Research Article

Development of monopoly learning media based on joyful learning model on natural sciences and social material

Hafida Rahma [a,1,*] **, Sri Sami Asih** [a,2]

[a] Department of Elementary School Teacher Education, Faculty of Education and Psychology, Universitas Negeri Semarang, Jl. Raya Beringin No.15, Wonosari, Semarang, Central Java 50244, Indonesia
[1] hafidarahma50@gmail.com*; [2] srisamiasih@mail.unnes.ac.id
 * Corresponding author

Abstract: The background of this research is the low learning outcomes of students in the content of science lessons on force material and its influence on everyday life. In addition, the use of learning media by teachers is still very limited and there is no development of learning models carried out. This researche aimed to develop motivation and learning outcomes of students grade IV. The type of research used in this study is research and development or Research and Development (R&D) which uses a research model design from Borg and Gall. This research resulted in four things, including: 1) Development of worksheet learning media in science learning force material; 2) The feasibility of media products that are considered very valid by experts with a final validation average of 91%; 3) Student responses to worksheet joyful learning media are very valid with a percentage of scores of 93.5%, 4) t-test results show GIS (2-tailed0 0.00 < 0.05 which shows an increase in average results before and after treatment on small-scale tests and large-scale tests, so it can be concluded that worksheet joyful learning media can improve student learning outcomes in the force material of grade IV elementary school students (natural sciences and social).

Keywords: learning media; joyful learning model; natural sciences and social; student worksheet

1. Introduction

Education is a conscious effort to humanize human beings. Therefore, to go towards human maturation there needs to be optimal guidance. There are two interrelated concepts of education, namely learning and instruction. Primary school education is the key to a child's future. Providing the best education for elementary school-age children can support their success in the future. In general, people think that being an educator is a difficult thing to do, especially being an elementary school teacher (Wicaksono, 2020). The development of technology in the industrial revolution 5.0 is the main door to advance education globally (Tafani & Kamaludin, 2023). During the Covid-19 period which began at the end of 2019, it had an impact on all sectors of life, one of which was the education sector. The existence of the Covid-19 pandemic has caused all learning to be carried out remotely or online. Therefore, educators are required to adapt to technological developments in order to create efficient learning activities to achieve learning objectives. However, not all e-learning implementation runs as expected, many teachers and students find several obstacles and problems during learning such as, lack of learning facilities and media, lack of teacher competence in developing online learning methods, and undeveloped learning media (Setyaningsih & Dayu, 2022).

Law No. 14 of 2005 concerning Teachers and Lecturers listed in article 1 paragraph 1 states that teachers are professional educators who have the main task of educating, guiding, teaching, training, assessing, and evaluating students at all levels of formal education. Teachers or educators are also responsible for the learning process and learning activities in an educational institution to achieve predetermined educational goals (Nurhayati et al., 2022). The implementation of learning during the covid-19 period certainly makes students feel bored, causing student learning outcomes to decrease. One

effective solution that can be done to overcome these problems is to use fun learning. Joyful learning is an effective and interactive learning method so that students can concentrate during learning activities (Tafani & Kamaludin, 2023). In addition, joyful learning can be used as a learning model that can be implemented to create comfortable conditions and make students happier during the learning process. This learning model creates a sense of pleasure and comfort during learning activities so that students can enjoy every learning process carried out (Bhakti et al., 2019).

The results of school observations and interviews conducted at the end of September 2023 with grade 4 homeroom teachers at SD Negeri Pongangan, several problems were still found in the main learning activities in the learning outcomes of grade IV students. The learning outcomes of students in science subjects after the implementation of the End of Semester Summative showed an average of 62 and only a few children showed successful learning outcomes. Of the 25 students, only three students who can complete Learning Objectives Attainment Criteria or *Kriteria Ketuntasan Tujuan Pembelajaran* (KKTP), while five people approach KKTP and the rest have not been able to complete KKTP. This means that the percentage of students who can complete KKTP is only 12%. The homeroom teacher also said that the learning model used tends to be monotonous, the students do not understand the material if they only use books.

Innovative learning models such as joyful learning provide opportunities for each student to compile their own knowledge or independently. This joyful learning model prioritizes an active learning system and combines concepts and practices to create meaningful learning for students (Arafat & Pali, 2021). Joyful learning defined as an approach to learning activities that are fun and provide comfort to students during the learning process. This learning model is also defined as the attachment of love and affection between teachers and students and between learners, and in the learning process will make each – Each party tries to give its best to please the other (Anggoro et al., 2017). Any effort made to improve fun learning can help students to improve their memory, reduce stress or pressure during learning, make it easier for students to understand various disciplines can be done with the implementation of joyful learning models.

Based on the principle of the joyful learning model, this learning model is suitable to be applied to the content of science lessons where science material requires an active and fun learning model. Understanding science is an effort made by humans to understand and study the entire universe and its contents through observation, and observation that is right on target that is adjusted to procedures and can be explained by human logic to get a conclusion (Azhar & Rahayu, 2021). Science or science learning plays an important role in shaping and producing students who have the competence to think critically, logically, creatively and innovatively, so that they can compete globally (Irsan, 2021). The implementation of science learning in elementary schools generally has six principles that must be met, namely, motivation, problem background, discovery, learning while doing (experiments), learning while playing, and social attitudes (Latifah et al., 2020). In science learning in elementary schools, in addition to choosing a learning model, an educator is also required to determine the media to be used during the learning activity process.

To facilitate the absorption of the learning material taught, learning media is an intermediary or introduction to messages conveyed by teachers to students. The tool used as an intermediary in delivering information during training activities is learning media. The selection of media for the world of education, especially in elementary school education must be adjusted to the needs of students (Bulkani et al., 2022). Learning media itself is defined as a tool that can be used by students to find information and increase knowledge so that they can understand what is conveyed by the teacher (Antara & Dewantara, 2022). The purpose of using media in teaching and learning activities is "to help students understand the subject matter in learning, besides that it is expected that students will see quality improvements in all areas of the school curriculum" (Azizah et al., 2021). In addition, learning media can also arouse students' enthusiasm in learning

and learning activities (Rahmatika et al., 2021). Non-print media such as learning videos that utilize AR (Augmented Reality) technology (Dinayusadewi & Augustika, 2020), VR-based (Virtual Reality) (Utomo et al., 2021). Learning media that are usually used can be in the form of print media such as teaching materials, Student Books, or student worksheet (Noorhidayati et al., 2021).

Student worksheet is one of the media that can be used by students as instructions in conducting investigations or when solving problems. Through this student worksheet, students are expected to improve their knowledge and critical thinking skills (Wahyuni et al., 2021). The forms of student worksheet can be of various types, some are experiment-based, practice questions, and game-based. Student Worksheet aims to increase student activity in order to improve learning achievement, by helping and facilitating teaching and learning activities and being an effective interaction between students and teachers (Widyaningrum & Prihastari, 2020). Student worksheet not only contains questions for students but also contains a set of learning processes, such as material summaries, material descriptions, work instructions, and practice questions that must be completed by students (Edwar et al., 2021).

Based on the understanding of experts, it can be said that student worksheet contains activities that must be carried out by all students independently or in groups using narration or images that must be filled in by each student (Kholida et al., 2020). Technological advances at this time can be utilized to develop various forms of student worksheet that are implemented with customized learning models (Lo et al., 2021). One form of game-based student worksheet development is to use the Monopoly game system. The purpose of monopoly games is to use rent, exchange, and purchase, so as to improve student learning outcomes as they engage in the game (Nurhayati et al., 2022). Monopoly games are chosen because they are easy to combine with various learning materials and students are easy to play.

This monopoly game can also be applied in the implementation of learning evaluations or exams to increase student enthusiasm and learning outcomes (Surur, 2021). This learning media also implements joyful learning, so that students are more receptive to the knowledge conveyed by the teacher. To realize an active, creative, interactive, effective and fun learning environment, media improvement is targeted at the primary school level. Because basically elementary school-age children are in the stage of enjoying playing, learning to understand and apply the rules and concepts of real life (Rusmiaty et al., 2020).

The development carried out by this research has also been applied to previous studies. Research by Azhar and Rahayu (2021) conclude that the joyful learning model can improve the creativity and learning outcomes of grade IV students. In addition, there is also research that implements joyful learning models using student worksheet (Arianti et al., 2020). Ardiyanti et al (2021) using Likert scale questionnaires for collecting data. Research by Nurhayati et al (2022) about the development of joyful learning models in the implementation of social studies learning in elementary schools. Research by Tafani and Kamaludin (2023) was using PowToon to increase student motivation. Research by Ariawan and Pratiwi (2017) was using treasure game strategy. Research by Ashfaq et al (2017) was implementing the joyful learning model in elementary school students to increase learning motivation. Research by Donasari et al (2023) was using the Likert scale questionnaire method on 20 students showed positive student responses to the joyful learning model. Last, research by Syawaluddin et al (2020) about the development of snakes and ladders game-based media to improve learning outcomes.

Based on the above problems, researchers want to know the feasibility of joyful learning-based student worksheet Media. Researchers chose worksheet Media because student worksheet which is generally used by teachers is only limited to sheets of paper, so that with this development students can more easily understand the material and enjoy learning more because it is equipped with pictures on the selected material, namely Force

in everyday life. The research aimed to develop worksheet using technology and improve the content on worksheet. Through student worksheet which uses this monopoly game, students are invited to be actively involved in learning activities. This is in accordance with the principle of monopoly games as a learning medium can increase students' interest in learning. Through this research, the researcher hope that it can help teacher to improve their skill to develop learning media especially student worksheet.

2. Research Methods

Research design is a tool or procedure used by a researcher to conduct research. In this study, the method used is R&D (Research and Development). According to Borg and Gall (1983) R&D is a method used to produce products, develop products, and test the effectiveness of products made or developed. This research method can be used to develop a product to have high quality so that product efficiency can increase. According to (Sugiyono, 2015) in the theory of Borg and Gall development research there are ten steps that must be carried out, among others, (1) analyzing potential and problems, (2) collecting data, (3) designing products, (4) validating designs, (5) revisions or improvements to designs, (6) early stage trials, (7) improving designs, (8) usage trials, (9) revising products, and (10) mass production. The subjects of this study were grade IV students of SDN Pongangan, Gunungpati District, Semarang City-Central Java. The number of students in one class that is used as a subject is 25 students.

The sampling technique used is purpose sampling where sampling has a specific purpose basis. The research procedure used is to develop student's worksheet media based on the joyful learning model using the monopoly game method, where the development assessment process to become the main series is based on teacher responses which are used as a benchmark for development success. The analysis of product data used consists of two parts, namely teacher needs analysis and student needs analysis. As well as analysis of teacher and student responses to the results of media development. The implementation of teacher and student needs analysis using the Guttman Scale with answer options between Yes and No. For the range of values used are 1 (yes) and 0 (no).

We follow the provisions of Arikunto (2013) as in Formula 1, while Criteria for Teacher and Student Needs Questionnaire are as in Table 1 and Teacher Response Questionnaire Criteria are as in Table 2.

$$P = \frac{\sum x}{\sum xi} \times 100 \qquad\qquad (1)$$

Information:

P = Score percentage
$\sum x$ = number of respondents' answer scores in one item
$\sum xi$ = number of ideal scores in one item

Table 1. Criteria for Teacher and Student Needs Questionnaire

Percentage (%)	Criterion
81% - 100%	Totally agree
61% - 80%	Agree
42% - 60%	Disagree less
21% - 40%	Disagree
0% - 20%	Strongly disagree

Table 2. Teacher Response Questionnaire Criteria

No.	Score Percentage (%)	Criterion	Information
1.	81% - 100%	Excellent	The media is very feasible, it does not need to be revised
2.	61% – 80%	Good	Decent media does not need revision
3.	41% - 60%	Good enough	Less decent media needs revision
4.	21% - 40%	Not good	Media is not worth revising
5.	< 20%	Very unfavorable	The media is very unworthy of revision

For the questionnaire of student responses to media developed using the Guttman scale with 2 answer choices, namely score 1 for affirmative answers and score 0 for disagree answers. We follow the provisions of Arikunto (2013) as in Formula 2, while Criteria for Student Response Questionnaire are as in Table 3.

$$P = \frac{F}{N} \times 100 \tag{2}$$

Information:
P= percent value of interest in learning using media
F= frequency searched percentage
N= Maximum number of scores

Table 3. Student Response Questionnaire Criteria

No.	Score Percentage (%)	Criterion
1.	81% - 100%	Very interesting
2.	61% – 80%	Pull
3.	41% - 60%	Quite interesting
4.	21% - 40%	Less attractive
5.	< 20%	Unattractive

The normality test is used to test the results before treatment (pretest) and after treatment (posttest). This normality test aimed to determine whether the data is normally distributed or not in the pretest and posttest results of students. A normality test is important to find out if the data is normally distributed, then the data can be representative of the population (Priyatno, 2019) as in Table 4. In this study, researchers conducted a normality test using Kolmogrov-Smirnov on SPSS version 23 to determine whether the data was normally distributed or not.

Table 4. Normality Test Test Criteria

Result	Information
If the significance value ≤ 0.05	Ho was rejected
If the significance value > 0.05	Ho accepted

Next on Test Paired Samples T-Test or a paired t-test performed to determine the test of the difference between the average of two paired samples. Paired samples are used in groups of samples that have the same subject but pass two different treatments, such as before and after treatment accordig to Priyatno (2019) as in Table 5 and Table 6. Researchers used SPSS version 23 to perform paired t-tests on parametric normally distributed data.

Table 5. Test Criteria Paired Samples T-Test

Result	Information
If –t counts ≥ -t table or t counts ≤ t table	Ho accepted
If –t counts < -t table or t counts > t table	Ho was rejected

Table 6. Decision Making Based on the Significance *of the Paired Sample T-Test*

Result	Information
If the significance value ≤ 0.05	Ho was rejected
If the significance value > 0.05	Ho accepted

Source: (Priyatno, 2019)

The Wilcoxon test on nonparametric data is used instead of the paired samples t-test if the data is not normally distributed (Table 7). In addition, the Wilcoxon test is used to determine the mean of two paired samples from ordinal or interval data used. Researchers can conduct the Wilcoxon test in this study using SPSS version 23.

Table 7. Decision Making in the Wilcoxon Test

Result	Information
If the significance value < 0.05	Ha accepted
If the significance value > 0.05	Ha rejected

Furthermore, the implementation of gain analysis to test students' pretest postest scores. This study used a normalized gain (N-gain) test. Data (N-gain) was obtained from the results of a comparison between the difference in pretest and posttest scores using the difference in the Ideal Maximum Score (SMI) on the Gaya in Daily Life material after using student worksheet Media based on the Joyful Learning Model. The Formula 3 is for calculating N-gain and Test Average Increase is in Table 8.

$$N - Gain = \frac{posttest\ score - pretest\ score}{maximal\ score - pretest\ score} \qquad (3)$$

Information:
N-gain   = magnitude of gain factor
Score Posttest   = final test score after treatment
Score Posttest   = initial test score before treatment
Max Score   = Maximum value of acquisition

Table 8. Test Average Increase (N-gain)

Interval	Criterion
N-gain ≥ 0.7	Tall
0,3 ≤ N-Cain ≥ 0,7	Keep
N-gain, 0.3	Low

3. Result
3.1 Product Data Analysis
3.1.1. Analysis of Teacher and Student Needs Questionnaire

This subject was aimed about teacher and student necessary of the media that will used in the classroom. To do the analyze, researcher using Gutman scale with option of the answer Yes or No. Table 9 shows the results of the questionnaire of teacher and student needs. The questionnaire produced an average questionnaire of teacher and student needs for the development of joyful learning-based student worksheet media with a percentage of 87.5% and was classified as very agreeable.

Table 9. Results of the Teacher and Student Needs Questionnaire

Teacher/Student	Percentage (%)
Teacher	85%
Student	90%
Average	87.5%

3.1.2. Analysis of Teacher and Student Responses to the Media

Table 10 shows the results of teacher responses to joyful learning-based learning media that adapt monopoly games. From the results of the table, teachers responded to the treatment of joyful learning-based student worksheet learning media by 100% and was classified as very feasible criteria without the need for improvement or revision. Table 11 shows the results of student responses to worksheet learning media based on joyful learning models. These results were obtained through small-scale trials and large-scale trials, followed by calculations to find the average of the results of the questionnaire. So that the average results in the results of the previous small-scale trial were 92% and after being given a questionnaire the students' response in large-scale trials increased to 95%, then from the results of the two questionnaire responses obtained an average of 93.5% which was classified as a very interesting criterion. Based on student responses, it can also be concluded that joyful learning model-based learning media can increase student interest in learning and understanding material about forces in everyday life.

Table 10. Results of the Teacher Response Questionnaire

Subject	Percentage (%)
Teacher	100%
Average	100%

Table 11. Results of Student Response Questionnaire to Media

Results of small-scale trials	Results of large-scale trials	War – War
92%	95%	93.5

3.2 Initial Data Analysis

3.2.1 Normality Test

Table 12 shows the results of the normality test on a limited scale trial activity. Based on the output table in the Shapiro – Wilk sig column. For pre-treatment values of $0.739 > 0.05$ and post-treatment values of $0.918 > 0.05$. This means that the values of both are greater than 0.05 which can be concluded that the two values are normally distributed, so that they can meet the requirements of the paired sample t-test. Because the results of the normality test show normally distributed data, the t-test can be performed. The results of the t-test are obtained from the values on the pretest and posttest conducted through SPSS 23.

Table 12. Normality test results on limited-scale trials

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Say.	Statistic	df	Say.
Pretest	.164	6	.200[*]	.950	6	.739
posttest	.185	6	.200[*]	.974	6	.918

*. This is a lower bound of the true significance.

a.   Lilliefors Significance Correction

Table 13 shows the results of the normality test on a wide-scale trial. Based on the output table of the Shapiro – Wilk sig column. shows the value before treatment is $0.101 > 0.05$ and in the value after treatment is $0.674 > 0.05$. Because both values are greater than 0.05, it can be concluded that the value data is normally distributed, so the requirements

for conducting a paired sample t-test are met. The results of the t-test can be carried out if the results of the normality test show normally distributed data. T-test results can be obtained through data processing using the SPSS 23 application.

Table 13. Normality Test Results on Wide-Scale Trials

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Say.	Statistic	df	Say.
Pretest	.194	19	.059	.917	19	.101
posttest	.125	19	.200*	.965	19	.674

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

3.2.2 Uji T-Test

Table 14 shows the results of the t-test on a limited-scale trial showing the sig value. (2-tailed) 0.000 < 0.005, so Ho was rejected and Ha was accepted. Therefore, it can be concluded that there is a difference in the average results before treatment and results after treatment, which means that there is an influence of the use of worksheet Media on the Gaya material to improve learning outcomes in grade IV elementary school students.

Table 14. T-Test Results on Limited Scale Trials

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	pretest - posttest	-18.333	4.082	1.667	-22.618	-14.049	-11.000	5	.000

Table 15 shows the results of the t-test in a wide-scale trial showing the sig value. (2-tailed) 0.000 < 0.005, so Ho was rejected and Ha was accepted. Thus, it can be concluded that there is a difference in the average results before treatment and results after treatment, which means that there is an influence of the use of worksheet Media on Force material to improve learning outcomes in grade IV elementary school students. Based on the table above, the results after treatment are higher than the results before treatment. The results after treatment showed an increase in scores in students after using worksheet joyful learning media. So, it can be concluded that student worksheet joyful learning media can improve student learning outcomes on Force material.

Table 15. T-Test Results on a Wide Scale

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	pretest - posttest	-23.421	11.187	2.566	-28.813	-18.029	-9.126	18	.000

3.2.3 Uji N-Gain

The average improvement test was performed to determine the difference between the results before treatment and after treatment. To calculate the average increase in the results of values before and after treatment using the N-gain analysis technique. N-gain

is the normalization of gain obtained through a comparison of the difference in scores before and after treatment using SMI and before treatment. Gain is an average increase in student learning outcomes on the material Force and Its Influence in Life using joyful learning-based student worksheet learning media (Table 16).

Table 16. N-gain Test Results on Limited Scale Trials (Descriptive Statistics)

	N	Minimum	Maximum	Mean	Std. Deviation
ngain_score	6	.40	.75	.5509	.11834
ngain_percent	6	40.00	75.00	55.0926	11.83433
Valid N (listwise)	6				

Based on the calculation results in the average increase test (N-gain) in a limited scale trial, it was found that the data experienced an average increase of 0.55 which was included in the moderate criteria (see Table 17).

Table 17. N-gain Test Results on Wide-Scale Trials (Descriptive Statistics)

	N	Minimum	Maximum	Mean	Std. Deviation
ngain_score	19	.33	1.00	.5892	.22824
ngain_percent	19	33.33	100.00	58.9181	22.82389
Valid N (listwise)	19				

Based on the results of calculating the average increase test (N-gain) in wide-scale trials, it can be seen that it has increased by 0.58 which is classified as a medium criterion.

3.3 Development Product

The design design for the development of joyful learning-based student worksheet media is based on the results of questionnaires on the needs of students and teachers and is developed in accordance with the learning objectives listed in the independent curriculum and adapted to students. The steps for making joyful learning-based student worksheet media are divided into several stages, namely, 1) Determining the theme in student worksheet, 2) Determining learning outcomes and learning objectives to be achieved by grade IV students, 3) Compiling the student worksheet concept, 5) Making student worksheet designs by adapting from monopoly games, 6) Combining selected materials with student worksheet designs, 7) Arranging monopoly board components according to the original game. Student worksheet media design is made using the website https://www.canva.com . Starting from scratch devised a design for the Monopoly game template, a question card whose colors and themes are adapted to elementary school students. The addition of images of the figure who invented the force and examples of the use of force in everyday life which is used as a background in the monopli. This monopoly is printed, using two sheets of A3 paper pasted on a wooden board equipped with cards, toy money, cones, and dice so that students can play together. For the results of this worksheet media product, it can be seen in the Figure 1 (learning media display) dan Figure 2 (component of media).

Before researcher doing the research, they have been analyze feasibility about the development media and also the material that contain on the learning media. Based on calculations using the validity formula, a percentage value of 90% was obtained (Table 18). According to the criteria table, the learning media is classified as adequate (value range 81% - 90%). The product is suitable for use without any revisions. The material classified with percentage value 92% on the highly valid in the range 90% - 100%.
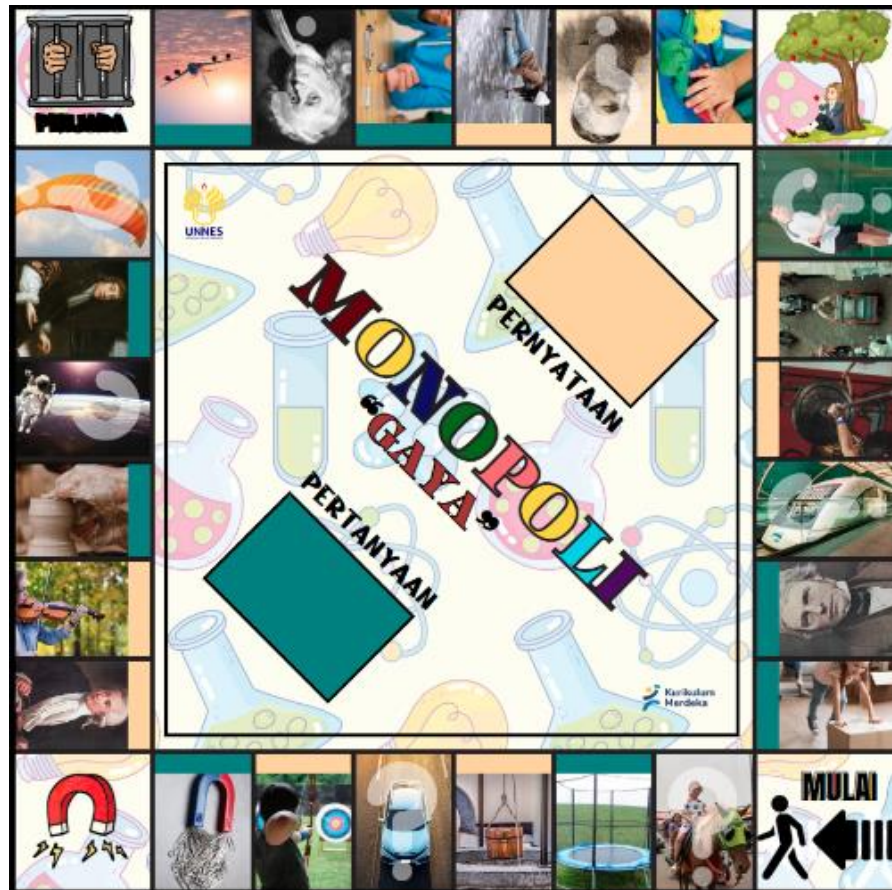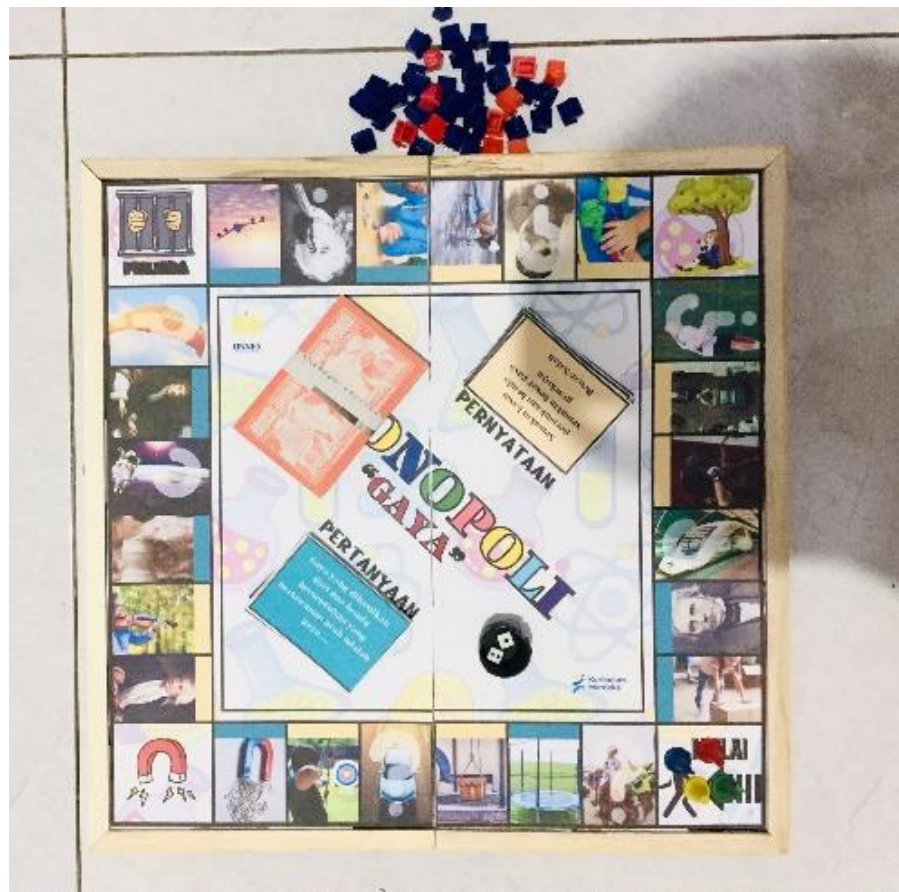
Figure 1. Learning Media Display

Figure 2. Component of Media

Table 18. Media And Material Feasibility Test Results

Validator	Score Percentage	Criteria
Media	90%	Valid
Material	92%	Highly Valid
Average	91%	Highly Valid

4. Discussion

By concentrating on the possibilities and obstacles faced in learning in grade IV SDN Pongangan Semarang City. Through interviews and observations conducted to collect data, it was found that students were less interested in learning a material because the delivery of material was considered uninteresting and tended to be bored. The media used by teachers during science learning activities is less diverse so that it is less effective in helping students understand the material presented. The result of research by Bhakti et al (2019) concluded that joyful learning can help student to learning easily. That is similar with the result of researh by Ardiyanti et al (2021) about how to implementing joyful learning model to improve higher-order thinking skill and learning outcomes from the students. The research about monopoly learning media that can help teacher to improve learning motivation and outcomes learning of student also can find on research by Putra and Nisa (2021). Through their research they proving that monopoly learning media one of development that can improve joyful learning model.

The research that writer do aims to proving theory that appear before. The researcher hope that their research can help each other especially primary teacher or new teacher that will teach on primary school. Not only that, but also can help students that does not have any motivation to learn the lesson in the school. Based on the result of research that have been carried out previously, it concluded that monopoly belong to joyful learning media that can improve students learning outcome. It can also help teacher to share material of the lesson. Joyful learning model is a learning model that can help students to learning with joy and fun, enjoying study, knowing easily whats the material of the lesson and improving learning outcome (Bukit et al., 2023).

The data collection process in the development of joyful learning student worksheet Media was obtained through observation, interviews, and filling out questionnaires for teacher and student needs qualitatively. The feasibility data of joyful learning student worksheet Media on the natural science and social content of force material was obtained through validation questionnaires by material experts and media experts who were analyzed qualitatively. Data on student responses to students worksheet media on the content of natural science and social force material were obtained through questionnaires qualitatively. Data on improving student learning outcomes on the use of students worksheet joyful learning media on force material were obtained through evaluation before media use and after media use which was analyzed quantitatively with normality tests, t-tests, and n-gain tests using the SPSS 23 application.

Based on the aims of the research to collecting the data, the researcher have been doing with two steps small scale trial activity with sixth objects and large scale trial activity with 19 objects. In this small-scale trial activity, the subjects of the study were grade IV students of SDN Pongangan Semarang totaling 6 children. This small-scale trial begins with pretest question work activities first, then continued by conducting trials on student worksheet learning media that have been developed in science learning activities, then continued with providing student response questionnaires to learning activities that have been carried out and closed with learning evaluation activities. Learning using joyful learning media uses an approach scientific. Learning activities begin with showing learning videos first, then continued with the presentation of material by the teacher to students, then students are given student worksheet which is packaged in the form of a monopoly game with a alternating system. To finish the steps, students should mark the question on posttest worksheet. Based on the activity researcher analyzed shows that sixth student was reach KKTP, the result of the analyzed can see on the table N-Gain the data

experienced an average increase of 0.55 which was included in the moderate criteria (Ekantini & Wilujeng, 2018).

In this large-scale trial, the subjects of the study were grade IV students of SDN Pongangan Semarang City, totaling 19 children. In this large scale the students also can improve their learning outcomes after using Monopoly Learning Media. The results of student responses to joyful learning media on force material in the content of this science lesson can be seen from the results of student response questionnaires. The results of the responses from these students were obtained in the results of small-scale trials and large-scale trials, then analyzed using mathematical calculations that were sought on average from the results of the questionnaire. In limited trials, student responses in questionnaires showed an average of 92%, after distributing questionnaires, student responses in large-scale trials increased to 95%, so in the final results the average of student response was 93.5% which was included in the very good category. After doing the research of using student can give effectivenes worksheet on the learning activities on the classroom especially for elementary school students is same way with research by (Edwar et al., 2021). Based on the result of N-Gain test on large-scale trial activity average shows 0.58 which mean belongs to moderate criteria.

5. Conclusion and Implications

This research has developed student worksheet learning media based on joyful learning models on force material in natural science and social content. Based on the results of the analysis of the expert test, it shows that the score of the material expert team is 92% and the media expert team is 90%, which is classified as very valid so that the joyful learning student worksheet is worth using. In addition, from the results of the teacher response questionnaire and student response questionnaire with the final average being at 96% which is classified as very good, this shows that respondents (teachers and students) are very good when carrying out learning activities using mdia student worksheet joyful learning for force material. This joyful learning-based student worksheet media is effectively used to support learning activities in improving learning outcomes through the cognitive realm of science lesson content on Force and Its Influence on Life. These results are obtained through analysis of the pretest and posttest implementation values. In the paired t-test results show sig (2-tailed) $0.000 < 0.05$ and the N-gain test results show a value of 0.58, it can be said that there has been a significant increase and is classified as a medium category.

From the results of research and development of student worksheet media based on this joyful learning model, media development is only limited to one material, namely force material, it is recommended that in the next research can be developed with a wider and unlimited scope of material so that it can provide insight into additional knowledge to improve the learning outcomes of students in science subjects.

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