

DEVELOPMENT OF FADED EXAMPLE WORKSHEET TO ENHANCE THE ABILITY OF MATHEMATICAL PROBLEM SOLVING IN MIDDLE SCHOOL STUDENTS

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ABSTRACT

The importance of mathematics in learning, encourages students to understand the material. There are five supporting abilities that students must have in order to understand mathematics. One of the supporting abilities in understanding mathematics is mathematical problem solving ability. In addition to the ability to understand mathematics, to help students improve their problem solving skills, other things are needed. One of them is the use of student worksheets. However, due to the low mathematical problem-solving ability of students and the unsuitability of worksheets used in learning, innovations are needed in learning. Therefore, the purpose of this study is to improve mathematical problem solving skills by using faded example worksheets based on valid, practical, and effective criteria. This research method is Research and Development with ADDIE model (analysis, design, development, implementation, and evaluation). The results indicate that the developed worksheets are valid with an assessment by material and media experts with validation results of 83.33% and 86.17%; based on the results of teacher and student responses of 75% and 79.51% with practical criteria; and the worksheets developed get a fairly effective assessment through pretest-posttest with N-Gain Score results of 0.59 for 27 students.

Keywords: faded example; mathematical problem solving ability; student worksheet.

ABSTRAK

Pentingnya matematika pada pembelajaran, mendorong siswa harus mampu memahami materi tersebut. Terdapat lima penunjang kemampuan yang harus dimiliki oleh siswa agar dapat memahami matematika. Kemampuan penunjang dalam memahami matematika satu diantaranya adalah kemampuan pemecahan masalah matematis. Selain kemampuan dalam memahami matematika, untuk membantu siswa dalam meningkatkan kemampuan pemecahan masalah, diperlukan hal lain. Satu diantaranya adalah penggunaan lembar kerja siswa. Namun, rendahnya kemampuan pemecahan masalah matematis siswa dan belum sesuainya lembar kerja yang digunakan saat pembelajaran, perlu dilakukan inovasi pada pembelajaran. Oleh karena itu, tujuan dari penelitian ini adalah meningkatkan kemampuan pemecahan masalah matematis dengan menggunakan lembar kerja faded example berdasarkan kriteria valid, praktis, dan efektif. Metode penelitian ini adalah Research and Development dengan model ADDIE (analysis, design, development, implementation, dan evaluation). Hasil yang didapat dari penelitian ini adalah lembar kerja yang dikembangkan valid dengan penilaian oleh ahli materi dan media dengan hasil validasi sebesar 83,33% dan 86,17%; berdasarkan hasil respons guru dan siswa sebesar 75% dan 79,51% dengan kriteria praktis; dan lembar kerja yang dikembangkan mendapatkan penilaian cukup efektif melalui pretest-posttest dengan hasil N-Gain Score sebesar 0,59 terhadap 27 orang siswa.

Kata kunci: faded example; kemampuan pemecahan masalah matematis; lembar kerja siswa.



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Introduction

Mathematics plays an important role in human life by shaping critical, logical, analytical, systematic, and creative thinking patterns. However, many students find math difficult due to difficulties in understanding concepts, counting, and solving problems. Internal factors, such as motivation, as well as external factors such as the lack of parental support, also affect student understanding (Ayu et al., 2021). According to cognitive load theory (Sweller, 1988), these difficulties are caused by high cognitive load that inhibits the processing of new information. Student worksheets designed with clear and gradual instructions can reduce this load.

Based on Vygotsky's Zone of Proximal Development (ZPD) theory, effective learning occurs when students are supported in their zone of proximal development (Suardipa, 2020). In ZPD, the process of scaffolding or gradual assistance, such as guidance in worksheets, helps students solve problems independently after assistance is gradually reduced. Meanwhile, Piaget explained that students' thinking processes involve schema, assimilation, accommodation, and equilibration (Khoiruzzadi & Prasetya, 2021). LKS using the faded example method can support this process by presenting structured examples, allowing students to adjust new information into their schema until they reach a balance, namely the equilibration stage.

The success of learning is influenced by strategies, models, learning media, and students' cognitive abilities. The importance of appropriate learning methods and motivating students, as well as the teacher's role in facilitating active learning (Busthomi, 2018). Learning tools such as worksheets play a crucial role in supporting student understanding. However, the mismatch of worksheet materials with student needs often hinders the learning process (Mawadah, 2021). E-modules supported by live worksheets serve as an alternative teaching material for numerical methods, designed to enhance the effectiveness of online learning (Sudarman, Sudarman & Vahlia, 2022). According to Kurniawan (2015), common deficiencies in worksheets include problems without clear examples, unattractive designs, and incompatibility with the curriculum. Observations at SMPN 22 Serang City revealed that mathematics worksheets were minimal and unappealing, causing students to memorize formulas without understanding the concepts, making it difficult for them to solve new problems. Therefore, it is important to use worksheets that support problem solving by reducing cognitive load (Paas et al., 2010; Renkl et al., 2004).

The faded example method in the worksheet, as explained by Van Merriënboer, helps students learn gradually by reducing the steps of solving problems over time (Salsabila, 2017). This method is also in line with Vygotsky's ZPD theory, as it provides challenges according to students' abilities with gradual assistance. In addition, this method supports the process of assimilation and accommodation in

Piaget's theory, helping students achieve new understanding gradually until equilibration is achieved (2023).

Research shows that the faded example method can improve students' ability to solve mathematical problems (Kusuma & Retnowati, 2021; Pambayun & Retnowati, 2018). With worksheets designed based on this method, students can process new information, develop problem-solving skills, and achieve deep understanding gradually. Therefore, the development of worksheets with the faded example method is needed to improve students' mathematical problem solving skills, especially on the material of flat-sided space building at the junior high school level.

Research Methods

This type of research is development research. Then the research model used is the ADDIE model, which consists of five stages including analysis, design, development, implementation, and finally evaluation (2019). The ADDIE research procedure is presented in Figure 1 below.

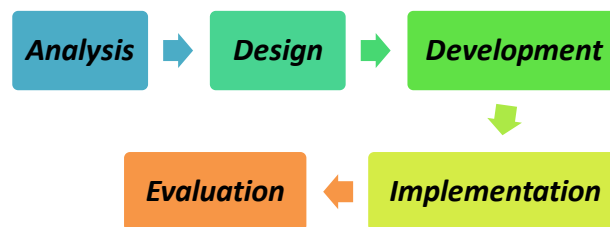


Figure 1. ADDIE Model Procedure

First, the analysis stage. An analysis of the curriculum and needs was conducted. Curriculum analysis aims to ensure the worksheets are based on the basic competencies in the classroom, this process leads to the curriculum used at school. Then, needs analysis aims to identify students' needs and difficulties through interviews with math teachers and students from class IX of SMP Negeri 22 Serang City.

Second, the initial planning stage (design). At this stage, the worksheets are designed based on the results of the analysis. This process includes the formulation of basic competencies and learning objectives, as well as the preparation of materials and activities that are suitable for learning. The ADDIE model is used to develop worksheets with the faded example method, where problems are presented in stages, starting from complete problems until students solve them independently without assistance.

Third, the development stage. The development stage includes making and modifying worksheets to improve mathematical problem solving skills based on the planning stage with the faded example method. The design is consulted with the supervisor, then assessed by material and media experts to test the validity and get comments and suggestions for improvement.

Fourth, the implementation stage. After the worksheet was declared valid, the product was implemented in ninth grade mathematics learning to 27 students. Then, students took a pretest, continued learning with the worksheets that had been developed, and then a posttest. Students also filled out a questionnaire to assess the practicality of the worksheet

The final stage is evaluation. This stage includes data analysis to assess whether the worksheets that have been developed are valid, practical, and effective. The validity is tested by experts, namely material and media experts. Then the practicality of is measured based on teacher and student response questionnaires. And effectiveness is measured from pretest and posttest results based on N-Gain *Score* criteria. If the results show the worksheet is feasible, it can be used, with or without revision.

Data was collected through interviews, questionnaires, and tests. Interviews aimed to collect basic information before the product was developed. Second, a response questionnaire aimed at teachers and students, and finally a pretest-post test to assess students' abilities when solving the mathematical problems presented. Then data analysis was carried out to test the validity, practicality, and effectiveness of the worksheet, namely by testing the validity by experts, then the practicality test aimed at teachers and students, and finally the effectiveness test aimed at students.

The calculation of the validity test score and practicality test uses a Likert scale in the form of a check consisting of scores 1 to 4. The results of the validity test scores obtained were analyzed using the percentage formula adopted from the research of Mawarni and Sinuraya(2022) which is as follows:

$$Percentage = \frac{Score\ obtained}{Maximum\ score} \times 100\%..... (1)$$

The validity test stage or measuring validity is carried out to examine the product developed whether it is valid or not. The criteria for validity of worksheet products are based on Table 1.

Table 1. Criteria for validity

Interval	Validation Criteria
81% - 100%	Very valid
61% - 80%	Valid
41% - 60%	Simply
21% - 40%	Invalid
0% - 20%	Very invalid

Source: (Mawarni & Sinuraya, 2022)

Next is the practicality stage or measuring the level of product practicality. The criteria for the level of practicality of the product is based on Table 2.

Table 2. Practicality criteria

Interval (%)	Criteria	Description
81 - 100	Very good	Very practical
61 - 80	Good	Practical
41 - 60	Simply	Simply
21 - 40	Less	Not practical
0 - 20	Very less	Very impractical

Source: (Indriani, 2020)

Finally, the effectiveness test stage or measuring the effectiveness of the product is intended to determine whether the product is effective or not when used

in learning activities (Tegeh et al., 2019). To find out the pretest-posttest result score, use the following formula:

$$Score = \frac{Score\ obtained}{Maximum\ score} \times 100.....(2)$$

After knowing the score of the results, continued with the N-Gain Score analysis. The following criteria for product effectiveness are based on the N-Gain Score criteria in Table 3.

Table 3. N-Gain score criteria

N-Gain Value	Gain Improvement Criteria
$g > 0,7$	High
$0,3 \leq g \leq 0,7$	Medium
$g < 0,3$	Low

Source: (Sukarelawa et al., 2024)

Results and Discussion

Research Results

This research uses the Research and Development (R&D) model with ADDIE development, including the stages of analysis (analysis), initial planning (design), development (development), implementation (implementation), and evaluation (evaluation). The following is a description of the worksheet development process.

First, the analysis stage. This consists of analyzing the curriculum and student needs. At the curriculum analysis stage, researchers analyzed the curriculum at SMPN 22 Serang City, especially in class IX which uses the Merdeka Curriculum. Learning is guided by this curriculum and combined with indicators of mathematical problem solving ability. The material in the worksheet prepared is flat-sided space, with the learning objective that students can master the concepts of surface area and volume of flat-sided space to solve contextual problems. This analysis becomes the basis for the preparation of the worksheets developed, namely with the faded example method used in learning.

Then the needs analysis stage, information was obtained from interviews with teachers and students in class IX, it was found that students' ability to solve problems was still at a low level. This was due to the ineffective use of worksheets and students' low understanding of the previous material. The worksheets used rarely include examples of clear and contextual problems, and the design is less attractive. Teachers tend to use textbooks that are less effective in improving students' problem-solving skills, while students still face difficulties in the previous material.

The second stage is initial planning (design). Worksheet products are designed in accordance with the learning outcomes and learning objectives of the Merdeka Curriculum, which combines the Problem Based Learning (PBL) model with indicators of mathematical problem solving ability. Worksheets are prepared by utilizing the Canva application, with a design that includes a cover, identity sheet, learning outcomes and objectives, and instructions for use. The worksheet contains material, sample problems, and exercises that students need to complete in groups.

The material preparation process at this stage includes selecting the material compiled is flat-sided space, in accordance with the Merdeka Curriculum and the

PBL model. The source of the material comes from the ninth grade Merdeka Curriculum math book and the 8th grade Erlangga book. Preparation of material, examples, and practice questions using the faded example method and PBL, which is related to real life. Then after completing the material preparation process, proceed with the creation and collection of content. This process includes making covers, illustrations, and material images using the Canva and Geogebra applications.

The last is the instrument preparation stage. At this stage, the instrument preparation process is carried out at the planning stage. The instruments made are material and media expert validation instruments to test the validity of the product, then make teacher and student response instruments used to test the practicality of the product. And finally make a mathematical problem solving ability test instrument, namely a pretest-posttest test instrument used to test the effectiveness of the product.

The third stage is development. The worksheet development process is carried out after planning, by utilizing Canva and Geogebra applications. This developed worksheet serves as an alternative learning reference on flat-sided space building material. The design consists of three parts::

1. The Front includes the cover and the identity sheet. The cover contains the author's name, curriculum, education level, grade, and group identity.
2. The Contents section includes materials, faded examples, group activities, and practice questions related to building spaces.
3. The closing section includes a bibliography and author bios.

Next are the results of validation by material and media experts. The worksheet was validated by two material experts, Mr. I and Mrs. O.

Table 4. Material Expert Validation Results

No.	Aspects assessed	Score obtained	Maximum score	Percentage
1	Contents	64	80	80%
2	Presentation	23	24	95,83%
3	Language	33	40	82,5%
4	Contextual	12	16	75%
Average percentage			83,33%	
Category			Very valid	
Description			Testable with revision	

Based on the assessment results in Table 4, it consists of content, presentation, language, and contextual aspects resulting in an average percentage of 83.33%, which is included in the very valid category. This worksheet was declared worthy of testing with revision.

Based on Table 4, the results of the material expert validation, it is found that the content feasibility aspect of the worksheet needs to be improved. Before the revision, the example problems that were presented were directly difficult. After the revision based on the suggestions, the sample problems were changed in order from easy to difficult. This approach follows Piaget's theory which emphasizes the importance of connecting old and new knowledge, making it easier for students to manage information (Marinda, 2020).

Then based on media experts. The assessment was carried out by Mr AH and Mrs UH. The following are the results of media expert validation in Table 5 below.



Table 5. Media expert validation results

No.	Aspects assessed	Score obtained	Maximum score	Percentage
1	Cover Design	50	56	89,29%
2	Content Design	85	104	81,73%
3	Component Suitability	14	16	87,5%
Average percentage Category Description			86,17%	Very valid Testable with revision

Parts assessed by media experts include cover design, content, and component suitability, with an average result of 86.17%, categorized as very valid. So that the worksheet is worth testing with revisions. Referring to Table 5, the results of media expert validation show that there are aspects that need to be improved on the worksheet, namely content design and component suitability. Before the revision, the distance between paragraphs was too tight and there was no bibliography at the end of the worksheet. After the revision based on the suggestions, the distance between paragraphs was made more relaxed and a bibliography was added. This makes it easier for readers, helps students understand the main idea of each section, and supports credibility by avoiding plagiarism and getting students used to using academic references (Rahman & Jumino, 2019).

After being validated and getting comments and suggestions from the validator, the researcher made improvements according to what was given. Some of the revisions made by researchers are the addition of tiered sample questions, adjusting images according to the material, as well as adding reference sources and improving the distance between lines and paragraphs. The following are the appearance and changes in the product before and after the revision in Table 6 below.

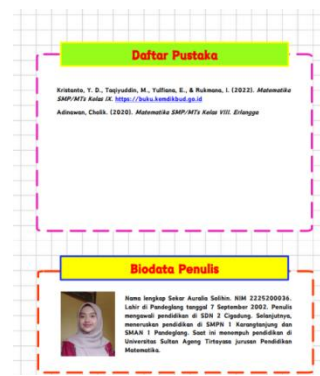
Table 6. Product before and after revision

Before Revision	After Revision
	

1. The example questions presented should be tiered, starting from easy, medium, and difficult.



2. In the problem 2 section of the block material, the picture presented should be more in line with the material, namely the stone is replaced with an object that has a block shape.



3. The source of reference for the material has not been included and paragraph spacing should be added so that it is not mixed between one material and another

Based on the results of the validation of material and media experts in Tables 4 and 5, it states that the faded example worksheet for flat-sided space building is declared to meet the validity requirements of the specified worksheet.

The fourth stage is implementation. Through this stage, the product that has been designed and through the validation process by experts is tested on 27 9th grade students. Data were also collected to test the practicality and effectiveness of the product. The following are the results of the practicality and effectiveness of the product in Table 7, namely the results of teacher responses, Table 8, namely the results of student responses and Table 9, namely the pretest-posttest results.

Table 7. Teacher response results

No.	Aspects assessed	Score obtained	Maximum score	Percentage
1	View	15	20	75%
2	Content Quality	24	32	75%
3	Interest	6	8	75%
Final percentage Category			75%	Praktis

Based on Table 7, teachers' responses to the three aspects assessed, namely appearance, content quality, and interest, each obtained a percentage of 75%. The

average teacher response was 75%, indicating a practical category. The comments and suggestions by teachers are that the pictures, writings and colors used can attract students in studying and working on worksheets shows at Table 8:

Table 8. Student response results

No.	Aspects assessed	Score obtained	Maximum score	Percentage
1	Format	479	540	79,81%
2	Relevance	378	432	78,7%
3	Confident	388	432	81,02%
4	Interest	186	216	77,31%
Final percentage			79,51%	
Category			Practical	

Based on Table 8, the student response questionnaire to the worksheet shows the results: format aspect 79.81%, relevance 78.7%, confidence 81.02%, and interest 77.31%. The final percentage of 79.51% is in the practical category, so the worksheet meets the criteria of practicality and can be used in learning.

Next is Table 9 containing the acquisition of student scores during the pretest and posttest.

Table 9. Pretest-posttest results

Pretest						Trunk	Posttest								
3,21	5	8,57				2									
0,36	2,14	3,93	5,71	7,5	9,29	3									
1,07	2,86					4									
1,79						5	8,93								
						6	2,5	4,29	6,07	7,86	9,64				
						7	1,43	3,21	5	6,79	8,57				
						8	0,36	2,14	3,93	9,29					
						9	8,21								

Based on Table 9 above regarding the pretest and posttest results of 27 students, it can be seen that there are differences between the pretest and posttest results. The following is an analysis of the pretest and posttest results in Table 10..

Table 10. Analysis of pretest-posttest results

	Lowest score	Highest score	Average	Variants	Standard deviation
Pretest	23,21	51,79	33,93	32,64	5,71
Posttest	58,93	98,21	72,82	84,45	9,19

Based on Table 10, the pretest average was 33.93 and the post-test average was 72.82. The data indicates that the average value of the post-test is greater than the pretest. This shows that there is progress in students' skills in solving mathematical problems, although it does not happen to all students.

The next step is to analyze N-Gain which aims to determine the effectiveness after the use of worksheets to improve students' skills in problem solving (2016). The following are the results of the recapitulation of students' N-Gain score in Table 11, namely the results of students' N-Gain Score.

Table 11. Student n-gain score results

Limitations N-Gain Score	Criteria	Number of Students	Average N-Gain Score	Percentage	Criteria
$g < 0,3$	Rendah	1	0,59 (sedang)	59%	Cukup Efektif
$0,3 \leq g \leq 0,7$	Sedang	21			
$g > 0,7$	Tinggi	5			

Based on Table 11, the number of students who experienced an increase in problem solving ability with low criteria was 1 student, medium criteria was 21 students, and high criteria was 5 students. The average N-Gain Score of 0.59 shows a moderate category improvement ((range $0,3 \leq g \leq 0,7$) with a percentage of 59%, which reflects a fairly effective improvement.

Researchers also conducted tests to see significant differences, namely with paired sample t-test related to pretest and post-test results. Before that, a normality test was carried out to ascertain whether the pretest-post test results were normally distributed. The following are the results of the pretest-post test normality test in Table 12.

Table 12. Normality test results

Test	Shapiro-Wilk			
	Statistic	df	Sig	Description
Pretest	0,934	27	0,087	Normal
Posttest	0,946	27	0,167	Normal

According to Table 12, the significance values for the pretest and post-test are 0.087 and 0.167, which are higher than 0.05. This indicates the pretest-post test results in mathematical problem-solving ability are normally distributed.

Next, a paired sample t-test was conducted to determine whether there was a significant increase in the pretest and post-test results after students learned using the faded example worksheet. The test results showed the values $t_{statistic} = 19,50$ and $t_{table} = 1,706$, where $t_{statistic} > t_{table}$. This means that there is a significant improvement in problem solving ability, which indicates that the worksheets developed are effective.

The last stage is the evaluation stage. This stage aims to analyze the product whether there are deficiencies or not. After expert validation and revision according to suggestions, the product is used in learning. The practicality test shows practical results based on teacher and student responses. Then, through evaluation based on pretest-post test tests, it shows that faded example worksheets effectively improve students' mathematical problem solving skills.

After being validated by experts and the product was declared highly valid. This validation process was followed by revisions according to expert suggestions and comments. After revision, the product was applied to learning, followed by practicality testing through teacher and student responses that showed practical results. Assessment of the use of the product was carried out to assess the improvement of students' skills in solving mathematical problems through tests before and after the use of the product. The results showed that the worksheet with the faded example method was effective in improving these skills.

Discussion

The ability to solve problems mathematically is an important aspect of understanding mathematics. The lack of this ability often causes difficulties for students in solving problems, especially if the worksheets only contain problems without clear examples. Therefore, worksheets that support mathematical problem solving are needed.

The Merdeka Curriculum encourages teachers to be creative and utilize technology and learning methods, including worksheets (2024). The faded example-based worksheets developed according to this curriculum, discuss flat-sided space building material, connect the material to everyday life situations, and include sample problems, exercises, and group activities.

Based on the validation of material and media experts, the faded example worksheet is categorized as very valid according to the criteria in Table 4 and Table 5. Material experts assessed the content, presentation, language, and contextual aspects, with revisions to the example questions. Initially, the problems presented were directly difficult, but after the revision, starting from the easy ones. This improvement is based on Piaget's theory, which suggests that starting with easy examples helps students manage information more efficiently (Marinda, 2020)

The results of the media expert validation showed that the student worksheets were categorized as very valid with revisions in the aspects of cover design, content design, and component suitability. Aspects that need to be improved are content design and component suitability, especially regarding the spacing between paragraphs and the inclusion of a bibliography. After revision, the distance between paragraphs was widened to improve readability, and a bibliography was added to support credibility and make it easier for students to access references (Rahman & Jumino, 2019). This worksheet is considered practical based on teacher and student responses, making it effective to use in flat-sided space building material.

Based on the results of teacher responses in Table 7, all three indicators of appearance, content quality, and interest received a 75% rating (agree or good). In accordance with Vygotsky's theory, gradual assistance, such as through structured worksheets, helps students solve problems that are above their ability (Rahmawati & Purwaningrum, 2022). In addition, the attractive appearance of the worksheet, which displays concrete images and stages of material with captions, makes it easier for students to understand flat-sided spaces concretely. In accordance with Multimedia Load Theory (2001), the use of concrete visuals helps students understand concepts and practice problems, so that learning becomes more meaningful.

Based on the questionnaire results in Table 8, the worksheets developed are included in the practical category. The faded example worksheet is proven to help students in learning flat-sided space building and is interesting to use. All four aspects assessed, namely format, relevance, confidence, and interest, received good or practical ratings.

The first aspect, format. Students rated the worksheet format as visually appealing and easy to understand. An organized and attractive format increases motivation and makes it easier for students to organize information, so that information is more easily absorbed. Based on Vygotsky's theory, structured design functions as scaffolding that supports students to learn according to ZPD (Suardipa, 2020). Piaget's theory also supports that a clear design facilitates the process of assimilation and accommodation plays a role in forming students' cognitive schemes, so that they more easily adjust new information (Amir & Risnawati, 2015). The second aspect is relevance. Students gave positive responses to the suitability of the worksheet content, which students considered relevant to the assessment on the response sheet. Images, examples, and contextual problems in the faded example approach help visualize abstract concepts, transfer knowledge gradually, and increase student motivation by connecting concepts to the real world (Nabuasa & Blegur, 2022; Siswanto & Meiliasari, 2024). The third aspect is confidence. Students responded positively to the appropriateness of the worksheet content, which they considered relevant to the assessment on the response sheet. Images, examples, and contextual problems in the faded example approach help visualize abstract concepts, transfer knowledge gradually, and increase student motivation by connecting concepts to the real world (Siswanto & Meiliasari, 2024). The last aspect is attraction. Worksheets with attractive designs and bright colors increase student interest, especially in the last hours of learning. Interesting and contextual visuals make students interested in the material and actively participate in group discussions. According to Heriyati (2017), high interest makes students more focused and contribute to learning. Based on aspects in the response questionnaire. Worksheets have a good format, relevance to real life, able to increase self confidence, and have an attraction to learning have a positive impact on student understanding. Kusuma and Retnowati's (2021) research also shows that faded examples can progressively improve students' problem-solving skills and procedural fluency. Worksheets with the faded example method are considered practical to use in learning, as indicated by the positive responses of teachers and students.

The effectiveness of the faded example worksheet was tested through pretest and post-test on 27 students. The pretest-post test results indicated an increase in problem solving ability, with an average post-test of 72.82 from an average pretest of 33.93. Next, the N-Gain Score test results showed a value of 0.59 which is included in the moderate category, proving an increase in problem solving ability. Then a t-paired test was also conducted which showed a significant difference with the results $t_{statistic} > t_{table}$, this reinforces that the use of faded example worksheets is statistically effective in improving problem solving skills which means there is a significant difference between after and before the use of worksheets. However, the difference in variance between students indicates a difference in ability, influenced by factors such as physical condition or prior knowledge.

PBL-based worksheets and faded examples make it easier for students to understand concepts through real contexts and problems, increasing independence, discussion, collaboration, and confidence. This process emphasizes analysis, logic, and critical evaluation, making students more skilled at solving problems. This approach is supported by Vygotsky's scaffolding theory and Piaget's knowledge integration, which encourages the development of critical thinking and problem-solving skills in the context of surface area and volume of flat-sided spaces. Referring to the previous explanation regarding the development of faded example worksheets, the final result is a worksheet that is valid, practical, and effective as an alternative teaching material in learning activities.

Conclusions and Suggestion

In accordance with the results of research and development of faded example worksheets that have been carried out, it is concluded that the faded example worksheets are in the very valid, practical, and effective categories.

Some suggestions are (1) faded example worksheets can be used as an initial reference for future researchers. (2) The material in the faded example worksheet is limited to flat-sided spaces, so it needs to be developed for other topics or methods according to learning needs. (3) Faded example worksheets can be developed through integration with applications.

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