and W. Chen, "Learned NIR&VIS-CAM: multi-spectral fusion for large depth-of-field computational imaging," in *Proceedings of SPIE - The International Society for Optical Engineering*, 2023, vol. 12315, doi: 10.1117/12.2642517.
- [27] Y. Zhang et al., "Deep learning-assisted smartphone-based molecularly imprinted electrochemiluminescence detection sensing platform: Portable device and visual monitoring furosemide," *Biosens. Bioelectron.*, vol. 209, 2022, doi: 10.1016/j.bios.2022.114262.
- [28] M. Zakaria, E. Karaaslan, and F. N. Catbas, "Advanced bridge visual inspection using real-time machine learning in edge devices," *Adv. Bridg. Eng.*, vol. 3, no. 1, 2022, doi: 10.1186/s43251-022-00073-y.
- [29] S.-R. Ohk, Y. Kim, and Y.-J. Kim, "Phase-Based Low Power Management Combining CPU and GPU for Android Smartphones," *Electron.*, vol. 11, no. 16, 2022, doi: 10.3390/electronics11162480.
- [30] S. Lee, J. Lee, and K. Lee, "DeepVehicleSense: An Energy-Efficient Transportation Mode Recognition Leveraging Staged Deep Learning Over Sound Samples," *IEEE Trans. Mob. Comput.*, vol. 22, no. 6, pp. 3270–3286, 2023, doi: 10.1109/TMC.2022.3141392.
- [31] N. K. Kamarudin, A. Firdaus, A. Zabidi, F. Ernawan, S. I. Hisham, and M. F. Ab Razak, "Android malware detection using PMCC heatmap and Fuzzy Unordered Rule Induction Algorithm (FURIA)," *J. Intell. Fuzzy Syst.*, vol. 44, no. 4, pp. 5601–5615, 2023, doi: 10.3233/JIFS-222612.
- [32] U. Kulkarni, S. M. Meena, S. V. Gurlahosur, and G. Bhogar, "Quantization Friendly MobileNet (QF-MobileNet) Architecture for Vision Based Applications on Embedded Platforms," *Neural Networks*, vol. 136, pp. 28–39, 2021, doi: 10.1016/j.neunet.2020.12.022.
- [33] D. C. Wijaya, Y. W. Syaifudin, R. Ariyanto, N. Funabiki, M. S. F. Ruslan, and I. Mu'Aasyiqiin, "An Implementation and Evaluation of Basic Data Storage Topic for Content Provider Stage in Android Programming Learning Assistance System," in *2021 International Conference on Innovation and Intelligence for Informatics, Computing, and Technologies, 3ICT 2021, 2021*, pp. 328–333, doi: 10.1109/3ICT53449.2021.9581767.
- [34] N. M. Puspita, A. Suyatna, and U. Rosidin, "Optimizing the use of smartphones for M-learning as a supplement for magnetic learning with a scientific approach," in *Journal of Physics: Conference Series*, 2020, vol. 1572, no. 1, doi: 10.1088/1742-6596/1572/1/012048.
- [35] F. Sufyan, S. Sagar, Z. Ashraf, S. Nayel, M. S. Chishti, and A. Banerjee, "A Novel and Lightweight Real-Time Continuous Motion Gesture Recognition Algorithm for Smartphones," *IEEE Access*, vol. 11, pp. 42725–42737, 2023, doi: 10.1109/ACCESS.2023.3255402.

- [36] T. S. Astami, U. Novella, and L. Unsriana, "Utilization of ICT in Japanese Language Learning During the Covid 19 Pandemic: Case Study of Japanese in Use I Courses," in *E3S Web of Conferences*, 2023, vol. 388, doi: 10.1051/e3sconf/202338804033.
- [37] K. A. Pratama and D. A. P. Putri, "Development of Android-based 'Kanigara apps' learning media," in *AIP Conference Proceedings*, 2023, vol. 2727, doi: 10.1063/5.0141901.
- [38] H. Bomström et al., "Information needs and presentation in agile software development," *Inf. Softw. Technol.*, vol. 162, 2023, doi: 10.1016/j.infsof.2023.107265.
- [39] L. Zhou, Z. Liu, X. Yuan, Z. Shangguan, Y. Li, and B. Hu, "CAINNET: Neural network based on contextual attention and information interaction mechanism for depression detection," *Digit. Signal Process. A Rev. J.*, vol. 137, 2023, doi: 10.1016/j.dsp.2023.103986.
- [40] W. Höhl, "Ambiguity in utopian XR-games: Basic principles for the design of virtual worlds," *Eur. J. Futur. Res.*, vol. 11, no. 1, 2023, doi: 10.1186/s40309-023-00218-w.
- [41] L. Motta et al., "Postoperative complications after successful primary rhegmatogenous retinal detachment repair," *BMC Ophthalmol.*, vol. 23, no. 1, 2023, doi: 10.1186/s12886-023-02824-5.
- [42] J. Florensia and A. Suryadibrata, "7-Day Math: A Mobile Visual Novel Game for Mathematics Education," *Int. J. Interact. Mob. Technol.*, vol. 17, no. 6, pp. 197–205, 2023, doi: 10.3991/ijim.v17i06.36545.
- [43] M. I. Bocharov, T. N. Mozharova, E. V. Soboleva, and T. N. Suvorova, "Development of a personalized model of teaching mathematics by means of interactive novels to improve the quality of pupils' educational results," *Perspekt. Nauk. i Obraz.*, vol. 53, no. 5, pp. 306–322, 2021, doi: 10.32744/PSE.2021.5.21.
- [44] K. Tsong Chau and N. U. R. A. S. B. A. Nasir, "The effect of a visual novel application on students learning motivation in biology for secondary school in Malaysia," in *ACM International Conference Proceeding Series*, 2021, pp. 83–88, doi: 10.1145/3449388.3449399.
- [45] M. B. Garcia, "Kinder Learns: An Educational Visual Novel Game as Knowledge Enhancement Tool for Early Childhood Education," *Int. J. Technol. Learn.*, vol. 27, no. 1, pp. 13–34, 2020, doi: 10.18848/2327-0144/CGP/v27i01/13-34.
- [46] H. Rante and A. Basuki, "The Role of Paper Prototyping in Designing Visual Novel Game as Learning Media for Children," in *2019 5th International Conference on Education and Technology, ICET 2019*, 2019, pp. 24–28, doi: 10.1109/ICET48172.2019.8987208.
- [47] N. Chatziantoniou, N. Politopoulos, and P. Stylianidis, "Designing and developing an educational game for leadership assessment and soft skill optimization," in *Advances in Intelligent Systems and Computing*, 2018, vol. 725, pp. 258–265, doi: 10.1007/978-3-319-75175-7_27.
- [48] K. Ram Surath Kumar et al., "Effectiveness of a Visual Interactive Game on Oral Hygiene Knowledge, Practices, and Clinical Parameters among Adolescents: A Randomized Controlled Trial," *Children*, vol. 9, no. 12, 2022, doi: 10.3390/children9121828.
- [49] N. A. M. J. Sales, N. Villanueva, M. R. Evangelista, J. L. E. Cestina, and J. Camba, "The Development of a Visual Novel Role-Playing Game [VN RPG] as an Open Educational Resource [OER] for Philippine Literature Educators Administering the 'Noli Me Tangere' Module," 2021, doi: 10.1109/HNICEM54116.2021.9731836.
- [50] S. B. Nayeem and F. Tabassum, "A Visual Novel for the Bangladeshi Youths to Connect Them to Bengali Literature and History," in *Proceedings of 2021 IEEE International Women in Engineering (WIE) Conference on Electrical and Computer Engineering, WIECON-ECE 2021*, 2021, pp. 29–32, doi: 10.1109/WIECON-ECE54711.2021.9829652.
- [51] K.-W. K. Lai and H.-J. H. Chen, "A comparative study on the effects of a VR and PC visual novel game on vocabulary learning," *Comput. Assist. Lang. Learn.*, vol. 36, no. 3, pp. 312 – 345, 2023, doi: 10.1080/09588221.2021.1928226.
- [52] D. Deli, "User Interface Analysis in English Language Learning Media Based on Visual Novel Games [Analisis User Interface pada Media Pembelajaran Bahasa Inggris Berbasis Game Visual Novel]," *J. Appl. Informatics Comput.*, vol. 5, no. 1, pp. 9–20, 2021, doi: 10.30871/jaic.v5i1.2749.
- [53] [3] S. G. Jabali, S. Supriyono, and P. Nugraheni, "Development of Ethnomathematics-Based Visual Novel Game Media to Improve Understanding of Concepts in Algebra Material [Pengembangan Media Game Visual Novel Berbasis Etnomatematika Untuk Meningkatkan Pemahaman Konsep Pada Materi Aljabar]," *Alifmatika J. Pendidik. dan Pembelajaran Mat.*, vol. 2, no. 2, pp. 185–198, 2020, doi: 10.35316/alifmatika.2020.v2i2.185-198.
- [54] [4] H. I. Anggraini, N. Nurhayati, and S. R. Kusumaningrum, "Application of HOTS-Based Mathematics Game Learning Media Using Digital Game Based Learning Methods [Penerapan Media Pembelajaran Game Matematika Berbasis HOTS Dengan Metode Digital Game Based Learning]," *J. Pendidik. Indones.*, vol. 2, no. 11, pp. 1885–1896, 2021.
- [55] [5] F. U. Ritonga and D. C. Anggraini, "Application of Fun-Learning Methods Improves Children's Academic Abilities at Baitul Amanah Irwansyah Dakhi Orphanage [Penerapan Metode Fun-Learning Tingkatkan Kemampuan Akademik Anak Di Panti Asuhan Baitul Amanah Irwansyah Dakhi]," *J. Pengabd. Masy.*, vol. 3, no. 1, pp. 96–106, 2022, doi: 10.32815/jpm.v3i1.896.
- [56] I. Binanto, *Digital multimedia-theoretical basis and development [Multimedia digital-dasar teori dan pengembangannya]*. Penerbit Andi, 2010.
- [57] T. Wulandari and A. Mudinillah, "Effectiveness of Using the CANVA Application as a MI/SD Science Learning Media [Efektivitas Penggunaan Aplikasi CANVA sebagai Media Pembelajaran IPA MI/SD]," *J. Ris. Madrasah Ibtidaiyah*, vol. 2, no. 1, pp. 102–118, 2022, doi: 10.32665/jurmia.v2i1.245.
- [58] I. Y. Andari, "The Importance of Video-Based Learning Media for Students [Pentingnya Media Pembelajaran Berbasis Video Untuk Siswa]," *J. Pendidik.*, vol. 2, no. 1, pp. 263–275, 2019.
- [59] T. Tafonao, "The Role of Learning Media in Increasing Student Interest in Learning [Peranan Media Pembelajaran Dalam Meningkatkan Minat Belajar Mahasiswa]," *J. Komun. Pendidik.*, vol. 2, no. 2, p. 103, 2018, doi: 10.32585/jkp.v2i2.113.
- [60] K.-W. K. Lai and H.-J. H. Chen, "A comparative study on the effects of a VR and PC visual novel game on vocabulary learning," *Comput. Assist. Lang. Learn.*, vol. 36, no. 3, pp. 312 – 345, 2023, doi: 10.1080/09588221.2021.1928226.
- [61] F. Iffath and M. Gavrilova, "RAIF: A deep learning-based architecture for multi-modal aesthetic biometric system," *Comput. Animat. Virtual Worlds*, vol. 34, no. 3–4, 2023, doi: 10.1002/cav.2163.
- [62] C.-M. Wang, B.-T. Lee, and T.-Y. Lo, "The Design of a Novel Digital Puzzle Gaming System for Young Children's Learning by Interactive Multi-Sensing and Tangible User Interfacing Techniques," *Sustain.*, vol. 15, no. 4, 2023, doi: 10.3390/su15043036.
- [63] A. S. D. Martha, S. N. A. Muqorobin, R. R. Riskiana, and S. Widawati, "User Interface Design of Jaipong Dance Applications for Elementary School using the User-Centered Design (UCD) Method," *Int. J. Adv. Sci. Eng. Inf. Technol.*, vol. 13, no. 2, pp. 777 – 785, 2023, doi: 10.18517/ijaseit.13.2.16675.
- [64] M. S. Rahmawati, A. Irwansyah, E. H. Binugroho, A. H. Alasiry, N. F. Satria, and D. K. Basuki, "ERISA Robot's Walking Trajectory Control using Pixy CMUcam5 to Locate the Target Position," in *International Electronics Symposium 2021: Wireless Technologies and Intelligent Systems for Better Human Lives, IES 2021 - Proceedings*, 2021, pp. 476 – 481, doi: 10.1109/IES53407.2021.9593942.
- [65] D. Milovanović, "From Ephemeral to Digital: A Study of Alexandra Waierstall's Screened and Live Contemporary Dance Performance," *Body, Sp. Technol.*, vol. 22, pp. 128 – 145, 2023, doi: 10.16995/bst.9702.
- [66] Z. Wang and J. Dong, "Design of Dance Data Management System Based on Computer-Aided Technology Under the Background of Internet of Things," *Comput. Aided. Des. Appl.*, vol. 20, no. S2, pp. 45 – 55, 2023, doi: 10.14733/cadaps.2023.S2.45-55.
- [67] R. Horst, S. Gerstmeier, R. Naraghi-Taghi-Off, J. Wagner, L. Rau, and R. Dörner, "Virtual reality content creation based on self-contained components in the e-learning domain: Re-using pattern-based vr content in different authoring toolkits," *Multimed. Tools Appl.*, 2022, doi: 10.1007/s11042-022-13362-5.

Development of an Educational Game Visual Novel Introduction to Traditional Dance Based on Android: Case Study of Typical Dance of Lombok Island

ORIGINALITY REPORT

2%

SIMILARITY INDEX

PRIMARY SOURCES

- 1** biblio.ugent.be 27 words — 1%
Internet
- 2** Constance Creux, Farida Zehraoui, François Radvanyi, Fariza Tahi. "Comparison and benchmark of deep learning methods for non-coding RNA classification", Cold Spring Harbor Laboratory, 2024 18 words — 1%
Crossref Posted Content

EXCLUDE QUOTES ON

EXCLUDE SOURCES OFF

EXCLUDE BIBLIOGRAPHY ON

EXCLUDE MATCHES OFF