Inovasi Kurikulum *- p-ISSN 1829-6750 & e-ISSN 2798-1363*
Volume 21 No 3 (2024) 1345-1358

Inovasi Kurikulum
https://ejournal.upi.edu/index.php/JIK

HOTS-Based e-evaluation Quizwhizzer in Science Learning in Elementary Schools

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ABSTRACT

Teachers must still implement HOTS-based questions for learning evaluation, resulting in students' low thinking abilities. This research aims to develop HOTS-based E-evaluation using the Quizwhizzer application. This research uses the ADDIE model with various stages, namely (1) the analysis stage, curriculum analysis, student character, and learning evaluation are carried out; (2) the design stage, learning materials are determined, HOTS questions and research instruments are prepared; (3) the development stage, validation of the suitability of the material, language and media is carried out; (4) the implementation stage, a validation test of the practicality and effectiveness of the application is carried out; (5) the final, evaluation stage was carried out to find out deficiencies in the application. The research subjects were 28 class IV students at SDN Mulyorejo 3. The instruments used are tests and questionnaire sheets. The research results showed that the E-Evaluation of the feasibility test was 90 percent from material experts, 96 percent from language experts, and 92 percent from media experts. The results of teacher practicality were 95 percent, and the students were 92 percent, and effectiveness showed that there was an increase in students' HOTS abilities." HOTS-based e-evaluation using the Quizwhizzer application can increase students' HOTS in science learning.

ARTICLE INFO

Article History:
Received: 2 Apr 2024
Revised: 13 Jun 2024
Accepted: 15 Jun 2024
Available online: 21 Jun 2024
Publish: 30 Aug 2024

Keyword:
e-evaluation; higher order thinking skill; Quizwhizzer

Open access
Inovasi Kurikulum is a peer-reviewed open-access journal.

ABSTRAK

Guru belum menerapkan soal-soal berbasis HOTS untuk evaluasi pembelajaran sehingga berakibat kemampuan berpikir peserta didik yang rendah. Tujuan penelitian ini untuk mengembangkan E-evaluation berbasis HOTS menggunakan aplikasi Quizwhizzer*. Penelitian ini menggunakan model ADDIE dengan berbagai tahapan yaitu (1) tahap analyis dilakukan analisis kurikulum, karakter peserta didik, dan evaluasi pembelajaran; (2) tahap design dilakukan penentuan materi pembelajan, menyusun soal HOTS dan instrument penelitian; (3) tahap development dilakukan validasi kelayakan materi, bahasa, dan media; (4) tahap implementation dilakukan uji validasi kepraktisan dan keefektifan aplikasi; (5) terakhir, tahap evaluation dilakukan untuk mengetahui kekurangan pada aplikasi. Subyek penelitian ialah peserta didik kelas IV SDN Mulyorejo 3 sejumlah 28 peserta didik. Instrumen yang digunakan yakni test dan lembar angket. Hasil penelitian menunjukkan E-Evaluation dari uji kelayakan sebesar 90 persen dari ahli materi, 96 persen dari ahli bahasa, dan 92 persen dari ahli media. Hasil kepraktisan guru 95 persen, peserta didik 92 persen dan keefektifan yang menunjukkan terdapat peningkatan kemampuan HOTS peserta didik. E-evaluation berbasis HOTS menggunakan aplikasi* Quizwhizzer *dapat meningkatkan HOTS peserta didik pada pembelajaran IPA.*

Kata Kunci: *e-evaluation; kemampuan berpikir tingkat tinggi;* Quizwhizzer

How to cite (APA 7)
Kumala, F. N., Safitri, I., Triwahyudianto, T., Yasa, A. D., & Salimi, M. (2024). HOTS-Based e-evaluation Quizwhizzer in science learning in elementary schools. *Inovasi Kurikulum, 21*(3), 1345-1358.

Peer review
This article has been peer-reviewed through the journal's standard double-blind peer review, where both the reviewers and authors are anonymised during review.

https://doi.org/10.17509/jik.v21i3.71147

INTRODUCTION

Many teachers have not implemented evaluation tools that focus on *High Order Thinking Skills* (HOTS). In addition, most evaluation questions still use grade-level evaluation of *Low Order Thinking Skills* (LOTS). In addition, there are still limitations in using conventional evaluation methods in the classroom, which causes academic dishonesty among students during the evaluation and many students late submitting their answer sheets after the specified time. In addition, there is potential for errors in correcting and assessing student learning outcomes. In addition, students have never used electronic evaluation tools in the form of games. Evaluation tools facilitate learning evaluation by providing information on improving student skills (Narassati *et al.*, 2021). Science learning still seems monotonous and passive because some students need help understanding the material presented. They only follow the learning process according to the teacher's instructions, which refer to textbooks and picture media. One of the science learning materials for elementary school grade IV is Energy Transformation. It can be seen that energy is an effort or ability used to make something happen. Therefore, making it easier for students to understand the material can be done through simple experimental activities to prove energy changes; in addition to supporting the effectiveness of the learning process, digital-based learning media can be used so that it can attract students' enthusiasm for learning.

Based on these problems, one of them can be overcome with HOTS-based e-evaluation. HOTS-based evaluation is an evaluation method that measures cognitive talent at an advanced level. These abilities include 1) synthesizing concepts with factual knowledge, 2) analyzing and using information, 3) developing problem-solving strategies, and 4) critically reviewing ideas and information (Aprilia, 2020). HOTS refers to the capacity to communicate effectively, analyze, understand, and provide innovative solutions. The need to improve the quality of students, such as critical and creative thinking, can currently be done through the development of evaluations using HOTS questions. The abilities in question are related to critical thinking, reflective thinking, metacognition, and creativity. Stimulus is usually used when creating HOTS questions. (Putri & Dwijayanti, 2021). Stimulus serves as a basis for formulating questions. The stimuli provided are contextual and exciting in the context of HOTS (Higher Order Thinking Skills) (Setyowati *et al.*, 2023). In creating HOTS-based questions, teachers must have the necessary skills and abilities to formulate questions, choose appropriate stimuli depending on specific circumstances and situations, and thoroughly understand the teaching topic (Fanani, 2018). Evaluation activities demonstrate teachers' ability to analyze and understand the relationship between knowledge and materials while addressing practical challenges from multiple perspectives. Integrating HOTS into the learning evaluation system will enhance students' creative thinking (Azhar & Pasandaran, 2022).

In assessing the effectiveness of the teaching and learning process, teachers need to develop evaluation methods that specifically focus on learning objectives. These evaluation tools must be based on HOTS and aligned with teachers' professional goals. Educators face the challenge of optimizing and utilizing technological developments in learning (Susanto & Ismaya, 2022; Setyaningrum *et al.*, 2020). Evidence shows that using creative and interactive learning media can improve student learning outcomes, foster innovative thinking skills, and facilitate the application of acquired knowledge (Ali, 2023; Putra & Salsabila, 2021). Using technology in the evaluation process will be more exciting and efficient, making it easier for educators to assess student learning outcomes. Effective learning is learning that optimally utilizes information and communication technology as a tool (Latip, 2020). So, it can be concluded that using technology-based evaluation tools can reduce cheating by students, such as cheating, so that the evaluation results are genuinely the result of the student's thinking.

In today's digital era, educational technology can transform conventional learning into modern learning (Tambak & Lubis, 2022). The rapid advancement of technology has led to various online learning applications that can be used to evaluate high-level thinking skills (HOTS) in education. One such tool is

https://doi.org/10.17509/jik.v21i3.71147

the Quizwhizzer Application. This tool increases students' focus on learning materials and simplifies the evaluation process by generating automatic scores and rankings after completing the quiz. The advantages of the Quizwhizzer study are that it can increase the interest of fourth-grade students in learning energy sources and increase motivation and learning outcomes in PPKN material and class VIII food digestion system material (Oktavian *et al.*, 2023). Based on interactive game media based on Quizwhizzer has been proven to be very suitable for evaluation tools. (Audina *et al.*, 2022).

The above research shows that there are similarities in the use of the Quizwhizzer application as a learning evaluation tool. In addition, previous researchers have never studied HOTS-based evaluation questions packaged in quizzes. Therefore, researchers will develop HOTS-based e-evaluation using the Quizwhizzer application. Given this context, it is essential to create a HOTS-based e-evaluation using the Quizwhizzer application; this will allow for evaluating creative thinking skills and exposing students to high-level thinking through HOTS-based evaluation questions. Ultimately, this will improve the overall quality of education (Annisa *et al.*, 2023). This study aims to describe the development process and determine the feasibility, practicality, and effectiveness of HOTS-based e-evaluation using the Quizwhizzer Application on Energy Transformation Material for Grade IV Elementary School. HOTS-based evaluation using the Quizwhizzer application on energy transformation material for grade IV elementary school is expected to be an exciting and fun evaluation tool for students. This product is expected to contribute to introducing interesting and fun evaluation tool progress in educational institutions. In addition, this product is likely to function as a valuable and practical evaluation tool in schools, simplifying the process of evaluating student learning outcomes for teachers. In addition, students will be free to answer quiz questions in class and at any location and time.

LITERATURE REVIEW

Learning Evaluation

Evaluation is an essential instrument in learning (Idrus, 2019). Evaluation is a systematic and continuous learning outcome instrument that determines effective learning and provides input for improving further learning (Putri & Dwijayanti, 2021). Evaluation is carried out to ensure that the quality of students, learning outcomes, and learning methods are improved appropriately (Sari *et al.*, 2017). Evaluation determines the extent to which learning objectives have been achieved and identifies students' academic success levels (Magdalena, 2023). Evaluation development is in line with the use of technology, namely electronic evaluation (e-evaluation), which is created using application software of various types and with different uses (Umam *et al.*, 2017). Evaluation results from learning interactions between teachers and students that influence changes in student actions in knowledge, attitudes, and skills.

Higher Order Thinking Skills (HOTS)

HOTS is described as the ability of students to understand, analyze, and modify previous information so that it is not monotonous (Karimah, 2018). HOTS is a comprehensive and gradual thinking process used to find solutions to problems (Rahayu *et al.*, 2020). Brookhart defines HOTS as moving from problems to solutions by thinking critically (Rochman & Hartoyo, 2018). Other research also states that HOTS is the ability to think critically, namely using broad reasoning, so that it allows students to find new ways creatively, be able to make decisions wisely and apply them in solving problems based on science and criticize something based on logical and scientific foundations (Ulum, 2020). HOTS can be trained by giving students practice questions that focus on high-level cognitive or level C4 (analysis), which means the ability to break down concepts into several parts and connect them so that they can understand the concept as a whole, C5 (evaluation), which shows the ability to evaluate solutions and ideas to achieve

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their effectiveness, C6 (creation), which means the ability to design a way to solve a problem (Jannah & Pahlevi, 2020). It is essential to equip children with advanced cognitive skills to cope with everyday challenges effectively (Setyaningrum *et al.*, 2020). The main goal of HOTS is to improve students' high-level cognitive thinking skills, particularly their capacity to analyze complex learning materials and effectively solve problems encountered (Azam & Rokhimawan, 2020; Zamkakay, 2022).

Quizwhizzer

Quizwhizzer is an educational game app that offers a narrative and adaptable experience with various question-creation capabilities. Users only need to access the quiz code to start (Faijah *et al*., 2021; Wahyuningsih & Darodjat, 2021). Quizwhizzer is an exciting assessment tool that offers several benefits in the learning process. It is free to access and provides a variety of exciting templates (Vinidiansyah *et al.,* 2021). Quizwhizzer is an application that aims to make it easier for educators and students to conduct learning evaluation activities (Susanto & Ismaya, 2022).

METHODS

This study uses the research and development method (Research & Development) to produce products and test their feasibility. This study uses the ADDIE *(Analysis et al., and Evaluation)* development model. The selection of the ADDIE model was based on the consideration that this model is easy to apply, easy to understand, and is a systematic development model. In **Image** 1, It can be seen that the process of making HOTS-based e-evaluation products using the Quizwhizzer application includes various stages, namely 1) the analysis stage is carried out by analyzing the curriculum, student character, and learning evaluation; 2) the design stage is carried out by determining learning materials, compiling HOTS questions and research instruments; 3) the development stage is carried out by validating the feasibility of materials, language, and media; 4) the implementation stage is carried out by testing the validation of the practicality and effectiveness of the application; 5) finally, the evaluation stage is carried out to find out the shortcomings in the application.

https://doi.org/10.17509/jik.v21i3.71147

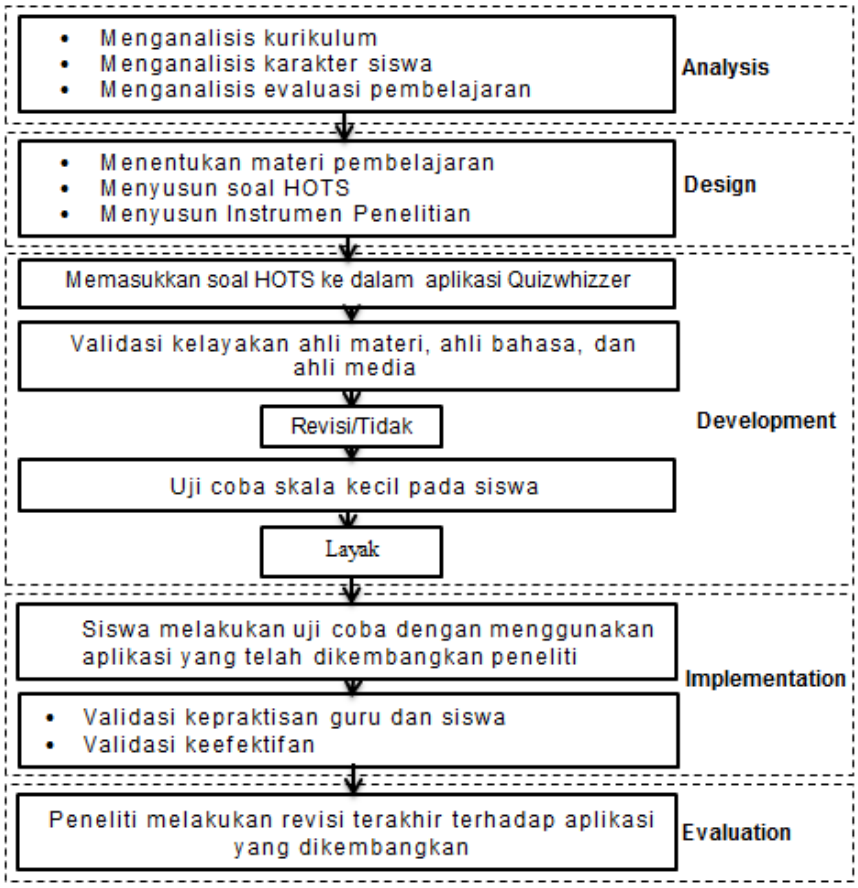

Image 1. Prosedur Model Penelitian dan Pengembangan ADDIE
Sumber: Dokumentasi Penelitian 2024

The subjects of the study were 28 fourth-grade students of SDN Mulyorejo 3, using a Chromebook to test HOTS-based e-evaluation products using the Quizwhizzer application. The data used consisted of qualitative data from expert validation results and input and suggestions from teachers and participants regarding practical aspects. In addition, quantitative data was obtained from the assessment results, namely scores given by material, media, and language experts. The data collection method used questionnaires and evaluations to assess the feasibility or validity of the evaluation tools developed by the author, according to input from experts. In addition, this was used to measure the practicality of the evaluation tools based on feedback from teachers and students. This study used questionnaire sheets and test sheets as instruments. The following is a grid of validation instruments by material, media, and language experts (see **Table 1**).

Table 1. Kisi-Kisi Instrumen Validasi Ahli

Validation	Rated aspect	Evaluation Indicators
Material Expert	Question	Suitability of questions with CP, TP, and ATP
		Suitability of question items with material
		Suitability of images or videos with material
		Suitability of answer choices with material
		Use of stimulus or distractors in questions
		Suitability of question items with students' abilities
	Construction	Clarity of writing
		Number answer choices are written sequentially.
		Complete question identity
		Question instructions are easy to understand

https://doi.org/10.17509/jik.v21i3.71147

Validation	Rated aspect	Evaluation Indicators
Media Expert	The effectiveness of the features in the Quizwhizzer application can be used to create questions.	The features of the Quizwhizzer application are practical for creating multiple-choice questions.
		The features of the Quizwhizzer application can be used to see scores.
		The writing used in the application is easy to understand.
	Easy-to-read presentation	The writing and font size are easy to read.
		Clear pictures and videos of the questions
	Efficiency Quizwhizzer app is easy to use/	The Quizwhizzer application is easy and efficient for creating evaluation questions.
		Quizwhizzer application can train students in high-level thinking.
	Straightforwardness	Accuracy and effectiveness of sentence elements
	Dialogic and interactive	Standard terms
		Message delivery can be understood.
		Understanding of messages or sounds
Language Validator	Language conformity with language rules	Grammar and spelling rules used
	Conformity with student development	Following the intellectual and emotional development of students
	Readability of sentence structure accuracy	Using standard Indonesian
	Readability of sentence structure accuracy	Using standard Indonesian
		Sentences are not ambiguous.

Source: Dokumentasi Penelitian 2024

After the data is obtained, the data analysis is carried out. This study uses a Likert scale analysis ranging from 1 to 4. Scale 1 indicates terrible results, 2 indicates bad ones, 3 indicates good ones, and 4 indicates excellent ones. Furthermore, the results of the feasibility and practicality validation questionnaire are calculated using the formula:

$$P=\frac{\sum x}{\sum xi} x100\%$$

Information:

P = Validation Presentation
$\sum x$ = Total score from validation (original score)
$\sum xi$ = Maximum score
100 = constant value

The decision to revise the HOTS-based e-evaluation using the Quizwhizzer application is based on the results of users and validators: media experts, material experts, language experts, teachers, and students. The validator's decision is based on the below validation criteria (see **Table 2**).

Table 2. Kriteria Validitas dan Kepraktisan Persentase

Presentations	Criteria
85% - 100%	Excellent
76% - 84%	Good
60% - 75%	Not Good
≤ 55% - 59%	Very Bad

Sourcer: Hasil modifikasi penulis 2024

The effectiveness of HOTS-based e-evaluation using the Quizwhizzer application can be assessed by analyzing the results of student learning evaluations carried out after implementing HOTS-based e-evaluation created using the Quizwhizzer application. The data can be explained by calculating the average using the following formula.

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$$\text{Persentase Keidealan} = \frac{Skor\ Hasil\ Penelitian}{Skor\ Maksimal\ ideal} x100\%$$

After the findings are available, learning outcomes can be determined by applying the N-Gain Score method.

$$\text{N-Gain} = \frac{Skor\ PostTest - Skor\ Pretest}{Skor\ Ideal - Skor\ Pretest}$$

Learning outcomes can increase if the N-gain value is > 0.3 in the given categorization (see **Table 3**).

Table 3. Klasifikasi Nilai Standar N-Gain

N-Gain Standard Value	Classifications
G>0,7	High
0,35 > G > 0.7	Mediun
G<0.3	Low

Source: Aisyah & Dewi (2021)

RESULT AND DISCUSSION

First, the analysis showed that current learning evaluation activities rely on conventional media, especially paper. However, there are inherent areas for improvement related to using traditional evaluation tools. This includes examples of students cheating during the evaluation, late collecting answer sheets after the allocated processing time, and potential errors in correction and assessment. In addition, educators have yet to become accustomed to using HOTS questions, which poses a challenge for students when trying to answer questions that arouse curiosity. In addition, the analysis results show that students need help understanding the material on energy transformation. Thus, the development of HOTS-based e-evaluation uses the Quizwhizzer application as an attractive and easy-to-use evaluation tool for students so that students become more accustomed to working on HOTS questions while increasing their knowledge regarding energy transformation.

Second, the design or planning stage is carried out by packaging HOTS questions previously compiled into interactive quizzes using the Quizwhizzer application. **Image 2** shows the appearance of the Quizwhizzer application with an access code and link to access the e-evaluation.

Gambar 2. Tampilan Aplikasi Quizwhizzer
Sumber: Dokumentasi Penelitian 2024

Meanwhile, in **Image 3**, the questions are arranged interestingly and equipped with videos so students can easily understand the statement's meaning. In addition, researchers have also compiled instrument grids and expert validation sheets and created a questionnaire on the practicality of teachers and students.

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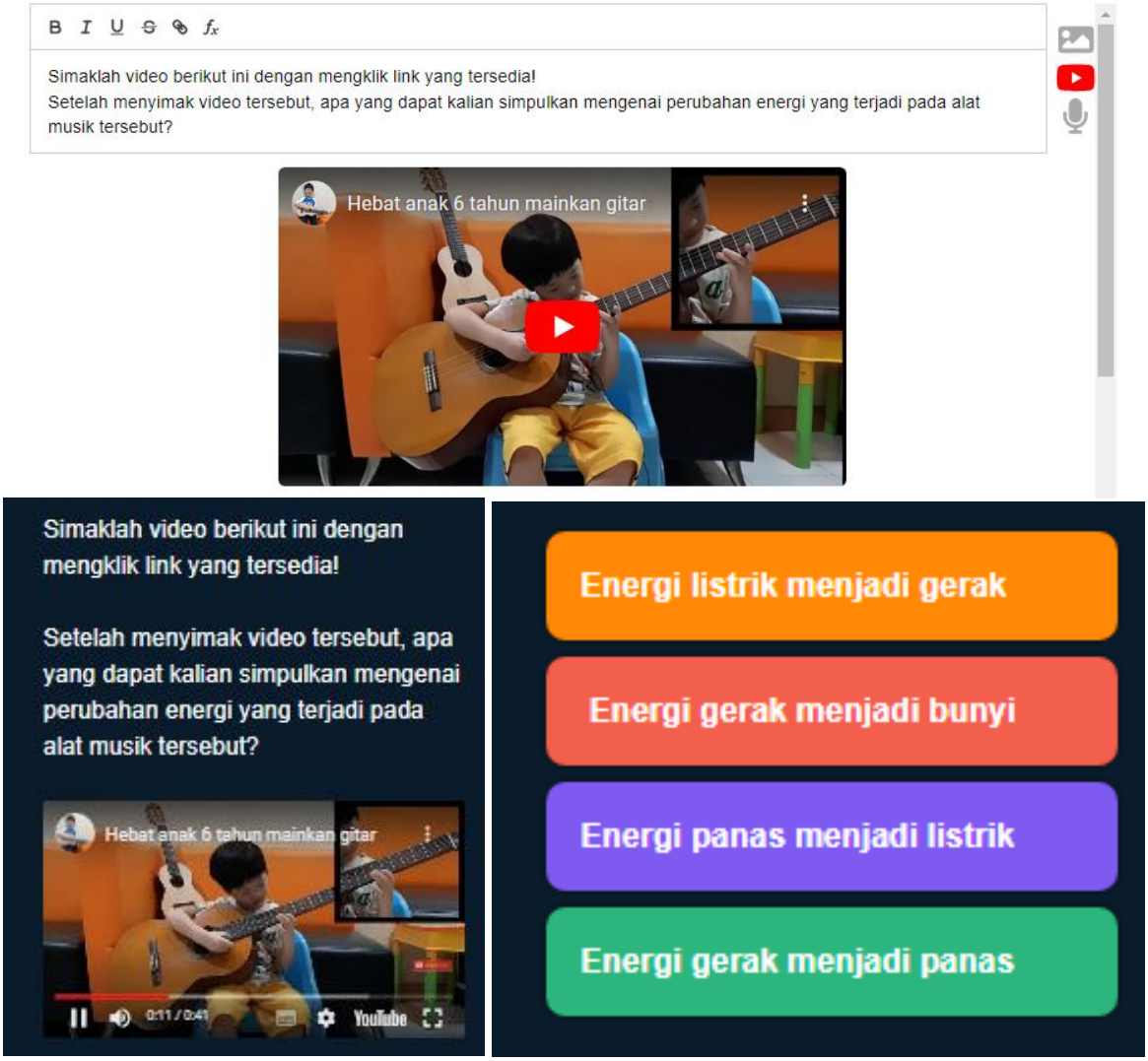

Image 3. Proses mengemas soal-soal HOTS dalam aplikasi Quizwhizzer
Sumber: Dokumentasi penelitian 2024

Third, the development stage aims to produce a HOTS-based e-evaluation using the revised Quizwhizzer application based on expert input; the validators consist of 3 lecturers from the Faculty of Education, Universitas PGRI Kanjuruhan Malang. Based on the validation results, the material expert scored 90% in the "Feasible" criteria. Then, the validation results by the language expert showed that the feasibility of the language used got a percentage score of 96% with the "Very Feasible" criteria. Furthermore, the aspects assessed by the media expert got a percentage score of 92% with the "Feasible" criteria. After the data was obtained from the average total validity (RTV), it can be concluded that the validation results of the HOTS-based e-evaluation using the Quizwhizzer application based on the ideal conversion guidelines are as follows (can be seen in **Table 4**).

Tabel 4. Evaluasi Validator Mengenai Aspek Kelayakan

Validator	RTV	Interpretation
Material Expert	90%	Worthy, needs revision
Language Expert	96%	Very worthy; no revision needed
Media Expert	92%	Worthy, needs revision

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Validator	RTV	Interpretation
Rata-rata total	92,6%	

Source: *Hasil penelitian 2024*

Fourth is the implementation stage; at this stage, the product has been revised based on suggestions and input from experts; then, the researcher conducted a small group trial on five fourth-grade students of SDN Mulyorejo 3. Students were given an e-evaluation declared feasible by the expert validator and a questionnaire on student practicality, getting a percentage score of 91% in the "Very Practical" criteria. Furthermore, the researcher conducted a large group trial on 28 fourth-grade students of SDN Mulyorejo 3. This trial or implementation was conducted to determine the practicality of HOTS-based e-evaluation using the developed Quizwhizzer application. The validation results for measuring the practicality of teachers and students used a questionnaire. The results of the aspects are presented in **Table 5** below.

Table 5. Evaluasi Validator Mengenai Aspek Kepraktisan

Rated aspect	Presents
Practicality of students	92 %
Practicality of teachers	95 %

Sumber: Hasil penelitian 2024

Based on **Table 5**, the practicality of students was measured, and a score of 92% was obtained, which is included in the "Very Practical" category. The teacher's practicality questionnaire produced a score of 95%, which shows that HOTS-based e-evaluation using the Quizwhizzer application is very practical for both students and teachers as a learning evaluation tool. This study also shows the effectiveness of HOTS-based e-evaluation through the Quizwhizzer application, as evidenced by the analysis of pre-test and post-test data on Energy Transformation. The following data presents the learning achievements of grade IV students of SDN Mulyorejo 3 Malang City, both before and after using the Quizwhizzer application.

Table 6. Hasil *Pretest* dan *Post-test* Penggunaan Aplikasi Quizwhizzer

Nilai ***Pretest***	Nilai ***Post-test***	***N-gain***
62	87	0,68

Sumber: Hasil penelitian 2024

Table 6 shows students' learning outcomes after participating in learning activities using the Quizwhizzer application on the material of energy transformation; the pre-test score was 62, while the average score on the post-test was 87. The students' pre-test results were below standard. After completing the learning process through the Quizwhizzer application, there was an increase in student learning outcomes, as evidenced by the post-test results. The increase in learning outcomes can be measured using N-gain, which produces a value of 0.68, included in the "moderate" range according to the criteria. Therefore, the Quizwhizzer application can be used for the E-evaluation of grade IV students at SDN Mulyorejo 3.

Fifth is the evaluation stage, which is the process of evaluating the results of the trial that has been carried out. The results of the product trial evaluation indicate that no improvements need to be made to the HOTS-based e-evaluation using the Quizwhizzer application that was developed because it is already at the "feasible" status and is at the "efficient" and "effective" category level.

Discussion

Developing HOTS-based e-evaluation using the Quizwhizzer application was conducted at SDN Mulyorejo 3 with 28 students and researchers using 20 valid questions for e-evaluation. Valid evaluation instruments can activate students' high-level abilities (HOTS) (Afrita & Darussyamsu, 2020). Based on the results of

https://doi.org/10.17509/jik.v21i3.71147

the data analysis conducted, the results of the HOTS-based e-evaluation feasibility test using the Quizwhizzer application from the material expert developed are classified as valid with a percentage value of 90% and are in the "Feasible" criteria; this is because the product produced has focused on the material and uses effective sentences. Then, the evaluation of the language expert validator is 96%, according to the "Very Feasible" criteria, because it includes the language components used in it according to the guidelines for good and correct Indonesian. The media expert validator gets a percentage score of 92% with the "Feasible" criteria. Regarding the media development of the Quizwhizzer application as a learning outcome evaluation media, it can be considered valid and feasible for use in learning. Overall, it has an average total validity (RTV) of 92.6% and is categorized as "very feasible." These results indicate that HOTS-based e-evaluation using the Quizwhizzer application is valid and feasible for use in learning because it has met the components and criteria of e-evaluation according to the needs of student characteristics.

The need for HOTS is critical in the era of increasingly advanced education 4.0. Educators can foster advanced cognitive abilities by integrating HOTS into student learning, enabling students to effectively keep up with today's era's ever-evolving knowledge and technology. Therefore, educators can foster HOTS skills in students by familiarizing themselves with HOTS practice questions in the book. These tasks are designed to relate to everyday life and incorporate character values (Jaya, 2021). In this study, educators still use conventional media for learning evaluation and must include HOTS-based questions. As a result, the average student in this study showed low thinking skills. However, implementing HOTS-based E-evaluation using the Quizwhizzer application with complete dedication and consistency will raise students' thinking skills to a higher level, especially in science learning at SDN Mulyorejo 3. Therefore, technology, namely e-evaluation, is used to build learning materials. This approach increases student interest and fosters a conducive learning environment so that students have high-level thinking skills due to the limited emphasis on critical thinking skills, analysis, and evaluation in their educational training (Yasa *et al.*, 2020).

Based on the results of the revision and improvement were based on responses, criticisms, and suggestions from expert validators of material, language, and media, as well as the results of a small trial, a good evaluation product was obtained, then a practicality questionnaire was given to the revised evaluation product to the fourth-grade teachers of SDN Mulyorejo 3. The practical results obtained from the teachers got a score of 95% with the criteria of "Very Practical." The results of the practicality evaluation by students got an average score of 92% with the requirements of "Very Practical," which means that students and teachers can easily use HOTS-based e-evaluation using the Quizwhizzer application as a learning evaluation tool in the fourth grade SDN Mulyorejo 3. This is evident from the percentage level of the questionnaire stating that evaluation using Quizwhizzer is more attractive to students and helps and facilitates learning evaluation activities. Technology media will facilitate communicators (teachers) and communicators (students) in carrying out the evaluation process, and the role of educators in designing innovative and creative learning media is vital to supporting the success of students (Rolisca & Achadiyah, 2014). In addition, it can also create exciting learning. Thus, technological innovation increasingly improves students' learning process more effectively and interactively.

This study's results also illustrate the product's effectiveness, as evidenced by a significant increase in the average pre-test and post-test scores, where the average pre-test score of students was 62, while the average post-test score was 87. The increase in learning outcomes can be calculated using N-gain, and a value of 0.68 was obtained with the criteria of "moderate." This increase illustrates that the Quizwhizzer application is helpful because HOTS-based questions can boost students' thinking skills to a higher level, reflected in the rise in students' learning outcomes after using the Quizwhizzer application as a learning evaluation tool. This is reinforced by other studies that state differences in students' learning outcomes using interactive Quizwhizzer media and students' learning outcomes not using Quizwhizzer media in

https://doi.org/10.17509/jik.v21i3.71147

improving learning outcomes in science lessons.(Faijah *et al.*, 2021). The influence of Quizwhizzer media can also increase student motivation and learning outcomes (Ekaputra, 2023; Oktavian *et al.*, 2023).

CONCLUSION

Based on the previous explanation, it can be concluded that the development of HOTS-based e-evaluation using the Quizwhizzer application uses the ADDIE model with stages of analysis, design, development, implementation, and evaluation. Based on the feasibility questionnaire, the HOTS-based e-evaluation product using the Quizwhizzer application is feasible. The material expert validator obtained a feasibility result of 90%, the media expert validator obtained a result of 92% with a very feasible category, and the language expert validator obtained a result of 96% with a very feasible category. The level of practicality indicated by the results of the teacher practicality questionnaire was 95%, according to the criteria "Very Practical." Likewise, students achieved a level of practicality of 92% with the same criteria. HOTS-based e-evaluation carried out through the Quizwhizzer application has proven to be very effective. This conclusion is based on the fact that students achieve an average score that exceeds the KKTP (Criteria for Achieving Learning Objectives) of 87. In addition, the analysis of the increase in student learning outcomes using the N-gain calculation produces a value of 0.68, which is included in the "moderate" criteria. The Quizwhizzer application can be used for HOTS-based e-evaluation on energy transformation material for grade IV, thus providing a fun evaluation tool for students. In advancing research, it is recommended to conduct research and development of HOTS-based e-evaluation using the Quizwhizzer application. This should include more than just learning science and technology or energy material transformation; it should also include other subjects and areas of learning.

AUTHOR'S NOTE

If any, thanks are addressed to official institutions or individuals who have provided funding or have made other contributions to the research. A research contract number accompanies acknowledgments.

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