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Feasibility of Interactive E-LKPD Based on Nature of Science (NoS) to Train Students' Critical Thinking Skills on Chemical Bonding Material

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Abstract: The Merdeka Curriculum is adaptive and focuses on developing the character of the Pancasila Student Profile, one of which is critical thinking. This study aims to describe the feasibility of products, including the validity, practicality, and effectiveness of Nature of Science (NoS)-based e-LKPD on chemical bond materials. NoS learning has 6 pedagogical practices, namely background readings, case study discussions, inquiry lessons, inquiry labs, historical studies, and multiple assessments. Indicators of critical thinking skills trained in this study are analysis, explanation, and evaluation. This type of research is R&D research with 4D methods (Define, Design, Develop, and Disseminate), only up to the development stage but still tested on a limited basis. The results of the validity of the contents and constructs obtained were 98.70% and 99.26%, with very valid categories. The results of the practicality received a score of 94.95% in the very practical category. In terms of effectiveness, the average n-gain score of learning outcomes was obtained, the components of critical thinking skills in the analysis, evaluation, and explanation of students were 0.62, 0.54, 0.46, and 0.55 in the medium category. The n-gain score is obtained ≥ 0.3, so e-LKPD is effectively used to train students' critical thinking skills. It can be concluded that the developed e-LKPD is feasible for use.

Keywords: Chemical Bond; Critical Thinking Skill; E-LKPD; Nature of Science

Introduction

The Merdeka Curriculum is one method used by the Ministry of Education and Culture of the Republic of Indonesia to revive learning following the Covid-19 pandemic (Hattarina et al., 2022). This curriculum also serves as a continuation of the "Merdeka Belajar" initiative. In order to help students become more independent in their approach to problem-solving in the classroom, this program helps them build their own learning styles (Muthoharoh & Sakti, 2021). As part of the learning process, this curriculum enables educational institutions, educators, and students to make changes on their own and creatively (Hattarina, et al., 2022). Due to technological advancements allow teaching and learning activities to be conducted anytime, anywhere, and whatever you like. Instructors can implement student-centered learning when technology is used in the classroom (Rivalina & Siahaan, 2020). According to Permendikbud number 103 of 2014, which outlines the requirements for 21st-century learning, students are urged to enhance factors that support their learning, such as motivation, interest, creativity, initiative, inspiration, independence, and enthusiasm for learning, through learner-centered learning. By concentrating on necessary resources, the Pancasila Student Profile for character development, and student competencies, the Merdeka Curriculum is made more adaptable (Priantini et al., 2022). Chemistry is one of the subjects where the Merdeka curriculum is being used.

In grade 10, chemistry subjects are combined with natural science subjects. Science disciplines are not divided into more particular subjects. However, each

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educational unit can choose how the content of these subjects is organized through separate class hours, such as different subjects (Kepmendikbudristek, 2022). Chemical bonding is one of the fundamental concepts in chemistry and a precondition to learning about other chemical concepts. Critical thinking is one of the Pancasila Student Profile accomplishments in chemistry that must be met in the Merdeka curriculum. To achieve this goal, students need critical thinking abilities.

Preliminary investigation at SMA Negeri 2 Lamongan, a small trial school, indicated a percentage level of understanding of concepts in chemical bonding materials was 62.08%. Additionally, SMA Negeri 2 Lamongan has not utilized any teaching resources or material to assist students in understanding how ionic and covalent bonds enhance as well as how electrons move inside metal bonds under a microscope. Furthermore, students in grade 10 struggle to comprehend critical thinking skills. It makes sense that the material on chemical bonds is abstract, there are no experiments, and the teachers still implement traditional teaching models and method, such as teacher-centered learning, when delivering chemistry knowledge (Husein et al., 2023; Ekasari, 2023).

Critical thinking is defined as self-regulation skills that result in interpretation, analysis, evaluation, and inference as well as exposure to the use of concepts, procedures, criteria, and/or contextual factors when making decisions, which can be learned, estimated, and taught (Facione, 2020). Therefore, critical thinking skills need to be trained with models, methods, or approaches that are in line with student centered learning, to make it easier for students to understand concepts and hone their thinking skills (Fara et al., 2019). For this reason, it is necessary to develop teaching materials that are matched to the student's need in order to make it easier to understand the concept of chemical bonding.

Teaching materials are a set of learning tools that teachers can utilize to help students exhibit the necessary behavioral changes (Nurdin, 2021). Student worksheets (LKPD) are referred to as printed teaching materials. With the advancement of technology, LKPD can now be presented in electronic form along with interesting videos and images that can help students gain a sense of the material being presented (Alhikmah, 2021; Wahyuni et al., 2021). Electronic student worksheets, also known as E-LKPD, can be used in the learning process and accessed and operated online (Farkhati &; Sumarti, 2019). This enables teachers to provide students with teaching materials that meet their needs for accessing information without being restricted by time or place. Providing a way for students to easily access and study difficult content is one of the advantages of the digital version of the science student worksheet (known with LKPD) (Laksono et al., 2023).

Teachers might use the Nature of Science (NoS) approach to learning to develop students' critical thinking skills in chemistry lessons. According to Listiani and Kusuma (2017), NoS is knowledge that clarifies how science operates and how scientists carry out their study. Background readings, case study discussions, inquiry lessons, inquiry laboratories, historical studies, and repeated assessments are the six pedagogical techniques that make up NoS learning in practice (Wenning C. J., 2006). A modified NoS learning model with a communication component was used in Trihastuti's research (2019), which revealed an improvement in students' critical thinking skills.

To train students' critical thinking abilities, this study developed teaching materials in the form of interactive E-LKPD based on Nature of Science (NoS) on chemical bond material. In line with research by Novitasari & Puspitawati (2022), Trihastuti (2019), and Putri et al. (2018), which declare that LKPD and NoS-based learning can be used to improve critical thinking abilities.

Method

This study employs the type of research known as research and development (R&D), which aims to create learning products and evaluate their efficacy. The defining, design, development, and dissemination phases of Ibrahim's 4D technique (2014), which was adapted from Thiagarajan, were applied in this paper. Even though the interactive e-LKPD development procedure is only in the research stage, small-scale tests will still be conducted to assess the practicality and effectiveness of the E-LKPD generated to create feasible learning resources. The target of this study was an interactive NoS-based e-LKPD on chemical bond material which was tested on a limited basis on 32 students of grade X-1 SMA Negeri 2 Lamongan.

The define stage aims to establish and define instructional requirements as e-LKPD requirements, consisting of front-end analysis, student analysis, task and concept analysis, and formulation of learning objectives. The planning (design) stage is carried out using various supporting tools, starting with drafting the e-LKPD and then compiling a feasibility instrument. The initial design is processed using Microsoft Word as the device. Then, the design is processed using the Canva application to generate an initial draft in the form of a pdf file. The initial draft was then made interactive and converted into an electronic LKPD using Heyzine.com website.

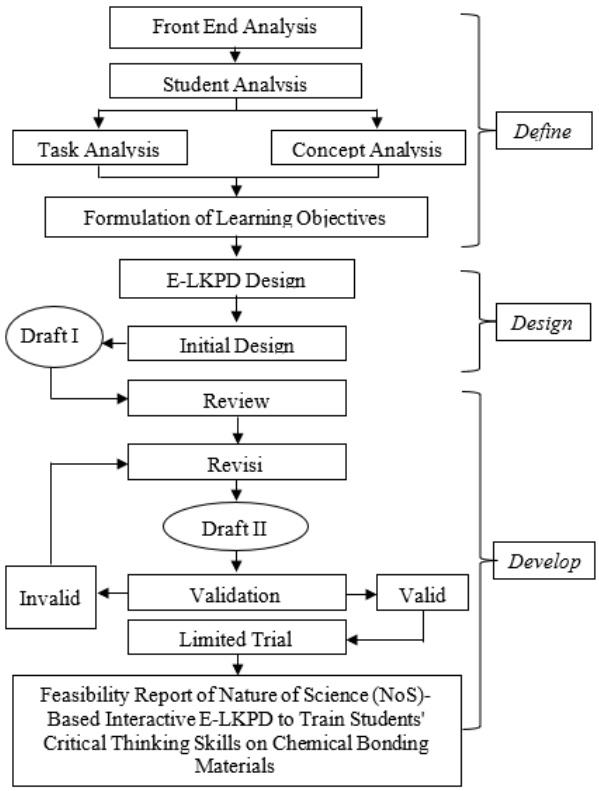

Figure 1. 4D Research Design Adapted (Ibrahim, 2014)

The development stage aims to generate and validate the developed e-LKPD. E-LKPD was validated by 2 expert lecturers in chemistry education and chemistry teachers at SMA Negeri 2 Lamongan. Validators are asked to provide an assessment of the e-LKPD that has been developed based on the items on the assessment sheet and provide criticism and suggestions. Validation is carried out until the teaching material is declared valid to be implemented in learning activities. E-LKPD is then followed up by revising teaching materials according to validators' criticisms and suggestions.

The validation results from validators were analyzed using quantitative descriptive methods to determine the validity of the interactive e-LKPD. The percentage of validity sheet results is obtained based on the calculation of the Likert scale as shown in Table 1.

Table 1. Likert Scale

Score	Categories
1	Very Not Good
2	Not Good
3	Quite Good
4	Good
5	Very Good

The results of the calculation of the percentage of validity of e-LKPD can be interpreted in Table 2.

Table 2. Interpretation of the Validation Score adapted from (Riduwan, 2015)

Percentage (%)	Criteria
0-20	Very Not Valid
21-40	Less Valid
41-60	Enough Valid
61-80	Valid
81-100	Very Valid

E-LKPD Interactive can be said to be valid if the percentage obtained ≥ 61%. After obtaining data on the validity of e-LKPD, a limited trial was conducted for 32 students of grade X-1 SMA Negeri 2 Lamongan to determine the practicality and effectiveness of e-LKPD. Students and teacher response questionnaire data were used to determine the practicality of e-LKPD using the Guttman scale as Table 3.

Table 3. Guttman Scale

Answer	Score
Yes	1
No	0

The results of calculating the percentage of practicality of interactive e-LKPD can be interpreted in Table 4.

Table 4. Interpretation of the Practicality Score adapted from (Riduwan, 2015)

Percentage (%)	Criteria
0-20	Very Impractical
21-40	Impractical
41-60	Fairly Impractical
61-80	Practical
81-100	Very Practical

E-LKPD Interactive can be said to be practical if the percentage obtained ≥ 61%. Effectiveness data were obtained from pretest-posttest. Learning outcomes are successfully improved and students' critical thinking skills are successfully trained or improved identified through tests given before learning (pretest) and after learning (posttest). The data obtained from the test results will then be analyzed with a normality test. If the data is normally distributed, the data is further analyzed with paired sample t-test, while if the data is not normally distributed, it will be analyzed with Wilcoxon signed rank test. Learning outcomes and critical thinking skills of students are said to have a significant difference if the probability value (Asymp. Sig) <0.05. For improved learning outcomes and critical thinking skills analyzed descriptively using the normal N-gain formula as follows (Formula 1).

$$< g >= \frac{posttest\ score - pretest\ score}{maximum\ score - pretest\ score} \quad (1)$$

By criteria g ≥ 0.7 is high, 0.3 ≤ g < 0.7 is medium, and g < 0.3 is low. E-LKPD can be said to be effective if an n-gain score of ≥ 0.3 is obtained.

Result and Discussion

Development of Interactive E-LKPD based on Nature of Science (NoS) using Heyzine Website Program

The product produced in this study is an interactive e-LKPD based on NoS chemical bond material which has 3 sub-materials, namely ionic bonds, covalent bonds, and metal bonds. The E-LKPD developed is a digital LKPD. Digital LKPD provides meaningful memory because it contains visual and verbal knowledge (Wijayanti &; Ernawati, 2020). E-LKPD can be accessed online without requiring a fee to use the website Heyzine.com directly through the link https://heyzine.com/flip-book/9d11bafe60.html. There are also images, videos, animations, website links and QR codes that can be directly accessed by users. The existence of learning videos can increase students' understanding of abstract concepts by placing more emphasis on real representation (Jundu et al., 2020). The design of e-LKPD can be seen in Figure 2 and 3.

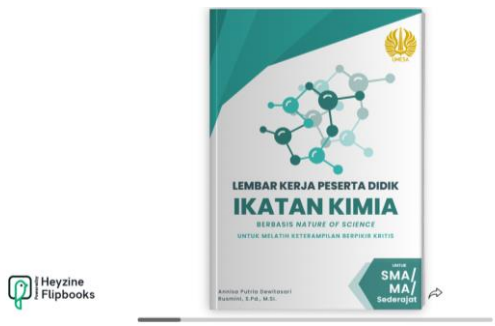

Figure 2. Initial display of e-LKPD

Figure 3. Sub Cover Ionic, Covalent and Metallic Bonds.

In each sub-material, there are 6 NoS pedagogical practices, namely background readings, case study discussions, inquiry lessons, inquiry labs, historical studies, and multiple assessments combined with critical thinking skills components with the following activity details.

Table 5. Details of NoS Pedagogical Practice Activities and Critical Thinking Skills on E-LKPD

Pedagogical Practice	Explanation
Background readings	Read articles related to chemical bonds
Case study discussions	Discuss in groups to respond to reading at the background reading stage through several questions (Explanation)
Inquiry lessons	Discovering the concept of chemical bonding includes the process of formation and physical properties of compounds through guiding questions (Analysis and Explanation)
Inquiry labs	Conduct simple experiments or case studies to support the concept of chemical bonds that have been obtained
Historical studies	Presenting the results of activities carried out at the inquiry labs stage in the form of reports and / or posters
Multiple assessments	Take multiple choice tests and self-assessments to test the understanding of concepts that have been built (Evaluation)

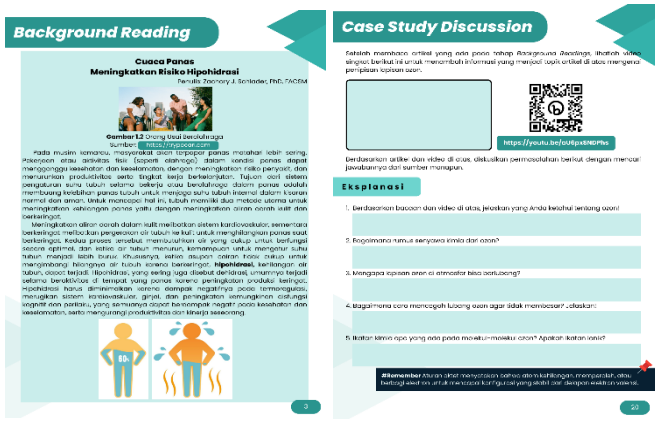

Figure 4. Background Reading and Case Study Discussion Stage

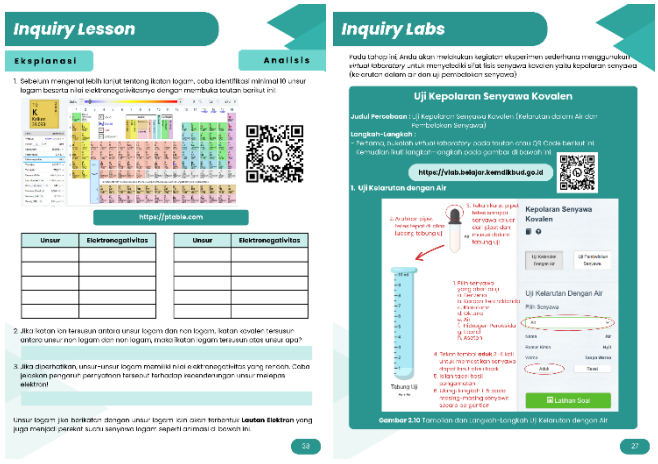

Figure 5. Inquiry Lesson dan Inquiry Labs Stage

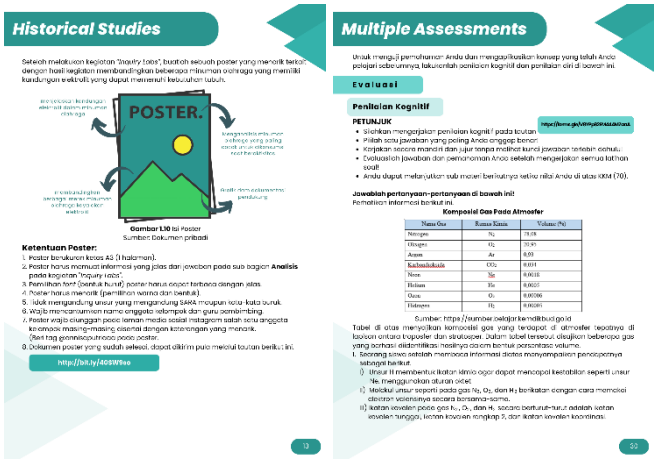

Figure 6. Historical Studies dan Multiple Assessments Stage

Validity

Validation includes content and construct validity. The validity of the contents of e-LKPD assessed by validators includes the suitability of the material with learning outcomes, the suitability of LKPD needs to train students' thinking skills, and the suitability of NoS-based LKPD needs. While the assessment of construct validity includes aspects of language, presentation, interaction (provision of stimulus and response), as well as the layout and design of e-LKPD. The following are presented the validation results that have been obtained.

Table 6. Expert Validation Result Data

Sub Material E-LKPD	Content Validity (%)	Construct Validity (%)
Ionic Bond	98.33	99.44
Covalent Bond	98.89	98.89
Metal Bond	98.89	99.44
Average	98.70	99.26

Based on the results of the content validity assessment in table 6, the percentage of feasibility in the e-LKPD sub-material of ionic bonds, covalent bonds and metals was 98.33%, 98.89%, and 98.89% respectively in the very valid category. As a result, the information provided in e-LKPD is given in line with current learning objectives. Additionally, the content in e-LKPD has been in line with the requirement to develop learners' critical thinking abilities and with NoS's pedagogical principles.

Explanation skills are trained in the case study discussion and inquiry lessons. According to the proposed explanation, students are able to express the conclusions of their thinking in the form of opinions based on thought-out decisions (Facione, 2020). In this lesson, students learn how to defend their opinions and ideas by responding to simple questions that are based on readings they have already done. Analysis is the next critical thinking skill. The analysis in question includes students capacity to separate and organize data, perceive linkages between pieces of information, and spot patterns and issue structures (Saraswati &; Agustika, 2020). This skill is trained in the inquiry lesson and historical studies section, students are asked to analyze phenomena or data presented through guiding questions to build the concept of chemical bonding meaningfully. While evaluation skills are trained in the multiple assessments section. Students evaluate their learning process and results in this area (Facione, 2020). Students are required to examine the learning outcomes they have learned about chemical bonding using cognitive assessment and self-assessment.

The assessment of construct validity in aspects of language, presentation, as well as layout and design has been very good. Furthermore, in the interaction aspect, E-LKPD can make students actively involved because e-LKPD is designed to be student-centered learning to be done in groups, both small and large groups, and individuals. In line with the demands of 21st century learning according to Permendikbud number 103 of 2014, students are encouraged to improve things that support their learning process such as motivation, interest, creativity, initiative, inspiration, independence, and enthusiasm for learning students through learner-centered learning. Student-centered learning is realized in E-LKPD by containing questions that encourage students to think and discover for themselves the concept of chemical bonding and practice their critical thinking skills.

Improvements were suggested by reviewers to make e-LKPD more interactive. by collaborating on Google Form in filling out e-LKPD. Students can directly answer questions through the Google Form pop up feature available in the column of each answer. Google Form is a free tool that allows users to customize surveys or online forms to meet their needs (Sudaryo, et al., 2019). Shortly after students submit their answers, they will instantly be saved in the Google Form and forwarded via student email. Additionally, respondents may have quicker access to information that is immediately saved on the form page (Sudaryo et al., 2019).

Based on the calculation of the average e-LKPD validity results, the percentage of content validity feasibility and constructs obtained were 98.70% and 99.26% respectively. The percentage of eligibility obtained is in the range of 81%-100%, so it can be interpreted that the developed e-LKPD is included in the very valid category.

Practicality

Student and teacher response questionnaires were distributed at the last meeting of the limited trial when

learning was about to end. The questionnaire was distributed using the guttman scale "Yes/No" where the expected answer was given a score of 1. The research results of the student and teacher response survey are shown below in the form of a percentage of responses which correspond to the expected response.

Table 7. Practicality Data from Response Questionnaire

Statements	(%)
Interactive e-LKPD can motivate students in learning chemistry, especially chemical bonding material	90.91
Students do not feel burdened when learning to use e-LKPD	81.82
Students' knowledge of chemical bonding material increases	100
E-LKPD can make students play an active role in the learning process	93.94
E-LKPD can make students understand more about concepts in chemical bonding material	100
E-LKPD can assist students in connecting chemical bond material with everyday life	93.94
E-LKPD can help students practice their critical thinking skills	93.94
The language used in the e-LKPD is clear and easy to understand	93.94
Images, videos, audio, animations, and illustrations in e-LKPD make it easy to understand the material	100
This e-LKPD can help students work in groups	93.94
Students feel happy when learning to use e-LKPD	100
This E-LKPD can assist students in improving student learning outcomes, especially in chemical bonding material	100
Average	95.20

Based on the actual results shown in table 7, 90.91% of respondents believed that interactive e-LKPD can stimulate students to learn chemistry, especially on chemical bond materials. In this study, up to 81.82% of respondents claimed that they hadn't felt any burden when learning using e-LKPD. Additionally, 93.34% of respondents agreed with that e-LKPD in this study can encourage students to participate actively in the learning process, support students in making connections between chemical bond content and real-world situations, helps students to improve their critical thinking abilities, and assist students in cooperating in groups. Moreover, practically 100% of respondents recognized that this study's e-LKPD may aid students in enhancing their learning outcomes (values), particularly with regards to chemical bonding materials. All respondents, or 100%, confirmed that the e-LKPD created for this study can help students learn more about chemical bond materials, can help students comprehend the concepts in chemical bond materials, and also make students enjoy themselves or happy when using e-LKPD.

According to user feedback of the language used in e-LKPD, 93.94% of respondents think that the language is understandable and clear, which helps students feel happy as they learn to use it. Additionally, in terms of appearance, up to 100% of respondents concur that the e-LKPD's pictures, videos, audio, and visual aids make it easier to absorb the content. The usage of multimedia in the e-LKPD can assist students in visualizing complex and abstract chemical bond concepts that are taught only in text, as well as aiding in the maintenance of their focus and interest in the subject matter (Surjono, 2017).

The results of the questionnaire that was filled out by students and teachers revealed an average eligibility rate of 95.20 percent. Considering that the percentage of feasibility was in the range of 81% to 100%, it can be said that the developed e-LKPD belongs to the very practical category.

Effectiveness

Pretest is carried out before giving treatment, namely learning using e-LKPD developed, while posttest is carried out after giving treatment. Results from the pre- and post-tests reflect the students' level of critical thinking and learning outcomes. In order to figure out whether the data gathered has a normal distribution or not, the pretest and posttest results are then evaluated for normality using SPSS. The Shapiro Wilk test is employed as a normality test if the research sample < 50 (Razali, et al., 2011). The Shapiro Wilk test is used to determine whether the data utilized in the study are 32 or less than 50, with the following hypothesis.

H_0 : The research data is normally distributed

H_1 : The research data is not normally distributed

If the significant value > 0.05 then H0 is accepted, and if the significant value < 0.05 then H0 is rejected (Priyanto, 2012). The following table of normality test results is presented.

Table 8. Normality Test Results (*Shapiro-Wilk)*

	Statistic	df	Sig.
Pretest	.902	32	.007
Posttest	.952	32	.164

a. Lilliefors Significance Correction

Based on the SPSS normality test that has been done, the significance value of the pretest is 0.007 and the posttest is 0.164. The pretest data departs significantly from the normal distribution significance value, indicating that the students in restricted trials have a variety of initial skills and knowledge. This is because the school's chemistry teacher taught the subject of chemical bonds during the previous semester. Thus, students capacities to recall information about the

chemical bond material they have learned varied. As a result, the acquired pretest data are not regularly distributed. The posttest data is normally distributed, indicating that after the application of learning using the developed e-LKPD, students' abilities are around the same or evenly distributed. Due to the research data's indication that it was not normally distributed and the study's limited number of samples, further analysis was conducted using a non-parametric statistical method, test of rank signed by Wilcoxon (Nuryadi, et al., 2017).

The Wilcoxon signed rank test will be used in further analysis to see whether there are any significant differences between the students' learning outcomes and skills in critical thinking before and after using the developed e-LKPD. The used hypothesis is as follows.

H_0: There was no significant improvement in learning outcomes and critical thinking skills after learning using NoS-based interactive e-LKPD on chemical bonding materials.

H_1: There was a significant improvement in learning outcomes and critical thinking skills after learning using NoS-based interactive e-LKPD on chemical bonding materials

If the significant value > 0.05 then H0 is accepted, and if the significant value < 0.05 then H0 is rejected (Priyanto, 2012). The following are presented the results of data analysis using the Wilcoxon signed rank test.

Table 9. Test Statistics with Wilcoxon Signed Rank Test Results

	Posttest - Pretest
Z	-4.941[b]
Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test
b. Based on negative ranks.

Based on the test results in table 9, a probability value (Asymp. Sig) pretest-posttest of 0.000 or < 0.05. Then H0 is rejected and H1 is accepted. That is, after learning with interactive NoS-based e-LKPD on chemical bond materials, learning outcomes and critical thinking abilities significantly improve. Therefore, it is claimed in this study that students' learning outcomes after using e-LKPD have been improved than their initial learning outcomes on the chemical bond material held. This is because critical thinking skills of the components of explanation, analysis, and assessment can be trained.

The effectiveness of e-LKPD can also be known using the calculation of n-gain scores from pretest and posttest results. E-LKPD can be said to be effective if you get a percentage n-gain score of ≥ 0.3. The calculation of the n-gain score for each sample of students is shown in Table 10.

Table 10. N-Gain Score of Learning Outcomes

Range	Learning Outcomes		
	Frequency	%	Categories
<g> <0,30	2	6.25	Low
0,30 ≤ <g> < 0,70	20	62.5	Medium
0,70 ≤ <g> ≤ 1,00	10	31.25	High
Total	32	100	-
$\bar{X}$ N-Gain Score		0.62	Medium

The results of the calculation of the n-gain score in table 10, Values in the pretest and posttest are taken to represent learning outcomes. a medium category average n-gain score of 0.62 was obtained. Ten students had high n-gain scores, twenty had medium n-gain scores, and two had low n-gain scores out of 32 samples in the restricted trial research. Due to a variety of factors, only a small number of trial participants still achieved n-gain values in the low range. One of the reasons why learning occurs is that some students are still less engaged in working on the e-LKPD. As a result, these students frequently fall behind with their peers and are reluctant to ask questions when they are having trouble or lack understanding the topic. The NoS-based interactive e-LKPD on chemical bond material can be regarded as a successful tool for enhancing student learning outcomes because the n-gain score of the learning outcomes obtained is ≥ 0.3. Most of research also imply that explicitly teaching NoS can enhance learning results, interest in science content, and decision-making on scientific matters (Bell et al., 2011; Lederman, 2006).

Furthermore, the results of calculating the n-gain score on each component of critical thinking skills tested are presented.

Table 11. Critical Thinking Skills N-Gain Score

	Analysis	Evaluation	Explanation
$\bar{X}$ Pretest Score	24.22	34.38	25.78
$\bar{X}$ Posttest Score	64.84	64.32	66.41
N-Gain Score	0.54	0.46	0.55
Categories	Medium	Medium	Medium

According to table 11's calculations for the n-gain score of critical thinking skills, the medium category received successive n-gain scores of 0.54, 0.46, and 0.55 for the analysis, evaluation, and explanation components. This indicates that, although still in the medium category, students' critical thinking abilities have increased as a result of using the e-LKPD created for this research. By developing each skill component over a longer period of time, students can further develop their critical thinking skills. As stated by a trial school chemistry teacher, one of the abilities that is particularly challenging to practice is critical thinking.

The n-gain score obtained ≥ 0.3, it can be interpreted that NoS-based interactive e-LKPD on chemical bonding material is effectively used to train students' critical thinking skills. With the application of the NoS model in e-LKPD, it can help students understand science by involving critical thinking, evaluating visible facts, and making decisions based on existing evidence (Trihastuti, 2019; Indrayani, et al., 2016).

Conclusion

E-LKPD interactive based on nature of science (NoS) on chemical bonding material to train students' critical thinking skills is feasible of use in learning both in terms of validity, practicality, and effectiveness. The results of the e-LKPD validation were calculated as a percentage of validity, with very valid categories accounting for 98.70% and 99.26% of the validity, respectively, of the contents and constructs. Practicality in terms of student and teacher responses gets a feasibility percentage of 94.95% with a very practical category. Effectiveness in terms of pretest-posttest values using the Wilcoxon signed rank test obtained probability values (Asymp. Sig) pretest-posttest of 0.000 or < 0.05. That is to state that resulting from learning with interactive NoS-based e-LKPD on chemical bond materials, there is a significant improvement in learning outcomes and critical thinking skills. Futhermore, the average n-gain score obtained for student learning outcomes was 0.62. While the n-gain scores of analysis, evaluation, and explanation critical thinking skills aspects were 0.54, 0.46, and 0.55, respectively in the medium category. The n-gain score obtained ≥ 0.3, then e-LKPD is effectively used to train students' critical thinking skills.

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Author Contributions
E-LKPD development, instrument development, small-scale trial, data gathering and data analysis are the tasks assigned to Annisa Putria Dewitasari. Instrument validation, initial product design, and E-LKPD results are all the responsibility of Rusmini. Rusmini assisted with the analysis of the research data after it had been collected.

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Conflicts of Interest
The authors declare no conflict of interest.

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