

NEEDS AND PROFILE OF GAME TEMANGGUNG LIBRARY (GATEL) FOR MADRASAH IBTIDAIYAH IN TEMANGGUNG REGENCY: A PRELIMINARY STUDY

Hamidulloh Ibda*¹, Shevia Putri Maharani², Kuni Milata Zakia³

^{1,2,3} Institut Islam Nahdlatul Ulama Temanggung, Indonesia

*e-mail: h.ibdaganteng@gmail.com¹, sheviamhrn@gmail.com², kunimilataza@gmail.com³

Article Information

Received: May 05, 2023

Revised: June 12, 2023

Accepted: June 23, 2023

Keywords

Educational Game Needs,
Temanggung Library Game,
Madrasah Ibtidaiyah

ABSTRACT

This research-based community service aims to analyze the overview and media needs of Game Temanggung Library (GATEL) in Madrasah Ibtidaiyah in Temanggung Regency by applying a survey method with a cross-sectional survey type and in-depth interviews. The findings in this article refer to ten criteria. First, 100% of Madrasah Ibtidaiyah in the assisted subjects have no games for learning. Second, not having games is because there is no training, ignorance, and unfamiliarity with games. Third, there has never been training on making games in all Madrasah Ibtidaiyah in the assisted subjects. Fourth, the condition of Madrasah Ibtidaiyah students in the assisted subjects in playing games, data obtained 60% Madrasah Ibtidaiyah often, 40% Madrasah Ibtidaiyah ever, and 0% Madrasah Ibtidaiyah never. Fifth, the condition of the names of games/types played by students in the assisted subjects is very diverse, namely LoL games, Jigsaw Puzzles games, E-Sport, LEGO Nijago, and Once Upon a Tower. Sixth, the condition of the games played by students in the assisted subjects integrated into learning obtained data very often 0%, quite often 0%, and less often as much as 100%. Seventh, the causes of students playing games without being directed and not integrated into learning is obtained because the teacher cannot direct and there is no planning, no assistance, lack of concern, not accompanied by parents and teachers, and not noticed by the teacher. Eighth, the condition of teacher knowledge in the assisted subjects on educational games obtained data that 80% know and 20% do not. Ninth, the condition of Madrasah Ibtidaiyah teachers' knowledge on the assisted subjects of Homer, Prodigy Math, Buzzmath, Robot School, PBS Kids, The Time Tribe, and One Globe Kids games obtained data of 20% of teachers know, and 80% of teachers do not know. The last aspect is that all assisted subjects provided input on the need for training because there has rarely been training or training in making games.

INTRODUCTION

Educational game media at the elementary school and madrasah ibtidaiyah (MI) levels has been used in Indonesia since the advent of the digital era starting from the 1990s with various languages, characters, uniqueness, and novelty (Hamidulloh et. al., 2022; Bado, 2022; Minaldi et. al., 2023). In addition to aiming to make it easier for teachers to convey material, the use of educational games also aims to make fun for students because that is one of the advantages of game media applied to learning (Saleem et al., 2021). However, the reality is that Madrasah Ibtidaiyah teachers only use, plan, design, and evaluate educational games (Syarifuddin, 2022). Madrasah Ibtidaiyah teachers are still minimally trained to design games according to the needs of each madrasah (Imron, 2021). This happened because there was no initial mapping, needs analysis, and determination of the desired game profile or prototype that suited the needs of the field (Galang et. al., 2023; Andreas et. al., 2023).

Library-based games have so far been little studied because, in addition to the lack of human resources, there is also a lack of innovation in this field (Suwanto et al., 2022). Studies related to the FlashDevelop Flixel Library Open-Source Environmental Game in Malang were conducted through Flashdevelop application-based development. This game proved to be able to introduce Malang's local wisdom based on the library (Aprilia, 2013). Researchers, not teachers, developed this game, which differs greatly from what will be done in this research-based service. Another finding mentions that the Rotating Sphere Puzzle Game raises the library with the concept of "Threejs Library," which focuses on children's games in the form of puzzles and spheres (Reza, 2018). This game is the result of researcher development that focuses on the game, not on improving the ability of teachers to design the game itself. Another recent study mentions that augmented reality application-based media has been implemented using the android-based Vuforia Library for animal recognition in Bali (Wijaya, 2022). This media only focuses on animal introduction material which is very different from what will be done in this service.

Research and community service in the form of assistance to Madrasah Ibtidaiyah teachers in designing educational game media is also still minimal. Several research-based community service findings are still targeting several programs or activities, such as educational games as eye interaction learning for autistic children (Rahadian et al., 2018), assistance and training for Madrasah Aliyah Negeri (MAN) teachers in designing interactive learning games in Probolinggo (Moh. et al., 2022), training to develop game media for mathematics teachers at SMP Negeri 8 Denpasar, training to develop game media for mathematics teachers at SMP Negeri 8 Denpasar, training to develop game media for mathematics teachers at SMP Negeri 8 Denpasar, Bali (I et al., 2022), and the development of interactive games with the PowerPoint platform in increasing the study motivation of grade V elementary school students with the ADDIE type (Rosidah et al., 2022). Several community service and research above are still few that examine research-based community service with a focus on improving the ability of teachers to develop library-based games.

Conceptually, Game Temanggung Library (GATEL) departs from the concept of educational games, which is a game designed to facilitate teachers' and students' learning and also serves to create fun learning because, in the game, there are interesting activities carried out by teachers and students (Millán, 2021; Atwood-Blaine et al., 2019). The library referred to in this game is all the knowledge, intelligence, and typical local wisdom of Temanggung, which is the material for designing the game (Spradley, 1997). The purpose of Game Temanggung Library (GATEL) is a platform that will be on a library that raises local knowledge, intelligence, and wisdom of Temanggung Regency. From the literature review, no research has been found that examines research games containing the Temanggung library, which contains Temanggung's local wisdom.

Referring to the social facts and literature facts above and based on preliminary studies, in Temanggung Regency itself, there are still few services that focus on improving the ability of teachers to design library-based games, especially in the Temanggung District area, which is very pluralistic in terms of social conditions and student backgrounds. Based on this, the researcher wants to carry

out community service by improving the ability of Madrasah Ibtidaiyah teachers to design GATEL games through the SAGU SAGA (One Teacher One Game) program, which begins with a needs analysis activity first. To facilitate achieving this goal, the researcher asked two research questions, namely (1) What is the general description and needs of pre-existing game learning media in Madrasah Ibtidaiyah in Temanggung Regency and (2) What is the profile of the Wordwall-based Temanggung Library Game (GATEL) in Madrasah Ibtidaiyah Temanggung Regency?

METHODS

This research-based community service uses quantitative and qualitative approaches. The quantitative approach uses a survey technique with a cross-sectional survey type, which is applied to collect data related to the real conditions of game-based media in MI in Temanggung Regency and is only done once. The survey method was chosen because this research-based community service wanted to reveal an overview of existing games in the field. The survey method in this research was used to collect data in the form of information from the population (teachers) in the Temanggung District area by taking a sample of five schools in Temanggung District that could represent the needs of Game Temanggung Library (GATEL) perspective schools in urban areas (limited to Temanggung District) and in rural areas (limited to outside Temanggung District). The instrument or tool used in data collection is a questionnaire. Qualitative data in this research-based community service is conducted through in-depth interview techniques to reveal the profile of Wordwall-based Game Temanggung Library (GATEL) in Madrasah Ibtidaiyah in Temanggung Regency. Meanwhile, the method for service uses participatory action research (PAR) with the Kurt Lewin type developed with the principles of organizing, experimenting, applying, fact-finding, and learning (Lewin, 1946; Adelman, 1993). The PAR steps in this research are carried out through stages. The assisted subjects in this research are invited to participate in action orientation, triangulation, and the principle of flexibility or flexibility in empowerment activities (Siti et. al., 2022; Shirley, 2022). Data analysis in this research uses quantitative in the form of tables/diagrams based on teacher perspective needs analysis. In comparison, qualitative data analysis was carried out through descriptive techniques describing the Wordwall-based Game Temanggung Library (GATEL) profile in Madrasah Ibtidaiyah in Temanggung Regency. The analysis results reveal an overview of existing games in the field and the Wordwall-based Game Temanggung Library (GATEL) profile in Madrasah Ibtidaiyah in Temanggung Regency.

RESULTS AND DISCUSSION

In this research-based community service, before assisting the assisted subjects, an initial study was conducted to reveal the conditions and general description of the application, availability, and needs of the existing Game Temanggung Library (GATEL). For this reason, the assisted subjects are limited to five teachers from four institutions who will be fostered and assisted in developing the Temanggung Library Game (GATEL). For this reason, the following are the names of teachers (initials) and institutions, as well as the representation of schools in urban and rural areas to obtain diverse data before developing the Temanggung Library Game (GATEL).

Table 1 Assisted subjects of Madrasah Ibtidaiyah in Temanggung Regency

No	Name	Institutions	Representations
1	MUF	MI ELPIST Temanggung	Urban
2	YF	MI ELPIST Temanggung	Urban
3	MM	MI Al Ikhlas Kauman Parakan	Rural
4	NU	MI Ma'arif Asma'ul Husna Kemloko	Rural
5	DS	MI Darul Jihad Gemawang	Rural

Researchers conducted a needs collection and analysis before assisting in the five assisted subjects above. At this stage, needs collection and analysis are carried out, which refers to the real

needs in the field experienced by the assisted subjects. The assisted subjects at this stage were given a questionnaire through Google Form (<https://bit.ly/ANGKETGAMESKU>) to fill in and analyze their needs for the GATEL game to be developed. In the questionnaire, the assisted subjects filled in their identity, availability of game learning media in Marrasah Ibtidaiyah, reasons when there are no games, participation in game design training, response to game design materials and training, the intensity of students in the assisted subject agencies in playing games, variants of game names, game integration into learning, knowledge of educational games, level of knowledge about *Homer games*, *Prodigy Math*, *Buzzmath*, *Robot School*, *PBS Kids*, *The Time Tribe*, *One Globe Kids*, the need for game development and the reasons. After the team was formed and a needs analysis was carried out, the results showed that the capacity of the team that had been formed still needed capacity building in carrying out capacity building in designing the GATEL game with Worldwall, so the facilitator made a plan to strengthen capacity by providing training and assistance both technically and substantively to increase capacity in designing the GATEL game. Capacity building on the subject is carried out by providing training in designing GATEL games consisting of the ability to plan, design, and implement GATEL games in Madrasah Ibtidaiyah that have been agreed upon through the Sagu Saga (One Teacher One Game) program.

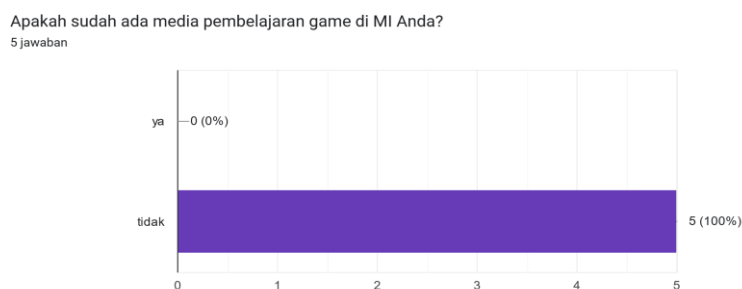
DISCUSSION

Overview and Needs of Learning Media Games for Madrasah Ibtidaiyah in Temanggung Regency

The overview and needs of game learning media in this research refer to the chosen empowerment method, namely with the principle of participation from Madrasah Ibtidaiyah teachers in Temanggung District, action orientation in developing GATEL games, triangulation, namely using various teacher perspectives on Temanggung Library, and conducting flexible final activities carried out by all teachers as assisted subjects. The overview and needs of learning media games for Madrasah Ibtidaiyah in Temanggung Regency are based on a questionnaire distributed to the assisted subjects before the training began in a series of implementations of the SAGU SAGA (One Teacher - One Game) Program. The questionnaire is to map the availability of game learning media in Madrasah Ibtidaiyah, reasons why there are no games, participation in game design training, response to game design materials and training, the intensity of students in the assisted subject agencies in playing games, variants of game names, game integration into learning, knowledge of educational games, level of knowledge about *Homer games*, *Prodigy Math*, *Buzzmath*, *Robot School*, *PBS Kids*, *The Time Tribe*, *One Globe Kids*, the need for game institutions and the reasons. Based on the data processing results from the questionnaire, an overview of game learning media in Madrasah Ibtidaiyah from the assisted subjects was obtained.

First, in the aspect of mapping the availability of game learning media in Madrasah Ibtidaiyah, almost all assisted subjects answered that there were no games provided by the management of Madrasah Ibtidaiyah / Headmaster of Madrasah Ibtidaiyah or from the results of development carried out by the teachers themselves. In detail, none of the 5 assisted subjects had games in the Madrasah Ibtidaiyah, so 100 percent of there were no games which can be seen in the graph below.

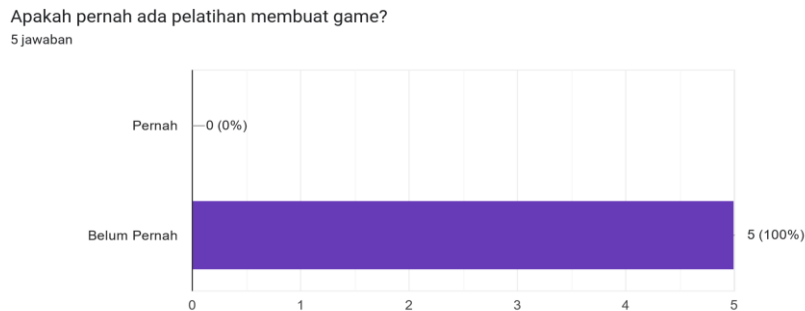
Graph 1 Availability of games in Madrasah Ibtidaiyah in assisted subjects.



Second, the absence of games in Madrasah Ibtidaiyah in the assisted subjects is due to several factors, namely no training, teacher ignorance, and teachers still taboo (unfamiliar) to games integrated into learning.

Third, on the aspect of training in making games, all assisted subjects responded that there was none. So, from the 5 assisted subjects who answered no, the accumulation became 100% that the teachers in the assisted subjects had never participated because there was no training on making games intended for them. In detail, it can be seen in the graph below.

Graph 2 Training data for making games.



Fourth, the condition of Madrasah Ibtidaiyah students in the assisted subjects in playing games obtained data from 3 Madrasah Ibtidaiyah (60%) often, 2 Madrasah Ibtidaiyah (40%) ever, and never 0 Madrasah Ibtidaiyah (0%). In detail can be seen in the graph below.

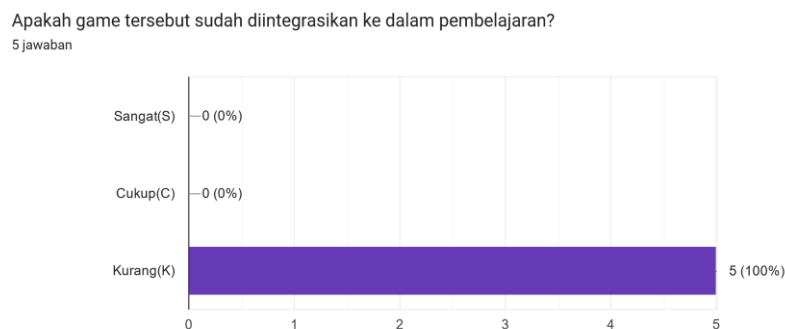
Graph 3 Intensity of students in assisted subjects in playing games.



Fifth, the condition of the names of games/types of games played by Madrasah Ibtidaiyah students on the assisted subjects is very diverse, namely LoL games, Jigsaw Puzzles games, E-Sport, LEGO Nijago, and Once Upon a Tower.

Sixth, the condition of the games played by students in the assisted subjects that have been integrated into learning obtained data very often 0 Madrasah Ibtidaiyah (0%), quite often 0 Madrasah Ibtidaiyah (0%), and less often 5 Madrasah Ibtidaiyah (100%). In detail can be seen in the graph below.

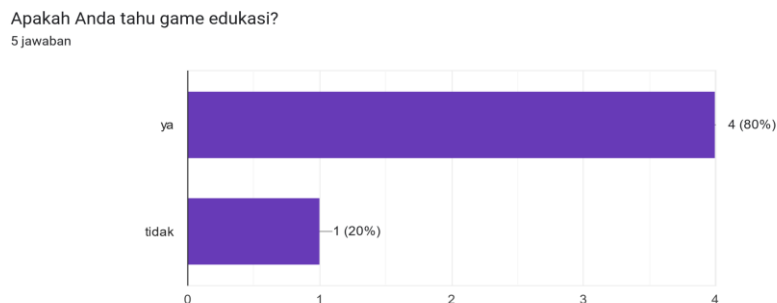
Graph 4 Integration of games used by students in assisted subjects that have been integrated into learning.



Seventh, the causes of students playing games without being directed and not integrated with learning is obtained data because the teacher cannot direct and there is no planning, no assistance, lack of concern, not accompanied by parents and teachers and not noticed by the teacher.

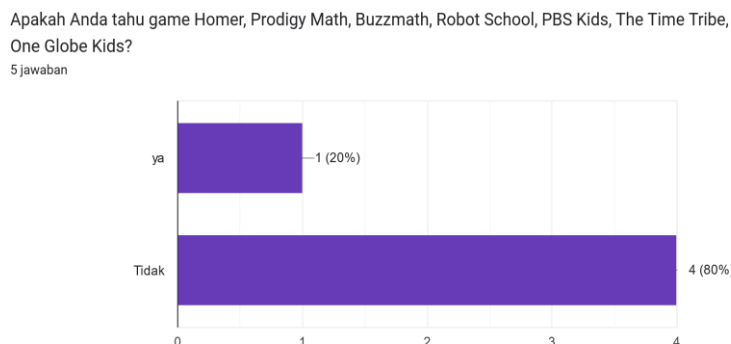
Eighth, the condition of teacher knowledge on the assisted subject of educational games obtained data 4 teachers (80%) know, and 1 teacher (20%) does not. In detail can be seen in the graph below.

Graph 5 The knowledge level of Madrasah Ibtidaiyah teachers in the assisted subjects about educational games.



Ninth, the condition of MI teachers' knowledge in the assisted subjects on Homer, Prodigy Math, Buzzmath, Robot School, PBS Kids, The Time Tribe, and One Globe Kids games, the data obtained is 1 teacher (20%) knows, and 4 teachers (80%) do not know. The details can be seen in the graph below.

Graph 5 Madrasah Ibtidaiyah teachers' level of knowledge about educational games in the assisted subjects.



Tenth, the condition of the needs of Madrasah Ibtidaiyah teachers in the assisted subjects to develop games obtained data from 3 teachers (60%) need/need, 2 teachers (40%) quite a need/need, and 0 teachers (0%) do not need/need. The details can be seen in the graph below.

Graph 7 The development needs of Madrasah Ibtidaiyah teachers in the assisted subjects towards developing educational games.

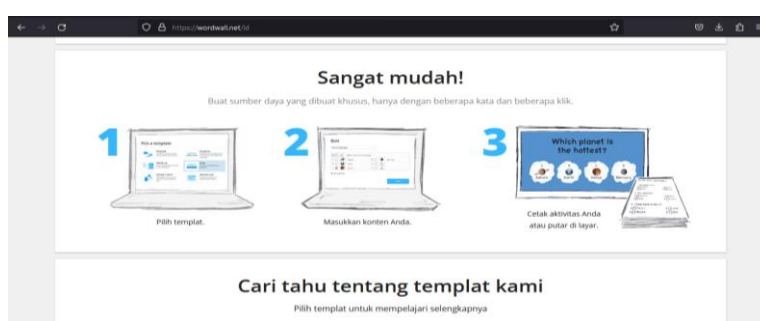


In the last aspect, namely input, all assisted subjects provide input/suggestions that training is needed because so far it is rare to have training or training in making games, in general training is only in the form of seminars, special training in making educational games is needed, socialization and guidance in making educational games are needed, game-based multimedia workshops are needed, training is needed, mentoring until teachers can design and apply games in learning.

Profile of Wordwall-based Game Temanggung Library (GATEL) in Madrasah Ibtidaiyah Temanggung Regency

Game Temanggung Library (GATEL) in this service has not previously been determined with a particular platform. Based on the results of theoretical studies and in-depth interviews, a word wall-based Game Temanggung Library (GATEL) prototype or profile was obtained at Madrasah Ibtidaiyah Temanggung Regency because the wordwall application was free, open access, and easier for beginners. The selection of wordwall is also based on the needs analysis results, which emphasizes the selection of web-based applications that are more affordable and can be easily accessed at any time. In appearance, the Wordwall platform can be seen in the image below.

Figure 1 Wordwall Platform View



Conceptually, Wordwall or Word Wall is an application applied to design a game with a test-shaped base, nuanced, exciting, many variants of game types, easy, and cheap (Hanny et. al., 2022). Wordwall is an application for designing web-based games that provides several quizzes and games that can be used to convey subject matter to students. In Wordwall, several features such as quizzes, random cards, crosswords, and others can be utilized as fun media for elementary school students (Adinda et. al., 2022). Based on this study, the researchers chose Wordwall as the basis for making games for the assisted subjects according to the innovation and creativity of each teacher.

The GATEL game profile developed in this service refers to the theoretical studies and methods applied, namely by including library elements containing local knowledge, local intelligence, and local wisdom of Temanggung Regency developed by the assisted subjects through the Wordwall application in the SAGU SAGA program series. This means that all participants in the SAGU SAGA program must design at least one game and are not limited to a number. The reason is that this program is the beginning of improving game design skills for elementary / MI teachers in the Temanggung Regency area. Therefore, the games produced in this program series cannot be separated from the construction/materials that originate, develop, and live in the Temanggung Regency community, packaged through a game on the Wordwall platform..

CONCLUSION

The overview and needs of Game Temanggung Library (GATEL) at Madrasah Ibtidaiyah in Temanggung Regency generally require development through mentoring. The analysis refers to several criteria. First, 100% of Madrasah Ibtidaiyah in the assisted subjects have no games for learning. Second, not having games is because there is no training, ignorance, and unfamiliarity with games. Third, there has never been training on making games in all Madrasah Ibtidaiyah in the assisted subjects. Fourth, the condition of Madrasah Ibtidaiyah students in the assisted subjects in

playing games, data obtained 60% Madrasah Ibtidaiyah often, 40% Madrasah Ibtidaiyah ever, and 0% Madrasah Ibtidaiyah never. Fifth, the condition of the names of games/types of games played by Madrasah Ibtidaiyah students in the assisted subjects is very diverse, namely LoL games, Jigsaw Puzzles games, E-Sport, LEGO Nijago, and Once Upon a Tower. Sixth, the condition of the games played by students in the assisted subjects integrated into learning obtained data very often 0%, quite often 0%, and less often as much as 100%. Seventh, the causes of students playing games without being directed and not integrated into learning is obtained because the teacher cannot direct and there is no planning, no assistance, lack of concern, not accompanied by parents and teachers and not noticed by the teacher. Eighth, the condition of teacher knowledge on the assisted subject of educational games obtained data from 80%, and 20% do not. Ninth, the condition of knowledge of Madrasah Ibtidaiyah teachers in the assisted subjects on Homer, Prodigy Math, Buzzmath, Robot School, PBS Kids, The Time Tribe, and One Globe Kids games obtained data of 20% of teachers know, and 80% of teachers do not know. In the last aspect, namely input, all assisted subjects provided input on the need for training because, so far, there has rarely been training or training in making games.

The Game Temanggung Library (GATEL) profile recommended to be developed in this research-based service refers to the theoretical studies, methods, and interview results applied, namely by including library elements containing local knowledge, local intelligence, and local wisdom of Temanggung Regency developed by the assisted subjects through the Wordwall application in the SAGU SAGA program series. Research-based community service to produce a game that is needed in the digital era is urgent to be carried out continuously after this initial study. Future research-based community service needs to explore the sustainability of existing games and identify more to be developed into multiplatform-based research and development because the limitations of this research-based community service only apply one application, namely Wordwall.

REFERENCES

- Adelman, C. (1993). Kurt Lewin and the Origins of Action Research. *Educational Action Research*, 1(1), 7–24. <https://doi.org/10.1080/0965079930010102>
- Adinda Desty Dian Utami, Arita Marini, Nurcholida Nurcholida, S. S. (2022). Penerapan Aplikasi Game Wordwall dalam Pembelajaran untuk Menumbuhkan Karakter Disiplin Siswa Sekolah Dasar. *Jurnal Basicedu*, 6(4). <https://doi.org/10.31004/basicedu.v6i4.3365>
- Andreas Naratama, T. Arie Setiawan Prasida, J. P. (2023). Perancangan Game Visual Novel “Freshmen” sebagai Media Edukasi Etika Bermedia Sosial Sekolah Menengah Atas. *Jurnal Desain Komunikasi Visual Nirmana*, 23(1). <https://doi.org/10.9744/nirmana.23.1.32-39>
- Aprilia, A. (2013). *Pengembangan game 2 dimensi “The Bugs Hunter” menggunakan flashdevelop berbasis open source flixel library untuk personal komputer dan android* [Universitas Negeri Malang]. <https://doi.org/http://repository.um.ac.id/14172/>
- Atwood-Blaine, D., Rule, A. C., & Walker, J. (2019). Creative self-efficacy of children aged 9-14 in a science center using a situated Mobile game. *Thinking Skills and Creativity*, 33(June), 100580. <https://doi.org/10.1016/j.tsc.2019.100580>
- Bado, N. (2022). Game-based learning pedagogy: a review of the literature. *Interactive Learning Environments*, 30(5), 936–948. <https://doi.org/https://doi.org/10.1080/10494820.2019.1683587>
- Galang Prihadi Mahardhika, Arrie Kurniawardhani, R. W. N. (2023). Augmented reality-based serious game using ADDIE model to support reading activity. *AIP Conference Proceedings* 2508. <https://doi.org/10.1063/5.0118607>
- Hamidulloh Ibda, Nur Rira Febriani, Muhammad Fadloli Al Hakim, Silviana Nur Faizah, Andrian Gandhi Wijanarko, N. Q. (2022). Game innovation: a case study using the Kizzugemu visual novel game with Tyranobuilder software in elementary school. *Indonesian Journal of Electrical Engineering and Computer Science (IJECS)*, 28(1), 460–469.

<https://doi.org/10.11591/ijeecs.v28.i1.pp460-469>

- Hanny Maulida Rahma, Tita Mulyati, Y. W. (2022). The Development of Learning Media using Wordwall Application in Social Science Learning. *International Journal of Learning and Instruction (IJLI)*, 4(2). <https://doi.org/10.26418/ijli.v4i2.59786>
- I Gusti Agung Ngurah Trisna Jayantika, I Wayan Sumandya, Ni Kadek Rini Purwati, N. L. M. M. W. (2022). Pelatihan Pengembangan Media Berbasis Game untuk Guru Matematika di SMP Negeri 8 Denpasar. *Jurnal Pengabdian Kepada Masyarakat Widya Mahadi*, 3(2), 226–233. <https://doi.org/https://ojs.mahadewa.ac.id/index.php/widyamahadi/article/view/2494>
- Imron, M. A. (2021). Memanfaatkan Hasil Asesmen Kompetensi Minimum (AKM) untuk Mendesain Multimodal Learning. *Madaris: Jurnal Guru Inovatif*, 2(1). <https://doi.org/https://www.jurnalmdaris.org/index.php/md/article/view/60>
- Lewin, K. (1946). Action research and minority problems. *Journal of Social Issues*, 2(4), 34–46. <https://doi.org/10.1111/j.1540-4560.1946.tb02295.x>
- Millán Brea Castro. (2021). Didactic methodology in professional e-sport training. An international experience in Brawl Stars. *Retos*, 41, 247–255. <https://doi.org/10.47197/retos.v0i41.83225>
- Minaldi Loeis, Musa Hubeis, Arif Imam Suroso, S. D. (2023). A strategy for reducing skills gap for the game development sector of the Indonesian creative industries. *Decision Science Letters*, 12(1), 97–106. <https://doi.org/10.5267/j.dsl.2022.10.003>
- Moh. Syadidul Itqan, Noer Vaidah, Siti Fatimah, N. R. (2022). Pelatihan dan pendampingan guru dalam pembuatan media pembelajaran interaktif. *Komatika: Jurnal Pengabdian Kepada Masyarakat*, 2(2), 39–43. <https://doi.org/10.34148/komatika.v2i2.568>
- Rahadian Kurniawan, Wuriandietry Mayang Purnamasari, R. R. (2018). Section Pengolahan Citra dan Multimedia Game Edukasi Pembelajaran Interaksi Mata bagi Anak Autis. *Seminar Nasional Aplikasi Teknologi Informasi (SNATI)*. <https://doi.org/https://journal.uui.ac.id/Snati/article/view/11159>
- Reza, F. (2018). *Aplikasi Permainan Rotating Sphere Puzzle Berbasis Web Menggunakan Threejs Library* [USU]. <https://doi.org/https://repositori.usu.ac.id/handle/123456789/4647>
- Rosidah Rosidah, Muhammad Nizaar, Sintayana Muhardini, Haifaturrahmah Haifaturrahmah, Y. M. (2022). Efektifitas Media Pembelajaran Game interaktif Berbasis Power Point Untuk Meningkatkan Motivasi Belajar Siswa Kelas V SD. *Prosiding Seminar Nasional Paedagogia*. <https://doi.org/http://journal.ummat.ac.id/index.php/fkip/article/view/9749>
- Saleem, A. N., Noori, N. M., & Ozdamli, F. (2021). Gamification Applications in E-learning: A Literature Review. *Technology, Knowledge and Learning*, 27(1), 139–159. <https://doi.org/10.1007/s10758-020-09487-x>
- Shirley Miedijensky, I. S. (2022). Participatory action research as a way to innovate mathematics and science teaching, teachers' professional development perceptions and performances. *Educational Action Research*, 30(1), 39–60. <https://doi.org/10.1080/09650792.2020.1802320>
- Siti, Munadah, Hamidulloh, Ibda, Muhammad Fadloli, A. (2022). Peningkatan keterampilan berbicara siswa SD melalui program SAPU TUWA. *Al-Azkiya: Jurnal Ilmiah Pendidikan MI/SD*, 7(2). <https://doi.org/10.32505/azkiya.v7i2.4822>
- Spradley, J. (1997). *Metode Etnografi*. Tiara Wacana.
- Suwarto, D. H., Setiawan, B., & Machmiyah, S. (2022). Developing Digital Literacy Practices in Yogyakarta Elementary Schools. *Electronic Journal of E-Learning*, 20(2), 101–111. <https://doi.org/10.34190/ejel.20.2.2602>
- Syarifuddin, M. (2022). Penggunaan Media Game Berbasis Internet Pada Pelajaran IPS

Menggunakan Aplikasi Quizizz. *Al-Madrasah : Jurnal Ilmiah Pendidikan Madrasah Ibtidaiyah*, 6(2). <https://doi.org/10.35931/am.v6i2.945>

Wijaya, I. M. P. P. (2022). Aplikasi Augmented Reality Pengenalan Hewan Berbasis Android Menggunakan Library Vuforia. *Jurnal Sistem Informasi Dan Informatika (Simika)*, 5(2), 173–181. <https://doi.org/10.47080/simika.v5i2.2220>