

Web-Based E-LKPD for the Indonesian History Subject for Grade XI Senior High School

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Abstrak

Pendidikan saat ini tidak lepas dari perkembangan teknologi. Terintegrasinya teknologi ke bidang pendidikan memberikan pembaharuan dalam berbagai aspek salah satunya penggunaan teknologi dalam proses pembelajaran. Permasalahan pada mata pelajaran Sejarah Indonesia yang ditemukan rendah minat dan hasil belajar peserta didik. Hal ini disebabkan pengaruh yang besar dari perkembangan smartphone. Salah satu cara meningkatkan pemahaman dan ketertarikan peserta didik belajar sejarah melalui LKPD berbentuk elektronik (E-LKPD) yang ditampilkan melalui web. Tujuan dari penelitian ini adalah mendeskripsikan proses, validitas, praktikalitas dan efektivitas pengembangan E-LKPD berbasis web pada mata pelajaran Sejarah Indonesia kelas XI SMA. Penelitian ini menggunakan metode pengembangan dan penelitian (R&D) dengan model ADDIE. Teknik analisis data dalam penelitian ini menggunakan angket skala likert 4 untuk mengetahui tingkat validitas dan praktikalitas produk E-LKPD berbasis web. Untuk efektifitas produk dilakukan pre-test dan post-test untuk melihat ketercapaian hasil belajar peserta didik. Uji validitas E-LKPD melibatkan ahli materi, media dan bahasa. Uji praktikalitas melibatkan dua pendidik mata pelajaran Sejarah Indonesia dan 71 peserta didik kelas XI SMA Negeri 1 Payakumbuh. Hasil uji validitas dari ahli materi memperoleh skor 3.9, ahli media skor 3.8 dan ahli bahasa skor 3.8 dengan kategori sangat valid. Hasil uji praktikalitas oleh pendidik diperoleh skor 3.8 dan peserta didik skor 3.7 kategori sangat praktis. Hasil uji efektivitas melalui pre-test dan post-test memperoleh skor gain kelas XI MIPA 7 0.9 dan XI MIPA 8 skor gain 0.8 kategori sangat tinggi.

Kata kunci: E-LKPD, Berbasis Web, Sejarah Indonesia.

Abstract

Education is currently inseparable from technological developments. The integration of technology into the education field provides renewal in various aspects. One of them is the use of technology in the learning process. The problems found in the Indonesian History subject were the low interest and low learning outcomes of the students. This is due to the great influence of smartphone development. One way to increase the students' understanding and interest in learning history is through an electronic form of LKPD (E-LKPD) displayed via the web. This research aims to analyze the process, validity, practicality and effectiveness of the web-based E-LKPD development for Indonesian History subject for Grade XI Senior High School. This study used the development and research (R&D) method with the ADDIE model. The data analysis technique in this research used a Likert scale 4 questionnaire to determine the validity and practicality of web-based E-LKPD product. For the product effectiveness, a pre-test and post-test were carried out to see the achievement of student learning outcomes. The validity test of the E-LKPD involved material, media and language experts. The practicality test involved two educators of Indonesian history and 71 students from class XI at Senior High School. The results of the validity test from material experts were 3.9, from media experts were 3.8 and from linguists were 3.8 in the very valid category. The results of the practicality test by educators were 3.8 and from students were 3.7 in the very practical category. The gain score results of the effectiveness test through the pre-test and post-test of XI MIPA 7 were 0.9 and XI MIPA 8 were 0.8 in the very high category.

Keywords: E-LKPD, Web Based, Indonesian History.

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1. INTRODUCTION

Education is one of the important factors to advance a nation. Through education there is a process of forming personality and increasing intelligence, skills and strengthening the spirit of nationalism in order to be able to build oneself and be responsible for nation building (Adli & Fatimah, 2019; Mahfud et al., 2019). In education, there is a teaching and learning activity requiring effort and skills to achieve these changes. To make it happen, of course, it cannot be separated from the role of the government continuing to carry out the

reforms in education. One of them is the provision of facilities and infrastructure in the form of technology-based media or tools (AlAjmi, 2022; Ghavifekr et al., 2014; Sirakaya & Cakmak, 2018). Learning currently leads to digitalization and requires learning to be integrated with technology as an effort to develop the ability to think critically and the creativity of educators (Anggraeni et al., 2019; Robandi et al., 2019).

In fact, the development of science, technology and communication (IPTEK) continues to progress very rapidly. This shows that science cannot be separated from technology. In education, the use of internet technology can directly change patterns in how to work, access and exchange of information that is not limited by space and time (Agustini et al., 2019; S. Lestari, 2018; Sjahruddin et al., 2022). The use of products resulting from technological developments such as the internet, laptops and smartphones has provided convenience for education in various aspects. One example is the learning process in class or assignments at home. The presence of this product is an answer to the problem of limited time and space which is one of the obstacles or problems in education field. Integrating technology in learning is an appropriate innovation in the 21st century today (Khalid, 2011; Putrawangsa & Hasanah, 2018; Siregar, 2020). Technology plays a role in saving space, time and costs. One of the integrations of technology that can be done in learning in schools is to develop digital or electronic-based student activity sheets (E-LKPD). LKPD is one of the learning resources known in the 2013 Curriculum used to help educators train students' skills in discovering concepts through activity steps to the end of the assessment (Sari, E.N and Susilowibowo, 2022; Sari & Wulandari, 2020).

However, History is one of the subjects taught to students in SMA (Senior High School). Education in the Indonesian History subject in SMA/MA/SMK/MAK is a study of various historical events in Indonesia aimed at building collective memory as a nation so that our national identity is known and make it the basis for building the life of the nation and state in the present and in the future (Afiqoh et al., 2018; Jumardi, 2017; Perdana et al., 2018). Learning history in schools has a goal so that students are able to foster a sense of nationalism and think critically. As educators in the subject of Indonesian History, educators must be able to present something new both in terms of models, strategies, methods and the use of appropriate learning media (S. U. Lestari et al., 2018; Lionar & Mulyana, 2019; Mohamad et al., 2018). In learning Indonesian history, educators really need creativity in choosing or creating interesting learning media for students. It is intended that the material presented is accepted and understood by students. History educators are required to be creative in developing learning media so that learning can be meaningful while at the same time forming the character of loving the motherland as well as being critical and constructive (Birsyada & Siswanta, 2021; Birsyada et al., 2022).

Based on the results of a survey at SMA Negeri 1 Payakumbuh, the use of learning media in the form of modules (teaching materials) and LKPD used in Indonesian History subject was still printed. The technology-based media used by educators in the form of power point applications displayed did not depict attractive and clear visualizations because the designs were less attractive to students and the limited face-to-face learning time to provide all material to students. In addition, the learning that always used books results in students feeling inactive because they only listened to lessons from educators' explanations in class. This was due to the use of monotonous learning methods and models from educators and the focus of the learning process in the classroom was too teacher centered. Due to some of these factors, students feel bored which distracts them, such as opening their smartphone on the sidelines when the teacher is explaining the material so that students do not absorb the material presented by the educator. This causes most students to become passive, lazy to learn, feel bored during learning and do not understand the concept of material provided by educators (Fauhah & Rosy, 2021; Tauresia et al., 2020; Tawfik, 2015). This problem also has

an impact on the low learning outcomes of the students in the daily assessors of class XI high school. Previous study found almost 69%. Thus, to minimize the problems described above, educators must provide learning innovations and explore teaching skills by designing and developing worksheets (Fitriyah & Ghofur, 2021). Therefore, the use of web-based E-LKPD can be a solution in learning and is able to increase learning outcomes, activeness and enthusiasm in students. Clearly, the development of web-based E-LKPD is an alternative or learning media that is able to support teaching and learning activities so that they are more effective, efficient and real time. Learning using the web has the advantages of being easy to access, easy to use, increasing motivation and forming a culture of self-education (Fitriyah & Ghofur, 2021; Hasibuan et al., 2019). The purpose of developing E-LKPD is to produce new products and to be applied to students so they are able to solve students' problems in class. This simultaneously minimizes the notion that learning history is still considered as monotonous material which only describes a number of historical facts, roles of figures, dates and years of events which are mostly recorded in the students' left brain which, if continued, will lead to student boredom (Andarwati, 2019; Andrianti et al., 2016; Muruganatham, 2015).

The development of this web-based E-LKPD uses a web application called liveworksheets.com. Liveworksheets is an electronic platform that transforms printed worksheets into interactive ones, which are also displayed online (Fauzi et al., 2021; Fitriani et al., 2021; Hazlita, 2021). The advantage of the liveworksheets.com web is good for students because it is interactive and motivating, for educators this web application saves time and paper (Khikmiyah, 2021; Prabowo, 2021; Widiyani & Pramudiani, 2021). Students can also repeat learning and explanations until these students feel they understand the material presented. The selection of learning media is strongly influenced by the chosen learning model. In addition, learning models or concepts are also needed that are adaptive and flexible according to the conditions and needs of all visible subjects (Adya Winata et al., 2021; Beer & Mulder, 2020). The developed E-LKPD combines a learning model that is integrated with the applicable curriculum, namely the 2013 curriculum. In line with previous study blended learning is a combination of face-to-face learning and online learning that can increase effectiveness, access, and accessibility in developing the potential of individual students (Widyastono, 2017). An educator can upload learning material on the internet, so that students can download it remotely so that students can study independently outside the classroom and continue face-to-face based on the agreed time so that it can increase the attractiveness of the face-to-face learning process and is very suitable for applied in the 21st century era (Fadillah et al., 2020; Ho et al., 2016).

The learning model used is a blended learning model which can be interpreted as a learning model combining two learning activities carried out in class with digital utilization so that learning can be carried out online. This model aims to shape students to develop better in the learning process, in accordance with learning styles and preferences in learning and also provides practical opportunities for educators and students to learn independently, benefit and continue to grow. The novelty of this research idea lies in the E-LKPD product in Indonesian History subjects which is packaged in a ready-to-use digital application. In accessing the E-LKPD, the supporting devices such as laptops, smartphones or iPads can be used which these devices are generally used by educators and students. This is also based on field problems that were found previously, where students when studying in class were not interested, got bored learning Indonesian history so they turned their eyes on opening smartphones. The aims of this study is to analyze the process, validity, practicality and effectiveness of the web-based E-LKPD development for Indonesian History subject for Grade XI Senior High School.

2. METHODS

The research and development (R&D) methods was used in this study. In this study, the product produced was a web-based E-LKPD for Indonesian History for Grade XI SMA. The model used in this R&D method was the ADDIE model consisting of five stages, namely analysis, design, development, implementation and evaluation (Sari, N.T and Wasgito, 2020; Sugiyono, 2013). The ADDIE model used because this development model is more dynamic, effective and supports the performance of learning programs. The ADDIE model is one of the most commonly used models in learning in the field of design or guide products to produce effective designs or products (Aldoobie, 2015; Nindiawati et al., 2021). The explanation of the ADDIE stages is as follows; 1) The analysis phase consisted of 3 stages, namely needs analysis, curriculum and students; 2) The design stage consisted of 3 stages, namely compiling the content framework of the E-LKPD, designing the learning content and planning the packaging of the E-LKPD; 3) The development stage tested product validity; 4) The implementation stage tested the E-LKPD product; 5) The evaluation stage conducted practicality tests, tests the effectiveness of E-LKPD products and product revisions.

This study involved several experts, namely material, media and language experts to test the validity of the E-LKPD product. In addition to data from the validator, the practicality test involved two Indonesian history educators and 71 students from 35 students of class XI MIPA 7 and 36 students of class XI MIPA 8 at SMA Negeri 1 Payakumbuh. To find out the level of validity and practicality of the E-LKPD, it was done by filling out instruments in the form of a questionnaire, by filling in a checklist for each indicator item. The research questionnaire instrument used a Likert scale with criteria divided into 4, namely Very Good (SB) with a weight of 4, Good (B) with a weight of 3, Not Good (TB) with a weight of 2 and Very Not Good (STB) with a weight of 1. Testing the effectiveness of the E-LKPD was carried out through a pre-test (before learning) and post-test (after learning). Then, it used the interval formula by using a Likert scale of 4 weights. It was found that the mean feasibility value was 0.75. The criteria for changing the mean score is show in Table 1.

Table 1. Validation Classification Scale and Practicality

Category Score	Range
3.26 s.d 4.00	Very Valid
2.51 s.d 3.25	Valid
1.75 s.d 2.50	Less Valid
1.00 s.d 1.75	Invalid

The web-based E-LKPD effectiveness data analysis technique used the results of the pre-test and post-test. The learning outcomes of students obtained before and after using the E-LKPD were calculated by using the N-gain formula. Then, the results of the normalized N-gain calculations were interpreted according to the criteria as show in Table 2.

Table 2 . N-gain Classification Scale

Criteria (N-gain)	Classification
$(N-gain) \geq 0,7$	Tall
$0,3 \geq (N-gain) > 0,7$	Currently
$(N-gain) < 0,3$	Low

3. RESULTS AND DISCUSSION

Results

The main result of the development research that has been carried out was the web-based E-LKPD for Indonesian History for Grade XI SMA that has been validated by several validators, practicality by educators and students and effectiveness during the learning process. The following are the steps used in developing the E-LKPD.

Analysis Stage

Based on the results of observations, it was found that there were low interest and learning outcomes of the students at SMA Negeri 1 Payakumbuh on Indonesian History lessons. The students' learning outcomes whose scores not fulfilling the criteria were almost 69% of the total number of the students. This was because the majority of students played their smartphones to just play games and open social media applications. Regarding the learning process, some of the media used by educators in schools were Microsoft Powerpoint, learning videos, learning textbooks and printed modules. Then, the curriculum analysis was carried out to collect information from various sources of the curriculum used, and the target of developing the E-LKPD was the learning material of Indonesian History for Grade XI in the even semester. The curriculum at the school became the research site, namely SMA Negeri 1 Payakumbuh using the 2013 revision of the 2018 Curriculum. Based on the observations, learning process and learning outcomes in class, the students grade XI had different abilities for each individual. There were students who have high, medium and low abilities.

Design Stage

At the design stage, this collects the main material about the Japanese occupation in Indonesia in accordance with the Core Competencies and Basic Competencies of Indonesian History subject for Grade XI SMA. This stage included several steps, namely: 1) Designing the E-LKPD covered on the Canva.com link via a laptop device. Selection of designs was according to pictures, fonts and colors so that students were interested in working on the LKPD. In addition, the layout was also considered so that the overall combination was easy to read and understand; 2) Then, designing the identity of the E-LKPD, steps for E-LKPD activities and practice questions in the E-LKPD.

As with the cover, the selection of images, fonts and colors was adjusted in combination so that students can read and understand it easily; 3) Next, the file that has been designed on the Canva.com link was saved as a PDF file; 4) After saving in pdf file form, the E-LKPD file was then edited using the liveworksheets.com web link by first uploading the E-LKPD pdf file at the link; 5) Then, in the liveworksheets.com web link, it included various editing variants, starting with editing the student identity column, the YouTube video accessed column, the Microsoft powerpoint container column and variations of the questions in the E-LKPD; 6) After all edit variations were deemed appropriate, the next step was exporting the E-LKPD by filling in the E-LKPD identity in the liveworksheets.com web link; 7) Finally, the liveworksheets.com link appeared copied and sent to students via a learning application, for example the WhatsApp group. The display of web-based E-LKPD products is show in [Figure 1](#), and [Figure 2](#).

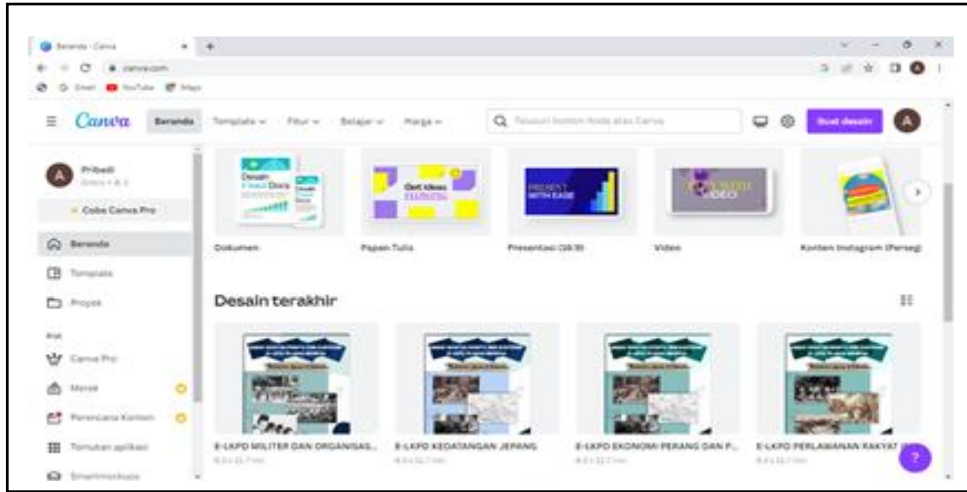


Figure 1 . The Design process in the Canva.com App

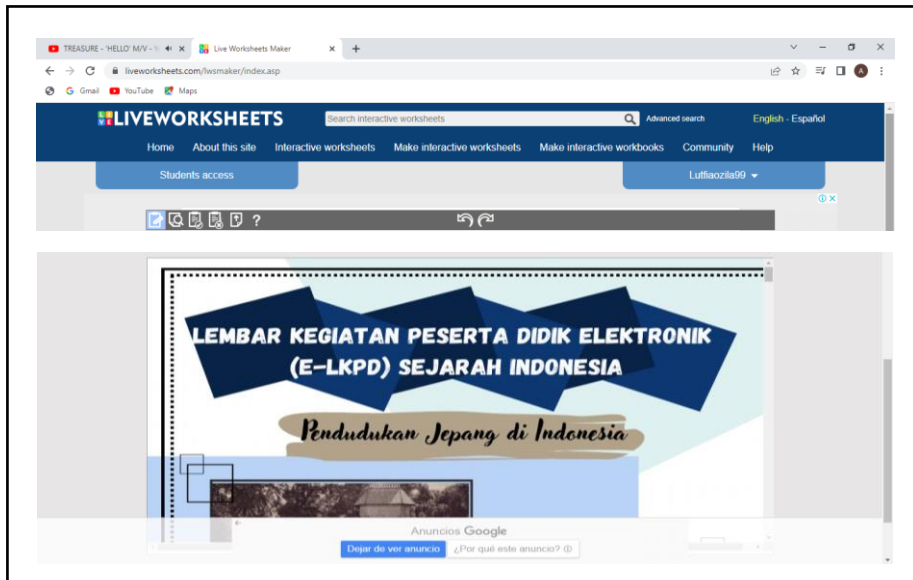


Figure 2 . Editing Process at Link Liveworksheets.com

Development Stage

At the development stage, the developed E-LKPD was then validated by experts consisting of several lecturers of Universitas Negeri Padang. The results of material validation in the E-LKPD is show in Table 3.

Table 3 . Material Validation Results

No	Rated Aspect	Grain	Total
1	Compatibility Components	3	12
2	Accuracy Components	10	40
3	Encourage Curiosity	5	18
4	Language Component	3	12
5	Graphic Components	4	16
Total Number			98
Total Final Average Rating			3.9
Assesment Criteria			Very Valid

Base on [Table 3](#) show the result of material validation result found total final rating to 3.9 is mean very valid. The results of media validation in the E-LKPD is show in [Table 4](#).

Table 4 . Media Validation Results

No	Rated Aspect	Grain	Total
1	E-LKPD Content Components	9	36
2	Language Component	2	8
3	Graphic Components of E-LKPD	13	47
4	Component Suitability with learners	4	16
5	E-LKPD Technical Components	2	8
Total Number			115
Total Final Average Rating			3.8
Assesment Criteria			Very Valid

Base on [Table 4](#) show the result of media validation result found total final rating to 3.8 is mean very valid. The results of language validation in the E-LKPD is show in [Table 5](#).

Tabel 5 . Language Validation Results

No	Rated Aspect	Grain	Total
1	Conformity with the rules of language	2	8
2	Sentence Suitability	4	15
3	Suitability with students	6	23
Total Number			46
Total Final Average Rating			3.8
Assesment Criteria			Very Valid

Base on [Table 5](#) show the result of language validation result found total final rating to 3.8 is mean very valid.

Implementation Stage

This stage was carried out after the media has been created and revised according to the suggestions for improvement from the validators. The tests carried out were practicality and effectiveness. The practicality of web-based E-LKPD for Indonesian History subjects can be seen from the results of practicality analysis by educators and students. The practicality test was carried out by two Indonesian history educators and 71 students from class XI MIPA 7 and 8 of SMA Negeri 1 Payakumbuh. The product trials were carried out during two meetings with material on the deployment and suppression during the Japanese occupation in Indonesia. The result of educator practicality is show in [Table 6](#), then the result of student practicality is show in [Table 7](#).

Table 6 . Results of Educator Practicality

No	Rated Aspect	Grain	P1	P2	Total
1	Display E-LKPD	4	15	16	31
2	Fill in the E-LKPD	4	16	15	31
3	Technical Use of E-LKPD	4	16	16	32
4	Benefits of E-LKPD	3	12	12	24
Total Number					114
Total Final Average Rating					3.8
Assesment Criteria					Very Practical

Table 7 . Results of Student Practicality

No	Rated Aspect	Grain	XI MIPA 7	XI MIPA 8	Total
1	Display E-LKPD	4	515	550	1065
2	Fill in the E-LKPD	4	510	535	1045
3	Technical Use of E-LKPD	4	370	390	760
4	Benefits of E-LKPD	3	378	404	782
Total Number					3652
Total Final Average Rating					3.7
Assesment Criteria					Very Practical

Effectiveness Test

Testing the effectiveness of web-based E-LKPD can be seen from the students' learning outcomes. The learning outcomes were obtained through the results of a knowledge test by conducting a pre-test in the form of objective questions and post-test questions in the E-LKPD to determine the success rate of the web-based E-LKPD that was developed in increasing the students' learning outcomes. Student effectiveness results is show in [Table 8](#).

Table 8 . Student Effectiveness Results

No	Class	Description	Meeting 1		Meeting 2	
			Pre	Post	Pre	Post
1.	XI MIPA 7	Total	2080	3325	2180	3310
		Average	59.4	95.0	62.3	94.6
		N-gain	0.9		0.9	
		Category	Tall (N-gain \geq 0.7)		Tall (N-gain \geq 0.7)	
2.	XI MIPA 8	Total	2100	3220	2110	3290
		Average	60.0	92.0	60.3	94.0
		N-gain	0.8		0.8	
		Category	Tinggi (N-gain \geq 0.7)		Tall (N-gain \geq 0.7)	

Base on [Table 8](#), the mean score of the students' learning outcomes after using the web-based E-LKPD in class XI MIPA 7 was 95% and XI MIPA 8 was 93% in the Very Good category. Thus, it can be said that there was an increase in the students' understanding of knowledge, which previously based on the survey results, it was found that the daily score of the students from class XI MIPA 7 and 8 was 69%.

Evaluation Stage

The evaluation stage in this study was carried out at every stage from the development stage to the implementation stage. Evaluation was carried out for the need for revision or improvement in order to obtain a valid, practical and effective E-LKPD product. There were several revisions from E-LKPD media experts, namely adding the name of the researcher/author, changing the size and type of LKPD font and scoring settings in the E-LKPD assessment.

Discussion

The learning media developed was a web-based E-LKPD which can be accessed anywhere and anytime using the internet network. E-LKPD was developed using the Liveworksheets.com web link. The way to access this link was very easy by clicking on the

link sent by the educator through the class whatsapp group application so that all students can get it. The web-based E-LKPD for Indonesian History for Grade XI SMA aims to arouse students' curiosity and motivate students to study independently. E-LKPD is in the form of student work guides to make it easier for students to understand learning material in electronic (digital) form whose application uses desktop computers, notebooks, smartphones and cellphones, a set of basic activities that students must carry out to maximize understanding in an effort to achieve learning goals (Darmawan & Yuwaningsih, 2021; Farman et al., 2021; Ramadhana & Hadi, 2021).

E-LKPD is suitable for use in learning based on aspects of validity, practicality and effectiveness for students (Fitriyah & Ghofur, 2021; Prastika & Masniladevi, 2021). The validation carried out in this study was a web-based E-LKPD validation using instruments in the form of assessment questionnaire sheets (validation) and carried out by validators, namely material, media and language. This E-LKPD assessment was in line with previous research which produced LKPD in a valid category based on an assessment of the feasibility aspects of content, design and language (Adnan, 2019). The results of material validation in the very valid category showed that the material presented in the E-LKPD was in accordance with Basic Competence (KD) and Competency Achievement Indicators (GPA). This was in line with the opinion of stating that the calculations of material experts showed that all material was relevant to the contents of the E-LKPD (Farman et al., 2021). This means that the E-LKPD is appropriate to use considering the validator has said it is valid. The material displayed is in accordance with indicators of competence and syllabus achievement so as to be able to achieve the objectives of learning (Farman et al., 2021; Ramadhana & Hadi, 2021).

The media validation results obtained a very valid category indicating that the E-LKPD presented an attractive media display using pictures, videos, fonts, navigation buttons and layouts that made it easier for students to access and work on the developed E-LKPD. This was in line with research conducted which stated that the media expert validation (E-LKPD) that was assessed was the aspect of content and presentation, language and graphics (Karina et al., 2019). Language validation in the E-LKPD also obtained a very valid category indicating that the use of language and sentence structures in the web-based E-LKPD was appropriate for conveying messages to students. This was in line with the opinion stating that the presentation of sentences in the E-LKPD was able to convey messages to students and stimulate curiosity (Sari, E.N and Susilowibowo, 2022). An attractive design display with good typography allows students to stimulate active participation throughout the learning process. Based on the results of the overall validation, it can be said that the E-LKPD can make students active in the learning process and can increase the learning value of students. The results of educators' responses to the practicality of the E-LKPD showed that the developed web-based E-LKPD was very practical to use in the learning process. Web-based E-LKPD was able to increase student activity. This was seen from the participation of students while completing the web-based E-LKPD and there was an increase in students' self-confidence and curiosity about learning (Augustha et al., 2021; Wahyuni et al., 2021). The implication of this study provide overview that there is an increase in student learning outcomes after using the web-based E-LKPD. It can be concluded that the developed web-based E-LKPD is valid, practical and effective for use in learning Indonesian History for Grade XI SMA. Based on the research that has been done, it is hoped that it will be useful to add insight and knowledge in learning Indonesian History subject for Grade XI SMA. For students and educators, it is hoped that it can be used as an alternative learning media in the learning process. For schools, the web-based E-LKPD can be used as a new innovation in the use of media and for other researchers, the E-LKPD can be used as a guide for other researchers to conduct further research.

4. CONCLUSION

The mean score result of the validity of the web-based E-LKPD was in the very valid category after being validated by the media validator after having been revised once. Then, the mean score was in the very valid category by the material validator and the mean score was in the very valid category by the language validator. Thus, the mean score results of the overall validity of the media, material and language aspects were in the very valid category. The mean score result of the practicality of the web-based E-LKPD showed very practical criteria after a practicality assessment was carried out by the students was in the very practical category and educators was in the very practical category. The test results for the effectiveness of student learning outcomes from the pre-test and post-test data on the value of the pre-test results obtained low mean score and during the post-test it increased after using the web-based E-LKPD in the classroom learning process XI SMA.

5. REFERENCES

- Adli, A., & Fatimah, S. (2019). Implementation of strengthening values of nationalism in character education through history learning in public senior high school 1 Sungai Penuh. *International Journal of Educational Dynamics*, 1(2), 116–124. <https://doi.org/10.24036/ijeds.v1i2.138>.
- Adnan, H. (2019). Test the Validity of Discovery Learning-Based Development for High School Students on the concept of the digestive system. *Proceedings of Biology Seminar VI*, 6, 299–305. <https://ojs.unm.ac.id/semnasbio/article/view/10569/6191>.
- Adya Winata, K., Hasanah, A., & Sunan, U. (2021). Implementasi model pembelajaran interaksi sosial untuk meningkatkan karakter peserta didik. *Jurnal Pendidikan*, 9(1), 22–32. <https://doi.org/10.36232/pendidikan.v9i1.639>.
- Afiqoh, N., Atmaja, H. T., & Saraswati, U. (2018). Penanaman Nilai Kearifan Lokal dalam Pembelajaran Sejarah Pokok Bahasan Perkembangan Islam di Indonesia Pada Siswa Kelas X IPS di SMA Negeri 1 Pamotan Tahun Ajaran 2017/2018. *Indonesian Journal of History Education*, 6(1), 40–50. <https://journal.unnes.ac.id/sju/index.php/ijhe/article/view/27353>.
- Agustini, K., Santyasa, I. W., & Ratminingsih, N. M. (2019). Analysis of competence on “TPACK”: 21st century teacher professional development. *Journal of Physics: Conference Series*, 13.
- AlAjmi, M. K. (2022). The impact of digital leadership on teachers’ technology integration during the COVID-19 pandemic in Kuwait. *International Journal of Educational Research*, 101928. <https://doi.org/https://doi.org/10.1016/j.ijer.2022.101928>.
- Aldoobie, N. (2015). ADDIE Model. *American International Journal of Contemporary Research*, 5(6). www.aijcrnet.com/journals/Vol_5_No_6_December_2015/10.pdf.
- Andarwati, M. (2019). Pembelajaran Sejarah Kontekstual, Kreatif, Menyenangkan di Kelas Dengan “Power Director” bagi Generasi Z. *Jurnal Pendidikan Sejarah Indonesia*, 2(1), 64–81. <https://doi.org/10.17977/um033v2i12019p064>.
- Andrianti, Y., Susanti, R., & Hudaidah. (2016). Pengembangan Media Powtoon Berbasis Audiovisual pada Pembelajaran Sejarah. *Jurnal Criksetra*, 5(9), 58–68. <https://doi.org/10.36706/jc.v5i1.4802>.
- Anggraeni, H., Fauziah, Y., & Fahyuni, E. F. (2019). Penguatan Blended Learning Berbasis Literasi Digital Dalam Menghadapi Era Revolusi Industri 4.0. *Al-Idarah : Jurnal Kependidikan Islam*, 9(2), 190–203. <https://doi.org/10.24042/alidarah.v9i2.5168>.
- Augustha, A., Susilawati, S., & Haryati, S. (2021). Pengembangan E-LKPD Berbasis Discovery Learning Menggunakan Aplikasi Adobe Acrobat 11 Pro Extended Pada Materi Keseimbangan Ion DAN pH Larutan Garam Untuk Kelas XI SMA/MA

- Sederajat. *Journal of Research and Education Chemistry*, 3(1), 28. [https://doi.org/10.25299/jrec.2021.vol3\(1\).6485](https://doi.org/10.25299/jrec.2021.vol3(1).6485).
- Beer, P., & Mulder, R. H. (2020). The Effects of Technological Developments on Work and Their Implications for Continuous Vocational Education and Training: A Systematic Review. In *Frontiers in psychology* (Vol. 11, p. 918). <https://doi.org/10.3389/fpsyg.2020.00918>.
- Birsyada, M. ., & Siswanta, S. (2021). An Innovation of National Character Education Based on Historical Values of Prince Sambernyowo's Struggle in the Era of Society 5.0. *Diacrobica*, 21(1), 45–56. <https://doi.org/10.24036/diakronika/vol21-iss1/179>.
- Birsyada, M. I., Gularso, D., & Fairuzabadi, M. (2022). Learning Development Strategy for the History of the Japanese Occupation in Indonesia Based on Museum Dioramas in Schools. *Diakronika*, 22(1), 76–93. <https://doi.org/10.24036/diakronika/vol22-iss1/272>.
- Darmawan, M. A., & Yuwaningsih, D. A. (2021). Pengembangan E-Lkpd Matematika Berbasis Problem Solving Pokok Bahasan Pola Bilangan. *Jurnal Pendidikan Matematika Universitas Lampung*, 9(4), 343–359. <https://doi.org/10.23960/mtk/v9i4.pp343-359>.
- Fadillah, A., Nopitasari, D., & Pradja, B. P. (2020). Blended Learning Model During the Covid-19 Pandemic: Analysis of Student's' Mathematical Disposition. *JTAM (Jurnal Teori Dan Aplikasi Matematika)*, 4(2), 173–181. <https://doi.org/10.31764/jtam.v4i2.2582>.
- Farman, Hali, F., & Rawal, M. (2021). Development of E-LKPD Using Live Worksheets for Online Mathematics Learning during Covid-19. *Journal of Mathematics Education*, 6(1), 36–42. <https://doi.org/https://doi.org/10.31327/jme.v6i1.1626>.
- Fauhah, H., & Rosy, B. (2021). Analisis Model Pembelajaran Make A Match Terhadap Hasil Belajar Siswa. *Jurnal Pendidikan Administrasi Perkantoran (JPAP)*, 9(2), 321–334. <https://doi.org/10.26740/jpap.v9n2.p321-334>.
- Fauzi, A., Rahmatih, A. N., Indraswati, D., & Sobri, M. (2021). Penggunaan Situs Liveworksheets untuk Mengembangkan Lkpd Interaktif di Sekolah Dasar. *Jurnal Pengabdian Masyarakat*, 2(3), 232–240. <https://doi.org/10.37478/mahajana.v2i3.1277>.
- Fitriani, N., Hidayah, I. ., & Nurfauziah, P. (2021). Geogebra Assisted Realistic Mathematics Education Liveworksheet: Improving Middle School Students' Mathematical Abstraction on Quadrilateral Material. *JNPM: National Journal of Mathematics Education*, 5(1), 37–50. <https://doi.org/10.33603/jnpm.v5i1.4526>.
- Fitriyah, I. M. ., & Ghofur, M. A. (2021). The Development of Android-Based E-LKPD with Problem Based Learning (PBL) Learning Models to Improve Students' Critical Thinking. *Educative: Journal of Education*, 3(5). <https://doi.org/10.31004/edukatif.v3i5.718>.
- Ghavifekr, S., Razak, A., Ghani, M., Ran, N., Meixi, Y., & Tengyue, Z. (2014). ICT Integration in Education: Incorporation for Teaching & Learning Improvement. *Malaysian Online Journal of Educational Technology*, 2(2), 24–45. <https://eric.ed.gov/?id=EJ1086419>.
- Hasibuan, A. M., Saragih, S., & Amry, Z. (2019). The Development Of Learning Materials Basen on Realistic Mathematics Education to Improve Problem Solving Ability and Student Learning Independence. *Journal Of Mathematics Education*, 14(1), 243–252. <https://doi.org/10.29333/iejme/4000>.
- Hazlita, S. (2021). Implementasi Pembelajaran dalam Jaringan dengan Menggunakan Instagram dan Liveworksheets pada Masa Pandemi. *JIRA: Jurnal Inovasi Dan Riset Akademik*, 2(7), 1142–1150. <https://doi.org/10.47387/jira.v2i7.195>.

- Ho, V. T., Nakamori, Y., Ho, T. B., & Lim, C. P. (2016). Blended learning model on hands-on approach for in-service secondary school teachers: Combination of E-learning and face-to-face discussion. *Education and Information Technologies*, 21(1), 185-208. <https://doi.org/10.1007/s10639-014-9315-y>.
- Jumardi, J. (2017). Peranan Pelajaran Sejarah Dalam Pengembangan Karakter Siswa Melalui Pembelajaran Berbasis Nilai Sejarah Lokal di SMA Negeri 65 Jakarta Barat. *Jurnal Pendidikan Sejarah*, 6(2), 70–80. <https://doi.org/10.21009/jps.062.08>.
- Karina, D., Yulita, I., & Ramdhani, E. P. (2019). Pengembangan media pembelajaran ular tangga kimia (ULTAKIM) berbasis kemaritiman pada materi hakikat ilmu kimia. *Jurnal Zarah*, 7(1), 13–16. [http://download.garuda.kemdikbud.go.id/article.php?article=1053349&val=9783&title=Pengembangan Media Pembelajaran Ular Tangga Kimia ULTAKIM Berbasis Kemaritiman pada Materi Hakikat Ilmu Kimia](http://download.garuda.kemdikbud.go.id/article.php?article=1053349&val=9783&title=Pengembangan%20Media%20Pembelajaran%20Ular%20Tangga%20Kimia%20ULTAKIM%20Berbasis%20Kemaritiman%20pada%20Materi%20Hakikat%20Ilmu%20Kimia).
- Khalid, M. S. (2011). ICT in Education: Secondary Technical Vocational Education and Training Institute Centered Diffusion of Innovation in Rural Bangladesh. In *International Technology, Education and Development Conference* (pp. 1126–1134). International Association of Technology, Education and Development (IATED). <https://vbn.aau.dk/en/publications/ict-in-education-secondary-technical-vocational-education-and-tra>.
- Khikmiyah, F. (2021). Implementasi Web Live Worksheet Berbasis Problem Based Learning dalam Pembelajaran Matematika. *Pedagogy: Jurnal Pendidikan Matematika*, 6(1), 1–12. <https://doi.org/10.30605/pedagogy.v6i1.1193>.
- Lestari, S. (2018). The Role of Technology in Education in the Era of Globalization. *Edureligion: Journal of Islamic Religious Education*, 2(2), 94–100. <https://doi.org/10.33650/edureligia.v2i2.459>.
- Lestari, S. U., Saraswati, U., & Muntholib, A. (2018). Penanaman Nilai-nilai Nasionalisme dalam Pembelajaran Sejarah Lokal Perjuangan Rakyat Sukorejo Kelas XI di SMA Negeri 1 Sukorejo. *Indonesian Journal of History Education*, 6(2), 205–215. <https://doi.org/10.23887/.v6i1.38300>.
- Lionar, U., & Mulyana, A. (2019). Nilai-Nilai Multikultural Dalam Pembelajaran Sejarah: Identifikasi Pada Silabus. *IJSSE : Indonesian Journal of Social Science Education*, 1(1), 11–25. <https://doi.org/10.29300/ijssse.v1i1.1322>.
- Mahfud, C., Prasetyawati, N., Agustin, D. S. ., Suarmini, N. W., & Hendrajati, E. (2019). The Urgency of Civic Education and Religious Character Education for Early Childhood in Indonesia. *Elementary: Jurnal Ilmiah Pendidikan Dasar*, 5(1), 97–106. <https://doi.org/10.32332/elementary.v5i1.1496>.
- Mohamad, S., Kulap, M., & Hamdiah, L. M. (2018). Historical Education in The Process of Nation Character Building of Indonesia. *International Journal of Multicultural and Multireligious Understanding*, 5(5), 312. <https://doi.org/10.18415/ijmmu.v5i5.443>.
- Muruganatham, G. (2015). Developing of E-Content Package by Using ADDIE Model. *International Journal of Applied Research*, 1(3), 52–54. https://www.researchgate.net/profile/Muruganatham-Ganesan/publication/339102976_Developing_of_E-content_package_by_using_ADDIE_Model/links/5e3d6c4392851c7f7f249dc8/Developing-of-E-content-package-by-using-ADDIE-Model.pdf.
- Nindiwati, D., Subandowo, M., & Rusmawati, R. D. (2021). The Development of Mathematics Teaching Materials for Class V Elementary School Students. *Journal of Educational Technology Studies*, 6(1), 140–150. <https://doi.org/10.17977/um039v6i12021p140>.

- Perdana, Y., Djono, D., & Ediyono, S. (2018). The Implementation of Multicultural Education in History Learning At SMAN 3 Surakarta. *International Journal of Multicultural and Multireligious Understanding*, 5(3), 11. <https://doi.org/10.18415/ijmmu.v5i3.135>.
- Prabowo, A. (2021). Penggunaan Liveworksheet dengan Aplikasi Berbasis Web untuk Meningkatkan Hasil Belajar Peserta Didik. *Jurnal Pendiidkan Dan Teknologi Indonesia*, 1(10), 383–388. <https://doi.org/10.52436/1.jpti.87>.
- Prastika, Y., & Masniladevi. (2021). Pengembangan E-LKPD Interaktif Segi Banyak Beraturan dan Tidak Beraturan Berbasis Liveworksheets Terhadap Hasil Belajar Peserta Didik Kelas IV Sekolah Dasar. *Journal of Basic Education Studies*, 4(1), 4–14. <https://www.ejurnalunsam.id/index.php/jbes/article/view/3817>.
- Putrawangsa, S., & Hasanah, U. (2018). Integrasi teknologi digital dalam pembelajaran di era industri 4.0. *Jurnal Tatsqif*, 16(1), 42–54. <https://doi.org/10.20414/jtq.v16i1.203>.
- Ramadhana, R., & Hadi, A. (2021). Efektivitas Penerapan Model Pembelajaran Berbasis E-Learning Berbantuan LKPD Elektronik Terhadap Hasil Belajar Peserta Didik. *Edukatif: Jurnal Ilmu Pendidikan*, 4(1), 380–389. <https://doi.org/10.31004/edukatif.v4i1.1778>.
- Robandi, B., Kurniati, E., & Puspita Sari, R. (2019). *Pedagogy In The Era Of Industrial Revolution 4.0*. 239, 38–46. <https://doi.org/10.2991/upiupsi-18.2019.7>.
- Sari, E.N and Susilowibowo, J. (2022). The Development of HOTS-Based E-LKPD in Accounting Practicum Subjects for Grade XI Semester 2. *Educative: Journal of Education*, 4(3), 4469–4483. <https://doi.org/10.31004/edukatif.v4i3.2709>.
- Sari, N.T and Wasgito, M. A. (2020). The Development of Crossword Puzzle Game Learning Media in History Class X IPA SMA N 8 Jambi City. *Istoria Journal*, 4(2), 98–106. <https://doi.org/10.33087/istoria.v4i2.93>.
- Sari, R. ., & Wulandari, S. S. (2020). The Development of Student Activity Sheets (LKPD) Based on a Scientific Approach in Public Relations and Protocol Subjects Odd Semester Class XI OTKP at SMK YPM 3 Taman. *JPAP*, 8(3), 440–448. <https://doi.org/10.26740/jpap.v8n3.p440-448>.
- Sirakaya, M., & Cakmak, E. K. (2018). The effect of augmented reality use on achievement, misconception and course engagement. *Contemporary Educational Technology*, 9(3), 297–314. <https://doi.org/10.30935/cet.444119>.
- Siregar, R. A. (2020). The Effective 21st-century Pedagogical Competence as Perceived by Pre-service English Teachers. *Pedagogy: Journal of English Language Teaching*, 8(1), 1. <https://doi.org/10.32332/pedagogy.v8i1.1953>.
- Sjahruddin, H., Ramli, M., Anaconda Bangkara, B., & Fatmawati, E. (2022). Technological Innovation to Support 21st Century Learning Outcomes and Sustainability at Universitas Islam Negeri (UIN) Antasari. *Jurnal Iqra': Kajian Ilmu Pendidikan*, 7(1), 63–76. <https://doi.org/10.25217/ji.v7i1.1473>.
- Sugiyono, D. (2013). *Metode Penelitian Kuantitatif, Kualitatif, dan Tindakan*.
- Tauresia, A., Harun, H., Putranta, H., Mailool, J., & Cahyo, H. (2020). The Effects of MANSA Historical Board Game toward the Students' Creativity and Learning Outcomes on Historical Subjects. *European Journal of Educational Research*, 9(4), 1689–1700. <https://doi.org/10.12973/eu-jer.9.4.1689>.
- Tawfik, A. A. (2015). Essential Readings in Problem-Based Learning: Exploring and Extending the Legacy of Howard S. Barrows. *Interdisciplinary Journal of Problem-Based Learning*, 9(2). <https://doi.org/10.7771/1541-5015.1593>.
- Wahyuni, K. S. P., Candiasa, I. M., & Wibawa, I. M. C. (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.
- Widiyani, A., & Pramudiani, P. (2021). Pengembangan Lembar Kerja Peserta Didik (LKPD) Berbasis Software Liveworksheet pada Materi PPKn. *DWIJA CENDEKIA: Jurnal Riset Pedagogik*, 5. <https://doi.org/10.20961/jdc.v5i1.53176>.
- Widyastono, H. (2017). Pemanfaatan Teknologi Informasi dan Komunikasi pada Sekolah Menengah pertama Negeri Akreditasi A di Provinsi Jawa Timur. *Jurnal Kwangsan*, 5(1), 21–38. <https://doi.org/10.31800/jurnalkwangsan.v5i1.37>.