

## **Development of Fun High Order Thinking Skill (HOTS) based Thematic Learning Electronic LKPD to Increase the Intensity of Independent Learning of Elementary School Students**

**Sri Rahayu<sup>1</sup>, Iskandar Ladamay<sup>2</sup>, Farida Nur Kumala<sup>3</sup>, Romia Hari Susanti<sup>4</sup>,  
Bambang Sugiyono Agus Purwono<sup>5</sup>**

<sup>1,2,3,4</sup> Universitas PGRI Kanjuruhan Malang, Indonesia

<sup>5</sup> Member of WSSET, University of Nottingham, United Kingdom

\*Corresponding authors: [srisk@unikama.ac.id](mailto:srisk@unikama.ac.id); [bambangsap2015@gmail.com](mailto:bambangsap2015@gmail.com)

### **Abstract:**

The use of LKPD in schools so far tends to easily make students bored and does not increase the intensity of students' independent learning. The purpose of this study was to develop a fun E-LKPD Thematic Learning based on High Order Thinking Skills to increase the intensity of independent learning of elementary school students. The research method uses Research & Development with the ADDIE approach (Analysis, Design, Development, Implementation, Evaluation). The results showed that the application of the Thematic Learning Electronic LKPD based on High Order Thinking Skills (HOTS) for Elementary School Students was able to reduce students' boredom in learning and increase the intensity of students' independent learning. This is indicated by the data on the value of the assessment instrument on the indicator of eliminating boredom, obtaining a score of 4 and increasing the intensity of students' independent learning, obtaining a score of 3.9. Utilization of information and communication technology in learning can support and develop students' cognitive, affective and social abilities to be higher. The use of E-LKPD is one solution in increasing the mastery of learning materials by students.

### **1. INTRODUCTION**

In the current era of the Covid-19 Pandemic, online learning is an absolute must for educators to do to their students in carrying out the learning process. Online learning is learning that utilizes the use of the internet network in the learning process (Dewi, 2020). Online learning requires educators to utilize their abilities to use learning support materials by utilizing technological developments in distance learning. The implementation of online learning certainly cannot be separated from various kinds of obstacles such as not all teachers and students have adequate technological equipment, connection quality, data package availability, and low digital literacy skills so that many teachers have difficulty in carrying out online learning (Roni Hamdani & Priatna, 2020).

The government itself has pursued various policies to improve the quality of education in Indonesia. One of them is by changing the curriculum which is increasingly up to date. One of them is the 2013 Curriculum. Its basic essence is the change in learning objectives towards Higher Order Thinking Skills (HOTS). These skills are absolutely necessary because in the industrial revolution 4.0, critical and creative skills are needed as solutions to increasingly complex problems (Ketut Sri Puji Wahyuni et al., 2021).

Higher order thinking skills or HOTS (High Order Thinking Skills) is an ability that must exist in students (Husna Nur Dinni, 2018). According to Permendikbud No. 21 of 2016 concerning Standards of Content for Primary and Secondary Education states that the future competency needs of students are students

who can have higher order thinking skills (HOTS) (Kholifahtus et al., 2021). In addition, higher order thinking skills (HOTS) are a necessity in the implementation of learning, especially for students (Nisa et al., 2018). HOTS learning is able to make students think systematically, learn to analyze a problem from various aspects, educate students to be confident and improve critical and creative thinking skills (Arifin, 2018).

In order to produce output in the form of students who have HOTS, the role of the teacher is very crucial. They must prepare various things to support a meaningful learning process, one of which is through the use of Student Worksheets (LKPD). Student worksheets are intended to activate students, help students find and develop concepts, train students to find concepts, become an alternative way of presenting subject matter that emphasizes student activity and can motivate students (Trianto, 2009).

LKPD is a set of learning as a complement or means of supporting the implementation of lesson plans (Utami et al., 2020). LKPD can be used for any subject. Ratna Wilis Dahar revealed that "Student Worksheets" (LKPD) are worksheets that contain information and interactions from teachers to students so that they can work on a learning activity themselves, through practice or the application of learning outcomes to achieve instructional goals (Dahar, 2013).

Regarding the use of media, the reality in the field based on observations at school, the use of LKPD is less fun and has not been able to motivate students in the learning process. This statement is also supported by the results of research that has been carried out by (Permata, 2019) which says that so far educators use LKPD in the form of printed books that are less attractive and difficult for students to understand in the teaching and learning process. This is because the LKPD used is less attractive, less effective and considered not optimal, this causes

students to be less motivated to use the available LKPD. Thus reducing students' interest in learning independently.

Based on this phenomenon, the development of an Electronic LKPD oriented to higher order thinking skills is important as an effort to create a quality online learning process. By using electronic-based worksheets, of course learning is more interesting for students and they can access it through their parents' smartphones. By using the features that exist in the digital world, LKPD can be made as ideal as possible according to the needs of students and the demands of the times.

Research conducted by (Subekti & Suparman, 2019) says that the teaching materials used by teachers so far still have many weaknesses. Along with the times, conventional learning media should also be changed to digital, including LKPD. The use of electronic learning media has long been an option in education (Nurmiyanti et al., 2015). Therefore, teachers need to develop teaching materials that utilize technology such as Electronic Student Worksheets (E-LKPD) based on High Order Thinking Skills. E-LKPD like this is able to build students' conceptual knowledge by optimizing hands-on and minds on (Sopandi, 2017). Based on the description of the background above, the researchers will conduct research on the development of E-LKPD for Thematic Learning based on High Order Thinking Skill (HOTS) for Fun Elementary School Students to Increase the Intensity of Students' Independent Learning.

### **Conceptual Framework**

The conceptual framework of this research departs from the students when the learning process is only glued to material sheets and question sheets that do not meet basic competency standards. In this case, the question sheet has not been used optimally. The form of the question sheet is so far identical to the form of a

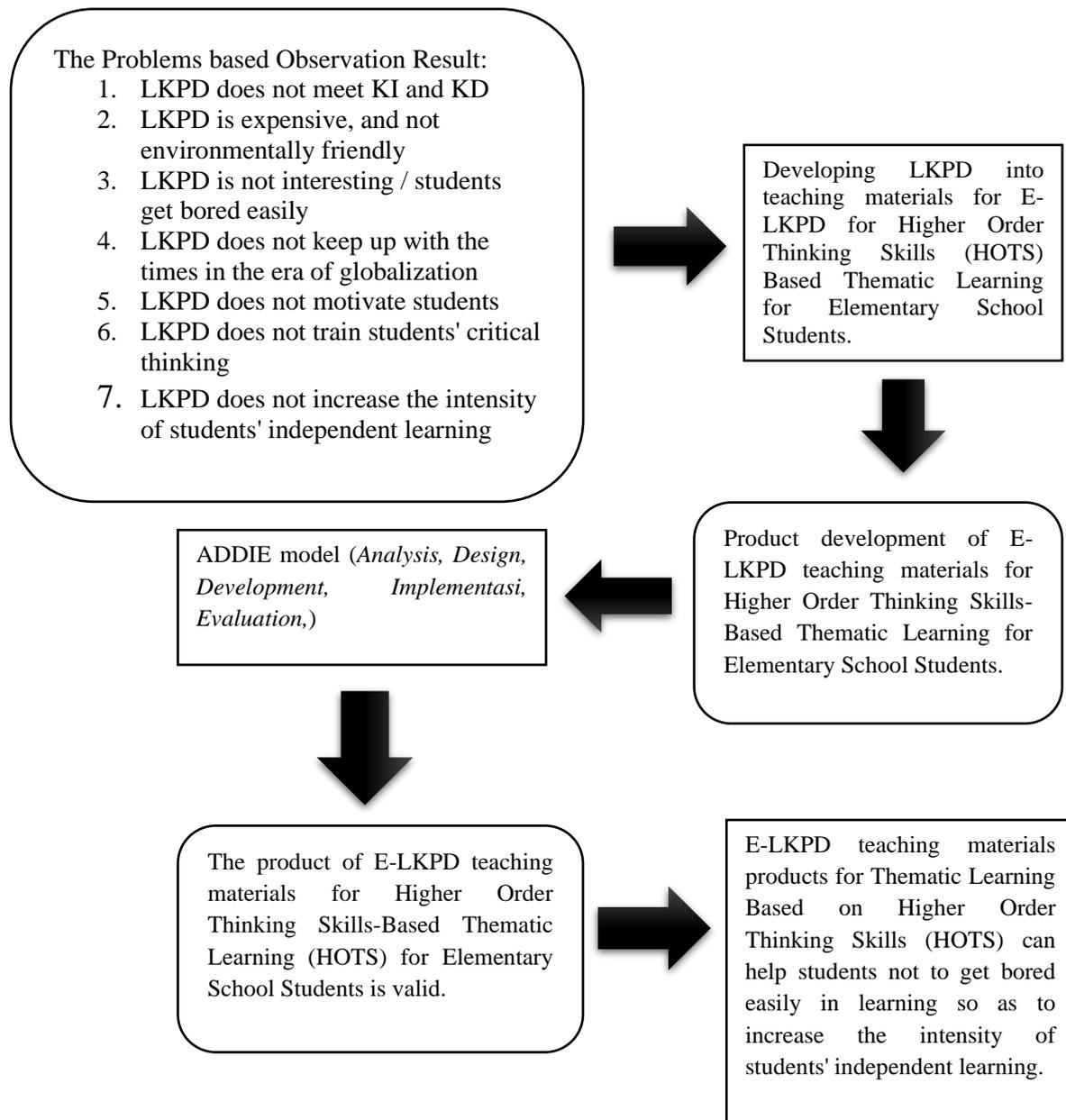
book or sheet of paper, and has not followed the current era of technological development. The hope is that using multimedia can increase student interest in learning.

So it is necessary to have student worksheets in electronic form to meet standards, be practical, fun, affordable and able to increase the intensity of students' independent learning. Based on the results of observations in schools, the use of student worksheets is less than optimal. To overcome the existing problems, an electronic student worksheet was made. In developing student worksheets there is an analytical action, both technical analysis and analysis of objectives and content. Technical analysis is used to see what equipment is used to develop student worksheets. Meanwhile, the purpose and content analysis is to determine the

objectives and materials that must be included in the E-LKPD.

The next step is the process of designing the E-LKPD and developing it. The design process begins with creating content to display. Then in the manufacture of E-LKPD development products. The implementation phase uses Microsoft Word 2010, and Kvisoft Flipbook Maker, to edit images and videos using supporting software. The final product is a good E-LKPD product, so it can be used by educators and students. Previously, E-LKPD was tested on its performance and feasibility, then repaired or improved. The test was carried out by media experts, material experts, and students (media users) using a questionnaire.

The framework of the researcher's thinking in this study can be seen in the following figure.



**Figure 1.** Conceptual Framework

## 2. RESEARCH METHOD

This type of research is research and development (R&D). The development model used is the ADDIE model, an extension of the Analysis-Design-Develop-Implement-Evaluate model. The ADDIE model is a simple and easy process model to produce learning media and teaching materials in a short and sustainable time (Hasyim, 2016). The stages of research on the development of E-LKPD are: First, conduct data analysis in the field by conducting observations and

interviews at school. The second is designing or making an initial draft of the E-LKPD. The third stage is the development stage by collecting materials, questions, illustration images, videos and audio, then developing it into an E-LKPD and expert validation. Fourth, this implementation stage is carried out repeatedly, this teaching material is applied to grade 3 and 4 elementary school students, trial 1 is carried out to see the quality of the questions and revision II. Then experiment II was carried out. From

the results of the second trial, revision III was carried out. And the last stage is the HOTS-based E-LKPD for Grades 3 and 4 of Elementary School.

The data collection technique used in this study was through a questionnaire. Data collection is carried out to obtain data that is used as a basis for making improvements in order to achieve the level of validity, practicality, and effectiveness of the developed E-LKPD. The trial subjects were selected randomly, to determine students who were capable of high, medium, and low, the developer observed from the learning outcomes of students on the previous material. The small group trial subjects were students 3 and 4 of elementary schools whose schools had implemented the 2013 Curriculum.

This study uses a descriptive analytical method using a list of students' cognitive values. Furthermore, the data obtained were analyzed descriptively by calculating the percentages correction.

According to (Sugiyono, 2017), analytical descriptive is statistics used to analyze data by describing or describing the data that has been collected as it is without intending to make conclusions that apply to the public or generalizations. The formula for calculating the percentages correction (Sugiyono, 2017) is as follows.

$$P = \frac{\sum x}{\sum xi} \times 100\%$$

Where:

P : Percentage

x : Overall score of respondents' answers

$xi$  : Highest score expected

$\sum x$  : Total score of respondents' answers

$\sum xi$  : Highest score expected

The assessment instruments (Table 1) used in this study are as follows.

**Table 1.** Assessment Instrument

No.	Rated aspect	Indicator	Number of items	Item number
1.	Media Display	Attractive design or Media display	1	1
		Attractive color composition of E-LKPD	1	2
		Easy-to-read font size and type	1	3
		The images and backgrounds used are interesting	1	4
2.	Material	The material is easy to understand	1	5
		The language used is easy to understand	1	6
		Adding new insights	1	7
3.	Forms of motivation in learning	Eliminate boredom	1	8
		Increase the intensity of independent study	1	9
		The use of E-LKPD helps the learning process	1	10

### 3. RESULTS AND DISCUSSION

The results of the E-LKPD trial for Thematic Learning based on High Order Thinking Skills (HOTS) for elementary school students were carried out by elementary school students. Based on the

questionnaire given by the researcher to elementary school students, the E-LKPD (Table 2) for Thematic Learning based on High Order Thinking Skills (HOTS) for Elementary School Students obtained the following results.

**Table 2.** Assessment Results of E-LKPD Products

No.	Rated aspect	Indicator	Earned Score	Expected Score
1.	Media Display	Attractive design or Media display	4	4
		Attractive color composition of E-LKPD	3.3	4
		Easy-to-read font size and type	3.7	4
		The images and backgrounds used are interesting	3.2	4
2.	Material	The material is easy to understand	3.4	4
		The language used is easy to understand	3.7	4
		Adding new insights	3.8	4
3.	Forms of motivation in learning	Eliminate boredom	4	4
		Increase the intensity of independent study	3.9	4
		The use of E-LKPD helps the learning process	4	4
<b>Total</b>			<b>37</b>	<b>40</b>
<b>Percentage</b>			<b>92.5%</b>	
<b>Category</b>			<b>Very Interesting</b>	

The results of the assessment of the development of the E-LKPD for Thematic Learning based on High Order Thinking Skills (HOTS) for Elementary School Students above overall obtained a score of 37 and if presented as a percentage, it became 92.5% with a very attractive category. Thus the E-LKPD for Thematic Learning based on High Order Thinking Skills (HOTS) for Elementary School Students is practical to be used by elementary school students in particular.

Based on the results of the study as shown in Table 2 above, the application of the Thematic Learning Electronic LKPD based on High Order Thinking Skills (HOTS) for Elementary School Students is able to make students not bored quickly and motivated to be active in learning because the E-LKPD that has been developed is a media fun when used by students in the learning process. This is known from obtaining a maximum score of 4 on the indicator of eliminating boredom. Meanwhile, the indicator of increasing the intensity of independent learning based on the data presented in Table 2 above shows a score of 3.9. This means that the Thematic Learning

Electronic LKPD product based on High Order Thinking Skills (HOTS) for Elementary School Students that has been successfully developed is considered to be able to increase the intensity of students' independent learning. Graser said that students' learning skills were influenced by contextual practice questions (Graser et al., 2019). So that teachers must be able to improve students' ability to think highly (Hartik et al., 2021).

The development of LKPD teaching materials that can improve students' higher order thinking skills (HOTS) plays an important role for teachers (Baloian et al., 2014). LKPD as a result of this development is an instructional tool consisting of a series of questions and information designed to guide students in understanding complex ideas (Choo et al., 2011). Lautfer stated that LKPD as one of the learning media is useful as a teaching aid for teachers to deliver teaching materials, increase students' creativity and increase students' attention in the learning process. With the media students will be more motivated to learn, encouraging students to write, speak and imagine getting stimulated. Thus,

through learning media can make the teaching and learning process more effective and efficient as well as establish good relations between teachers and students. In addition, the media can play a role in overcoming boredom in learning in the classroom. Therefore, teachers are required to motivate students through the use of media that is not only in the classroom, but also outside the classroom, if it is used, the learning objectives will be achieved (Lautfer, 1993).

E-LKPD is said to be an effective learning media that can be used in the learning process. The use of technology in the learning process is 80% interesting and easy for students to understand (Ghavifekr & Rosdy, 2015). Other research also states that E-LKPD is more interesting to use in the learning process, can improve student learning outcomes and can train students' critical thinking processes (Haryanto et al., 2020). But unfortunately there are still many teachers who have not used technology in the learning process (Fadila et al., 2019).

Teachers must have classroom management skills by utilizing information and communication technology (Riyadi et al., 2018). The use of information and communication technology in learning can support and develop students' cognitive, affective and social skills to be higher (Ganefri et al., 2017). The use of E-LKPD is one solution in increasing the mastery of learning materials by students (Choo et al., 2011).

#### 4. CONCLUSION

The application of the Thematic Learning Electronic LKPD based on High Order Thinking Skills (HOTS) for Elementary School Students can reduce students' boredom in learning and increase the intensity of students' independent learning. This is indicated by the data on the value of the assessment instrument on the indicator of eliminating boredom, obtaining a score of 4 and increasing the intensity of students' independent learning,

obtaining a score of 3.9. This means that the Thematic Learning Electronic LKPD product based on High Order Thinking Skills (HOTS) for Elementary School Students that has been successfully developed is considered capable of eliminating student boredom in learning and increasing the intensity of students' independent learning.

#### REFERENCES

1. Arifin, N. (2018). *HOTS (Higher Order Thinking Skills)*. Grasindo.
2. Baloian, N., Pino, J. A., Hardings, J., & Hoppe, H. U. (2014). Monitoring Student Activities with a Querying System Over Electronic Worksheets. *CYTED-RITOS International Workshop on Groupware*, 38–52.
3. Choo, S. S. Y., Rotgans, J. I., Yew, E., & Schmidt, H. G. (2011). Effect of Worksheet Scaffolds on Student Learning in Problem Based Learning. *Advances in Health Sciences Education*, 16(4), 517.
4. Dahar, R. W. (2013). *Metode-Metode Mengajar*. Angkasa.
5. Dewi, W. A. F. (2020). Dampak COVID-19 terhadap Implementasi Pembelajaran Daring di Sekolah Dasar. *Edukatif: Jurnal Ilmu Pendidikan*, 2(1), 55–61. <https://doi.org/10.31004/edukatif.v2i1.89>
6. Fadila, A., Dasari, R., Setiyaningsih, S., Septiana, R., Sari, R. M., & Rosyid, A. (2019). The Development of Electronic Flash Worksheet Based on Adobe Flash Cs6 on Fraction Numbers in the Seventh Grade of Junior High School. *Journal of Physics: Conference Series*, 1155(1), 1–7. <https://doi.org/10.1088/1742-6596/1155/1/012019>
7. Ganefri, Hidayat, H., Kusumaningrum, I., & Mardin, A. (2017). Needs Analysis of Entrepreneurships Pedagogy of Technology and Vocational Education With Production Based Learning Approach in Higher Education. *International Journal on Advanced Science, Engineering and Information Technology*, 7(5), 1701–1707.

- <https://doi.org/10.18517/ijaseit.7.5.1510>
8. Ghavifekr, S., & Rosdy, W. A. W. (2015). Teaching and learning with technology: Effectiveness of ICT integration in schools. *International Journal of Research in Education and Science*, 1(2), 175–191. <https://doi.org/10.21890/ijres.23596>
  9. Graser, J. V., Bastiaenen, C. H. G., & van Hedel, H. J. A. (2019). The Role of the Practice Order: A Systematic Review About Contextual Interference in Children. *PLoS ONE*, 14(1), 1–25. <https://doi.org/10.1371/journal.pone.0209979>
  10. Hartik, S., Utaminingsih, S., & Madjdi, A. H. (2021). A Need Assessment of Integrated Science Teaching Material Based Higher Order Thinking Skills (HOTS). *Journal of Physics: Conference Series*, 1823(1), 1–7. <https://doi.org/10.1088/1742-6596/1823/1/012078>
  11. Haryanto, Asrial, & Ernawati, M. D. W. (2020). E-Worksheet for Science Processing Skills Using Kvisoft Flipbook. *International Journal of Online and Biomedical Engineering*, 16(3), 46–58. <https://doi.org/10.3991/IJOE.V16I03.12381>
  12. Hasyim, A. (2016). *Metode Penelitian dan Pengembangan di Sekolah*. Media Akademi.
  13. Husna Nur Dinni. (2018). HOTS (High Order Thinking Skills) dan Kaitannya dengan Literasi Matematika. *Prisma*, 2018(1), 170–176.
  14. Ketut Sri Puji Wahyuni, I Made Candiasa, & I Made Citra Wibawa. (2021). Pengembangan E-Lkpd Berbasis Kemampuan Berpikir Tingkat Tinggi Mata Pelajaran Tematik Kelas Iv Sekolah Dasar. *PENDASI: Jurnal Pendidikan Dasar Indonesia*, 5(2), 301–311. [https://doi.org/10.23887/jurnal\\_pendas.v5i2.476](https://doi.org/10.23887/jurnal_pendas.v5i2.476)
  15. Kholifahtus, Y. F., Agustiningsih, A., & ... (2021). Pengembangan Lembar Kerja Peserta Didik Elektronik (E-Lkpd) Berbasis Higher Order Thinking Skill (Hots). *EduStream: Jurnal ...*, 5(2), 143–151. <https://journal.unesa.ac.id/index.php/jpd/article/view/14124>
  16. Lautfer, R. (1993). *Pedoman Pelayanan Anak*. Yayasan Persekutuan Pekabaran Injil Indonesia.
  17. Nisa, N. C., Nadiroh, N., & Siswono, E. (2018). Kemampuan Berpikir Tingkat Tinggi (Hots) Tentang Lingkungan Berdasarkan Latar Belakang Akademik Siswa. *Jurnal Ilmiah Pendidikan Lingkungan Dan Pembangunan*, 19(02), 1–14. <https://doi.org/10.21009/plpb.192.01>
  18. Nurmiyanti, F., Bakri, F., & Budi, E. (2015). Pengembangan Modul Elektronik Fisika dengan Strategi PDEODE pada Pokok Bahasan Teori Kinetik Gas untuk Siswa kelas XI SMA Instructional Technology for Smart Learning View project E-Learning View project. *Prosiding Simposium Nasional Inovasi Dan Pembelajaran Sains, 2015(Snips)*, 337. <https://www.researchgate.net/publication/324861362>
  19. Permata, Y. (2019). *Pengembangan LKPD Elektronik dengan 3D Pageflip Professional berbasis literasi sains pada materi gelombang bunyi*. 23(3), 2019.
  20. Riyadi, B., Ertikanto, C., & Suyatna, A. (2018). The Analysis and Design of Guided Inquiry E-Worskheet Based to Develop High Order Thinking Skills. *International Journal Research - Granthaalayah*, 6(7), 223–233. <https://doi.org/10.5281/zenodo.1336682>
  21. Roni Hamdani, A., & Priatna, A. (2020). Efektifitas Implementasi Pembelajaran Daring (Full Online) Dimasa Pandemi Covid- 19 Pada Jenjang Sekolah Dasar Di Kabupaten Subang. *Didaktik: Jurnal Ilmiah PGSD STKIP Subang*, 6(1), 1–9. <https://doi.org/10.36989/didaktik.v6i1.120>
  22. Sopandi, W. (2017). The Quality Improvement of Learning Processes and Achievements Through the Read-Answer-Discuss-Explain Create

- Learning Model Implementation. *Proceeding. 8th Pedagogy International Seminar 2017: Enhancement of Pedagogy in Cultural Diversity Toward Excellence in Education, October.*
23. Subekti, M. A. S., & Suparman. (2019). Analisis kebutuhan E-LKPD untuk menstimulus kemampuan berpikir kritis dengan model pembelajaran discovery learning. *Proceedings of the Steem 2019, 1(1)*, 185–192.  
<http://seminar.uad.ac.id/index.php/STEEEM/article/view/2870>
  24. Sugiyono. (2017). *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, R & D.* Alfabeta.
  25. Trianto. (2009). *Mendesain Model Pembelajaran Inovatif Progresif.* Kencana.
  26. Utami, S. M., Irianto, S., & Badarudin. (2020). *Pengembangan lkpdp matematika materi keliling dan luas bangun datar menggunakan kalkulator di kelas iv sekolah dasar.* 8(2), 37–41.

## Biography

### First Author

Dr. Sri Rahayu, M.Pd. was born in Pasuruan on April 14, 1966. He is a lecturer at Kanjuruhan University Malang, East Java-Indonesia. He got his Bachelor's degree twice. The first bachelor's degree was obtained at the

Mathematics Education Department, Faculty of Mathematics and Natural Sciences Education in 1989 from the IKIP PGRI. While the second Bachelor's degree was obtained in the Indonesian Language Education Department of the Elementary School, the Faculty of Language and Arts Education in 1995 from IKIP Malang. He completed his master's degree in Education Management at the State University of Surabaya, East Java Indonesia in 2004. He continued his Doctorate degree in the same field, namely the field of Educational Management at Malang State University, East Java, Indonesia and successfully graduated in 2018. In addition to teaching, research and community service, he is also actively involved in many professional development activities.

### Second Author

Drs. Iskandar Ladamay, M.Pd. born in Merauke on July 8, 1951. He is a lecturer at Kanjuruhan University Malang, East Java-Indonesia. He received a Bachelor's degree from the Teachers Association of the Republic of Indonesia Teaching and Education Institute, majoring in Pancasila Moral Education and State Citizenship in 1989. He completed his master's degree in Social Science Education at Kanjuruhan University Malang, East Java Indonesia in 2004. In addition to teaching, research and in community service, he is also actively involved in many professional development activities.