IJESS
International Journal of Education and Social Science
ISSN : 2686-2239 (online) _____ VOL 6 NO 1 APRIL 2025

Development of E-Modules Integrated Game-Based Learning Method for Illustration Drawing to Enhance Student Understanding

Gyska Zhitfi[1], Iriaji[2]
[1],[2] Pendidikan Seni Rupa, Universitas Negeri Malang, Malang, Indonesia
gyska.zhitfi.2102516@students.um.ac.id[1], iriaji.fs@um.ac.id[2]

Abstract

The teaching of fine arts, particularly illustration drawing for eighth-grade students at SMPN 03 Lawang, highlights the necessity for developing innovative media integrated with more interactive teaching methods. This need arises due to indications of students' limited comprehension of the subject matter. This research focuses on developing an e-module combined with a game-based learning approach to optimize the learning process of illustration drawing. This research aims to assess the need for enhancing students' understanding of illustration drawing concepts, describe the outcomes of developing an e-module integrated with game-based learning, and evaluate its effectiveness, validity, and feasibility. The method used in this study is the research & development method with the Four-D model. This research approach combines qualitative and quantitative methods with trial subjects involving teachers, students, and experts. The results obtained from the expert validator on the media aspect showed a figure of 91%, and the results of the material aspect validator got a figure of 86%, both of which are included in the very valid category. The feasibility test by the art and culture teacher reached a score of 94%, and the results of the feasibility test by students reached a score of 94%, also in the very valid category. Meanwhile, the comparison test of pre-test and post-test by students showed a score of 0.777, in the effective category. Therefore, it was decided that the media developed was valid and feasible to be used to improve the understanding of eighth-grade students of SMP Negeri 03 Lawang.

Keywords: E-Module, Game-Based Learning, Illustration Drawing, Media Development

Submission: March 14, 2025 Review: March 20, 2025 Publish: April 30, 2025

INTRODUCTION

The advancement of science and technology has influenced various fields, with education being one of the most dynamic sectors in adapting to these developments. Technology is employed as a tool to enhance the quality of learning media, which has become a crucial necessity (Nirwana & Desyandari, 2024). Therefore, educators are urged to innovate so that the learning process can remain relevant, effective, and in accordance with the character of students. Learning innovations integrated with technology are expected to be able to coordinate learning activities and provide digital-based teaching materials (Prasetyo et al., 2021) . In line with this, students will tend to have a great desire to continue the learning process when the process involves more students and integrates digital technology (Andari, 2020) . The existence of digital learning objectives that are considered more successful in building new scenarios and environments during the learning process and no longer prioritizing traditional teaching methods, further supports this (Ramadhina et al., 2022)

Unfortunately, learning with conventional methods is still often used by educators using teacher handbooks and student books (Ariyanto & Diva, 2022). Many educators feel that they are still unable to integrate digital technology aspects in the media that have been developed (Aryawan et al., 2018). As a result, students will be more passive because the learning process does not use technology-based media as support (Wulandari et al., 2020). The failure to maximize sufficient optimization of student learning outcomes, particularly in terms of comprehension, is one of the issues that frequently arises in Indonesia's educational system these days. The absorption of understanding by students, which is one form of learning outcomes, can be influenced by two aspects, namely internal and external aspects (Brata (2003: 233) and Luvy (2016) at (Numimit et al., 2023)). This learning outcome is certainly influenced by several things that occur in the education and teaching process. Learning models, methods, teacher competence, and media availability are the main things that need to be considered before the start of teaching and learning activities.

Learning media are those that are utilized in educational settings (Iriaji et al., 2022). A key component of a learning process is learning media, which should support students in completing learning activities as effectively as possible. The proper selection of learning media significantly influences students' learning outcomes. Furthermore, the media should serve as a bridge for teachers to convey content and messages to students (Prasetyo, 2024). Media development must also pay attention to aspects of advances in digital technology. Educators are required to prepare digital learning media that supports the online learning process so that students can open the media from anywhere and anytime (Rini et al., 2021) . The completion of the need for this type of media-based education can be realized through media development in the form of e-modules.

Rahmi (2019) explains that E-modules are independent learning media presented in digital format and are intended to achieve the expected learning competencies. Moreover, e-modules are designed to enhance student engagement in the learning process, enabling them to participate more actively. That is because in the e-modules, students will be able to find electronic formations of form animations, videos, navigation, and links that allow students to learn anywhere and anytime. The use of e-modules as educational materials have been adjusted to keep up with modern advancements by integrating game-based learning methods. Games, both digital and conventional forms, are used in game-based learning to assist and improve teaching, learning, or assessment (Charlier et al., 2012). Romana and Peyman (2011) explained that games have the potential as an intermediary medium that will train, and involve students more in the learning process (Wahyuning, 2022)

In the subject of cultural arts aspects of fine arts, students will encounter a lot of material about images. One of them is illustration drawing material. Drawing illustrations requires a creative and interactive approach so that students can be motivated to understand

the concepts and techniques taught. In this context, e-modules that integrate game elements can be an effective solution to help improve student understanding, especially in illustration drawing materials. Besides that, teachers will be able to provide material in a more innovative, effective, and interactive format. This condition will be able to help improve student understanding accompanied by increased interest and motivation to learn (Widowati, 2023)

Several issues were identified during the interview and observation process, which contributed to the ineffectiveness of learning. Lack of learning activities, a lack of diverse learning media, signs of student boredom, a lack of comprehension of fine arts content, and a lack of updates that integrate technology and media are all significant issues that must be addressed in the educational process. For this reason, it is necessary to update the media used by educators for cultural arts subjects so that learning objectives and the process of increasing students' understanding can run optimally.

Some previous studies that were used as references for this research include research by Rahayu Nita and Gutama (2024) regarding e-modules (Rahayu et al., 2024) , Puspitasari, Suyono and Astutiningtyas (2021) regarding e-modules (Puspitasari et al., 2021) , Maharani, Aminuyati, Wiyono, Buwono and Karolina (2024) on game-based learning model (Maharani et al., 2024) and Fatikawati, Zulfitia and Husaeni (2024) on the utilization of technology in learning fine arts (Fatikawati et al., 2024). These studies each describe that the use of e-modules and the utilization of technology can make learning media into practical, efficient media and can maximally improve student learning outcomes. All of that previous studies have not specifically addressed illustration drawing material for eighth-grade junior high school students. This gap presents an opportunity for further development research in this area.

Based on the background of the problem and data and field facts obtained by researchers as written, researcher then conducted a study with the theme "Design and Development of Media in the Form of E-Modules That Will Be Integrated with the Game-Based Learning Method in the Illustration Drawing Unit in an Effort to Improve Student Understanding". The purpose of this development research is to identify and assess the needs of educators and learners to improve comprehension of illustration drawing unit material for class VIII SMP Negeri 03 students of Lawang, describe the process and results of developing e-modules integrated with game-based learning methods in illustrative drawing units using the 4D development model and describe the effectiveness, validity and feasibility of e-modules in the process of increasing student understanding of illustrative drawing material after the media is used.

RESEARCH METHODS

This research uses the R&D (Research and Development) research method. Research and Development (R&D) is the process of developing, creating, and validating educational products. Development research has become the main choice to produce new innovations in all aspects of the field of life because this type of research provides certainty in the activities from products or models (Waruwu, 2024). This research approach a combination of qualitative and quantitative methods. The qualitative method is used to analyze data from observation, questionnaires, interviews, and documentation. The research method applied is descriptive qualitative, which aims to describe and present an overview of facts and data through explanations. Meanwhile, the quantitative method is used to compare pretest-posttest scores before and after the research action.

The Four-D Model, or 4D, is the development model utilized in this research. This model was developed by Sivasailam Thiagarajan, Dorothy S. Semmel, and Melvyn I. Semmel in 1974 (Johan et al., 2023). This model is one of the options that can be used in the media development process (Arkadiantika et al., 2020). The 4D development model consists of four

stages as in the following figure.

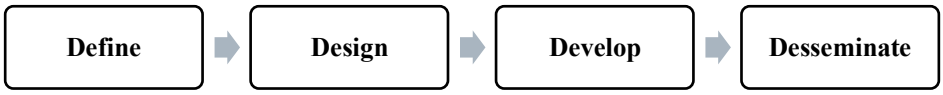

Figure 1. Flowchart of the 4D model
(source: adaptation of 4D Thiagarajan (Arkadiantika et al., 2020)

Each stage of 4D has its own role in the media development process. The definition process includes analysis of the ongoing learning process, students, materials, tasks, and formulation of learning objectives. There are five steps in the definition stage, which include analysis of learning components in the form of needs, students, tasks, and concepts and formulation of learning objectives. The design process is carried out through four stages, including test preparation, media selection, format selection, and initial design. The next stage is the development process, where the development of products or models is carried out, including expert evaluations followed by revisions and trials of development results. Meanwhile, the final stage is the distribution stage, which aims to distribute the integrated e-module of the game-based learning method that has been developed on a wider scale.

In this research, there were four trial subjects, including media aspect validators, material aspect validators, students in class VIII of SMPN 03 Lawang, and one art and culture subject teacher. The subjects then produced two types of data in the form of qualitative data in the form of interview results, observations, and documentation and quantitative data in the form of validator, student, and teacher value calculations on each instrument. In processing expert and audience assessment data using the formula:

$$P = \frac{\Sigma X}{\Sigma Xi} \times 100\%$$

(Source: Sudjana, 1990:44)

Description:
P = Percentage
∑X = the sum of all informant responses
∑Xi = number of ideal values in one item
100% = constant number

The formula is then processed using guidelines that can interpret the results of data analysis, very valid, valid, determined by the criteria of quite valid, and invalid.

Table 1. Success Interpretation Criteria (Sudjana, 1990)

Category	Percentage Range	Qualification
A	80% - 100%	Very valid
B	60% - 79%	Valid
C	50% - 59%	Valid enough
D	<50%	Invalid

In the data form of the test, the N-Gain (normalized gain) formula is used:

$$\text{N-Gain} = \frac{\text{Skor Posttest} - \text{Skor Pretest}}{\text{Skor Ideal} - \text{Skor Pretest}}$$

The categorization of the acquisition of the N-Gain score is determined based on the N-Gain value which can be made in the form of percent (%). The division of N-Gain score categories

in the following table.

Table 2. Division of Gain Score (Guntara, 2021)

N-Gain Value	Category
G > 0,7	High
0,3 < G <0,7	Medium
G < 0,3	Low

RESULTS AND DISCUSSION

Define

The definition stage involves analyzing various aspects of the learning process, including students, learning materials, assignments, and the formulation of learning objectives. Based on these steps, researchers found that the school implements an independent curriculum, while the learning media used are still predominantly conventional. There are also indications of students' lack of understanding, suboptimal utilization of school facilities and infrastructure, and diverse student characteristics in a single class. These findings highlight the need for media development that better integrates digital technology and interactive methods such as games. In the task analysis stage, students are expected to achieve minimum competencies through several key activities, including "Let's Practice" and "Let's Play." At the next stage, specific learning objectives related to illustration drawing are established, ensuring that students acquire the necessary skills and understanding.

Design

In the design stage, the first step taken is to compile a standard test that will be given to students, including oral tests, tests written in the form of questions totaling 20 items, and tests in game form. The next step is to determine that the media developed is in the form of an e-module. Several other tools, including Canva, Photoshop, Web Educative Play, and Heyzine Flipbook Web, were used in the preparation of e-modules. After that, the e-module format was chosen and will be sent to students in the form of links. The e-module design has several parts, namely the cover page, foreword, table of contents, general e-module information, core, components material description, evaluation, attachments, and bibliography. Each part of the e-module is attempted by researchers to insert pictures or illustrations so that when students do learn using this e-module, they will be more interested and the learning process can run more conducive, effective, efficient and communicative.

Develop

At this stage, the media design produces an e-module of 69 pages which are then uploaded to the heyzine flipbook web and will be shared in the form of a link. The next step is expert assessment which will be accompanied by revisions. This stage is carried out to ensure that the learning media is accurate, effective, tested, and has high technical quality. The media aspect validator and the material aspect validator are two of the four specialists who serve as validators. The following chart details the findings of the two experts' validation test.

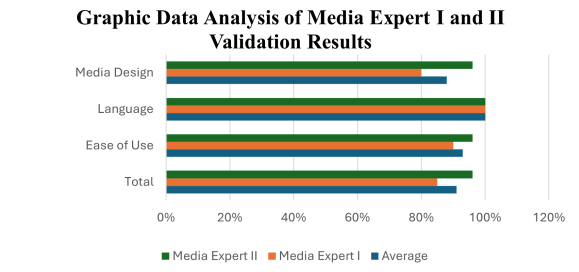

Figure 2. Results of Media I and II Expert Analysis

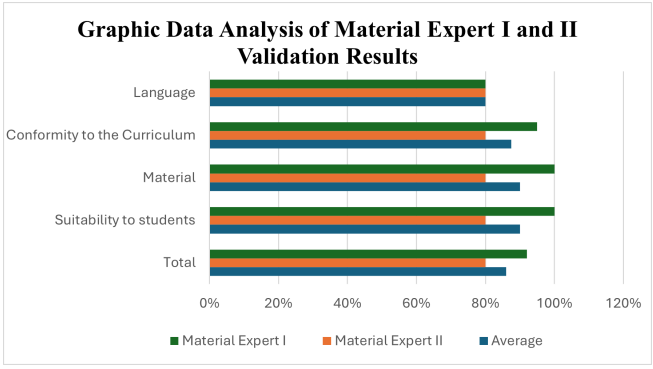

Figure 3. Results of Material I and II Expert Analysis

From the picture above, it can be seen that the validator on the media aspect I gave a total average score of 85%, the expert validator II 96%, and the overall average of the two experts 91%, which was stated as very valid. While the validator on the material aspect I gave a total average score of 92%, the validator on the material aspect II 80% and the overall average of the two experts 86% which was stated as very valid. Some suggestions received from each expert and used as evaluation material for media improvement by the researcher include aspects of typography, design, e-module components, images, illustrations, writing sources, and selection of color palettes. In the following phase, teachers and students from class VIII SMPN 03 Lawang were used to test the e-module media. Media was provided, questionnaires were distributed, and the findings were analyzed as part of the trial stage. The following figureshows the outcomes of the computations and analysis.

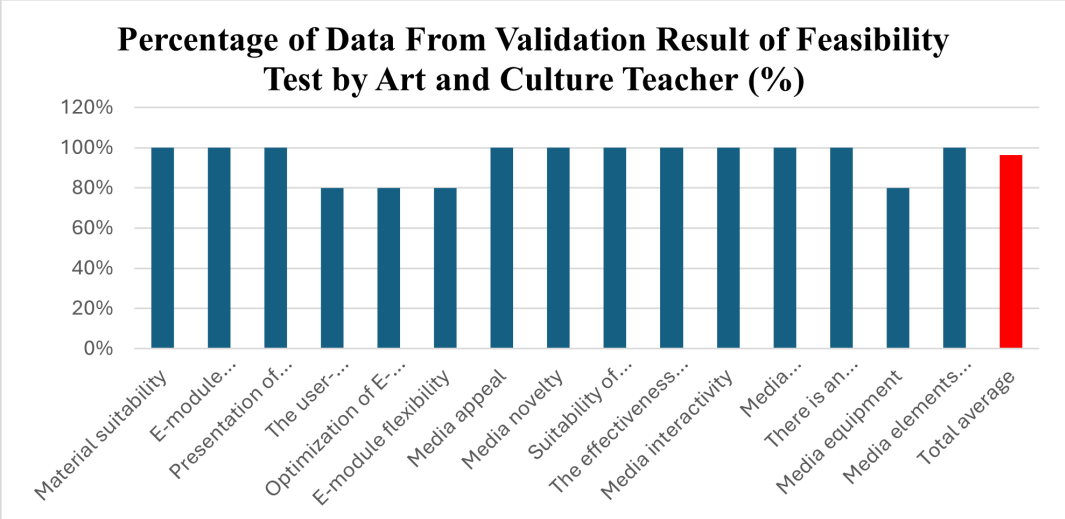

Figure 4. Data on Feasibility Test Validation Results by Cultural Arts Teachers

The total outcome, as determined by the data processing of the teacher feasibility test of fine arts content, was 94%. Accordingly, it can be said that the development materials in the form of e-modules combined with the game-based learning approach have a high degree of media validity and are suitable for educational purposes. Furthermore, the media was tested on students through two stages, namely through tests and effectiveness test questionnaires. The results of the two trials are depicted in the following graph.

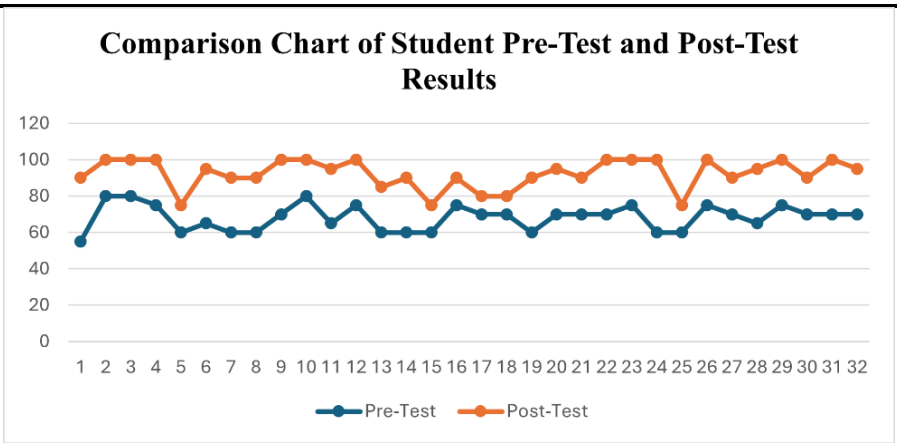

Figure 5. Comparison of Student Test Results

A result of 0.777 was achieved following two testing phases, one before and one after the media was implemented. The results fall into the high and effective group after being adjusted to Table 2 Gain Score Distribution. Based on these findings, it can be concluded that the game-based learning approach, which is used in the integrated e-module learning materials, is an effective way to implement in learning activity.

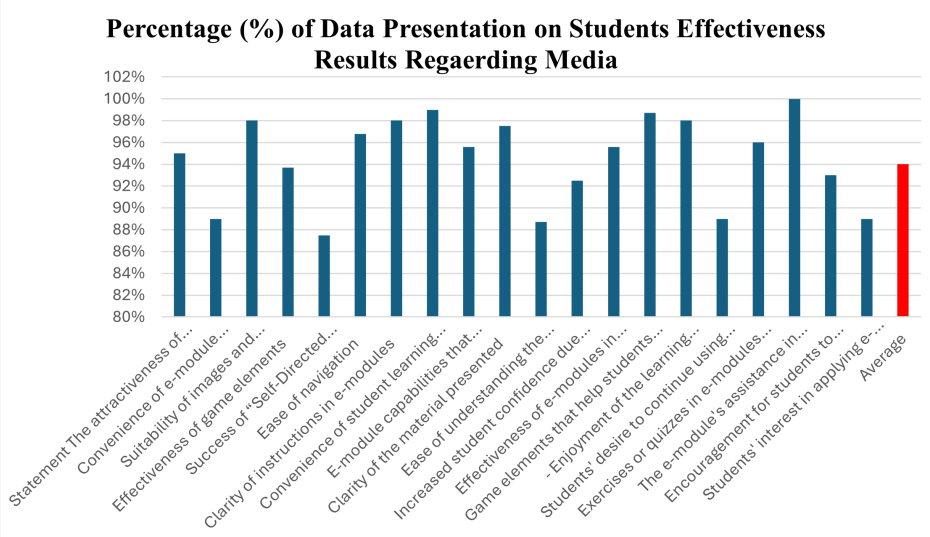

Figure 6. Data Presentation of Student Effectiveness Results on Media

Based on data processing obtained from the media effectiveness test by students, the results of the effectiveness calculation are at a percentage of 94%. Were obtained, it can be concluded that students are helped when using development media in the learning process. That can infer that using e-module media integrate with the game-based approach to educate and learn is both legitimate and practical.

Disseminate

The product in the form of an e-module that has been developed is then shared in the form of a link and may be accessed online. Because in the research conducted, the e-module was only used in one class, class VIII-G, at this stage it will be possible to disseminate the media e-module to other class VIII. In addition to class VIII, e-modules are also disseminated to cultural arts teachers who teach class VIII so that they can be applied to class subsequent periods. Hopefully, all cultural arts teachers will be able to feel the advantages, effectiveness,

and validity of the developed media. In addition, teachers will be able to provide evaluations as development feedback.

CONCLUSIONS

This e-module learning media integrated with the game-based learning method was developed using 4D stages. The Four-D model is divided into four parts according to its name including the define, design, develop, and disseminate stages. This media was then given to four experts including the material aspect expert validator and the media aspect expert validator. The media aspect expert validator I gave a score of 85%, the media aspect expert validator II gave a score of 96% and the overall average of the two experts was 91% in the very valid category. While the material aspect expert validator I gave a score of 92%, the media aspect expert validator II gave a score of 80% and the overall average of the two experts was 86% which was in the very valid category. Furthermore, it can be concluded that the media development has been valid and can be implemented in teaching and learning activities in the classroom.

After being implemented in the learning process of illustration material for art and culture subjects, the integrated e-module media with game-based learning method obtained the assessment results of art and culture teachers with a percentage of 94% of the expected maximum result of 100% in the very valid category. While in the field trial involving 32 students of class VIII-G SMPN 03 Lawang, the trial obtained an average result of the N-Gain formula calculation of 0.777 or 77.7% in the high level of effective category and an effectiveness test with a percentage of 94% of the expected maximum result of 100%. Based on the results obtained, it can be concluded that the development of the media is stated to meet the valid criteria and is suitable for use in the teaching and learning process in the classroom.

ACKNOWLEDGMENTS

The researcher expresses his deepest gratitude to all those who have helped the process of writing this article especially to the supervisor, lecturers of fine arts education at the State University of Malang, cultural arts teachers at SMP Negeri 03 Lawang and friends of class VIII-G SMP Negeri 03 Lawang, colleagues, and family who always encourage. Hopefully, this article will be useful for the development of science and educational practice.

REFERENCES

Andari, R. (2020). Pemanfaatan Media Pembelajaran Berbasis Game Edukasi Kahoot ! Pada Pembelajaran Fisika. *Orbita. Jurnal Hasil Kajian, Inovasi, Dan Aplikasi Pendidikan Fisika*, *6* (1), 135–137.

Arkadiantika, I., Ramansyah, W., Effindi, M. A., & Dellia, P. (2020). Pengembangan Media Pembelajaran Virtual Reality Pada Materi Pengenalan Termination Dan Splicing Fiber Optic. *Jurnal Dimensi Pendidikan Dan Pembelajaran*, 29–36.

Aryawan, R., Sudatha, I. G. W., & Sukmana, A. I. W. I. Y. (2018). Pengembangan E-Modul Interaktif Mata Pelajaran Ips Di Smp Negeri 1 Singaraja. *Jurnal Edutech Universitas Pedidikan Ganesha*, *6* (2), 180–191.

Charlier, N., Ott, M., Remmele, B., & Whitton, N. (2012). Not Just For Children: Game-Based Learning For Older Adults. *Proceedings Of The European Conference On Games-Based Learning*, *May 2017*.

Fatikawati, O., Zulfitria, & Husaeni, F. (2024). Pemanfaatan Teknologi Dalam Pembelajaran Seni Rupa Dalam Upaya Meningkatkan Kompetensi Siswa: A Literature Review. *Infontika : Jurnal Pendidikan Informatika*, *03* (01), 7–11. Https://Jurnal.Habi.Ac.Id/Index.Php/Info

Iriaji, Prasetyo, A. R., & Sidyawati, L. (2022). Development Of Educational Media About

Natural Dyed Batik Based On Virtual Reality. *International Conference On Art, Design, Education And Cultural Studies (Icadecs)*, 226–235. Https://Doi.Org/10.18502/Kss.V7i13.11665

Johan, J. R., Iriani, T., & Maulana, A. (2023). Penerapan Model Four-D Dalam Pengembangan Media Video Keterampilan Mengajar Kelompok Kecil Dan Perorangan. *Jurnal Pendidikan West Science*, *01* (06), 372–378.

Maharani, Aminuyati, Wiyono, H., Buwono, S., & Karolina, V. (2024). Efektivitas Model Pembelajaran Game-Based Learning Terhadap Hasil Belajar Peserta Didik Pada Pembelajaran Ips Kelas Vii Smp Negeri 6 Pontianak. *Journal On Education*, *06* (03), 16677–16684. Https://Jonedu.Org/Index.Php/Joe/Article/View/5403

Nirwana, N. S., & Desyandari. (2024). Pengembangan E-Modul Pembelajaran Seni Rupa Berbasis Pjbl Menggunakan Sistem Blended Learning Di Kelas Iv Sekolah Dasar. *E-Jurnal Inovasi Pembelajaran Sekolah Dasar (E-Jpisd)*, *12* (1), 41–55. Https://Doi.Org/Http://Dx.Doi.Org/10.24036/E-Jipsd.V12i1

Numimit, A., Iskandar, I., & Nuryatin, A. (2023). Pengaruh Kompetensi Guru Terhadap Hasil Belajar Ekonomi Dengan Motivasi Belajar Sebagai Mediator (Survei Terhadap Siswa Kelas X Sma Negeri 2 Kuningan). *Journal Pendidikan Ilmu Pengetahuan Sosial*, *15* (2), 192–201.

Prasetyo, A. R. (2024). Belantika Pendidikan Pengembangan Modul Ilustrasi Sebagai Media. *Jurnal Belantika Pendidikan*, *7* (1), 9–19.

Prasetyo, A. R., Rahmawati, N., Ulfa, S., Widodo, T., Qomar, M., & Wulansari, A. E. (2021). The Development Of A Virtual Module Based On The Infographic Dynamics Of Art Materials. *International Conference On Art, Design, Education And Cultural Studies (Icadecs)*, *2021*, 178–185. Https://Doi.Org/10.18502/Kss.V5i6.9193

Puspitasari, S. N., Suyono, S., & Astutiningtyas, E. L. (2021). Efektivitas Penerapan E-Modul Dalam Meningkatkan Pemahaman Siswa Kelas Viii Pada Materi Pola Bilangan Masa Pandemi. *Journal Of Mathematics Education And Learning*, *1* (3), 274–286. Https://Doi.Org/10.19184/Jomeal.V1i3.26773

Rahayu, B. P., Nita, C. I. R., & Gutama, A. (2024). Pengembangan E-Modul Interaktif Berbasis Kearifan Lokalpada Pembelajaran Seni Rupa Kelas V Sekolah Dasar. *Sistem-Among:Jurnal Pendidikan Sekolah Dasar*, *4* (2), 41–51.

Ramadhina, S. R., Pranata, K., Muhammadiyah, U., & Hamka, P. (2022). Pengembangan E-Modul Berbasis Aplikasi Flipbook di Sekolah Dasar. *JURNAL BASICEDU*, *6* (4), 7265–7274.

Rini, D. R., Ratnawati, I., & Wulandari, R. T. (2021). The Development of a Flip Book as an Online Learning Media. *International Conference on Art, Design, Education and Cultural Studies (ICADECS)*, 263–270. https://doi.org/10.18502/kss.v5i6.9209

Wahyuning, S. (2022). Pembelajaran ipa interaktif dengan game based learning. *Jurnal Sains Edukatika Indonesia (JSEI)*, *4* (2), 1–5.

Waruwu, M. (2024). Metode Penelitian dan Pengembangan (R&D): Konsep, Jenis, Tahapan dan Kelebihan. *Jurnal Ilmiah Profesi Pendidikan*, *9* (2), 1220–1230.

Widowati, R. A. D. (2023). Implementasi Canva dalam Digitalisasi Mata Pelajaran Seni Budaya Untuk Meningkatkan Keaktifan dan Hasil belajar Siswa. *Indonesian Journal of Action Research*, *2* (1), 135–142. https://doi.org/10.14421/ijar.2023.21-18

Wulandari, S., Wijaya, O. D., Laksono, I. T., & Robby, H. (2020). Penggunaan Media Pembelajaran Berbasis Teknologi Pada Guru Seni Budaya MTs Se-Kota Malang. *JPKS (Jurnal Pendidikan Dan Kajian Seni)*, *5* (1), 82–95. http://jurnal.untirta.ac.id/index.php/JPKS/article/view/7640