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The development of an interactive e-worksheet using wizer.me on social studies learning for grade 7 at junior high school

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Abstract

In the learning process, obstacles are often found such as students having difficulty understanding the material, boredom while studying, and a lack of motivation to learn. This results in the learning process being less than optimal. Based on pre-research activities at SMPN 3 Krian, Sidoarjo District. Based on pre-research activities at SMPN 3 Krian, Sidoarjo, the learning process in class did not use teaching materials in the form of the electronic worksheet so students had difficulty understanding the material and were bored during the learning process This research aims to develop an interactive e-worksheet based on wizer.me to overcome these problems. This research method is Research & Development using the ADDIE model with analysis, design, development, implementation, and evaluation steps. As the result of this research, the author succeeded in developing an interactive e-worksheet based on wizer.me which involves students with e-worksheet in the learning process. students will not only see and hear but there will be interaction or reciprocity between students and the e-worksheet. This interactive e-worksheet can help students understand the material and increase learning motivation. Based on the research results, this e-worksheet is very feasible and can be used in social studies learning so that it can help students understand the subject matter.

Keywords: E-Worksheet; Interactive Electronic Worksheet; Interactive Learning; Social Studies Learning; *Wizer.Me*

INTRODUCTION

Social Sciences is one of the subjects at the junior high school level. This social studies subject is important because it teaches students to be good citizens and provides insight and social skills that will be useful for them in socializing with the people in their environment (Wiradimadja, 2021). However, in the field problems are often found in social studies learning. Among them are students having difficulty understanding the learning material and a lack of motivation to learn due to the teacher's presentation of the material which tends to be monotonous (Efiyanti et al., 2019; Farika et al., 2020; Jacub et al., 2020). Apart from that, students tend to

focus on teachers and books. This situation causes students to get bored and pay less attention to the explanation of the material, so students are less able to understand the lesson material (Zahra & Erianjoni, 2022). This problem also occurred at Junior High School 3 Krian.

Based on the initial interviews with social studies teachers at junior high school 3 Krian, there are problems in social studies learning, including students having difficulty understanding the subject matter, especially the material "knowing where you live". This is proven by the students' learning outcomes which tend to be low. From the results of interviews with students, it is known that they are bored when learning activities take place. Apart from that, according to students, the student worksheets used are still printed so students find them less interesting. Regarding this problem, the teacher also stated that he had not implemented ICT (Information and Communication of Technology) technology in social studies learning. However, based on the TPACK (Technological Pedagogical Content Knowledge) framework, technology integration is needed to develop learning activities. TPACK is a theoretical framework that integrates technology, pedagogy, and learning materials (Sintawati & Indriani, 2019). Therefore, in this study, the researcher discusses the development and use of E-Worksheets. The development of this E-Worksheet follows the implementation of TPACK which integrates technology into learning.

Based on the learning style test results data, it is known that most students have a visual learning style. However, based on the information obtained, teachers rarely use teaching materials that support visual learning styles. Abdurrahman & Kibtiyah (2021) states that failure to understand learning styles can cause students to have difficulty understanding the material and tend to get bored easily. Viyanti et al., (2021) believes that learning that is less able to accommodate learning styles causes students to have difficulty understanding the delivery of material by the teacher. These problems result in social studies learning activities not running well. So, the solution that can be done is to develop an interactive E-Worksheet. E-Worksheet is teaching material in the form of an electronic worksheet and can be accessed online (Adawiyah et al., 2021). According to Dachi & Perdana (2020); Prastowo (2015), Student worksheets are worksheets that contain material, summaries, and instructions for assignment activities carried out by students so that learning objectives are achieved. One platform that can be used to develop e-worksheets is wizer.me. The e-worksheet developed by researchers contains learning media in the form of video and audio to meet students' learning needs.

Researchers use the wizer.me website to develop e-worksheets because it has various advantages. According to Putri & Indrawati (2021) The wizer.me website has advantages and disadvantages. The advantages of wizer.me are: (1) provides an attractive theme display, (2) is easy to use, (3) can be accessed for free or for a fee, (4) has a wide variety of questions, (5) can be accessed online via smartphone or laptop, and (6) completing and submitting assignments online. Meanwhile, the disadvantages of wizer.me are: (1) the themes provided are limited so you cannot design your own, (2) if you use the free wizer.me, only teachers can see students'

grades, and (3) for technologically clueless students, they need assistance when using it.

Previous research by Safitri (2022) development of interactive e-worksheets using wizer.me to overcome the problem of students having difficulty understanding the material. Research by Dewi et al., (2023) namely the development of interactive e-worksheet using wizer.me to improve student learning outcomes. Research by Mayasari et al., (2023) namely developing e-worksheets using wizer.me to overcome the problem of students having difficulty understanding the material. Based on previous research, the e-worksheet being developed is not equipped with an audio feature. Meanwhile, this e-worksheet is equipped with audio so that it can help students with an auditory learning style to understand the material or receive information. The material developed in previous research was limited to learning videos. Meanwhile, the material on the e-worksheet developed in this research is more diverse, using video and audio forms so that students can receive information according to their learning style.

The presence of video and audio makes students more interested and easier to understand the material presented (Harefa & La'ia, 2021). The various features available in wizer.me can enable teachers to create e-worksheets creatively and can be adapted to material needs (Fredlina & Dewi, 2022; Safitri, 2022). The advantage of e-worksheets is that they make them easier for teachers and students to use because they are designed in digital form and are interactive so that learning activities are more meaningful (Putra et al., 2022). Meanwhile, the disadvantage of e-worksheets is that they must use tools in the form of gadgets or IoT (Internet of Things) and they can only be used if they are connected to an internet network, so students need supporting facilities. Apart from that, students who have not mastered the use of IoT will have a little difficulty when using e-worksheets (Diani et al., 2019). To overcome this deficiency, in each class, there is Wi-Fi as a means of supporting learning activities.

This research is important to be able to overcome problems that occur in schools. Researchers developed interactive e-worksheets based on wizer.me because students had difficulty understanding the subject matter and were bored while studying, so teaching materials in the form of e-worksheets were needed to overcome these problems. Therefore, this research aims to develop an interactive e-worksheet based on wizer.me and test the feasibility of an interactive e-worksheet based on wizer.me in social studies learning. It is hoped that this research will contribute to complementing previous research regarding the development of e-worksheets, especially for social studies learning, and solving student learning problems at Junior High School 3 Krian.

METHODS

This research uses the Research & Development (R&D) method. The model used is ADDIE with stages including, Analysis, Design, Development, Implementation and Evaluation (Branch, 2009; Kawete et al., 2022). This research was conducted at Junior High School 3 Krian, because based on needs analysis, there were problems in social studies learning, namely students had difficulty understanding the material and felt

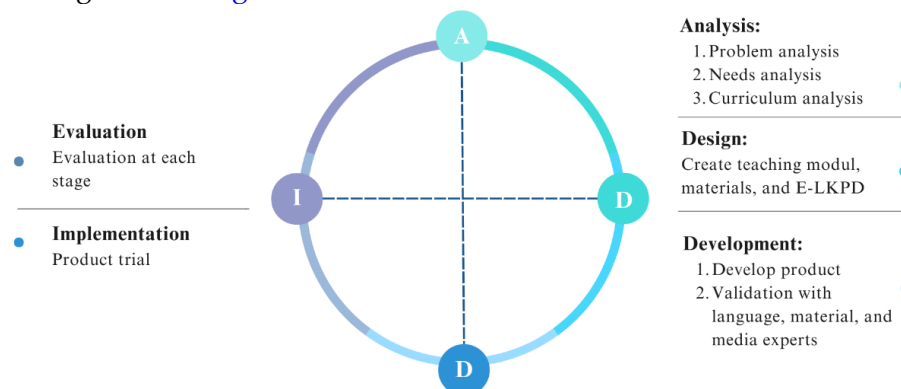bored, so teaching materials were needed to help overcome these problems. The research stages are in Figure 1.

Figure 1. ADDIE flowchart adapted from Branch (2009)

In the first stage, researchers carried out problem analysis, curriculum analysis, and needs analysis. In the second stage, researchers began to develop designs or elements and frameworks for teaching modules, materials, and e-worksheets. In the third stage, the researcher develops the product according to the design in the previous stage. The products that have been created are then subjected to validation tests with material, language, and media experts. The validator used has the criteria of having at least 5 years of experience and being an expert in their field. The validators are material experts, namely lecturers from the Social Studies Education Study Program, Universitas Negeri Malang, language experts, namely Indonesian language teachers at Junior High School 3 Krian, and media experts, namely lecturers from the Department of Geography, Universitas Negeri Malang. After obtaining the validation results, the researchers improved the product based on notes from the validators' suggestions. The fourth stage, after the validation results were obtained and declared feasible by the validator, researchers then implemented the product or limited trials on 36 grade 7 students. In the fifth stage, researchers carry out evaluations at each stage of development to determine the feasibility of the product.

The types of data for this research are qualitative and quantitative. Qualitative data was obtained from notes on recommendations and suggestions by validators and trials. Quantitative data is obtained from validation results in the form of numbers by material experts, media language, and test subjects. The data collection technique uses an instrument in the form of a questionnaire with a Likert scale of 1-4. Students' trial assessment instruments or questionnaires were adopted from research by Prayoga et al., (2022). The questionnaire has been tested for validity and declared valid with a value of $r_{count} > r_{table}$. The reliability test results obtained a Cronbach alpha value of 0.83 which is classified as a high degree of reliability. This means that the instrument is valid and reliable for use in obtaining data and can be trusted for data collection. The data that has been obtained is then processed using the following formula (1).

$$p = \frac{\sum x}{\sum xi} \times 100\% \tag{1}$$

Information:

p	= validity percentage
x	= assessment score in one item
xi	= ideal assessment score in one item
100%	= constant

After obtaining the validation test results and student responses, the results were interpreted based on Table 1.

Table 1. Criteria for assessing the feasibility test for adaptation of Yuniarti et al., (2021)

Percentage	Criteria	Statement
81% – 100%	Very worthy	Very suitable for use without needing revisions
61% – 80%	Worthy	Worth using with minor revisions
41% – 60%	Decent enough	Quite suitable for use but needs revision
21% – 40%	Not worth it	Not suitable for use so it needs a lot of revisions
0% – 20%	Very inadequate	It is not suitable for use so it cannot be used and needs total revision

RESULT AND DISCUSSION

Result

The product produced in this research is an interactive e-worksheet based on wizer.me. This research was conducted at Junior High School 3 Krian, Sidoarjo Regency, East Java. The results of this research explain the e-worksheet development process.

a. Analysis

This research analysis includes problem analysis, curriculum analysis, and needs analysis. Problem analysis was carried out through interviews with social studies teachers at Junior High School 3 Krian. The problem with social studies learning is that students have difficulty understanding the material. This is known from the students' learning outcomes which tend to be low. According to students, it is known that they feel bored when learning activities take place. Apart from that, according to students, the worksheets used are still printed so students find them less interesting. Meanwhile, based on the results of interviews, it is known that teachers rarely use teaching materials according to their needs and learning styles so they are less able to support learning activities. Researchers also conducted curriculum analysis to determine the material developed in the e-worksheet. Based on the curriculum analysis, it turns out that students have difficulty understanding the material "knowing where you live" in theme 1. Based on the needs analysis obtained through interviews with social studies teachers, it is known that the

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learning process is still limited to textbooks and limited use of technology. Meanwhile, students prefer technology-based learning. Needs analysis was carried out by distributing a learning style test questionnaire adopted from to serve as a guide for developing e-worksheets that refer to students' learning styles. The learning style data is shown in Figure 2.
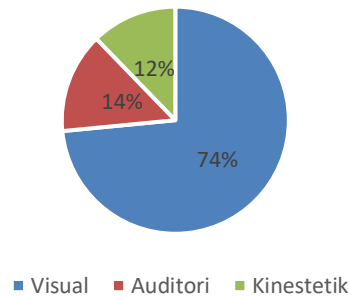

Figure 2. Student learning style test results

From this data, it is known that students with a visual learning style are 74%, followed by auditory 14% and kinesthetic 12%. In Figure 2 it is clearly seen that most students have a visual learning style. Meanwhile, in normal learning activities, teachers rarely use teaching materials according to the visual learning style. Therefore, researchers developed e-worksheets by adapting to visual learning styles.

b. *Design*

Researchers prepare designs or frameworks for teaching modules, materials, and e-worksheets. In the first stage, researchers began to develop teaching modules. Teaching modules are learning sequence sheets that contain objectives, steps, and assessments that are tailored to the learning topic. The second stage, preparing material for Theme 1 with the sub-theme "getting to know where you live". The third stage, the researcher designed a storyboard displaying the e-worksheet (Figure 3).

Figure 3. *Storyboard* e-worksheet

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c. *Development*

Researchers began developing the product according to the previous stages until the product in the form of an e-worksheet was completed. The product development process uses tools in the form of Canva, Inshoot, YouTube, audio editor and wizer.me. In the first stage, researchers created material packaged in the form of learning videos using Canva to create layouts and images to make the appearance more attractive. In the second stage, researchers used inshoot to create and edit learning videos. The third stage, after the learning video has been completed, the researcher uploads it to the YouTube page so that it is easily accessed by students. The fourth stage, the researcher created learning materials in audio form using an audio editor. In the fifth stage, researchers began to compile e-worksheets on the wizer.me platform. The e-worksheet that has been developed can then be accessed online via smartphone and computer or laptop. After the e-worksheet has been developed, validation tests are carried out on material, language, and media experts. The purpose of the validation test is to determine feasibility based on assessments from experts. The first validation test carried out is a material validation test to determine the suitability and accuracy of the material with the learning needs contained in the teaching module. The results of the recapitulation of quantitative data from material validation are presented in Table 2.

Table 2. Recapitulation of quantitative data for material validation

No	Components to be assessed	Score
1	Suitability of material to learning achievements	3
2	Suitability of material to learning objectives	4
3	The material is presented systematically	3
4	The material presented is easy to understand	4
5	Suitability of e-worksheets with learning achievements	4
6	Suitability of e-worksheets to learning topics	4
7	Suitability of e-worksheets with learning objectives	4
8	Suitability of e-worksheets to the needs and characteristics of students	3
9	Systematic presentation of e-worksheets	4
10	The presentation of material in e-worksheets adds to students' insight	4
11	Suitability of e-worksheet difficulty level with students' cognitive development and skills	3
12	Suitability of e-worksheets to phenomena around students	3
	Total Score	43
	Percentage	89,6%

The recapitulation results from material validation obtained a total score of 43 with a percentage of 89.6%. Based on the feasibility criteria in Table 1, the results of this test show that the material validation is declared "very feasible" without the need for revision. This means that the material on the e-worksheet is declared ready to be used in social studies learning activities at school. However, the material validator

provided notes of suggestions as material for improvement so that the material on the e-worksheet being developed could be better. Suggestions given by the material validator, (1) add the negative impacts of volcanic activity, and (2) provide sub-definitions of the map and then sub-components of the map. Next, the researcher improved the product according to suggestions from the validator which are presented in Figure 4.
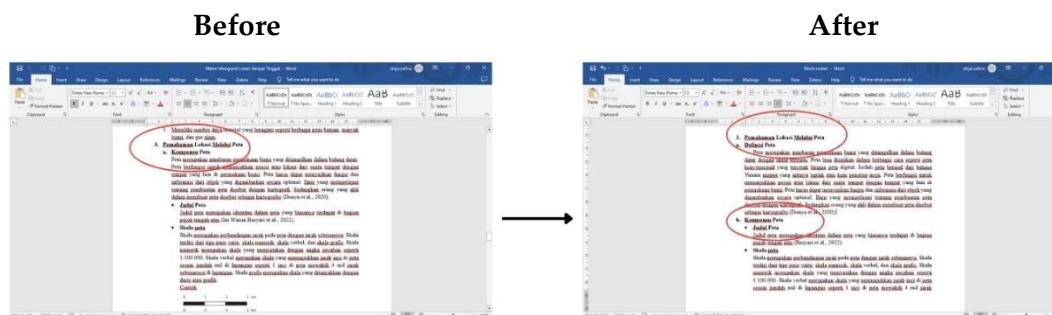
Before   **After**

Figure 4. Material improvements

After the material validation test, a language validation test is then carried out to obtain comments, suggestions, responses, and information regarding the language in the product being developed. Language validation is used to evaluate the language used in the product. The following recapitulation results from language validation are presented in Table 3.

Table 3. Recapitulation of quantitative language validation data

No	Components to be assessed	Score
1	Use good and correct language rules	4
2	The language used is easy for students to understand	4
3	Accuracy of sentence structure	3
4	Correct use of terms	3
5	The language used is communicative and informative	3
6	Sentences are structured clearly	4
7	The sentences used are able to convey information and commands well	3
8	Suitability of language to the cognitive level of students	3
9	The language used is able to encourage students to think critically	3
10	The language used is effective and efficient	4
11	The use of the term in is correct	3
12	The use of uppercase and lowercase letters is correct	3
13	The spelling is correct	3
14	The use of punctuation and symbols is correct	3
	Total score	39
	Percentage	81,3%

Based on the results of the recapitulation of language validation test data, a total score of 39 was obtained with a percentage of 81.3%, which shows that the criteria are "very suitable" for use without the need for revision. These results obtained the same criteria as the material validation results. The language used in e-worksheets is considered to contain no words or sentences that are ambiguous or difficult for students to understand. However, the language validator provides notes of suggestions to correct errors in writing letters and punctuation correctly. According to the language validator, overall, the writing is following linguistic rules. The language used is also effective, efficient, and following PUEBI (*Pedoman Umum Ejaan Bahasa Indonesia*).

Next, the researcher carried out a media validation test to obtain an assessment and determine the suitability of the product. The results of the quantitative data recapitulation from media validation are in Table 4.

Table 4. Recapitulation of quantitative media validation data

No	Components to be assessed	Score
1	Complete identity on e-worksheet	2
2	Appropriate layout of e-worksheet components such as title, learning outcomes, learning objectives, work instructions and question variations	2
3	Clarity of the flow of instructions for use	3
4	Systematic presentation of e-worksheets	3
5	The attractiveness of the e-worksheet display	3
6	The attractiveness of the theme and color of the e-worksheet display	3
7	The presentation of font types in e-worksheets is clear and easy to read	3
8	Suitability of choosing the size of e-worksheet writing	3
9	The images presented in the e-worksheet are clear	3
10	Ease of using e-worksheets	4
11	Creativity and innovation in e-worksheet media	3
12	E-worksheet media can motivate students	3
	Total Score	35
	Percentage	72,9%

Based on the results of media validation, a total score of 35 was obtained with a percentage of 72.9%, which shows that the criteria are "suitable" for use with slight revisions. This means that the media used is stated to be good, but there are several minor improvements. There are several suggestions given by the validator, including, (1) providing the identity column for full name and presence number separately, (2) changing the text font type to make it more attractive, and (3) changing the map image in question number 1 because the map image is used is not following map rules. Then the researcher improves the product or media according to suggestions from the validator in Figure 5.
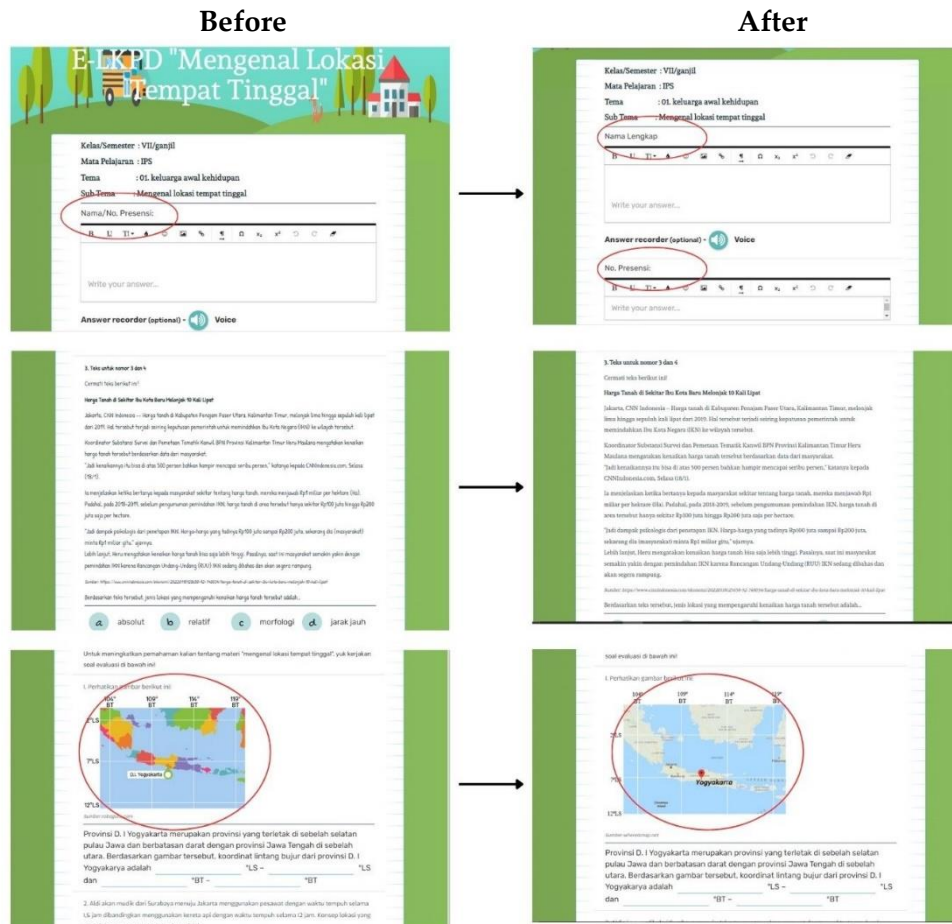
Before   **After**

Figure 5. Improved media display

d. *Implementation*

After obtaining the validation results and obtaining appropriate criteria by the validator, the researchers then carried out a limited trial on 36 class 7B students at Junior High School 3 Krian. Trials are carried out to collect data and determine the level of product suitability based on the results of student assessment responses. The trial was carried out face-to-face so that researchers could accompany and monitor the activities directly. In the initial stage, researchers shared an e-workshop link that could be accessed via smartphone. Then the researcher provided explanations and directions in using the e-workshop and accompanied students during the activity. After implementing the e-workshop in learning, the researcher distributed questionnaires to obtain research data from students. The results of the recapitulation of trials on students are presented in Table 5.

Table 5. Recapitulation of quantitative data from trials on students

No	Components to be assessed	Score
1	The attractiveness of the e-worksheet display	131
2	Writing readability	122
3	Image clarity	126
4	Attractive color	119
5	Voice clarity	124
6	Material is easy to understand	126
7	Clarity of material description	123
8	e-worksheets provide enthusiasm for learning	121
9	Ease of use	124
	Total Score	1116
	Percentage	86,11%

Based on the results of the recapitulation of student trials, a total score of 1116 was obtained with a percentage of 86.11% which was classified as "very feasible" criteria. This means that students can use e-worksheets well. They can understand the instructions contained in it and can also operate or work independently. These results prove that interactive e-worksheets based on wizer.me can be used in social studies learning activities in schools. Students also gave positive comments regarding this e-worksheet, namely that the e-worksheet presented was interesting because there were learning videos and varied types of questions so that students did not get bored and were more interested in using it. Apart from that, e-worksheets are also easy to use. Researchers also received suggestions from students regarding e-worksheets, namely adding quizzes to e-worksheets. However, because the proposal given was not large enough, the researchers did not make these changes.

e. *Evaluation*

Evaluation is a process to measure and determine the feasibility of the product being developed. This research carries out formative evaluation, namely evaluation carried out at each stage of the research starting from the analysis stage to product implementation to improve the product. At the analysis stage, an evaluation of the results of the problem, curriculum and needs analysis is carried out. The design stage is evaluating the design of teaching modules, materials, and e-worksheets. The development stage evaluates the validation results obtained from expert validators. The implementation stage evaluates the results of the implementation and student responses.

Discussion

Based on the research results, the researchers succeeded in developing e-worksheet with the R&D steps with the ADDIE model. In the analysis stage, material, curriculum and needs analysis were carried out. In the design stage, researchers designed teaching modules, materials, and e-worksheet. In the development stage, the researcher began to develop the product according to the design of the previous stage. After the product had been developed, it was then subjected to validation

tests with material, language, and media expert validators. In the implementation stage, the researcher conducted a product trial on 36 students of grade 7B at Junior High School 3 Krian. Then in the evaluation stage, the researcher carried out evaluations at each stage of development.

The development of interactive e-worksheet based on wizer.me can be used in learning activities because it has met the eligibility criteria of material, language, media expert validators and test subject whose results are in Table 6.

Table 6. Feasibility test results

Feasibility test	Percentage	Criteria
Material Validation	89.6%	Very worthy
Language Validation	81,3%	Very worthy
Media Validation	72,9%	Worthy
Product trial	86,11%	Very worthy

Based on the results of the assessment by expert validators, there are notes of suggestions and researchers have made improvements to the product according to the suggestions given. Based on the feasibility test results in Table 6, it can be concluded that the interactive e-worksheet based on wizer.me is very feasible and can be used in social studies learning. The results of this test prove that students can translate the information presented on the e-worksheet, so that they can understand the lesson material. Lailiah et al., (2021) stated that using e-worksheets via gadgets can increase enthusiasm during learning and make it easier for students to understand the material. Previous research conducted by Aliyah & Wiradimadja (2023); Arsyisyah et al., (2023); Habsyi et al., (2022); Oktaviani et al., (2023) shows that the use of e-worksheets can improve students' understanding. However, the development of e-worksheets in previous research did not study students' learning styles. Meanwhile, researchers conducted a study of learning styles to adapt e-worksheets to students' learning needs. This learning process is based on cybernetic learning theory. Nur'alimah (2022) explains the concept of cybernetic theory, namely the use of technology in learning to convey learning information quickly and precisely. Nasrul (2023) adding to this theory the learning process is very important, but what is more important is the information system to facilitate the delivery of material to students. The results of this research are similar to development research by Safitri (2022) which shows that the e-worksheet development based on wizer.me is very suitable for use in social studies learning. She also explained that through this e-worksheet, students are more active during learning so that a pleasant learning atmosphere is created. In learning activities, the use of e-worksheets can be adjusted to suit students' needs. Nisak (2021) stated that teaching materials are an important factor so that teaching materials are needed according to the material and characteristics of students. In line with Eliyanti et al., (2020) believes that good teaching materials should be in accordance with the needs or characteristics of students so that learning in class can run effectively and can improve students' skills.

As explained by Dale (1969); Sumiharsono & Hasanah (2017) in the cone of experience theory, it states that students can learn through their own direct experience, observing and listening through learning media and language. Based on the theory of the cone of experience, learning using e-worksheets is included at levels number 7 (seeing videos), 8 (seeing pictures), 9 (listening), and 10 (reading). Based on the theory of the cone of experience, learning activities through e-worksheets reach the visual stage. Where students can process and remember knowledge up to 30% (Dale, 1969; Sari, 2019). In line with Apriyanto et al., (2022); Rahmi & Alfurqan (2021); Rohmah & Syifa (2021) stated that audio-visual media can encourage interest in learning because the material is presented in a varied manner and is easy to understand and remember so that students do not get bored while studying. Audie (2019); Dale (1969) states that learning that is concrete and involves more senses can provide a better learning experience.

The e-worksheet developed by this researcher contains learning videos, audio, material summaries, activity instructions and assignment questions. According to Prastika & Masniladevi (2021) e-worksheets that contain videos, images and explanations increase students' interest in using them. The e-worksheet also contains assignments that students can complete. Having tasks in worksheets can train students' reasoning and problem-solving skills in everyday life (Widiyanti & Nisa, 2021). Using an e-worksheet based on wizer.me is considered more interesting as evidenced by the responses of students who are interested in using e-worksheets. In line with previous research conducted by Hidayat & Aripin (2023); Indriani et al., (2022); Putri & Amini (2023) shows that students are more interested in using E-worksheet because it is presented with an attractive appearance, not boring, and easy to use. The development of e-worksheets by this researcher has advantages, including (1) the appearance of e-worksheets is more attractive with the background themes available on wizer.me. In line with Fatmawati et al., (2022) stated that colorful and illustrated teaching materials are preferred by students, so they are more interested in participating in learning activities. According to Andini et al., (2022) an e-worksheet display that is made attractive can encourage students' enthusiasm for participating in learning activities. (2) The material presented by researchers is equipped with various media, namely learning videos and audio. According to Harefa & La'ia (2021), better understanding of material through video and audio in the learning process. Through video and audio, students can listen to explanations and can see visually with pictures or illustrations related to the material. (3) The types of questions are varied so that students do not get bored when working on them. Daryanto et al., (2022) stated that students will not easily get bored with various types of questions.

CONCLUSION

Based on the results of this research, it shows that Wizer.me-based interactive e-worksheets in social studies learning are feasible and can be applied. This is known from the results of feasibility tests and trials which obtained very feasible criteria. These results prove that this e-worksheet can be implemented in social studies learning because it can meet needs according to students' learning styles. This e-

worksheet is presented interestingly because there are videos, audio, and various types of questions so that students do not get bored or bored while learning is taking place. Apart from that, this e-worksheet helps students to understand the lesson material. Overall, researchers have made improvements according to input and suggestions. The suggestion given by the students was to add a quiz to the e-worksheet. However, researchers did not make these improvements because the suggestions given were not very significant. Therefore, these suggestions can be used as material for further development as material for improving the e-worksheet.

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