

Development of LKPD Online Based on Liveworksheets on Vulcanism Materials to Train Spatial Thinking in High School Geography Students in the Implementation of the Merdeka Curriculum

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Abstract: The learning process in Indonesia is currently experiencing a transformation with the essence of an learning Merdeka Curriculum. The curriculum is the heart of education which must be evaluated dynamically and periodically by current developments and science and technology. The Merdeka curriculum is starting to be implemented in Jember Regency, one of which is being implemented at Madrasah Aliyah Negeri 1 (MAN 1) Jember. In principle, teachers need to prepare teaching materials for implementing learning. One of the teaching materials that is by the Merdeka curriculum is the Online Student Worksheet (LKPD) based on Live Worksheets. The aim to be achieved is to examine the feasibility of online LKPD based on live worksheets on volcanism material to train spatial thinking for high school geography students in the implementation of the merdeka curriculum, and to examine students' responses to online LKPD based on live worksheets on volcanism material to train spatial thinking for high school geography students in implementation Merdeka curriculum. This research method uses the Research and Development method with the ADDIE Model. The online LKPD with live worksheets on volcanism material based on the assessment of material expert validators, design experts, linguists, and geography learning practitioners was declared feasible and received a very good response from students.

Keywords: LKPD Online, Vulkanism, Liveworksheets

I. INTRODUCTION

The learning process in Indonesia is currently experiencing a transformation with the essence of merdeka curriculum. The curriculum is the heart of education which must be evaluated dynamically and periodically by current developments and science and technology. Implementation of the merdeka curriculum is part of Indonesia's educational readiness to face the challenges of the times in the future [1]. The design of the merdeka curriculum focuses on freedom and creative thinking [2]. The Merdeka curriculum is starting to be implemented in school Jember Regency, one of which is being implemented at Madrasah Aliyah Negeri 1 (MAN 1) Jember.

In facing increasingly advanced educational developments and changes in the curriculum, teachers must also upgrade their abilities and follow technological developments that can develop electronic-based teaching materials or materials in the teaching and learning process. Teaching materials are learning tools that contain learning topics, methods, and evaluation methods that are designed systematically and interestingly to achieve learning objectives. In principle, teachers need to prepare teaching materials for implementing learning. One of the teaching materials that is by the Merdeka curriculum is the Student Worksheet (LKPD).

According to [3] LKPD is one of the teaching materials which is usually in sheet or printed form containing topics and learning activity guides in the form of instructions for carrying out tasks. Student worksheets abbreviated as LKPD are teaching materials used by teachers to increase student activity and involvement in learning so that the expected competencies can be achieved. With the development of technology and information, LKPD has now been developed into an IT-based LKPD or what is known as online-based LKPD.

LKPD Online can make learning easier for students because it can be accessed easily using a laptop or smartphone. According to [4], the use of LKPD can build conceptual knowledge in students and make learning less boring because it contains pictures, videos, text, and questions that are interestingly designed. This makes LKPD online can be used in geography learning which contains memorized material and seems boring for students. One material that has a broad concept is the material related to volcanism. The study of Volcanism material is included in physical geography material which discusses the characteristics of volcanoes, differences in earth intrusion and extrusion, faults and folds, and their impact on human life.

Using LKPD online requires teacher creativity in designing attractive worksheets and must use applications that are relatively light for students. Based on the results of an interview with the class X In using UKBM (Unit Kegiatan Belajar Mandiri), teachers experience several obstacles, including requiring quite a long time to make it and submitting assignments that are not structured, which has an impact on student motivation

and learning outcomes. Apart from that, worksheets that are printed in the form of sheets containing questions often make students bored and this also burdens teachers in correcting and is considered less effective.

LKPD Online has various advantages that can support the learning process. The advantages of online LKPD are that it is practical, easy to use, learning is more interesting, can contain material, learning videos, audio, varied learning evaluations, and makes it easier to collect assignments. The geography teacher at MAN 1 Jember stated that he agreed with the development of LKPD with a live worksheet application as an IT-based teaching material innovation and used as a reference teaching material in geography learning. The use of LKPD with a live worksheet application is considered very suitable for learning where students' learning tools and resources cannot be separated from the use of laptops, tablets, or smartphones.

Based on the background explanation above, the problem of this research can be formulated as: What is the feasibility of LKPD online based on liveworksheets on volcanism material to train spatial thinking for senior high school geography students in implementing the merdeka curriculum?, and what are the students' responses to online LKPD based on live worksheets on volcanism material for train spatial thinking of high school geography students in implementing the merdeka curriculum?

As for the problem formulation described above, the aim to be achieved is to examine the feasibility of online LKPD based on live worksheets on volcanism material to train spatial thinking of high school geography students in implementing the merdeka curriculum and examine student responses to online LKPD based on live worksheets on volcanism material to train spatial thinking of high school geography students in implementing the merdeka curriculum.

II. LITERATURE REVIEW

2.1 Geography Learning

Learning is an activity designed to support teacher-student interactions to help students gain knowledge and facilitate the learning process[5]. Apart from that, learning can also be interpreted as a teaching and learning process designed by teachers and students to achieve learning goals[6]. Learning is considered ideal if it is student-oriented, attempts to construct knowledge, and actively participates in seeking information[7].

Geography learning is a learning process that examines the earth as a whole by observing spatial, regional, and the relationship between natural and human factors[8]. The study of geography is often referred to as an integrated science because the study is broad and forms an interactive system. The discipline of geography can build and develop students' understanding of changes and spatial organization of people, places, and the environment on Earth[9]. Meanwhile, according to[10], students must develop spatial thinking skills after studying geography. Learning geography has one goal, namely to make students aware of natural phenomena and phenomena that occur on Earth. Meanwhile, according to[11], learning geography aims to equip students with spatial thinking skills.

2.2 Description of Online Student Worksheets (LKPD)

Student Worksheets abbreviated as LKPD are learning tools or teaching materials used by teachers to increase student activity in the learning process[12]. LKPD is a learning tool consisting of material sheets with tasks that students must complete. Meanwhile, according to[13] it is also explained that LKPD is teaching material that contains various student activities in the teaching material. The use of LKPD is an alternative method that teachers can use to improve students' understanding of concepts and learning activities.

With today's rapid technological advances, the use of printed worksheets has been innovated and integrated into presentations in a digital form that is more attractive, efficient, and effective[14]. The online version of the LKPD makes it easy for students to study anytime and anywhere. Online LKPD not only presents the material in the exam but also uses interesting illustrations such as pictures, audio, and video related to the material being taught.

2.3 Liveworksheets App

Live worksheets are an application that can be used to create learning tools. This is the opinion of Rosyidah et al., (2022) [15]Live worksheet is an application that can be used to create interactive LKPD which is equipped with pictures, videos, and animations so that learning becomes more fun. This application can be accessed for free via the live worksheet website.

Live worksheets have various features or tools that are provided, such as multiple choice, short essays, matching, listening features, and so on. The advantages of the live worksheet feature are: (1) it can be connected to YouTube to display learning videos, (2) students can answer each question directly using a smartphone, laptop, or tablet, (3) there is a listening feature, namely creating questions with voice and students can also answer questions by voice, (4) automatic correction, saving time for teachers[12]. Live worksheets make it easier for students to work on LKPD by using the link provided by the teacher. All students can access the

LKPD link in the live worksheet even if students do not have an account on the live worksheet[16]. Interactive worksheets in live worksheets have many forms of worksheets, including Drag and Drop worksheets, Join with Arrows, Multiple Choice Exercise, Fill in the Grap, Check Box, Puzzle, and Speaking Exercises[17].

With the worksheets application, it is very easy for teachers and students to learn. Apart from being accessible for free, this application also has complete and interesting features that can increase student activity. This research will use a live worksheet application by displaying LPKD Online on volcanism material.

2.4 Development of the ADDIE Model

The stages of the ADDIE model according to[18] are as follows:

a. Analysis stage:

At this stage, what the researcher does is carry out an analysis related to the development of the product that will be produced. There are several activities carried out, namely conducting needs analysis, identifying needs, and carrying out task analysis. So that the products produced are by student needs.

b. Design stage:

This stage is called the designing stage. Before designing learning media, researchers need to formulate learning objectives. Then prepare learning materials and determine appropriate learning strategies to achieve these goals. In this research, researchers want to design an Android-based pocket book learning media with material on earthquake disaster mitigation.

c. Development stage

Development is the process of making the blue-print or design a reality. If the design requires software in the form of learning multimedia, then this multimedia must be developed. One important step in the development stage is testing before implementation. This trial stage is part of one of the ADDIE steps, namely evaluation. More precisely, formative evaluation, because the results are used to improve the learning media that has been developed.

d. Implementation stage:

At this stage, it is the application of the resulting learning media. In this case, researchers will test Android-based pocket book learning media during the teaching and learning process in class. To test this media, it is necessary to install it first on the student's Android cellphone.

e. Evaluation stage:

This stage is an evaluation stage regarding the learning media that has been developed and whether it is successful as expected or not. Researchers will evaluate if there are deficiencies that need to be corrected in the learning media. The evaluation results were obtained after the product was tested on small groups and large groups of students, after which the students' responses were seen to be used as an evaluation.

III. RESEARCH METHODOLOGY

3.1 Development Procedure

This research method uses the Research and Development method. This method is used to produce certain products and test the effectiveness of these products. The ADDIE model is used in this Research and Development study. According to [19] the ADDIE model is a product development model that consists of five stages, namely Analysis, Design, Development, Implementation, and Evaluation.

3.2 Location and Research Objects

This research was conducted at MAN 1 Jember, East Java. Research on the development of learning media will be tested in class XI IPS 1, totaling 32 students, consisting of 10 male students and 22 female students. The material used in this research is Volcanism.

3.3 Data analysis technique

The data analysis technique in this research uses descriptive analysis. This analysis is used to assess the results of the questionnaire from the development of online LKPD based on Live Worksheets on Volcanism Materials. Valid There are 2 expert validations, namely material experts and design experts. The first step is to assign a score to each criterion. The assessment consists of 5 assessment points[20], namely:

5 = Very good

4 = Good

- 3 = Enough
- 2 = Not good
- 1 = None

The results obtained later from the percentage calculation will then determine the feasibility level of product development. Provide product feasibility stages by assigning qualifications to the criteria in Table 1:

Table 1. Product Eligibility Criteria

Percentage	Qualification	Eligibility Criteria
84% < score ≤ 100%	Very valid	Not Revised
68% < score ≤ 84%	Valid	Not Revised
52% < score ≤ 68 %	Enough	Revised
36% < score ≤ 52%	Not enough	Revised
20% < score ≤ 36%	Very less	Revised

Source: Sugiyono (2018) [21]

IV. RESULT AND DISCUSSION

4.1 Results

4.1.1 Analysis

This development research was carried out at MAN 1 Jember, one of the state schools in Jember. This Madrasah Aliyah is located in the city area, more precisely at Jl. Imam Bonjol No.50, Kaliwates Kidul, Kaliwates, Kec. Kaliwates, Jember Regency. Students who study at MAN 1Jember come from various backgrounds and places in the Jember Regency. In terms of facilities, MAN 1 Jember has adequate facilities to support teachers and students in carrying out the teaching and learning process. In this research, the class used was class XI IPS 1. After going through the research process, the research results obtained were related to expert validation and student response results. Based on the results of a student needs questionnaire, 80.4% of students need online LKPD based on live worksheets

4.1.2 Design

The design stage in this research used several applications and websites, such as Microsoft Word, YouTube, and the website <https://www.liveworksheets.com>. The stages of designing learning media are as follows: 1. The material is designed first using Microsoft Word to determine what material will be included, especially volcanism material. The material used comes from several references such as journals, student worksheets, and reference books. 2. Next, design or plan a picture of how the material fits the media being developed, by looking at several aspects. 3. Then the design is entered on the website <https://www.liveworksheets.com> by adding several elements to make it look more attractive. 4. Once the design is complete, the Online LKPD can be tested.

4.1.3 Development

At this stage, learning media is developed according to the design that has been prepared. The material provided can help students in learning and working on questions. The media developed is adapted to the LKS material with several reference sources in journals and websites. The results of developing online LKPD based on live worksheets can be seen in the link <https://unej.id/LKPDOnline>.

4.1.4 Implementation

a. Design Expert Validation

Before carrying out trials, products that have been developed need to be validated by experts. In this research, validation was carried out by Design and Materials experts. Design Validation was assessed by 1 expert, namely Mr. Bejo Apriyanto, S.Pd., M.Pd, who is a lecturer in learning media courses from the Faculty of Teacher Training and Education, Jember University. Based on the research results, validation results were obtained in Table 2 below.

Table 2. Design Expert Validation Results

No	Assessment Aspects	Score
1.	Navigation works fine	4
2.	Fonts are legible, proportional and consistent	4
3.	Adding media (images, audio, video)	4

4.	Good color composition	3
5	Attractive appearance	3
6	Proportional design layout	4
	Total Score	22
	Percentage (%)	91,6%
	Classification	Very valid

Source: Data Processing Results (2023)

Based on Table 2 above, the design expert's validation results regarding live worksheets-based online LKPD on volcanism material received a score of 91.6%. With this score, the feasibility level of the development product is included in the very feasible category. Based on this table, there are several inputs from media validators, namely that you need to pay attention to the coloring so that it does not overlap with the writing. And the image media should be given the source. However, overall the appearance of the ELPKD media is good.

b. Material Expert Validation

Material expert validation came from experts, namely Mr. Muhammad Asyroful Mujib, M.Sc. he is a Geography Education lecturer at the University of Jember who teaches Geology courses. The following are the validation results from material experts on learning media which can be seen in Table 3.

Table 3 Recapitulation of Material Expert Validation Results.

Assessment Aspects	Score
Clarity of KI and learning objectives	4
Clarity of the material presented in the LKPD	4
Regularity between activities	3
Suitability of images and videos to the material	4
Suitability of practice questions to the material	4
Clarity of work instructions	4
LKPD encourages curiosity	4
Material is taken from relevant sources	3
The existence of developer identity information	3
Include a list of references	4
Total score	37
Percentage (%)	92,5
Classification	Very valid

Source: Data Processing Results (2023)

Based on Table 3 above, the percentage of validation results by material experts shows that the Online LKPD is 92.5%. After validating with material experts, there were several inputs from the validator that needed to be improved. Improvements that need to be considered are the suitability of images and videos to the material, images need to be given a valid source.

c. Student Response Trial Results

This stage is a product trial stage that has been developed by researchers. Suitable student worksheets will be tested or implemented in learning activities to get student responses. The test subjects in this research were class XI IPS 1 students at MAN 1 Jember, consisting of 32 students.

Data collection on student responses is carried out after students complete learning activities using the Online LKPD. The following are the results of a recapitulation of student responses to the use of electronic student worksheets (Online LKPD) with live worksheets on volcanism material:

Table 4. Results of Class XI IPS 1 MAN 1 Jember Student Responses

Indicator	Percentage (%)
Using LKPD with live worksheets is easy to access	91,6
Ease of operating LKPD with live worksheets	90,2
LKPD displayed on volcanism material is interesting	91,6
This LKPD on volcanism material makes me more passionate about studying geography	89,5
The use of LKPD makes learning geography difficult Boring	93
I prefer online LKPD with live worksheets compared to printed LKPD	88,1
Presentation of coherent material	88,1
Presentation of material is clear and complete	89,5
The practice questions given are varied and in accordance with the learning objectives	90,2
LKPD is equipped with learning videos which make me understand the material better	91,6
The layout is neat	91,6
Attractive color composition and appearance	93,75
The sentences and paragraphs used are clear and easy to understand	92,3
The letters used are simple and easy to read	93
The grammar used is communicative	94,4
Percentage (%)	91,2
Classification	Very Good

Source: Data Processing Results (2023)

The LKPD trial was carried out in 1 meeting or 2 x 45-minute sessions on August 21, 2023. In the activities carried out by Class XI IPS MAN 1 Jember students, the students were very enthusiastic, active, and interested in completing the projects and questions in LKPD. The results of student responses show that each indicator has a different value. The highest assessment of online LKPD display indicators is color composition and aesthetics with a ratio of 93.75%. This is in line with one of the goals of online LKPD, namely increasing students' interest in learning with an attractive appearance[22]. The average assessment of student responses to online LKPD is classified as very good with a percentage of 91.2%.

4.1.5 Evaluation

This stage is an evaluation stage regarding the Online LKPD that has been developed and whether it is successful as expected or not. Researchers will evaluate if there are deficiencies that need to be corrected in the learning media. After testing the product on students, there were responses from students to be used as evaluation, such as the appearance, colors, images, and videos that needed to be improved. So with this response, it is hoped that the product developed will be suitable for use in the teaching and learning process.

4.2 Discussion

Interpretation of research results on the development of student worksheets in online form (online LKPD) which contain worksheets directly related to SMA/MA volcanic material. The development of this product emphasizes online LKPD and its application in schools to get student responses. The level of feasibility of the validator's assessment of online LKPD assisted by live worksheets is classified as feasible for testing. Online validation of the LKPD was carried out four times, namely by material experts and design experts.

Based on the assessment of material validation experts, the Live worksheet-based online LKPD product was declared suitable for use. In terms of material, online LKPD is considered appropriate because the rules for writing textbooks are adhered to during preparation, including title, initial competencies, learning outcomes, material, exercises, authorship, and references. The content of the material or student learning activities has also been arranged coherently and clearly by the learning objectives that have been created. This is in line with research[23] that learning materials that are arranged systematically can improve the quality of learning.

The display design of online LKPD should be as creative as possible to attract students' interest in learning, namely choosing harmonious colors, choosing fonts that are easy for students to read, adjusting the layout sequence of learning activities, and adding variations in content to the online LKPD. This is by research [14] that the neat layout of online LKPD, harmonious color combinations, and the addition of media can attract students' interest in reading. Additional media in this online LKPD is in the form of pictures and learning videos to help students understand the material more easily. According to research[3] and [4] the presence of learning pictures and videos helps improve students' understanding of learning material.

Based on the trials carried out, the online LKPD with live worksheets on volcanism received a positive response from students. Answers are given to students after taking part in the trial using an online LKPD product with live worksheets. The results of the student response trial showed that students rated the online LKPD with live worksheets as very good. The most prominent assessments in student responses to the questionnaire are indicators of color composition and attractive appearance as well as indicators of the communicative grammar used. This means that the online LKPD display with live worksheets is designed beautifully and uses language that is easy for students to understand so that learning is not boring and makes it easier for students to understand the material. The opinion [12] that interactive LKPD with live worksheets, students can learn material concepts easily, and according to [13] online LKPD is suitable for use in learning Online LKPD is interesting and makes it easier for students to understand the material.

Thus, this shows that the online LKPD with real-time worksheets that the researchers developed are very interesting and exciting and make it easier for students to understand the topic of volcanic activity or volcanism. During the trial, students complained about two problems, first, the written answers to the essay questions on the LKPD were too small so they needed to zoom in first when answering the questions. The second problem is that internet speeds are often very slow when using school WiFi, so many students choose to use their own personal data plans. The questions that arise from the LKPD trial can be used as material for assessing further research in developing LKPD or other teaching materials.

V. CONCLUSION

Based on the results and discussion, the following are several conclusions obtained:

- a. Online LKPD with live worksheets on volcanism material based on the assessment of material expert validators, design experts, linguists, and geography learning practitioners was declared feasible. Material expert validators provided an assessment percentage of 97.5%, and design expert validators were 95.8%. The assessment obtained from the validators is in the very feasible category.
- b. The online LKPD with live worksheets on volcanism received a very good response from students. Based on the recapitulation of student response results, it shows that students' assessment of the Online LKPD was very good with an average score of 91.2%.

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REFERENCES

- [1] Marisa, M. (2021). Inovasi kurikulum “Merdeka Belajar” di era society 5.0. *Santhet: Jurnal Sejarah, Pendidikan, Dan Humaniora*, 5(1), 66-78.
- [2] Takdir, M., Sani, K. R., Juniati, S. R., & Arifin, Z. (2021). Polemik Implementasi Program Magang Mbkm Program Studi Administrasi Publik Fakultas Ilmu Sosial Dan Ilmu Politik Universitas Muhammadiyah Sinjai. *Al Qisthi*, 11(2), 22-35.
- [3] Fitri, E. R., & Pahlevi, T. (2021). Pengembangan LKPD berbantuan kvisoft flipbook maker pada mata pelajaran teknologi perkantoran di SMKN 2 Nganjuk. *Jurnal Pendidikan Administrasi Perkantoran (JPAP)*, 9(2), 281-291.
- [4] Lestari, D. D., & Muchlis, M. (2021). E-LKPD berorientasi contextual teaching and learning untuk melatih keterampilan berpikir kritis siswa pada materi termokimia. *Jurnal pendidikan kimia indonesia*, 5(1), 25-33.
- [5] Muslimah, M. (2020). Pentingnya LKPD pada Pendekatan Scientific Pembelajaran Matematika. In *Social, Humanities, and Educational Studies (SHES): Conference Series (Vol. 3, No. 3, pp. 1472-1479)*.
- [6] Rahmawati, N. R., Rosida, F. E., & Kholidin, F. I. (2020). Analisis pembelajaran daring saat pandemi di Madrasah Ibtidaiyah. *SITTAH: Journal of Primary Education*, 1(2), 139-148.
- [7] Nurdin, E. A., Apriyanto, B., Ikhsan, F. A., & Kurniawan, F. A. (2017). Pengaruh model pembelajaran think pair and share ditinjau dari kemandirian belajar terhadap hasil belajar ips siswa. *JURNAL PENDIDIKAN EKONOMI: Jurnal Ilmiah Ilmu Pendidikan, Ilmu Ekonomi Dan Ilmu Sosial*, 11(2), 1-7.
- [8] Mustikarani, W., & Ruhimat, M. (2018). Kelemahan dan Keunggulan Implementasi Authentic Assesment dalam Pembelajaran Geografi. *Jurnal Geografi Gea*, 18(2), 147-153.
- [9] Nurdin, E. A., Kurnianto, F. A., Pangastuti, E. I., Nuriyanto, M. Z., & Bella, S. (2022). The Development of Android-Based Pocket Learning Media on Earthquake Disaster Mitigation Materials To Improve Spatial Thinking of Sma Students in The Era of The Industrial Revolution 4.0. In *Social, Humanities, and Educational Studies (SHES): Conference Series (Vol. 5, No. 4, pp. 92-100)*.
- [10] Nuriyanto, M. Z., Astutik, S., & Nurdin, E. A. (2022). Pengembangan media pembelajaran berbasis android pada materi sistem informasi geografi dasar siswa SMA. *Majalah Pembelajaran Geografi*, 5(2),

- 144-155.
- [11] Kumalawati, R., Riadi, S., & Febriyan, G. M. S. (2020). Pemanfaatan Data Geospasial dalam Proses Pembelajaran Geografi Pada Kondisi Bencana Covid-19. *Jurnal Geografika (Geografi Lingkungan Lahan Basah)*, 1(1), 20-29.
- [12] Noprinda, C. T., & Soleh, S. M. (2019). Pengembangan lembar kerja peserta didik (LKPD) berbasis higher order thinking skill (HOTS). *Indonesian Journal of Science and Mathematics Education*, 2(2), 168-176.
- [13] Roihanah, H., & Rochmawati, R. (2021). Pengembangan Lembar Kegiatan Peserta Didik (LKPD) Berbasis Higher Order Thinking Skills (HOTS) Perbankan Dasar Kelas X SMK. *Jurnal Pendidikan Akuntansi (JPAK)*, 9(1), 88-94.
- [14] Aslam, M., Azis, A. A., & Adnan, A. (2021). Pengembangan E-LKPD berbasis SALINGTEMAS (sains, lingkungan, teknologi, masyarakat) materi perubahan lingkungan kelas X SMA. *Jurnal Biotek*, 9(2), 224-243.
- [15] Rosyidah, N. F., Fauziyah, N., & Khikmiyah, F. (2022). Pengembangan lembar kerja peserta didik model problem based learning menggunakan web liveworksheet untuk kelas vii smp. *Prosiding: Konferensi Nasional Matematika dan IPA Universitas PGRI Banyuwangi*, 2(1), 138-145.
- [16] Nirmayani, L. H. (2022). Kegunaan Aplikasi Liveworksheet Sebagai LKPD Interaktif Bagi Guru-Guru SD di Masa Pembelajaran Daring Pandemi Covid 19. *Edukasi: Jurnal Pendidikan Dasar*, 3(1), 9-16.
- [17] Jannah, E. N. Pengembangan Live Worksheets Sebagai Instrumen Evaluasi Pembelajaran pada Materi Zat dan Komponen Penyusunnya (Penelitian dan Pengembangan pada Siswa Kelas V MI At Taufiq Jakarta) (Bachelor's thesis, Jakarta: FITK UIN Syarif Hidayatullah Jakarta).
- [18] Noor, D. R., Siregar, E., & Chaeruman, U. A. (2022). Pengembangan Mobile Learning dengan Metode Studi Kasus untuk Mata Pelajaran PPKn Kelas VI di SDN Telajung 01. *Jurnal Pembelajaran Inovatif*, 5(1), 63-70.
- [19] Astuti, I. A. D., Sumarni, R. A., & Saraswati, D. L. (2017). Pengembangan media pembelajaran fisika mobile learning berbasis android. *Jurnal Penelitian & Pengembangan Pendidikan Fisika*, 3(1), 57-62.
- [20] Ali, M. K., & Sukardi, S. (2021). Pengembangan Model Evaluasi Pembelajaran Daring di Sekolah Menengah Kejuruan. *JRTI (Jurnal Riset Tindakan Indonesia)*, 6(2), 161.
- [21] Sugiyono, D. (2018). *Metode penelitian kuantitatif, kualitatif dan R & D/Sugiyono*. Bandung: Alfabeta, 15(2010).
- [22] Palupi, D. A. T., Kantun, S., Nurdin, E. A., & Wahyudi, S. A. Development of Electronic Learner Worksheets with Live worksheets on Lithospheric Dynamics Material for High School Students. *JPG (Jurnal Pendidikan Geografi)*, 10(2).
- [23] Nurdin, E. A., Hussen, S., Pangastuti, E. I., & Lestari, D. (2019, March). Improving students critical thinking skills using a research based practice on Tourism Geography Materials. In *IOP Conference Series: Earth and Environmental Science (Vol. 243, No. 1, p. 012085)*. IOP Publishing.