



Development E-LKPD Based On Higher Order Thinking Skills To Improve Creative Thinking Of Elementary School Students

Fitriyani^{1*}, Fahrurrozi², Gumgum Gumelar², Fajar Rakhman², Erry Utomo², Nurkhalimah Ery¹

¹ Universitas Pelita Bangsa, Indonesia

² Universitas Negeri Jakarta, Indonesia

*Email: fitriyani@gmail.com

Articles Information Abstrak

Keywords:

E-LKPD,
HOTS,
Creative Thinking Ability

Submitted:

13-06-2023

Accepted:

01-11-2023

Published:

02-11-2023

Penelitian ini bertujuan untuk melakukan pengembangan Lembar Kerja Peserta Didik Elektronik berbasis HOTS, mengetahui penilaian dari tiga ahli serta pendapat dari pendidik dan peserta didik di kelas VI. Penelitian ini menggunakan jenis penelitian pengembangan desain pembelajaran (*Instructional design*) atau R&D dengan menggunakan model ADDIE. Subjek penelitian yang terlibat terdiri dari tiga ahli (ahli media, ahli bahasa dan ahli materi) dan peserta didik kelas VI. Instrument yang digunakan untuk pengumpulan data yang digunakan berupa angket yang diberikan kepada ahli media, ahli bahasa, dan ahli materi diperoleh dari hasil penelitian adalah data kualitatif yang dianalisis menggunakan data kuantitatif berupa data angka dan diinterpretasikan dengan pedoman kriteria kategori penilaian untuk menentukan kualitas produk. Hasil dari penelitian ini, menghasilkan produk E-LKPD berbasis HOTS yang dapat digunakan pada jenjang SD sebagai bahan ajar peserta didik yang telah memenuhi kriteria sangat baik dengan skor rata-rata ahli media 98,9%, ahli bahasa 95%, dan ahli materi 96,9% dengan kategori sangat layak untuk digunakan, serta tingkat kepraktisan 87,9% berada pada kriteria sangat praktis dan tingkat keefektifitasannya dengan rata-rata 90% berada dalam kategori sangat efektif. Bahan ajar E-LKPD berbasis HOTS sudah layak, praktis dan efektif untuk digunakan pada pembelajaran.

Abstract

This study aims to develop HOTS-based Electronic Learner Worksheets, knowing the assessment of three experts and the opinions of educators and students in grade VI. This research uses the learning design development research or R&D using the ADDIE model. The research subjects involved comprised three experts (media, linguists, and material experts) and grade VI students. The instrument used for data collection used in the form of a questionnaire given to media experts, linguists, and material experts obtained from the results of the study is qualitative data which is analyzed using quantitative data in the form of numerical data and interpreted with guidelines for assessment category criteria to determine product quality. The results of this study produce HOTS-based E-LKPD products that can be used at the elementary level as teaching materials for students who have met the excellent criteria with an average score of 98.9% media experts, 95% linguists, and 96.9% material experts with very feasible category to use, as well as a practicality level of 87.9% in very practical criteria and an effective level with an average of 90% in the very effective category. HOTS-based E-LKPD teaching materials are feasible, practical and effective for learning.



INTRODUCTION

Education is an important means to improve the quality of human resources. In Indonesia, efforts to improve the quality of education are continuously made to realize national education goals. This is stated in Law Number 20 of 2003, article 3 concerning the National Education System, which reads, "Developing the potential of students to become human beings who are faithful and devoted to God Almighty, noble, healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens" (Depdiknas, 2003).

Now entering an era that requires humans to think, be creative, critical, communicate and work well together. Humans will be required to show all abilities to compete. The initial stage of forming the individual is when sitting in elementary school. Individuals will be well-formed during teaching and learning activities, forming a thinking power skill in the classroom. Problem-solving skills are closely related to Higher-Order Thinking Skill (HOTS) (Karsono, 2017). As the demands of the 21st century, students are expected to have 4C thinking skills (Communication, Collaboration, Critical Thinking and Problem-Solving, and Creativity and Innovation). In the 4C skills, one thinking skill highly prioritized to be developed in education is creative thinking skills (Miswandi Tendrita, 2016).

The development of student's abilities, especially in science learning, is one of the keys to success in the teaching and learning process. Aspects of science learning in elementary schools can be obtained by students easily if they can master skills in thinking and are active in every lesson or respond to all teaching given by the teacher because science in elementary schools is conceptualized as a method of solving problems without ignoring facts. Through HOTS, students will be able to distinguish ideas, solve problems and increase their activity in the classroom. The 2013 curriculum as a means of achieving HOTS since the elementary level is an initial effort to improve student thinking quality. So that students will think more in developing ideas, solving problems, and not hesitate in pouring the content of the results of these thoughts in science learning in the classroom.

As an educator, you must also be able to provide assessment instruments to students that refer to investigation and problem-solving activities. Students are invited to explore and think critically in working on problems. Giving questions can be poured into the form of Learner Worksheets (LKPD). Electronic Learner Worksheets (E-LKPD) is one of the computer-aided media which was originally printed and then converted into electronic form. There are pictures, animations and videos that are more effective so that students do not feel bored (Nadya et al, 2016). The use of LKPD is very helpful for teachers in the learning process. LKPD is one of the learning tools that can improve learning achievement, because it has formed an effective interaction between teachers and students. LKPD can also be used as a facilitator in learning activities and help students learn in a directed manner to facilitate the teacher in carrying out the learning process in the classroom.

Based on the results of interviews with educators in class VI, some information was obtained: (1) Learning is carried out based on the 2013 curriculum using integrated thematic books. (2) In face-to-face

learning, the material is delivered conventionally and the assignments are given as simple LKS. (2) During learning there is a lack of experimental practice, due to limited learning media. (3) There are difficulties for teachers, namely a lack of understanding of technology. (4) The unavailability of LKPD in digital form. Regarding the teaching materials used, the teacher assesses that there is still very little explanation of the material and the lack of practice questions given to students. The explanation in the learning book is too brief, so the teacher must have the initiative to explain in more detail to students. In addition, the lack of LKPD for students makes one of the triggers for the lack of knowledge possessed by students. Based on the results of interviews with students, it is known that students are very enthusiastic about digital-based learning, because current technological advances make students almost on average own and use cellphones. Interactive LKPD can take advantage of the application's capabilities and display video, sound, and image features, which will help students visualize abstract material (Nanang, 2015).

Based on these conditions, a solution is needed to improve student learning outcomes in science subjects, especially magnet material, namely by developing HOTS-based E-LKPD, so that the quality of learning is much more enjoyable and more able to hone students' abilities in creative thinking. By applying the HOTS method, students are expected to be able to learn independently without pressure, active involvement in their skills and solve problems by thinking critically without getting out of the concept of science learning in elementary schools. Based on the background of the problems that have been described, the researcher is interested in conducting research with the title "Development of Electronic Learner Worksheets (E-LKPD) Based on Higher Order Thinking Skill (HOTS) to Improve Creative Thinking in Science Subjects Magnet Material Grade VI Elementary School".

METHOD

In this study, researchers used a design design and development research approach (Research and Development /R&D). Research and Development is a research method used to produce new products, test the effectiveness of new products. If the new product has been tested, the product will be easier, faster to use in work so that the quality and quantity of work products will increase (Sugiyono, 2017).

This study uses the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model of instructional design development research (Jumaidin Budaeng et al., 2017). The ADDIE development model has five development stages, namely: (1) analysis, (2) design, (3) development, (4) implementation, and (5) evaluation. The location of this research was carried out at Sukaresmi 06 State Elementary School, South Cikarang, Bekasi Regency, West Java. The research subjects in this development include three validators consisting of media expert test validators, language expert test validators, material expert test validators and the target users of this product are grade VI students of Sukaresmi 06 State Elementary School:

The needs questionnaire in the development of this product will be analyzed using descriptive qualitative data and quantitative data in the form of numbers and interpreted with the guidelines of the assessment category criteria to determine product quality.

Validation questionnaires that will be given to media, language, and material experts. This research and development uses a Likert scale and measurements that refer to the book by (Hayuwari, 2016) Quantitative analysis is the giving of questions that will produce scores in this case can be seen in formula (i).

$$P = \frac{f}{n} \times 100\% \quad (i)$$

Description:

P = Percentage value per aspect

f = Score obtained

n = Maximum score

To determine the criteria for determining the results of validation can be seen in table 1.

Table 1. Criteria for Validation Results

Grade presentation	Criteria
$0 \leq P < 25\%$	Invalid
$26 \leq P < 50\%$	Less Valid
$51 \leq P < 75\%$	Valid
$76 \leq P \leq 100\%$	Very Valid

Counting the questionnaires that have been collected from validators will be calculated using a Likert scale as a measuring tool. The data that has been obtained by researchers is then analyzed to determine the feasibility or not of a product being developed.

RESULT AND DISCUSSION

The development carried out in this study produced HOTS-based E-LKPD teaching materials on learning Theme 5 "Entrepreneurship" Subtheme 2 "Business Around Me" for grade VI SDN Sukaresmi 06. To develop HOTS-based E-LKPD, researchers used the stages of the ADDIE model with five stages, namely (Analysis, Design, Development, Implementation, and Evaluation). The stages of this development are as follows:

Analysis is used to obtain information in developing E-LKPD teaching materials according to the needs of students in the learning process, including: educator (teacher) analysis. This research was developed from problems that arose during the learning process, the explanation contained in the learning book was too brief, so the teacher had to have the initiative to explain in more detail to students. In addition, the lack of LKPD for students makes one of the triggers for the lack of knowledge possessed by students. Based on the results of the interview, it is also known that students are very enthusiastic about learning with digital-based media, because current technological advances make students almost on average own and use cellphones.

At this stage, researchers interviewed students to get an overview of making HOTS-based E-LKPD teaching materials by what students want. From the results of the interview, it can be concluded that students want to have digital-based teaching materials, with attractive images and practice questions that invite students to conduct learning practice experiments accompanied by video and audio that add to the attractiveness of learning. Therefore, researchers present a solution that is considered effective from students' opinions, namely developing practical HOTS-based E-LKPD teaching materials that can be used by students easily.

To develop E-LKPD, there are several stages in developing HOTS-based E-LKPD, namely:

1. The cover is an overview of the material to be presented, in Figure 1 show the front and back cover.



Figure 1. (a) Front cover and (b) back cover

2. Instructions are directions for using the teaching materials in Figure 2(a). In addition to instructions for use, a student identity column must be filled in when teaching materials are used.



Figure 2. (a) Instructions for using the book and (b) information about basic competencies, indicators and learning objectives

- In Figure 2(b) there are Basic Competencies, Indicators and Learning Objectives that are in accordance with the teaching material and are used as targets for achieving learning objectives.
- The material summary contains some content summarized as a reflection material before students work on the practice questions in Figure 3(a).

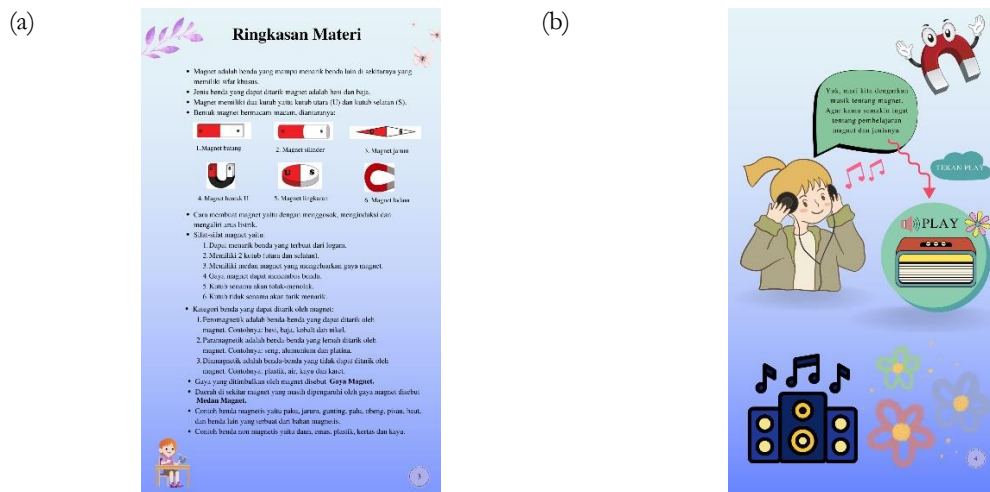


Figure 3. (a) Summary of material and (b) Audio display

- The audio display contains song compositions as supporting material so students can hear the song's contents. This display is found in Figure 3(b).
- YouTube display as a means of online-based learning media so that students can have an overview of the steps of the magnet making experiment 1 before starting the learning practice experiment. In Figure 4(a) there is a practice question on the experiment of making magnets 1 by rubbing.

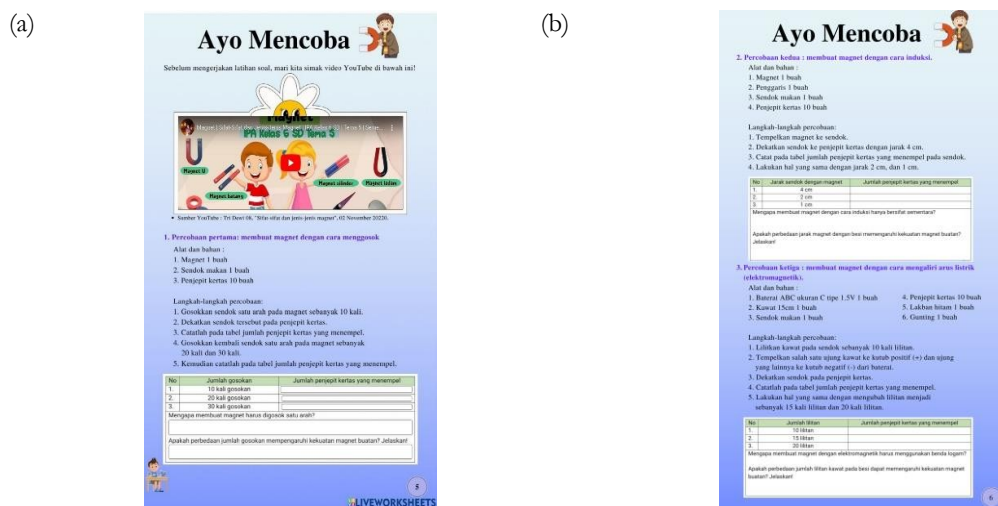


Figure 4. (a) YouTube display and (b) practice exercises

- In Figure 4(b) there are practice exercises for magnet making experiments 2 by inducing and practice experiments for making magnets 3 by flowing electric current.
- A line-drawing type exercise is a form of question exercise by giving directions to draw a line following the statement presented or match the answer with the existing statement. In addition, there are

exercises in the form of essay exercises or filling in the answers by typing the answers according to the questions asked. This practice question is shown in Figure 5(a).

- Figure 5(b) is almost the same as Figure 5(b), containing essay and drag-and-drop exercises. The drag and drop question exercise is a form of question exercise by pairing the answer with the statement submitted.

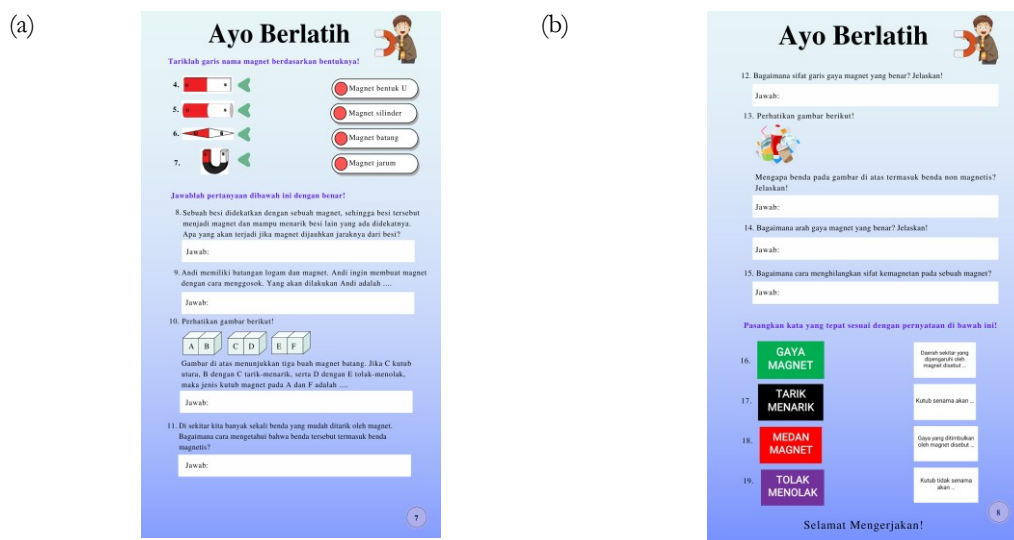


Figure 5. (a) Practice problems with line-drawing type and (b) practice essay questions and practice drag and drop questions

At this stage, the LKPD made using Canva graphic design is converted into pdf form. After being converted into pdf form, it is continued by entering the Liveworksheets application. In this application, the E-LKPD can be modified in the form of various questions and can add video and audio features to make it easier for researchers to make this HOTS-based E-LKPD.

The next step after the HOTS-based E-LKPD is made is to validate the product. This product validation is carried out by presenting several experts, namely media experts, linguists and material experts to assess the feasibility of HOTS-based E-LKPD products in science subjects of grade VI elementary school magnetism theme 5 subtheme 2. Meanwhile, to assess the practicality of this HOTS-based E-LKPD, researchers used an assessment questionnaire for grade VI elementary school educators or guardians and grade VI students. The data obtained in this study are as follows:

Feasibility Test Analysis of E-LKPD

The E-LKPD that has been developed is then validated by validators. Validators are media experts, linguists, and material experts. After each validator carries out the assessment, the three experts conduct an analysis on the validation results sheet. Then the instrument validation results obtained are the total average of all aspects of the assessment.

E-LKPD teaching materials are valid if they obtain and meet the eligibility requirements with a level of suitability. It is said to be valid if it meets the minimum criteria of 51-75%. Based on the validation results

from three validators, a value of 96.9% was obtained so that the E-LKPD was in a very valid criterion. So it can be concluded that the E-LKPD can be said to be very valid and feasible to use.

Analysis of E-LKPD Practicality Test

The practicality test was carried out on E-LKPD products that have been developed by researchers. This practicality test aims to make it easy or not to use E-LKPD products to educators and students. This test was conducted face-to-face in classroom VI D. The analysis of the questionnaire responses of educators and students to E-LKPD is shown in table 2.

Table 2. Practicality of educators and learners

No.	Name	Value
1.	Teachers	90
2.	Students	85.8
Average Result		87.9

From table 2, it can be concluded that E-LKPD teaching materials are said to be practical if they meet the minimum practical criteria equal to or more than 75. Based on the average results of teacher and learner responses, a score of 87.9 was obtained, which means that the E-LKPD developed by researchers is very practical.

Analysis of E-LKPD Effectiveness Score

The results of the student learning test were carried out to test the effectiveness of the E-LPD questions. To test the effectiveness, 30 students were tested. These students were asked to work on E-LKPD questions that had been validated by the validator. This is done in order to determine the effectiveness of the questions that have been developed. The analysis of students' scores on E-LKPD questions is shown in table 3.

Table 3. Effectiveness Score

No.	Name	Learner Score	KKM	Criteria
1.	SQ	83	75	Completed
2.	RM	91	75	Completed
3.	NAM	70	75	Not Completed
4.	RNI	83	75	Completed
5.	NFD	83	75	Completed
6.	SM	96	75	Completed
7.	NSJ	87	75	Completed
8.	RBF	100	75	Completed
9.	SAK	96	75	Completed
10.	NAP	87	75	Completed
11.	SA	70	75	Not Completed
12.	NP	93	75	Completed
13.	SN	81	75	Completed
14.	SMP	87	75	Completed
15.	QZJ	100	75	Completed
16.	RH	81	75	Completed
17.	NFN	81	75	Completed

18.	NFP	70	75	Not Completed
19.	SFN	96	75	Completed
20.	PMD	91	75	Completed
21.	RHP	87	75	Completed
22.	OBL	83	75	Completed
23.	RSP	93	75	Completed
24.	RR	91	75	Completed
25.	RN	81	75	Completed
26.	NF	96	75	Completed
27.	SNR	91	75	Completed
28.	SH	81	75	Completed
29.	RS	83	75	Completed
30.	NA	93	75	Completed
Many learners are complete				27 students

Description:

H = Percentage of learning completeness

T = Number of students who are complete

n = Many students

90%

$$H = \frac{T}{n} \times 100\%$$

Category	Highly Effective
-----------------	-------------------------

From table 3, it can be concluded that E-LKPD teaching materials are said to be effective if they meet the minimum effective criteria equal to or more than 70. Based on the results of the student learning test, a score of 90% was obtained, which means that the E-LKPD developed by the researcher is very effective.

Analysis of Creative Thinking Ability Score

The test of students' creative thinking skills was carried out to test the level of creativity of students in solving problems on HOTS-based E-LKPD. To test the ability to think creatively, researchers used a questionnaire in the form of a checklist for 30 students. This test was conducted face-to-face in class VI D. The results of students' creative thinking skills are shown in table 4.

Table 4. Creative Thinking Ability Score

No.	Name	Total score	Percentage	Category
1.	SQ	45	93.7%	Very good
2.	RM	38	79.1%	Good
3.	NAM	35	72.9%	Good
4.	RNI	40	83.3%	Very good
5.	NFD	30	62.5%	Good
6.	SM	35	72.9%	Good
7.	NSJ	35	72.9%	Good
8.	RBF	45	93.7%	Very good
9.	SAK	40	83.3%	Very good
10.	NAP	40	83.3%	Very good

From the table above, it can be concluded that class VI D students obtained an average result of the creative thinking ability test of 81.0% and were in very good criteria.

CONCLUSION

The development of HOTS-based E-LKPD was developed by paying attention to learning materials, basic competencies (KD) and learning objectives in accordance with theme 5 subtheme 2 for grade VI students of SDN Sukaresmi 06. To make HOTS-based E-LKPD, namely designing E-LKPD by designing using Canva graphic design, then converting E-LKPD into pdf (Portable Document Format), and converting E-LKPD in digital form with the help of the Liveworksheets application. The E-LKPD developed must go through the validation stages of media experts, linguists, and material experts as well as responses from class VI teachers at SDN Sukaresmi and tested on students consisting of 30 students. The quality of this HOTS-based E-LKPD has reached the standard of feasibility and practicality of use in learning. The quality of this HOTS-based E-LKPD has reached the standard of feasibility and practicality of use in learning based on the results of the assessment of media experts, linguists and material experts, educators and students.

Based on the validation results from 3 experts, namely media experts, linguists, and material experts, the overall average score is 96.9% on very valid criteria. From the development of HOTS-based E-LKPD teaching materials on magnetic material, it contains a cover, instructions for use, student identity, basic competencies, indicators, learning objectives, material summaries and practice questions with different types of questions, besides that there are additional videos and audio that can help improve the quality of E-LKPD magnetic material. From the results of the practicality test by teachers and students on E-LKPD, namely by giving a questionnaire to teachers and 30 students, the overall average value of 87.9% is obtained in very practical criteria. Meanwhile, based on the results of the effectiveness test, questions were tested on 30 students who obtained an average value of 90%, which was very effective. Finally, based on the creative thinking ability test to 30 students obtained an average of 81.0% in the very good category. So that the development of Electronic Learner Worksheets based on Higher Order Thinking Skills produces products that are valid, effective and practical for use in the learning process in the science content of class VI SDN Sukaresmi 06 magnet material.

REFERENCES

- Budaeng, J., Ayu, H. D., & Pratiwi, H. Y. (2017). Pengembangan Modul IPA Terpadu Berbasis Scaffolding Pada Tema Gerak Untuk Siswa Kelas VIII SMP/Mts. *Psysisic education Journal*, Retrieved from <http://ejournal.unikama.ac.id/index.php/momentum/article/view/1633> Depdiknas. (2003). Undang-undang RI No.20 tahun 2003 tentang Sistem Pendidikan Nasional. Hayuwari, D. A. (2016). Pengembangan Media Pembelajaran Komik Foto Untuk Meningkatkan Motivasi Belajar Siswa Kelas XI Program Studi Akuntansi SMK Negeri 1 Godean Tahun Ajaran2015/2016. Skripsi Universitas Negeri Yogyakarta.
- Karsono. (2017). Pengaruh Penggunaan LKS Berbasis HOTS Terhadap Motivasi dan Hasil Belajar IPA Siswa SMP. *Jurnal Pendidikan Matematika dan Sains*, V (1), 2017, 50-57. Yogyakarta, UNY.
- Nadya R. J Hafsah, Dedi Rohendi, and Purnawan. (2016). Penerapan Media Pembelajaran Modul Elektronik Untuk Meningkatkan Hasil Belajar Siswa Pada Mata Pelajaran Teknologi Mekanik**, *Journal of Mechanical Engineering Education*, 3.1. h. 107.

- Nanang Supriadi. (2015). Mengembangkan Kemampuan Koneksi Matematis Melalui Buku Ajar Elektronik Interaktif (BAEI) Yang Terintegrasi Nilai-Nilai Keislaman", *Jurnal Pendidikan Matematika*, 6.1. h. 64.
- Sugiyono. (2017). *Metode Penelitian dan Pengembangan Research and Development* (Vol. Cet.3). Bandung: Alfabeta.
- Tendrita, Miswandi; Mahanal, Susriyati; Zubaidah, Siti; (2016). Pemberdayaan Keterampilan Berpikir Kreatif melalui Model Remap Think Pair Share. *Proceeding Biology Education Conference*, 13(1), 285-291
- Sugiyono. (2008). *Metode Penelitian Kuantitatif, kualitatif dan R&D*. Bandung: Alfabeta.
- Sumantri, M. S., & Rachmadtullah, R. (2016). The effect of learning media and self regulation to elementary students' history learning outcome. *Advanced Science Letters*, 22(12), 4104–4108. <https://doi.org/10.1166/asl.2016.8140>
- Tambunan, H., & Napitupulu, E. (2016). Effectiveness of Interactive Multimedia Based Learning Model in Engineering Mechanics. *International Education Studies*, 9(10), 155–162. <https://doi.org/10.5539/ies.v9n10p155>
- Vaughan, T. (2011). *Multimedia Making it work ;8th Edition*. New York: McGraw-Hill.
- Winarno, S., Muthu, K. S., & Ling, L. S. (2018). Impacts of m-DPBL Approach towards Computer Networks Teaching and Learning Process. *International Journal of Emerging Technologies in Learning (iJET)*, 13(3), 207. <https://doi.org/10.3991/ijet.v13i03.7944>
- Xia, C. (2018). Multimedia Teaching Platform Construction Based on Flash Interaction Technology for Gymnastics. *International Journal of Emerging Technologies in Learning (iJET)*, 13(5), 224. <https://doi.org/10.3991/ijet.v13i05.8441>