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Natural and Social Sciences E-book Based on Inquiry Learning to Improve Higher Order Thinking Skills of Fourth Grade Elementary School Students

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ABSTRAK

Rendahnya kemampuan berpikir kritis siswa disebabkan oleh kurangnya partisipasi siswa dalam pembelajaran dan lebih di dominasi oleh guru. Penggunaan media yang tidak sesuai juga menyebabkan masalah ini. Maka dari itu penelitian ini bertujuan untuk menganalisis efektivitas media E-book berbasis Inquiry learning dalam meningkatkan kemampuan berpikir tingkat tinggi siswa kelas IV. Subjek yang digunakan dalam penelitian ini ialah 17 orang peserta didik kelas. Penelitian Ini menggunakan model ADDIE, yang memiliki tahapan Analysis, Design, Development, Implementation, dan Evaluation. Metode dan instrumen yang dipakai berupa kuesioner dan tes. Data dikumpulkan dianalisis dengan teknik analisis deskriptif kualitatif dan deskriptif kuantitatif. Hasil menunjukkan bahwa E-book IPAS berbasis Inquiry learning valid, praktis, dan efektif digunakan dalam pembelajaran. Analisis efektivitas e-book juga menunjukkan peningkatan signifikan sebanyak 20,33% dalam kemampuan HOTS peserta didik setelah menggunakan e-book. Maka dapat disimpulkan bahwa E-book IPAS berbasis Inquiry learning efektif dan berpengaruh positif dalamm meningkatkan kemampuan HOTS peserta didik kelas IV. Implikasi penelitian ini menunjukkan betapa pentingnya pembuatan media pembelajaran IPA yang relevan untuk meningkatkan kemampuan HOTS peserta didik.

ABSTRACT

The low critical thinking ability of students is caused by a lack of student participation in learning and is dominated by teachers. Use of inappropriate media also causes this problem. Therefore, this research aims to analyze the effectiveness of E-book media based on Inquiry learning in improving the high-level thinking abilities of grade 4 students. The subjects used in this research were 17 grade students. This research uses the ADDIE model, which has the stages of Analysis, Design, Develop, Implementation, and Evaluation. The methods and instruments used are questionnaires and tests. The collected data was analyzed using qualitative descriptive and quantitative descriptive analysis techniques. The results show that the Science E-book based on Inquiry learning is valid, practical and effective for use in learning. Analysis of the effectiveness of e-books also shows a significant increase of 20.33% in students' HOTS abilities after using e-books. So it can be concluded that the Science E-book based on Inquiry learning is effective and has a positive influence in improving the HOTS abilities of class IV students at SDN 3 Kertha Mandala. The implications of this research show how important it is to create relevant science learning media to improve students' HOTS abilities.

1. INTRODUCTION

The results of the PISA study stated that the competence of Indonesian students in science literacy is still far below that of other participating countries (OECD). Furthermore, it was revealed that the learning process in Indonesia emphasizes the ability to memorize material and cram students' heads to remember so much information (Fuadi et al., 2020; Sasmita & Hartoyo, 2020). Based on the survey results, it shows that Indonesian students' achievements need to be improved and must receive serious attention. The current learning paradigm demands learning that is oriented towards students' literacy, numeracy, and higher order thinking skills (HOTS). Therefore, students should be trained to be able to develop high-level thinking skills according to their respective potentials. The learning that is implemented should provide

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space for students to be able to explore various knowledge concepts by carrying out various meaningful activities. Therefore, the learning that is implemented must provide training in high-level thinking skills/HOTS.

However, in reality, the implementation of HOTS-oriented learning still cannot be implemented optimally. There are several obstacles that arise from both students and teachers. One of the problems that arises from students is the lack of training of students in solving questions related to HOTS, and one of the obstacles that arises from the teacher's point of view is the lack of ability possessed by teachers in developing HOTS-oriented learning (Manurung et al., 2021; Saraswati & Agustika, 2020). In addition, the availability of learning media specifically designed to train HOTS in the field is still limited, so it is necessary to develop HOTS-oriented learning media.

The low thinking skills of Indonesian students are related to the learning process which does not fully provide students with the opportunity to develop critical reasoning skills (Aliftika et al., 2019). In the learning process there are several important elements that must be considered, one of which is teaching materials. Students need learning resources to understand learning in order to support learning activities.

The same problem also occurred at SDN 3 Kertha Mandala. Based on the results of observations with homeroom teachers, several problems were revealed that had a negative impact on the effectiveness of learning and intellectual development of grade IV students. The results of this observation were also strengthened by an analysis of their scores. Several problems identified included the lack of motivation and ability of teachers in developing science learning resources so that the methods, models, and learning used by teachers were still monotonous and less interesting to improve students' high-level thinking skills (Muhammad Ikhsan & Muhammad Syafiq Humaisi, 2021; Murtado et al., 2023). The low HOTS ability of grade 4 students in analyzing information and drawing conclusions from various learning contexts. The lack of discussion activities carried out by teachers and students, teachers only explain the material.

This study provides concrete evidence of the challenges faced in learning in grade IV, and shows the urgency of improvement in the learning approach applied. In addition, based on observations that have been carried out, it was found that SDN 3 Kertha Mandala has adequate facilities, there are 4 laptops, 4 LCDs, 4 projectors, 15 chromebooks and students in grade IV on average already have cellphones, thus supporting the learning process that is in accordance with the demands of the 21st century. Ideal learning is learning that creates an environment that stimulates children's creativity as a whole, encourages active student participation, achieves learning objectives effectively, and takes place in a pleasant atmosphere. The key to realizing ideal learning is the presence of a teacher who is also ideal in managing it.

Based on the problems that have been described, a solution is needed to overcome these problems. One of them is by developing interesting and easy-to-use learning media that can train students' high-level thinking skills in accordance with 21st century learning. This is in line with previous research which states that android-based learning media that are developed effectively improve students' high-level thinking skills. Then, the E-book learning media that will be developed must be of good quality by meeting the criteria of validity, practicality, and effectiveness. So that it can increase students' interest in learning.

One of the innovations in developing teaching materials is electronic books or what is known as E-books. E-books are teaching materials designed with hardware and software in the form of digital files that usually contain images, text, audio and video and their use in electronic devices (Aisyah, DD & Sucahyo, 2022; Nurjanah, 2021). E-books can reduce the burden on educators in presenting information, the information provided through E-books is more concrete and allows individual learning because it does not depend on the information provided by educators. E-books have several advantages, including facilitating the distribution process, simplifying the storage process, easier to resize and add text, and tend not to be outdated. In addition, dynamic sound and image elements such as videos can be included in electronic teaching materials. With digital books, students no longer have to read material from printed books, they can read digitally using the technology that is already used (Liu et al., 2020; Nurjanah, 2021).

The novelty of this research is to present innovation in the world of education by developing and analyzing the effectiveness of the Inquiry Learning-based Science E-book to improve Higher Order Thinking Skills (HOTS) in grade IV students of SDN 3 Kertha Mandala. Unlike conventional learning media, this E-book is specifically designed to utilize digital technology and integrate multimedia elements such as text, images, audio, and video, all of which are designed to facilitate a more interactive and enjoyable learning process. In addition, the use of Inquiry Learning as the main approach in this E-book provides an opportunity for students to explore scientific concepts independently, develop analytical, synthesis, and evaluation skills, which are key components in HOTS (Hainun et al., 2022; Sylvia et al., 2019). This study not only focuses on the validity, practicality, and effectiveness of the developed learning media but also measures its impact on student motivation and engagement in the learning process. This study is expected to provide significant contributions in improving the quality of education, especially in developing students' critical and creative thinking skills in the digital era.

Based on the problem description, a study was conducted to analyze the effectiveness of the Inquiry Learning-Based Science E-book to Improve Higher Order Thinking Skills of Grade IV Students of SDN 3 Kertha Mandala. The Inquiry Learning-based e-book learning media is expected to improve students' abilities in developing into individuals who have high-level thinking skills

2. METHOD

This research is a research and development (research and development), the model used as a guide for product development is the ADDIE model (Fitria et al., 2020; Hasdi, H. & Agustina, 2016). The ADDIE model consists of five steps, namely analysis, design, development, implementation, and evaluation.This research develops an E-book of Inquiry Learning-based IPAS which will be carried out through several stages of procedures. The first stage is analysis, which includes needs analysis, student characteristics, and curriculum analysis. The second stage is design, the third stage is development, the fourth stage is implementation, and the fifth stage is evaluation.

The subjects of this study were all fourth grade students at SDN 3 Kertha Mandala totaling 17 students. They are the group that is the main focus of this study, because the purpose of the study is to improve their high-level thinking skills through the development of E-books. The object of the study is the Inquiry Learning-based Science E-book developed by the researcher. This E-book is a product that will be evaluated in the study to ensure its effectiveness in improving students' HOTS skills.

The research design used in the product effectiveness test is one group pre-test post-test design. Based on this design, the trial subjects will be given a pre-test before treatment. Furthermore, the trial subjects are given treatment in the form of implementing learning using the developed e-book. After following the learning process, the trial subjects are then given a post-test. The product trial is carried out to collect data that will be used in the validity, practicality, and effectiveness tests of the Inquiry Learning-based IPAS E-book to improve students' HOTS abilities. The product trial includes the product trial design, the subjects and objects of the product trial, the types of data used, the methods and instruments for data collection, the methods and techniques for data analysis.

The practical test of the e-book will be assessed by teachers as users of learning devices consisting of 2 practitioners. The next stage is a small group test, this small group test involves 9 subjects. The subjects in this small group trial are grade IV students of SDN 3 Kertha Mandala. At this stage, 9 students are used consisting of three students with high learning achievement, three students with moderate learning achievement, and three students with low learning achievement. Then the next stage is the effectiveness test. This stage is carried out to determine the effectiveness of a product developed to support the learning process.

In this study, there are two types of data analysis techniques used, namely qualitative descriptive analysis techniques and quantitative descriptive analysis techniques. Qualitative data is data in the form of words, not in the form of numbers. Qualitative data is obtained through various data collection techniques, namely interviews, document analysis, focused discussions, or observations that have been written in field notes. Qualitative data in this study were obtained from the results of interviews, product eligibility criteria, comments, suggestions, and responses obtained based on the responses of trial subjects to the products developed. While quantitative data is data in the form of numbers or figures. In accordance with its form, quantitative data can be processed or analyzed using mathematical or statistical calculation techniques. Quantitative data in this study were obtained from questionnaire data based on assessment sheets filled out by experts, practitioners, and the results of student pretests and posttests for effectiveness testing.

The data collection methods and instruments that will be used in this study are questionnaires and multiple-choice tests. Before the instrument is made, first make an instrument grid as a guideline in compiling a grid that matches the indicators. The instrument grid used in this study is presented in Table 1, Table 2, Table 3, Table 4, Table 5, and Table 6.

Table 1. The Learning Material Expert Grid

Criteria	Indicator
Content Suitability Aspect	a. Compliance of material with SK and KD
	b. Accuracy of Material
	c. Update of Material
	d. Encouraging Curiosity
Presentation Feasibility Aspect	a. Presentation Techniques
	b. Presentation Support
	c. Presentation of Learning
	d. Coherence and Sequence of Thought

Criteria	Indicator
Contextual Assessment Aspects	a. Contextual Nature b. Contextual Components

Table 2. The Expert Learning Design Instrument Grid

Criteria	Indicator
Learning objectives	Formulate learning objectives
Learning Activities	Learning objectives are integrated into learning activities at the core stage.
Learning methods	Selection of learning methods
Learning Media/time	Selection of learning media

Table 3. The Media Expert Instrument Grid

Criteria	Indicator
Media View	Attractive e-book learning media display
	The display of learning e-book media is clear
	Creative learning e-book media display
	Display of learning e-book media with appropriate learning content
	The e-book media display is effective in conveying information.
Media Eligibility	Learning media according to learning needs and objectives
	Learning media meets eligibility standards
Ease of Use of Media	Learning media is easy for educators to use
	Learning media is easy for students to use

Table 4. The Practitioner Response Instrument Grid

Criteria	Indicator
Clarity of E-book	Clarity of learning instructions in using inquiry learning-based learning media
E-book View	Color composition
	Menu view
	Text type and size
	Image display quality
Ease of Use of E-books	Ease of understanding the material
	Providing evaluations to measure students
	Give students the opportunity to practice on their own
	Use of Language and Spelling
	Clarity of images and explanation of material

Table 5. The Student Response Instrument Grid

Criteria	Indicator
Presentation of Material	The material presented in this learning media can be understood by students easily.
E-book Presentation	The power of media to generate learning motivation
	After studying using this learning media, students can better understand the material on the influence of force on the shape of objects.
	Sentences in the media are easy to understand
	The attractiveness of the animated images used is clearly visible.
	Conformity of the image to the content of the material
Ease of Use of E-books	Ease of using media
	The clarity of the text or writing in the media presented is clear and easy to read.
	Ease of use of language to understand the material
	The exercises and evaluations presented make it easier for students to understand the material.
	Instructions for using the media are understood so that students can use this learning media easily.
	The appearance of the title page can attract students' attention.

Table 6. The Pre-Test and Post-Test Grids

Learning Outcomes Phase B / Grade IV	Sub Material	High Order Thinking Skills (HOTS) Indicators	Indicators of Competence Achievement
1. Students can explain the effect of muscle force on objects. 2. Students can explain the effect of friction on the motion of objects. 3. Students can mention and explain the properties of objects related to force.	➢ Muscle Force and Friction Force ➢ Properties of Objects	Analytical skills (C4)	1. Describe the basic concepts related to friction and muscles in detail and in detail. They can clearly explain how friction occurs between two objects and how muscles play a role in producing force. 2. Examine the relationship between friction and muscles with its application in everyday life. They can analyze the role of friction in influencing the movement of objects and examine how muscles are used in everyday activities. 3. Distinguish the differences or relationships between frictional forces in different situations.
		Ability to evaluate (C5)	4. Summarize the information given about the properties of solids, liquids, and gases. They can draw conclusions about the characteristics of each type of object and its implications in everyday life. 5. Interpret data or information about the properties of solids, liquids, and gases. They can analyze the information given to understand the meaning behind it and relate it to concepts that have been learned. 6. Provide strong arguments or reasons to support their understanding of the properties of solids, liquids, and gases. They can present logical and detailed arguments to defend their views or conclusions.
		Ability to create (C6)	7. Reorganize information about the properties of solids, liquids, and gases into a coherent and structured description or paragraph. They can organize the information systematically to convey the concept clearly. 8. Categorize types of objects based on their properties such as solid, liquid, or gas. They can identify relevant categories based on the characteristics each type of object has.

After the instrument is created, the next stage is to carry out a validity test.The content validity test was conducted using the Gregory formula, namely by using expert assessment. Furthermore, item validity, reliability test, discrimination power and test difficulty level were carried out. In this learning device development research, two data analysis methods were used, namely qualitative descriptive analysis techniques and quantitative descriptive analysis techniques. Qualitative analysis was obtained from the results of expert reviews while quantitative analysis was obtained from the results of calculating the average, median, mode, standard deviation, and data visualization such as graphs.

Furthermore, to test the effectiveness of the media, inferential analysis is used.The analysis of the effectiveness of Inquiry Learning-based E-books on students' HOTS abilities was carried out using the correlated t-test formula. Before the hypothesis test was carried out, prerequisite tests were carried out including normality and homogeneity tests. Hypothesis testing refers to the assumption or assumption regarding the relationship between variables in a study. In this context, researchers can make two statements, namely the null hypothesis and the alternative hypothesis. After that, researchers must choose the appropriate statistical method or technique to test the hypothesis based on the type of data and research design used. Effectiveness data analysis was carried out using the SPSS application. The provisions for data

analysis using the correlated t-test technique in SPSS are if the Sig. (2-tailed0 <0.05, then H0 is rejected and Ha is accepted, while if the Sig. (2-tailed)> 0.05, then H0 is accepted and Ha is rejected

3. RESULT AND DISCUSSION

Result

This research is a type of development research and its product is an Inquiry Learning-based Science E-book used to improve Students' HOTS skills. The development model of this research is ADDIE, which has stages of analysis, design, development, implementation, and evaluation. The activities that have been carried out by the researcher are:

The first stage of analysis, at this stage, learning needs are identified and existing problems are revealed. This analysis includes understanding why the development of an Inquiry Learning-based Science E-book is needed to improve high-level thinking skills (HOTS) in students at SDN 3 Kertha Mandala. In this case, the analysis involves understanding student characteristics through interviews with grade IV teachers, which revealed a decline in student learning abilities and a lack of support for the E-book inquiry learning. The implementation of the independent curriculum also requires adjustments in learning.

The second stage is design, design is done manually to develop an inquiry learning-based IPAS E-book. The initial design is made as a framework that will be the basis for making an inquiry learning-based IPAS E-book. Learning objectives and indicators are compiled, learning activities are adjusted to the E-book being developed, and research instruments that will be used during the research. The third stage is development, the existing design is developed into a real product. In this case, the design from the previous stage is transformed into a complete Inquiry Learning-based IPAS E-book product. This process involves collecting materials such as authentic materials and relevant evaluation methods. Development also involves expert testing and product testing, with prototype development steps and improvements according to expert input. The appearance of the media that has been developed is presented in Figure 1.

Figure 1. E-book display IPAS is based on Inquiry learning

The fourth stage is implementation,The results of product development and instruments that have been made are then applied in science learning to determine the effect on the quality of effective learning. The prototype of the development product needs to be tested in real or real terms in the field to obtain an overview of the level of effectiveness, attractiveness, and efficiency of the learning carried out. The results of product implementation are the percentage of material validity of 93.6% so that it is qualified as very good. The percentage of design validity is 94% so that it is qualified as very good. The percentage of design validity is 95.56% so that it is qualified as very good. The percentage of practicality is 95.56% so that it is qualified as very good. The percentage of practicality of teaching materials is 95.75% so that it gets a Very Good qualification.

The effectiveness test of this study was conducted on 17 fourth grade students at SDN 3 Kertha Mandala. This effectiveness test was conducted using the pre-test and post-test methods. Before the hypothesis test was conducted, a prerequisite test was conducted including normality and homogeneity tests. The normality test of data distribution was conducted using the assistance of IBM SPSS Statistics for Windows version 26.0. The normality test of data distribution used Kolmogorov-Smirnov with the provision that if the Sig. (significance) value is >0.05 then the data is declared normal. The homogeneity test of variance in this study used the IBM SPSS Statistics for Windows version 26.0 program. The homogeneity

test of variance used was Levene's test of Equality of Error Variance. Based on the data results, the sig value is greater than 0.05 so it can be said that the data distribution is homogeneous.

Effectiveness data analysis was conducted using the SPSS application. The provisions of data analysis using the correlated t-test technique in SPSS are if the Sig. (2-tailed0 <0.05, then H0 is rejected and Ha is accepted, while if the Sig. (2-tailed) value> 0.05, then H0 is accepted and Ha is rejected. From the results obtained, it can be concluded that H0 is rejected, which means that the Inquiry Learning-based Science E-book to improve the HOTS abilities of grade IV students of SDN 3 Kertha Mandala that was developed is effective.

The final stage is evaluation,The evaluation stage is an important step in the process of developing an inquiry learning-based E-book for Science. Evaluation allows researchers and developers to measure the effectiveness and quality of the products that have been developed. Several aspects that need to be considered in the evaluation stage are, measuring the validity of the E-book developed in accordance with the learning objectives formulated in the design stage. Measuring the practicality of the abilities of students and teachers in using inquiry learning-based E-books. Measuring the effectiveness of using Inquiry learning-based E-books for fourth grade students at SDN 3 Kertha Mandala

Discussion

The results of this development research indicate that the Inquiry learning-based Science e-book to improve students' HOTS skills is valid, practical, and effective for use in learning. The developed e-book has undergone a careful validity evaluation process to ensure that its content and design are in accordance with the established learning standards. Currently, the use and development of E-books in learning is still not optimal. E-books play a central role in the learning process, because they are the main source of material presented to students. Therefore, in the context of Science learning, the development of effective E-books that are in accordance with the Inquiry learning approach is essential. Teacher creativity in creating fun and meaningful learning is essential.

Teachers are one of the main actors who have responsibility for the success of learning, because teachers are educators who are in direct contact with students. In fact, so far there are quite a few teachers who teach as is, in the sense that when teaching, teachers only refer to teaching materials available from the government or printed books provided. In this case, teachers are required to be creative in developing teaching materials as an effort to present interesting and meaningful learning (Dewantara et al., 2021; Khoirurrijal et al., 2022).Therefore, an educator must be able to create more efficient and effective learning materials. And can encourage students to participate more actively in their learning activities. Therefore, teachers must be able to follow the development of the era of globalization, teachers are expected to be more active and creative when creating teaching materials that are in accordance with the needs of students and can later help them learn (Astiti et al., 2021; Desyandri, 2022).

The right learning model is very important in increasing the effectiveness of learning and intellectual development of students. The right learning model can help students to actively ask questions, think critically, and conduct independent exploration in the learning process. This is needed especially in developing students' HOTS abilities (Abraham et al., 2021; Wirawan et al., 2022). One of the potential learning models to use is Inquiry learning. This method has the potential to build systematic, logical, and critical understanding in students, help them identify problems, and find solutions. The importance of the inquiry learning method lies in its ability to enable students to learn independently and optimize their potential (Supadma et al., 2019; Bima et al., 2023).

Inquiry-based learning is a dynamic and useful approach to help students develop critical skills, creativity, and a deeper understanding of the subject matter. Therefore, the development of Inquiry-based science learning materials is expected to improve the HOTS abilities of grade 4 students at SDN 3 Kertha Mandala. By implementing this method, it is expected that students can be more active, involved in a deeper understanding, and able to apply their knowledge in real situations.The Inquiry learning method invites students to think critically, find solutions to the questions asked, and develop deep understanding (Puspitasari et al., 2020; Sa'diyah & Aini, 2022). The use of E-books developed based on Inquiry learning will enable students to learn in a more interactive, explorative way, and build high-level thinking skills.

Based on these problems, a solution is needed to overcome these problems. One of them is by developing interesting and easy-to-use learning media that can train students' high-level thinking skills in accordance with 21st century learning. This is in line with previous research that Android-based learning media that are developed effectively to improve students' high-level thinking skills. Then, the E-book learning media that will be developed must be of good quality by meeting the criteria of validity, practicality, and effectiveness. So that it can increase students' interest in learning.

Several related studies reveal the same thing. Research that explains that students' problem-solving abilities are improved by the inquiry learning model. By implementing inquiry learning, students not only

learn from written texts but also from images and have the opportunity to search for data and materials from various sources. Better learning outcomes are also achieved through the application of the Inquiry learning model (Ansari & Abdullah, 2020; Juniati & Widiana, 2017). The last is a study that discusses the development of guided inquiry learning devices based on higher order thinking (HOT) activities on theme 8 subtheme 1 grade V SD. The purpose of this study was to determine the validity of guided inquiry learning devices based on higher order thinking (HOT) activities on Theme 8 Subtheme 1 grade V SD. The results of the data analysis showed that the syllabus received an average score of 4.69 which is a very good value, the RPP received an average score of 4.77 which is a very good value, and the LKPD received an average score of 4.84 which is a very good value. Thus, the guided inquiry learning device based on higher order thinking (HOT) activities on Theme 8 Subtheme 1 grade V SD meets the requirements well (Trisnawati & Sari, 2019; Widiarta et al., 2019).

E-book has an important role to be implemented and developed in the learning process. In addition, with E-books, students can learn online or offline, of course supported by adequate facilities, which means that E-books can be used anywhere and anytime. The digital book format is increasingly preferred because it has many advantages over conventional book formats. E-books are easy to carry around and do not require a lot of storage space. E-books can be stored on a PC (personal computer), laptop, smartphone, tablet, or electronic device that is specifically provided for storing and reading digital books. In addition, digital books are also environmentally friendly and support the paperless movement. Unlike printed books, the manufacturing process is long and expensive because they still use paper, in addition, printed learning resources are not able to present movements, the presentation of material is linear, and it is difficult to provide guidance to readers.

E-book helps to visualize abstract material so that it helps students' understanding and attracts students' attention to learn. By using E-books, students will find it easier to learn material wherever they are because e-books are electronic. As for research that supports the development of E-books to improve HOTS skills in students, inquiry-based E-books can improve students' higher order thinking skills (Kurniawan & Winarsih, 2021; Uspayanti & Pandiangan, 2023). Then another study stated that the developed E-book can foster critical thinking skills of students. Similar to previous studies, research by also proved that E-books can hone critical thinking skills and creative thinking skills of students.

The implications of this study show how important it is to create relevant science learning materials to improve the HOTS abilities of elementary school students. The results of this study indicate that teachers need to be trained to utilize inquiry-based learning ebooks effectively. This means that they need to understand the concept of inquiry learning and how to apply it in science learning in elementary schools through training, workshops, or other professional learning approaches. This ebook is based on Inquiry learning and emphasizes active learning, where students are actively involved in the learning process. This suggests that it is essential to create a supportive learning environment where teachers help and students are encouraged to ask questions, explore ideas, and draw conclusions about their own results (Alfurqan et al., 2021; Tri Pudji Astuti, 2019). This study further emphasizes how important it is for students to improve their critical thinking skills. This means that ebooks and their activities should be designed to help students learn to think critically, including synthesis, analysis, and evaluation of data. Finally, this study emphasizes that continuous evaluation is needed to improve Elementary School students' HOTS skills using Inquiry learning-based ebooks. The implication is that to find out how effective the ebook is, either through direct observation, interviews, or measurement of student learning outcomes, a careful evaluation method is needed.

Although this research was successfully conducted, there are several limitations in this research. These limitations include. The e-book developed is only limited to the content of Natural and Social Sciences (IPAS) learning, especially on science material regarding the effect of force on objects for grade V of elementary school which focuses on science subjects only. The e-book developed is based on the characteristics of grade IV students of SDN 3 Kertha Mandala, so that the product of the development is only intended for grade IV students of SDN Kertha Mandala. It is hoped that further research can conduct research with a wider and deeper reach.

4. CONCLUSION

The conclusion of this study shows that the Inquiry learning-based Science e-book is a valid, practical, and effective tool to improve students' HOTS skills. The development and use of this e-book have been proven to meet the established learning standards and are able to present interactive and interesting learning materials. Teachers have an important role in creating creative and meaningful teaching materials, which can increase students' active participation in the learning process. The Inquiry learning method has been proven effective in developing critical, logical, and systematic thinking skills in students, which in turn

improves the quality of their learning outcomes. Thus, the development of an Inquiry learning-based e-book not only supports more dynamic and interactive learning but also facilitates the development of students' high-level thinking skills. This study also underlines the importance of training for teachers to utilize e-books effectively and the need for ongoing evaluation to measure their impact on improving students' HOTS skills. Although this study has limitations in scope and subject, its results provide a strong foundation for further development on a wider scale.

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