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Development of Interactive E-Module Based on Inquiry Learning to Enhance *IPAS* Learning Outcomes for Students Public Elementary School

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Abstract: The purpose of this study was to develop and test the feasibility and effectiveness of an Interactive E-Module based on Inquiry Learning teaching materials on improving the cognitive learning outcomes of *IPAS* for fourth-grade students of SD Negeri Tambahagung 03 Pati Regency. This type of development research is Research and Development (R&D) using the ADDIE development model. The novelty of this research is the development of material on the Human Sensory System in teacher books and student books based on an innovative learning model, namely Inquiry Learning, which includes interactive edugame evaluations. The results showed the feasibility of media experts with a score of 89.0635% in the very feasible category and material experts with a score of 91.23% in the very feasible category. This is supported by a teacher-response questionnaire of 97.5% and a student-response questionnaire of 93.73%. The effectiveness of Interactive E-Modules based on Inquiry Learning based on the cognitive learning outcomes of students has increased with a normality test analysis, which shows that pre-test and post-test data are typically distributed. The results of the T-test calculation show that there is a significant difference between the pre-test and post-test learning outcomes with the acquisition of a medium category average through the N-Gain test. The conclusion of the research on the development of inquiry learning-based interactive e-modules was successfully developed, and it was very feasible and effective for improving the cognitive learning outcomes of IPAS fourth-grade students of SD Negeri Tambahagung 03 Pati Regency.

Keyword: E-Modul; Inquiry Learning; *IPAS*

Introduction

The National Education Standards contained in PP No. 4 of 2022, amending PP No. 57 of 2021, explains the realization of national education quality to enhance the nation's intellectual capacity, shape character, and advance the nation's standard of living, which is the goal of education [1]. The importance of the role of education in people's daily lives is that it can always make them develop in a better direction. The curriculum needs to be adjusted to the development of society, science, and technology and meet the needs of students in order to ensure a better quality of primary and secondary education in Indonesia, improving the quality of society and achieving educational goals. Learning recovery is pursued by implementing the "Independent Curriculum." Preparing students to face future global challenges through the implementation of the new curriculum aims to improve the quality of education in Indonesia. 21st-century skills need to be developed, including environmental skills. This is a priority of the Merdeka Curriculum [2]. Improving the quality and potential of Indonesian people who are superior and competitive compared to other countries in order to accelerate the achievement of national education goals by implementing an independent learning policy. In the design of the Merdeka Curriculum, Natural Sciences and Social Sciences are combined into natural and social sciences (*IPAS*).

IPAS includes natural science and social science learning, which guides students to think critically and skillfully in carrying out activities about the universe and its conditions, as well as social and humanities. Several learning theories in IPAS learning aim to guide and stimulate students in project-based learning [3]. The integration is not only studied separately in these two subjects but also interrelated so that students can understand the relationship between natural and social aspects in everyday life [4].

Things that often happen with curriculum changes, of course, there are changes in textbooks that contain subject matter [5]. In line with this, in curriculum development in *IPAS* learning, the teaching materials that have been circulating have not fully covered the material that has been stated in the *IPAS* learning outcomes [6]. In fact, in achieving learning that is more effective, efficient, and in accordance with the learning objectives in the learning outcomes, teaching materials are needed because of the importance of mastering the entire scope of *IPAS* material in the Merdeka Curriculum by students [7].

Information and learning materials contained in teaching materials can be packaged in the form of media that can facilitate students learning as a manifestation of the curriculum [8]. Various formats of teaching materials are in the form of printed modules, videos, software-based modules, or electronic modules (e-modules) so that teachers and students can use them. Generally, there are many teaching materials in the form of printed modules, but they are less attractive to students because they tend to be

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monotonous. The a need for the development of innovative electronic-based teaching materials in the form of Interactive E-Modules that contain material, methods, images, illustrations, and videos that are systematically designed and attractive [9].

The novelty of Interactive E-Modules based on Inquiry Learning is a learning model that emphasizes the activeness of students through solving the problems given so that students can search or find their ideas, concepts, or answers to their discoveries critically and students can encourage students' interest and motivation in learning [10]. This is in line with cognitive development at the concrete operational stage (6-12 years), which states that the development of a child's logical way of thinking is where children are able to solve simple problems systematically and draw conclusions based on logic [5].

Based on current technological developments, modules can be realized as e-modules that are displayed through devices, handphones, or laptops/computers [11]. Students in the learning process use interactive E-modalities based on inquiry learning with the help of Flipbook, which can provide exciting visuals that make it easier for students to use communicative applications because it encourages students to be enthusiastic about learning [12]. Flipbook, as a professional software, can be converted into book format by converting PDF files, text, images, and videos [13].

Based on the results of observations, interviews, and documentation conducted by researchers with Mrs. Nur Fitri, S.Pd. as the fourth-grade class teacher of SD Negeri Tambahagung 03 Pati Regency, stated that in the teaching and learning process of *IPAS* teaching materials used such as teacher books and student books are only sourced from the Ministry of Education and Culture and are not technology-based. Teachers use videos taken from YouTube with a direct learning model because the learning model is considered efficient for teachers to deliver *IPAS* material that has not been developed, namely Human Sensory System material in teacher books and student books. The teacher's lack of ability and knowledge in updating the learning model is a factor in causing students to be passive in the teaching and learning process, so the low level of ability and understanding of students in receiving material delivered by the teacher. It is also a significant factor; students easily give up when they encounter problems and questions because they are considered difficult to solve. These problems affect the concentration and cognitive learning outcomes of students who have not met the Learning Objective Achievement Criteria (*KKTP*). *KKTP* on the learning content of *IPAS* is 70. *IPAS* learning data on material with learning outcomes for students analyzing the relationship between the form and function of human body parts (Human Sensory System) shows an incomplete percentage of 55% of the total 20 students. This is the basis for conducting research by developing Interactive E-Modules based on Inquiry Learning to improve the learning outcomes of *IPAS* for fourth-grade elementary school students.

Some research results (Yunita Susanti et al., 2023) state that the development of Interactive E-Modules is considered very good and feasible to use as a source and media in the additional teaching and learning process in fourth-grade science learning [14]. Previous research in line with (Lala Eriska et al., 2022) explained that the Inquiry-based E-Module in learning was considered very feasible and valid in the learning process [15]. This is supported by research (Leni Rahmawati et al., 2020), which states that the inquiry learning model applied to learning is considered effective [16]. Another study (Anak Agung Meka Maharcika et al., 2021) explains that the development of E-Modules assisted by Flipbook is deemed valid and practical categories used as a resource in the teaching and learning process in elementary schools [17].

Based on previous research, the novelty of this research is to develop fourth-grade *IPAS* learning material, namely the material on the Five Senses at SD Negeri Tambahagung 03, which has also implemented the Merdeka Curriculum through an Interactive E-Module based on an innovative learning model, namely Inquiry Learning. This research also provides novelty by presenting interactive edugame evaluations and creative assignments. In addition, it stimulates students through songs to make it easier for them to remember the material.

The development of Interactive E-Modules based on Inquiry Learning conducted by researchers is expected to be able to provide updates related to teaching materials for *IPAS* subjects on the material of the Human Sensory System, which teachers can later apply in the learning process. The purpose of this study was to develop and test the feasibility and effectiveness of Interactive E-Modules based on Inquiry Learning in improving the cognitive learning outcomes of *IPAS* for fourth-grade students of SD Negeri Tambahagung 03 Pati Regency.

Research Methods

Research and Development (R&D) is crucial for creating validated products with regard to feasibility and effectiveness. The development of an Interactive E-Module based on Inquiry Learning follows the ADDIE development model, comprising analysis, design, development, implementation, and evaluation stages.

The development of Interactive E-Modules based on Inquiry Learning as a learning resource goes through the initial stage, namely the analysis stage. The need for the development of teaching materials in the form of Interactive E-Modules based on Inquiry Learning is due to fundamental problems in the teaching and learning process. The application of Interactive E-Modules based on Inquiry Learning as teaching materials in elementary schools can be known for their feasibility by doing some analysis. The continuation of the product developed after going through the analysis stage is the design stage of teaching materials in the form of Interactive E-Modules based on Inquiry Learning shown to fourth-grade elementary school students to be developed. Learners are helped in understanding learning materials through Interactive E-Modules based on Inquiry Learning that are designed to learn more excitingly and interactively. The development stage is realized by realizing the development of products in the form of interactive e-modules based on inquiry learning. The a need for adjustments to the material and learning objectives in developing Interactive E-Modules based on Inquiry Learning so that they can be applied. The implementation stage is carried out after Interactive E-Modules based on Inquiry Learning are reviewed by media and material experts and go through the revision stage. The evaluation stage is a stage in the application of Interactive E-Modules based on

Inquiry Learning in the teaching and learning process in elementary schools that are tested for feasibility and effectiveness.Penelitian ini dilaksanakan di SD Negeri Tambahagung 03 Kabupaten Pati.

The subjects of this study were twenty-fourth-grade students at SD Negeri Tambahagung 03. Data collection techniques included test and non-test techniques. Test techniques included pre-tests and post-tests, while non-test techniques included observation, interviews, and questionnaires.

Data analysis techniques are obtained by adjusting to the data group, namely, analyzing product feasibility and analyzing product effectiveness. Analyzing product feasibility by media experts and material experts to obtain validation supported by teacher and learner response questionnaires after using Interactive E-Modules based on Inquiry Learning as developed.

Analysis of product feasibility is carried out to meet the feasible criteria for developing Inquiry Learning-based Interactive E-Modules. Feasibility measurement with an expert validation questionnaire with a four-scale Likert scale, namely very good with a score of 4 to less good with a score of 1. Product feasibility can be tested using the following formula (1) [18].

$$NP = \frac{R}{SM}\ x\ 100\% \qquad (1)$$

Description:

NP : the result score
R : the raw score obtained
SM : the ideal maximum score

Furthermore, the percentage value obtained is converted to the eligibility criteria presented in Table 1. [19].

Table 1. Product Eligibility Criteria

Percentage	Criterion
81 % - 100 %	Very Worthy
61 % - 85 %	Worthy
41 % - 60 %	Pretty Decent
21 % - 40 %	Less Decent
0 % - 20 %	Very Unworthy

Analysis of product effectiveness was carried out by analyzing all data obtained from pre-tests and post-tests preceded by normality tests, followed by data analysis with the T-test and the N-Gain test to determine the final results. The data analysis was assisted by SPSS version 26.

Results and Discussion

Development of Interactive E-Modules based on Inquiry Learning

This research focuses on the development of Interactive E-Modules based on Inquiry Learning in the subject of *IPAS* material on the Human Sensory System for fourth grade SD Negeri Tambahagung 03 Pati Regency. It encompasses examining the outcomes of this development, including the e-module's design, its feasibility, and its effectiveness as assessed through pre-test and post-test scores. The research methodology follows the ADDIE model (Analysis, Design, Development, Implementation, Evaluation):

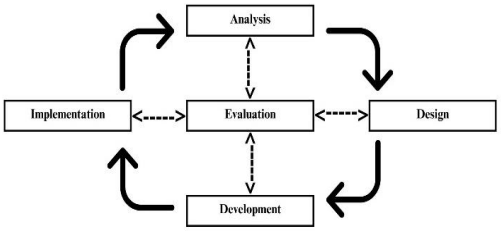

Figure 1. Stages of the ADDIE Model

Analysis

The first step in creating an Interactive E-Module on Inquiry Learning involves the analysis phase. This phase entails examining the requirements, student characteristics, and materials. The aim is to tailor the content and features of the Interactive E-Module to suit the specifics of the *IPAS* curriculum on Human Sensory Organs, addressing both the material itself and the unique needs of the school and its students.

Design

Continuation of product development after going through the analysis stage, namely the design stage of teaching materials in the form of Interactive E-Modules based on Inquiry Learning shown to fourth-grade elementary school students to be developed. Learners are helped to understand learning materials through Interactive E-Modules based on Inquiry Learning designed so that learning is more exciting and interactive by determining the framework, content, and aspects of Interactive E-Modules based on Inquiry Learning according to the material and needs of students. The design of Interactive E-Modules based on Inquiry Learning in the subject of *IPAS* material on the Human Sensory System is in the form of Cover, Preface, Table of Contents, Instructions for Using E-Modules, E-Module Advantages, Learning Outcomes, and Learning Objectives; Introduction; Concept Map on each topic of material; Material of the Human Pancreatic System (Eyes and Ears) which is equipped with indicators of achievement of learning objectives, learning activity objectives, *LKPD* (Learner Worksheets), pictures, animations, videos, songs, and material conclusions; Glossary on each topic of material; Bibliography on each topic of material; Learning Evaluation on each topic of material and the entire topic of material; Enrichment in the form of Creative Tasks; Cover; Developer Profile. The syntax of Inquiry Learning includes (1) orienting students to the problem, (2) formulating problems, (3) formulating hypotheses, (4) collecting data, (5) testing hypotheses, and (6) formulating conclusions [20].

Development

Realizing the Interactive E-Modules based on Inquiry Learning design in its original form through the development of learning objectives according to learning outcomes, preparation and adjustment of materials according to Inquiry

Learning syntax and evaluation (exercise questions and assignments). of Interactive E-Modules based on Inquiry Learning that has been developed with the help of Flipbook as professional software. This product can be used online via a device, laptop, or computer. In the next stage, the need for an assessment that has been made to determine the feasibility of Interactive E-Modules based on Inquiry Learning is validated by media experts and material experts as well as teacher and learner responses.

Implementation

The testing of Interactive E-Modules based on Inquiry Learning in the learning and teaching process was carried out on fourth-grade students in a large group of 20 students. The results of the development of Inquiry Learning-based Interactive E-Modules are presented in Figure 2-4.

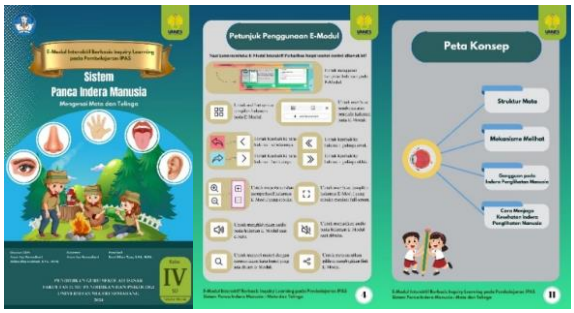

Figure 2. Cover, Instructions for Use, and Concept Maps on Topic A. Human Sense of Vision Interactive E-Module based on Inquiry Learning

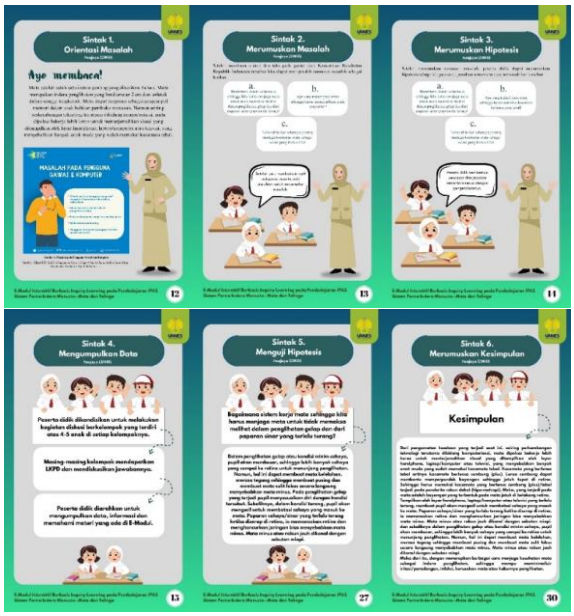

Figure 3. Inquiry Learning Syntax of Interactive E-Module based on Inquiry Learning

Figure 4. Learning Materials and Evaluation on Topic A. Human Sight Senses Interactive E-Module based on Inquiry Learning

Feasibility of Interactive E-Module based on Inquiry Learning

Evaluation

The results of the study stated that an Interactive E-Module based on Inquiry Learning was feasible by media experts and material experts. The feasibility test was carried out by giving a validation questionnaire to material experts and media experts [15]. There are several aspects of assessment in the media expert validation questionnaire, including quality of content and objectives, instruction, technical information, and display. The elements of assessment in the material expert validation questionnaire include Accuracy of Learning Objectives, Appropriateness of students' level of thinking, Interactive E-Module content, Stimulus in the material, Accuracy of lesson content, that is, facts, concepts, principles, and generalizations. Assessment of the feasibility The results of the study stated that the Interactive E-Module based on Inquiry Learning in IPAS subjects was based on the material of the Human Pancreatic System using a media and material expert validation questionnaire. The results of validation from media experts obtained a score of 89.0625% in the category of very feasible to be tested in the field without revision, and validation from material experts obtained a percentage of 91.23% in the category of very feasible to be tested in the field with minor revisions for adjustment.

Table 2. Validator Assessment of Feasibility Aspects

Validator	Assessment Percentage (%)	Criterion
Media Expert	89.0625 %	Very Worthy
Materi Expert	91.23 %	Very Worthy
Average	90.14635 %	Very Worthy

Finally, the results of the assessment of the Interactive E-Module based on Inquiry Learning in the form of teacher and learner responses after use can be seen in the evaluation stage through the feasibility questionnaire of Interactive E-Module based on Inquiry Learning assessed by teachers and learners. The aspects of assessment in the teacher and learner response questionnaire include Content, Language, and Presentation.

Table 3. Results of Teacher and Learner Response Questionnaires

Respond	Assessment Percentage (%)	Criterion
Class IV teacher	97.5 %	Very Worthy
Learners	93.73 %	Very Worthy
Average	95.615 %	Very Worthy

Based on Table 3. the results of the teacher and student response questionnaires show efficient criteria with a percentage value of 93.73% from students and 97.5% from teachers. Previous research findings (Yunita Susanti et al., 2023) also stated that the use of Interactive E-Modules based on Inquiry Learning is highly suitable as a varied and enjoyable learning resource in classroom teaching [14]. Corresponding previous research (Lala Eriska et al., 2022) explains that an Interactive E-Module based on Inquiry Learning in learning is considered very feasible and valid in the learning process [15]. It can be concluded that an Interactive E-Module based on Inquiry Learning is very feasible to use in learning activities.

Effectiveness of Inquiry Learning-based Interactive E-Modules

The effectiveness of an interactive E-Module based on inquiry learning on the material of the human pancreatic system is determined based on the learning outcomes of students by analyzing their pre-test and post-test scores. Effectiveness testing is conducted by providing pre-test and post-test questions [21]. The design uses a one-group pretest-posttest design model, which has not received treatment by doing the pre-test and after getting it by doing the post-test. The results of the pre-test and post-test tests are presented in Table 4.

Table 4. Pretest and Posttest Results

Aspects	Pre-test Score	Post-test Score
Average	45.3	79.85
Top Value	67	93
Lowest Value	30	70

Based on Table 4, it is known that the average cognitive learning outcomes have increased from a pre-test value of 45.3 to 79.85 on the post-test value. The increase occurred because of the interaction between students and teaching materials. Novelty is applied in the learning process using Interactive E-Modules based on an innovative learning model, namely Inquiry Learning with interactive edugame evaluations, so as to improve students' cognitive learning outcomes.

Furthermore, data analysis was preceded by a normality test, followed by data analysis using the T-test and N-Gain test to determine the final results. This study used the help of the SPSS version 26 program to analyze the initial and final data. Knowing whether the data is normally distributed or not, a normality test is conducted. The normality test in this study was carried out with the help of the SPSS version 26 program with Shapiro-Wilk. The results of the normality test are presented in Table 5.

Table 5. Normality Test Result.

Shapiro-Wilk	Sig. value	Information
Pre-test	.451	Normal
Posttest	.093	Normal

Data is said to be normally distributed if the Sig value is used. > 0.05 and not normally distributed if the Sig value is. < 0,05. Based on Table 5. it is known that the Sig value referring to Shapiro-Wilk pre-test data is 0.451 and post-test data is 0.093. The Sig. value in both normality test results is known to be more than 0.05, obtaining the final result that the pre-test and post-test data are typically distributed. After finding the results that the distribution is normal, the Paired T-test can be continued with SPSS version 26 to determine the effectiveness of the Interactive E-Module based on Inquiry Learning. Paired T-test results are presented in Table 6.

Table 6. Paired T-test Results

Paired Samples test	Mean	Sig. (2-tailed)
Pretest - Posttest	-34.55	.000

In the Paired T-test test, it is stated that there is a significant difference in the pre-test and post-test results of the Sig value. (2-tailed) <0.05. Based on Table 7. (2-tailed) <0.05, namely 0.000, this shows that between the pre-test and post-test results, the difference in improvement is shown as 34.55%, so it can be seen that there is a significant difference. It can be concluded that an Interactive E-Module based on Inquiry Learning is effectively used to improve *IPAS* learning outcomes.

The average pre-test and post-test can be determined through the N-Gain Test conducted. This study used the SPSS version 26 program to perform the N-Gain test. The results of the N-Gain test are presented in Table 7.

Table 7. N-Gain Test Results

Action	Average	Average Difference	N-Gain	Criterion
Pre-test	45.3	34.55	0.63	Sedang
Posttest	79.85			

The N-Gain test results show that the cognitive learning outcomes *IPAS* of Grade IV students of SD Negeri Tambahagung 03 Pati Regency using Interactive E-Modules based on Inquiry Learning increased the average N-Gain score of 0.6312 with a moderate category. The results of the average increase in the medium category while the product developed got a very decent category from material experts and media experts as well as teacher and student responses. The external factor that influences this is the readiness of students' learning. Teachers have never developed technology-based teaching materials in the form of interactive E-modules based on inquiry learning, so students' learning readiness must be appropriately considered. In addition, it is also necessary to pay attention to the learning style of students. This is in line with previous research (Shella S. N. et al., 2020), which explained that both learning

readiness and learning style have a significant effect on increasing the average student's learning outcomes [22]. This is in accordance with previous research (Mutia Febriyana et al., 2022), which explained that the development of E-Modules is effective in learning, such as reducing paper usage, increasing learning motivation, and learning to be more meaningful and exciting [23]. Supported research (Leni Rahmawati et al., 2020) states that the Inquiry learning model on learning outcomes effectively improves learning outcomes [16]. Data analysis that was carried out in the study obtained the results of the feasibility test, which shows a very feasible and practical category. The N-Gain test results show a moderate category. Based on data analysis, it is concluded that the use of Interactive E-Modules based on Inquiry Learning is very feasible and effective as a learning resource in the classroom.

Conclusion

The development of Interactive E-Modules based on Inquiry Learning for *IPAS* subjects on the material of the Human Sensory System using the type of Research and Development research with the ADDIE model was successfully developed to obtain very feasible and effective results. The category is very feasible, as obtained from the results of the validation test by media experts with a score of 89.0635% and validation tests by material experts with a score of 91.23%. Interactive E-Module based on Inquiry Learning is declared effective based on the cognitive learning outcomes of students in the form of pre-test and post-test results that experience significant changes in increase. Research on the development of Interactive E-Modules based on Inquiry Learning was successfully developed, and it is very feasible and effective for improving the cognitive learning outcomes of *IPAS* of fourth-grade students of SD Negeri Tambahagung 03 Pati Regency.

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Referensi

[1] Peraturan Pemerintah No. 4 tahun 2022 perubahan Peraturan Pemerintah No. 57 tahun 2021 tentang *Standar Nasional Pendidikan (SNP).*

[2] Khoirurrijal, Fadriati, Sofia, Makrufi, A.D., Gandi, S., Muin, A. Fakhrudin, A., Hamdani, Suprapno. (2022). *Pengembangan Kurikulum Merdeka.* Kota Malang: CV. Literasi Nusantara Abadi.

[3] Suhelayanti, Z., Syamsiah, Rahmawati I., Tantu, Y. R. P., Kunusa, W. R., Suleman, N., Nasbey, H., Tangio, J. S., & Anzelina, D. (2023). *Pembelajaran Ilmu Pengetahuan Alam dan Sosial (IPAS).* Kota Medan: Yayasan Kita Menulis.

[4] Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi, 2021.

[5] Pujiati, Rahmawati, F., & Rahmawati. (2019). *Modul Kurikulum dan Pembelajaran dengan Pendekatan Hypercontent*. Bandar Lampung: AURA CV. Anugrah Utama Raharja Anggota IKAPI No.003/LPU/2013

[6] Fitri, A., Rasa, A. A., Kusumawardhani, A., Nursya'bani, K. K., Fatimah, K., Setianingsih, N. I. (2021). *Buku Panduan Guru Ilmu Pengetahuan Alam dan Sosial*. Jakarta Pusat: Pusat Kurikulum dan Perbukuan Badan Penelitian dan Pengembangan dan Perbukuan Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi.

[7] Arifin, Zainal. (2017) *Konsep dan Model Pengembangan Kurikulum*. Bandung: PT Remaja Rosdakarya.

[8] Abdul Majid. (2017). *Perencanaan Pembelajaran, Mengembangkan Standar Kompetensi Guru.* Bandung: Remaja Rosdakarya.

[9] Laili, I. (2019). Efektivitas Pengembangan E-Modul Project Based Learning Pada Mata Pelajaran Instalasi. *Jurnal Imiah Pendidikan Dan Pembelajaran,* 3 (3).

[10] Efendi, D. R., & Wardani, K. W. (2021). Komparasi Model Pembelajaran Problem Based Learning dan Inquiry Learning Ditinjau dari Keterampilan Berfikir Kritis Siswa pada Mata Pelajaran IPA di Sekolah Dasar. *Jurnal Basicedu*, 5(3), 1277–1285.

[11] Harawati, N. S., & Muhtadi, A. (2018). Pengembangan Modul Elektronik (E-Modul) Interaktif pada Mata Pelajaran Kimia Kelas XI SMA. *Jurnal Inovasi Teknologi Pendidikan,* 5(2), 180-191.

[12] Pratama, R. J., & Yasa, I. N. M. (2020). Perancangan Buku Ilustrasi sebagai Media Informasi Tentang Stres. *Jurnal SASAK: 110 Desain Visual Dan Komunikasi*, 2(2), 59-66.

[13] Fonda, A., & Sumargiyani, S. (2018). The Developing Math Electronic Module with Scientific Approach Using Kvisoft Flipbook Maker Pro for XI Grade of Senior High School Students. *Infinity Journal*, 7(2), 109.

[14] Susanti, Y., Islami, S., Ningrum, W. W. K., Nuryadin, & A., Alim, M. A. b. A. (2023). Development of Interactive E-Module on Learning IPAS. *Jurnal Pendidikan*, 24(2), 51 – 60.

[15] Eriska, L., Hetilaniar, H., & Kuswidyanarko, A. (2022). Pengembangan E-Modul Berbasis Inkuiri Materi Suhu Dan Kalor Siswa Kelas V Sekolah Dasar. *Jurnal Pendidikan Dan Konseling (JPDK),* 4(4), 1797–1801.

[16] Rahmawati, L., & Hardini, A. T. A. (2020). Pengaruh Model Pembelajaran Inquiry Berbasis Daring terhadap Hasil Belajar dan Keterampilan Berargumen Pada Muatan Pembelajaran IPS di Sekolah dasar. *Jurnal Basicedu, 4*(4), 1035–1043.

[17] Maharcika, A. A. M., Suarni, N. K., & Gunamantha, I. M. (2021). Pengembangan Modul Elektronik (E-Modul) Berbasis Flipbook Maker untuk Subtema Pekerjaan di Sekitarku Kelas IV SD/MI. *Jurnal PENDASI (Pendidikan Dasar Indonesia)*, 5(2).

[18] Purwanto. (2017). *Metode Penelitian Kuantitatif*. Yogyakarta: Gava Media.

[19] Wulandari, Y., & Purwanto, W. E. (2017). Kelayakan Aspek Materi Dan Media Dalam Pengembangan Buku

Ajar Sastra Lama. *Gramatika STKIP PGRI Sumatera Barat*, 3(2), 162-172.

[20] Taufik, T. & Muhammadi. (2012). *Mozaik Pembelajaran Inovatif*. Padang: Sukabina Press.

[21] Ule, K. N., Bunga, Y. N., & Bare, Y. (2021). Pengembangan Modul Pembelajaran Biologi Berbasis Jelajah Alam Sekitar (JAS) Materi Ekosistem Taman Nasional Kelimutu (TNK) SMA Kelas X. *Diklabio: Jurnal Pendidikan Dan Pembelajaran Biologi*, 5(2), 147 – 156.

[22] Nihaya, S. S., dkk. (2020). Pengaruh Kesiapan dan Gaya Belajar terhadap Prestasi Belajar Siswa. *Jurnal Pendidikan Manajemen Perkantoran,* 5(2), 267-280.

[23] Febriyana, M., dkk. (2022). Pengembangan E-Modul Dilan Berbasis Android (Didroid) pada Materi Panas bagi Siswa Sekolah Dasar. *Jurnal Manajemen Pendidikan Islam*, 3(4), 2775-2933.