



DEVELOPMENT OF EVALUATION INSTRUMENTS BASED ON GOOGLE FORMS FOR GRADE IV ELEMENTARY SCHOOL ON THE FORCE TOPIC

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Abstract

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Evaluation is necessary in education to determine the effectiveness of the educational process in relation to students. Seeing that most educational evaluation systems in elementary schools still use the classical mode, they are less relevant and practical, there is a need for educational evaluation innovation. In this case, the use of Google Forms as an educational evaluation tool. This research aims to develop a Google Form-based evaluation instrument to improve the learning outcomes of style materials. Validity testing of the Google Forms-based evaluation instrument yielded 0.96 for content validity, 0.88 for construct validity, and 0.97 for language validity. The final validity index was 0.936, classified as excellent and relevant. The Google Form-based evaluation instrument was feasible for improving the learning outcomes of fourth-grade students on the 'Style' material in elementary school.

Keywords: Evaluation; Googleform; Learning Outcomes; Instruments; Grade IV

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INTRODUCTION

Education is essential for a country to develop rapidly. Developed countries are generally countries that prioritize education for their citizens. It is hoped that education will guarantee the community's welfare, but it will also not bring progress if the education system is unsuitable (Purwanto, 2021). To address changing community needs locally, nationally, and globally, the national education system must guarantee equal educational opportunities and enhance the quality, relevance, and managerial effectiveness of education. Consequently, planned, goal-oriented, and sustainable educational innovation is required (Nugroho & Airlan, 2020).

Evaluation is needed to determine how well the educational process has been applied to students (Utaminingsih et al., 2024). Traditionally, the evaluation of learning outcomes is conducted through written tests, supplemented by aids such as questionnaires and answer sheets. Teachers must then review each answer sheet to determine the results of the learning evaluation (Bidang, (Septiani et al., 2022). Of course, this requires a significant amount of time and effort. The rapid development of technology and information can benefit various fields, including education (Utami, 2021).

Seeing that most of the educational evaluation systems in elementary schools still use classical mode, so they are less relevant and effective in responding to the challenges of changing student needs (Utaminingsih, et al., 2024), while the existence of one of the

factors, namely evaluation in education, is an inseparable part of the learning process because through educational evaluation, results are obtained about the success of an activity and alternatives to the following action (Nugroho & Airlan, 2020). Accordingly, there is a need to innovate in educational evaluation, for instance, by employing Google Forms for assessment.”

As a component of the Google Docs service, Google Forms is ideal for students, educators, office workers, and professionals who need to build online quizzes, forms, and surveys (Ngafifah, 2020). Google Forms files can be shared publicly or restricted to Google-account holders, with permissions set to view-only or editable (Bulan & Zainiyati, 2020). A teacher who wants to evaluate learning using Google Forms has a particular condition: the teacher must have a Google account before registering at <http://Google.com/login> (Lukman & Imam, 2020). The use of the Google Form platform also makes it easier for teachers to share grades with students, and a quiz feature can provide grades for the answers to the questions asked (Utami, 2021). Some of these features are expected to increase student motivation. Student motivation is crucial for fostering enthusiasm among students during the learning process. Learning outcomes refer to one or more achievements that students attain, and behavioral changes often accompany them in learning activities.

Based on researchers’ observations at SDN 1 Ngawen of Grade IV science instruction, a phenomenon was identified: low learning motivation linked to students’ learning styles, which in turn negatively affected Grade IV learning outcomes. Learning activities are carried out face-to-face, while the evaluation instruments provided by the teaching teachers are still in the form of conventional methods and lack interest for students to maximize their imagination because the questions are only in the form of writing without a variety of pictures.

Today's students in elementary schools often use smartphones to enjoy fun, such as playing games and forgetting their learning obligations (Primasari & Hidayat, 2022). The observed realities indicated a need to create a Google Forms-based educational evaluation instrument at SDN 1 Ngawen, which could subsequently help teachers enhance Grade IV students’ science learning outcomes in the style (force) material.

METHODS

The research adopted a Research and Development (R&D) approach, which aims to produce a specific product and evaluate its effectiveness (Martin, 2016). To achieve the results of a particular product, research is used to analyze the needs and test the effectiveness of the product so that it can work in the broader community (Rustandi, 2021). This research procedure uses a 4D development model, which includes Defining, Designing, Developing, and Disseminating (Thiagarajan et al., 1974). The procedure of this research presented in Figure 1.

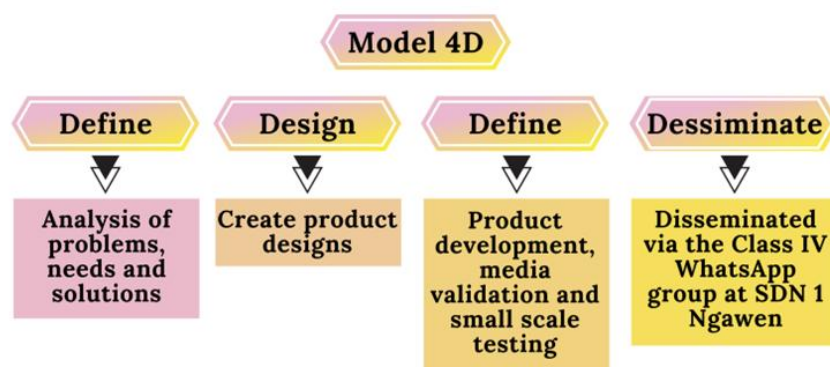


Figure 1.
4D Development Models

The first stage is to analyze the needs. The stage in this step is to review information related to the problem found through interviews with teachers. The problem arises that there needs to be more innovation from the evaluation instrument, even though the science subject of style material requires a valid and reliable evaluation instrument to evaluate the topic. Because the topic has low learning outcomes, innovative evaluation instruments are needed to assess learning in a fun and engaging way to obtain accurate results. The next step is to review the references and analyze the related solutions to the identified problems.

The solution to this problem is to create an evaluation instrument based on Google Forms. This stage contains the creation of a design that begins with product development steps from scratch, the selection of software to be used, the collection of materials to adjust learning outcomes, indicators to be achieved, and the cognitive realm to create a grid of questions and prepare an application that will be used to create questions, namely Google Form.

The next step is to develop. Development begins with creating a grid of Instruments according to the topic. The evaluation instrument grid is presented in Table 1.

Table 1.
Grid

Achievements Learning	Indicators	Indicators Question	Shape Question
Conclude the experiment's results that force can change the motion of an object.	Explain the definition of force, gauge, and unit of force	Mention the meaning of style Force gauge	PG PG PG PG

The making of the grid is followed by making questions. The evaluation instrument that has been designed will be tested for validity by an expert validator. The validator consists of three lecturers and one teacher who is an expert in their field. The three validators thoroughly validated the instrument developed using Google Forms. The validation results are outlined in the validation sheet the researcher has prepared.

The panel of expert validators included content specialists, media experts, and linguists. Findings from these validations informed revisions to the evaluation instrument, producing both qualitative and quantitative evidence. This included qualitative input in the form of comments and recommendations, as well as quantitative scores derived from the instruments administered by each expert.

The technical data analysis, using the Likert Scale, which converts qualitative data into quantitative data by assigning scores, is presented in Table 2.

Table 2.
Scoreboard

Score	Category
5	Highly relevant
4	Relevant
3	Quite Relevant
2	Irrelevant
1	Very irrelevant

Source: Gulo & Harefa (2022)

The method of calculating the average Score of each expert's evaluation aspect is using the formula:

$$P = \frac{F}{n} \times 100\%$$

Information:

P = Final grade

F = Score obtained

n = Highest Score

% = Describe the expression level

The percentage calculation results are qualified according to five criteria and presented in Table 3.

Table 3.
Product Eligibility Category

Achievement Level	Criterion	Information
85%-100%	Excellent	No need to revise
75%-84%	Good	No need to revise
65%-74%	Enough	Revised
55%-64%	Less	Revised
0-54%	Very Less	Revised

Source: Rachmawati & Kurniawati (2020)

Dissemination constitutes the last phase of this research. After expert validity testing confirms the product's feasibility, the product will be shared via the Grade 4 WhatsApp class group at Sekolah Dasar Negeri 1 Ngawen.

RESULTS & DISCUSSION

Results

This research and development was carried out at SDN 1 Ngawen, located at Jl. Raya Blora - Purwodadi, Km. 14, Ngawen RT.03/RW.07, Ngawen, Ngawen District, Blora Prov. Central Java. This research was conducted in November 2023 with the assistance of material experts, linguists, and media experts. The results of the field study were carried out by interviewing directly with the teachers, who said that the curriculum used at Ngawen 01 Elementary School is the independent curriculum and science teaching still uses conventional methods.

Subject analysis and syllabus are used to assist in creating evaluation instruments that match the goals to be achieved. The development of the instrument begins with the creation of a grid based on the style material presented in Table 4 for the grade IV elementary school.

Table 4.
Style Material Grid

Achievements Learning	Indicators	Indicators Question	Realm Cognitive	Shape Question
Conclude the experiment's results that force can change the motion of an object.	Explain the definition of force, gauge, and unit of force	Mention the meaning of style	C1	Multiple Choice (MC)
			C2	MC
			C1	MC
		Force gauge	C2	MC

The second stage is planning. The planning stage begins with designing learning outcomes, indicators, question types, question formats, and the number of questions. They are presented in Tables 5 to 7.

Table 5.
Multiple Choice Question Grid

Achievements Learning	Indicators	Indicators Question	Realm Cognitive	Shape Question	It
Conclude the experiment's results that force can change the motion of an object.	Explain the definition of force, gauge, and unit of force	Mention the meaning of style	C1	MC	1
			C2	MC	2
			C1	MC	3
		Force gauge	C2	MC	4
	Identify the relationship between attraction and drive to style	Determine the form of force used in an event	C2	MC	5

Table 6.
Short Fill Question Grid

Achievements Learning	Indicators	Indicators Question	Realm Cognitive	Shape Question	It
Conclude the experiment's results	Shows the influence	Determining the effect/effect of a force	C3	Short Answer	6

that force can change the motion of an object.	of force on the motion of objects	exerted on an object (stationary objects become moving)		(SA)	
		Determining the effect/effect of a force exerted on an object (moving object to go stationary)	C3	SA	7
			C3	SA	8
		Determining the nature of the style	C1	SA	9
		Determining the force can change the direction of an object	C1	SA	10

Table 7.
Essay Question Grid

Achievements Learning	Indicators	Indicators Question	Realm Cognitive	Shape Question	It
Conclude the experiment's results that force can change the motion of an object.	Shows the influence of force on the motion of objects	Modeling styles that occur in students' lives	C3	Essay (E)	11
		Determine the force used at an event	C3	E	12
		Classifying the force that occurs in an event. (Gravitational Force)	C3	E	13
		Determining the nature of the style	C2	E	14
		Determining the force can change the direction of an object	C2	E	15

The outcomes of the instrument developed for validation are shown in Figures 2–4.

2. Sepeda dapat bergerak karena adanya ... *

☐ gesekan

☐ gravitasi

☐ gaya

☐ pantulan

Figure 2.
Item 1 on the Google Forms Instrument

2. Sepeda dapat bergerak karena adanya ... *

☐ gesekan

☐ gravitasi

☐ gaya

☐ pantulan

Figure 3.
Google Forms - Question 2



Figure 4.
 Item 5 on the Google Forms Instrument

Media expert validation encompasses both the engineering aspects of the device and its visual communication aspects. The results of the qualification evaluation by media members were 88, which were included in the "Very Qualified" category with a qualification percentage of 88%. This is evident in Table 8.

Table 8.
 Media Validation Results by Lecturers

Item	Score	Value Classification
1	4	Relevant
2	4	Relevant
3	4	Relevant
4	4	Relevant
5	4	Relevant
6	4	Relevant
7	4	Relevant
8	4	Relevant
9	4	Relevant
10	5	Highly relevant
11	5	Highly relevant
12	5	Highly relevant
13	5	Highly relevant
14	5	Highly relevant
15	5	Highly relevant
Total Score	T 66	
Percentage	$\frac{66}{75} \times 100\% = 88\%$	Highly relevant

The following evaluation results are from linguists, which include aspects of language suitability for enhanced spelling. They obtained a score of 97 with a feasibility percentage of 97%, as seen in Table 9.

Table 9.
 Results of Language Validation by Lecturers

Item	Score	Value Classification
1	5	Highly relevant
2	5	Highly relevant
3	5	Highly relevant
4	5	Highly relevant

5	5	Highly relevant
6	5	Highly relevant
7	5	Highly relevant
8	5	Highly relevant
9	5	Highly relevant
10	5	Highly relevant
11	4	Relevant
12	4	Relevant
13	5	Highly relevant
14	5	Highly relevant
15	5	Highly relevant
Total Score	t	73
Percentage	$\frac{73}{75} \times 100\% = 97\%$	Highly relevant

The validation of material experts encompasses aspects of material integration, evaluation, and impact on learning strategies. The results of the feasibility evaluation by material experts are 96, which fall within the "Very Feasible" category, with a percentage of 96%, as presented in Table 10.

Table 10.
Results of Material Validation by Elementary School Teachers

Item	Score	Value Classification
1	5	Highly relevant
2	4	Relevant
3	3	Quite Relevant
4	5	Highly relevant
5	5	Highly relevant
6	5	Highly relevant
7	5	Highly relevant
8	5	Highly relevant
9	5	Highly relevant
10	5	Highly relevant
11	5	Highly relevant
12	5	Highly relevant
13	5	Highly relevant
14	5	Highly relevant
15	5	Highly relevant
Total Score	t	72
Percentage	$\frac{72}{75} \times 100\% = 96\%$	Highly relevant

Based on the validity of the content analysis test results from validation by content experts, media experts, and linguists, the values are then averaged to determine the validity of the product. The results of the validity test of the analysis of all aspects are presented in Table 11.

Table 11. Overall Validation Results	
Value	Aspect V
Media expert validators	88
Linguist validators	97
Subject matter expert validators	96
Final value v	93,6
Criterion	Excellent

Discussion

Table 11 shows that, across all aspects, the developed evaluation instrument achieved a very good validity rating, indicating suitability for use. This aligns with Elci et al. (2021) note that, prior to use, instruments should be validated following any expert-recommended revisions to foster student uptake and, in turn, support the achievement of learning objectives. This has implications for achieving learning objectives (UZ et al., 2019). Experts also contribute input and recommendations to improve the evaluation instrument and ensure it is fit for use (Hamzah & Mentari, 2017). Improvement: Following advice from media experts, the evaluation instrument is presented in Figures 5-8. The first suggestion is to add pictures so that students can more easily describe and conceptualize the question than just the question itself.

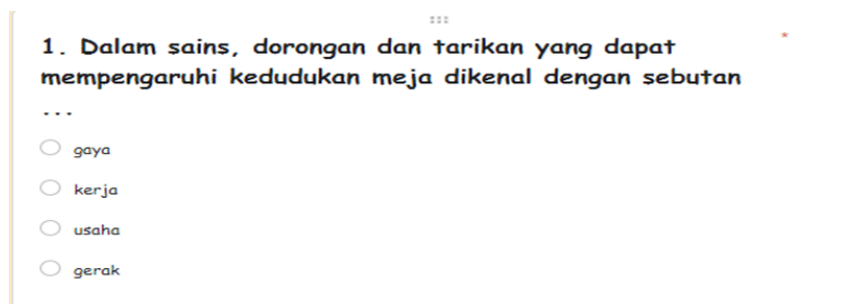


Figure 5.
Questions Before Validation

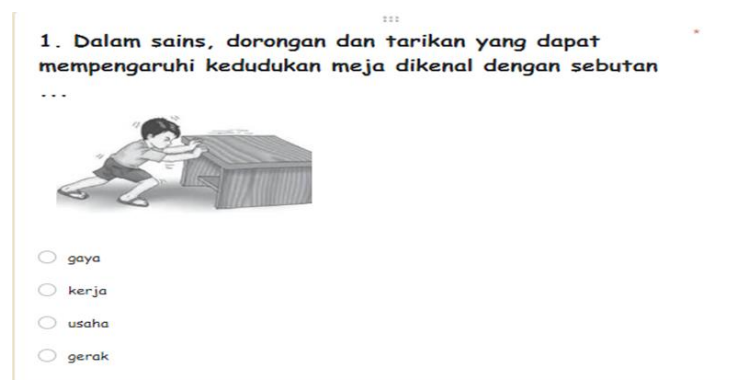


Figure 6.
Questions After Validation

2. Sepeda dapat bergerak karena adanya ... *

☐ gesekan

☐ gravitasi

☐ gaya

☐ pantulan

Figure 7.
Questions Before Validation

2. Sepeda dapat bergerak karena adanya ... *



☐ gesekan

☐ gravitasi

☐ gaya

☐ pantulan

Figure 8.
Questions After Validation

Furthermore, validation from linguists gave suggestions to delete some vocabulary so that ambiguity does not occur. Improvement of the evaluation instrument after receiving advice from linguists is presented in Figures 9 to 10.

11. Berikan 2 contoh gaya dalam IPA yang terdapat di lingkungan di sekitarmu ! *

Long answer text

Figure 9.
Questions Before Validations

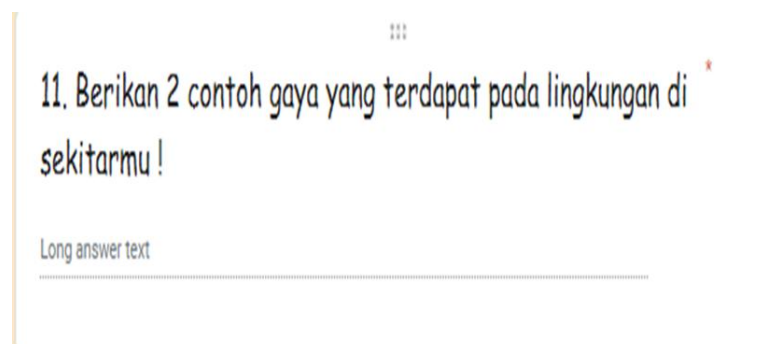
A screenshot of a Google Form question. The question is in Indonesian: "11. Berikan 2 contoh gaya yang terdapat pada lingkungan di sekitarmu!". Above the question, there are three small vertical bars. Below the question, there is a label "Long answer text" and a horizontal line for the answer.

Figure 10.
Questions After Validation

The evaluation instrument was deemed very good and relevant, making it feasible to use. The researcher disseminated the evaluation instrument through the WhatsApp group for class IV at Ngawen 1 Elementary School, accessible at the following website: <https://bit.ly/478oyMJ>. This is expected to improve student's learning outcomes in the fourth-grade style material of Ngawen 1 Elementary School because technology, namely a Google Form-based evaluation instrument, simplifies teaching and learning for both teachers and students, from accessing information to presenting material.

CONCLUSION

The development of a Google Form-based evaluation instrument yielded content validity, media validity, and language validity values of 0.96, 0.88, and 0.97, respectively. The final validity value of the Google Form-based evaluation instrument was 0.936, with excellent and relevant criteria. The development of Google Form-based evaluation instruments is expected to provide motivation and enthusiasm when learning so that students will be more enthusiastic in doing learning evaluations.

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