

Development of animated video based *Doratoon* on the material of fraction in class VII MTs Darul Qur'an Islamic Boarding School

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Abstract

Mathematics is often perceived as a difficult subject by students, especially when dealing with abstract topics such as fractions. One innovative solution to enhance students' understanding and interest in learning is through the use of technology-based instructional media, such as animated videos. This study aims to develop an animated video using the Doratoon platform and to examine its validity, practicality, and effectiveness in teaching fractions to seventh-grade students at Islamic junior high schools (MTs). The study employed a Research and Development (R&D) approach using the ADDIE Model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation. Validity was obtained through expert reviews by two media experts and two subject matter experts who assessed the media in visual designs, content alignment with the curriculum, and clarity of concept presentation. The results showed high validity scores of 88% and 92% from the media experts and 94% and 86% from the subject matter experts. Practicality was measured using questionnaires distributed to both the teachers and students after using the media in class, yielding scores of 87% and 84.37%, respectively categorized as highly practical. Effectiveness was determined by comparing students' learning outcomes before and after using the media through pre-tests and post-tests, analyzed using the paired sample t-test. The results showed a significant increase in the average score from 53.13% to 70.63%, with a mean difference of 17.50 points and a significance value of 0.000 ($p < 0.05$), indicating a positive impact on learning outcomes. In conclusion, the Doratoon-based animated video is proven to be a valid, practical, and effective alternative instructional medium for enhancing mathematics learning, particularly in teaching fractions.

Keywords: *Fracties, Doratoon, Addie Model, Research and Development (R&D), Animated Video.*

Abstrak

Pembelajaran matematika kerap dianggap sulit oleh siswa, khususnya pada materi bilangan pecahan yang bersifat abstrak. Salah satu solusi inovatif untuk meningkatkan pemahaman dan minat belajar siswa adalah melalui media pembelajaran berbasis teknologi, seperti video animasi. Penelitian ini bertujuan untuk mengembangkan media video animasi berbasis Doratoon dan menguji tingkat kevalidan, kepraktisan, serta keefektifannya dalam pembelajaran bilangan pecahan di kelas VII MTs. Penelitian ini menggunakan metode *Research and Development* (R&D) dengan model pengembangan ADDIE yang mencakup tahap Analisis, Desain, Pengembangan, Implementasi, dan Evaluasi. Kevalidan media diperoleh melalui proses validasi oleh dua ahli media dan dua ahli materi yang menilai aspek tampilan, kesesuaian isi dengan kurikulum, serta kualitas penyampaian konsep. Hasil validasi menunjukkan bahwa media dinyatakan sangat valid dengan skor 88% dan 92% dari ahli media, serta 94% dan 86% dari ahli materi. Kepraktisan diukur melalui angket yang diberikan kepada guru dan siswa setelah

penggunaan media dalam pembelajaran, dengan skor kepraktisan masing-masing sebesar 87% (guru) dan 84,37% (siswa), menunjukkan kategori sangat praktis. Efektivitas media diukur melalui tes hasil belajar sebelum dan sesudah penggunaan video (pre-test dan post-test), dengan analisis menggunakan uji Paired Sample t-Test. Hasilnya menunjukkan peningkatan skor rata-rata dari 53,13% menjadi 70,63% dengan selisih 17,50 poin dan signifikansi 0,000 ($p < 0,05$), yang berarti media efektif meningkatkan hasil belajar siswa. Dengan demikian, video animasi berbasis Doratoon terbukti valid, praktis, dan efektif serta dapat dijadikan alternatif media pembelajaran inovatif untuk meningkatkan kualitas pembelajaran matematika, khususnya pada materi bilangan pecahan.

Keywords: Bilangan Pecahan, Doratoon, Model ADDIE, Research and Development (R&D), Video Animasi.

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INTRODUCTION

Education is an attempt to foster and develop innate potential, both physical and spiritual, in accordance with the values that exist in society and culture (Mononimbar et al., 2022). As stated in Law No. 20 of 2003 concerning the objectives of the National Education that to develop the potential of students to become human beings who believe and fear God Almighty, have noble character, healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens. Education symbolizes fundamental aspects in the formation of quality human capital. Raynanda & Kadir (2024) revealed that in line with the evolution of the times, technology has become an element that is inseparable from life, including in the world of education. The use of technology in learning can increase the effectiveness and attractiveness of teaching materials, especially in abstract subjects such as mathematics.

One field of study that has a crucial role in honing logical and systematic thinking skills is mathematics. Suriani et al. (2024) revealed that mathematics is a field of science that has various characteristics such as having an object of abstract study, oriented to an agreement, has a deductive mindset. Consistent in the system, has meaningful symbols and prioritizes the universe of conversation, mathematics is often considered difficult, less attractive, and boring by students. In fact, many students are less interested in learning mathematics. Therefore, it is demanded a more creative effort to foster students' interest and understanding of mathematics learning (Nurlatifah et al., 2023). One part of mathematics that often makes it difficult for students is fraction. Ilahiyah et al., (2019) revealed the term "fraction" derived from the word Latin Fractio, which means

"breaking". Fraction numbers are rational numbers expressed in form, with A as the Peling and B as the denominator, where A and B are integers and $B \neq 0$.

However, many students face obstacles in understanding fractions because of their abstract concept and requires a strong rational understanding. This difficulty can be seen from the results of interviews with Ms. Lutfi Harfiah, S. Kom. At MTs Darul Qur'an Islamic boarding school on February 7, 2025, which shows that from the daily test results, 87.5% of students get grades under KKM (75), while only 12.5% of students reach KKM. This data shows that students' understanding of the material of fractions is still relatively low and requires a more innovative solution. In line with previous research by (Lestari et al., 2024) states that fraction is one material that is difficult to teach students.

Based on pre-research conducted by researchers through interviews and observations at MTs Darul Qur'an islamic boarding school, it is found that teachers still rarely use learning media in the mathematics learning process. Teachers still tend to convey material conventionally without using learning media. This is in line with the opinion (Afri & Sembiring, 2022) one of the triggers for the limited understanding of students is the teaching method implemented by the teacher. Learning media is a facility or facility that is utilized in the educational process to facilitate the delivery of material more effectively and interesting (Zila et al., 2022). This media functions to support students in understanding abstract concepts easily through an attractive and interactive visual appearance. However, currently the teacher still uses a lot of conventional learning media, such as non-dynamic teaching and visual teaching manuscripts, which do not help students visualize the concept of dynamic fraction numbers.

Monotonous and non -interactive learning media make students less enthusiastic in learning, so many feel bored and are less interested in participating in learning (Ghifari et al., 2022). Therefore, a more interactive and interesting optional teaching source is needed to increase student understanding. Although technology facilities in schools are available, such as computers and internet access, their use in learning mathematics is still limited. The teacher has not fully utilized digital media as a more effective teaching aid in increasing students' understanding.

To overcome the problem of the low understanding of students of the material of abstract fractions, learning media are needed that are able to present concepts visually, interactively, and contextually. Some previous studies have tried to answer this challenge through the development of technology -based media. For example (Lestari et al., 2024). Developing media using canva, which although visually attractive, is static and less

interactive. Meanwhile, (Noorlela Marcheta & Hartanto, 2024) developing game educative based unity engine which is very interactive, but requires high technical skills so that it makes it difficult for the application for most teachers.

As an alternative, the Doratoon platform provides dynamic animation features, expressive characters, and contextual narratives that allow the delivery of material more concretely and attractively. Khusna (2023) states that animated videos have an advantage in bridging abstract concepts to make it easier for students to understand. This is in line with the view (Siti Malahayati, 2023) which states that visual -based learning media can help students in understanding complex mathematical material, because it is able to reduce cognitive burden and clarify concept representation (Siregar et al., 2024). However, the use of Dorabo in the development of mathematics learning media, especially in the material of fractions at the junior high school level, has not been used as a focus in previous research. This condition shows the importance of developing learning media that is not only effective and attractive, but also practical and in accordance with the needs of teachers and student characteristics at that level.

This research develops and tests Doratoon-based animated video media which is designed to support mathematics learning more visually, easy to use, and contextual. Unlike Canva which is static or unity that is technically complex, Doratoon combines dynamic visual advantages, ease of operation, and the ability to deliver material through narration that supports understanding of concepts. This media is expected to be a relevant solution in increasing the effectiveness of mathematics learning at the junior high school level (Afri, 2019).

To ensure the quality of the media developed, this research focuses evaluation on three main aspects, namely: Valuation (to assess the feasibility of content and visual appearance), practicality (to determine the ease of use by teachers and students), and effectiveness (to assess the influence of the media on increasing student learning outcomes) (Pageno et al., 2024). Thus, the purpose of this study is to develop learning media in the form of Doratoon-based animated videos and measuring the level of validity, practicality, and effectiveness in learning of fractions in class VII junior high school.

METHODS

The type of research used in this study is research and development (Research and Development or R&D) which aims to produce products in the form of learning media in the form of Doratoon-based animated video. This method is used to create certain

products and assess how well the results of the product are used in the learning process. The development model applied is the ADDIE model, which consists of five main stages, namely analysis, design, development, implementation, and evaluation (Sugiyono, 2019).

Analysis Stage

This stage is carried out by interviews and observations of the teacher and the learning process in the classroom to identify problems, learning needs, learning objectives, as well as the characteristics of students and materials.

Design Stage

At this stage, the researcher compiles the instructional outline of the material (GBIM) and *storyboard* as the basis for making animated video, so that the material is presented in a structured, attractive, and easy to understand material.

Development Stage

At this stage, the learning media was developed using *platform Doratoon*. Furthermore, validation was carried out by two media experts and two material experts to assess the feasibility of content, visual appearance, and integration of concepts. The revision was carried out based on advice from experts.

Implementation Stage

At this stage, the media that have been validated are tested try limited to grade VII students mts to find out the practicality of the media through the questionnaire, and to obtain data *pre-test* and *post-test*.

Evaluation Phase

After the animated video was successfully tested to students, then the calculation of the results of pre-test and post-test evaluations was carried out to assess the effectiveness of the media for student learning outcomes based on pre-test and post-test data. In addition, an analysis of validation and practical data was carried out. Data were analyzed using descriptive statistical techniques for validity and practicality, as well as inferential statistics (normality test and paired sample t-test) for effectiveness.

Data Collection Techniques and Instruments

Data collection techniques used in this study include observation, interviews, questionnaires, learning outcomes tests, and documentation. Observation is carried out directly in class to observe the learning process, teacher and student activities, as well as the condition of the use of media. Interviews are conducted with mathematics teachers to explore information about learning barriers, the methods used, as well as the need for learning media (Raynanda & Kadir, 2024). The questionnaire was used to obtain data on the validity and practicality of the media. In addition, learning outcomes tests are given in

the form of pre-test and post-test to measure the effectiveness of the media developed. Documentation is carried out as a supporter of observation data, such as shooting, class activity records, such as shooting, class activity records, and student work (Damayanti et al., 2024).

The data collection instruments in this study were media expert feasibility questionnaires, material expert feasibility questionnaires, student and teacher response questionnaires and learning outcomes tests to test the effectiveness of the next media (Ponza et al., 2018).

Data analysis technique

The data in this study were analyzed with a qualitative and quantitative approach. Qualitative data obtained from observations, interviews, and documentation are analyzed descriptively through the stages of data reduction, presentation of data, and drawing conclusions to understand the real conditions in the field. Quantitative data analysis is carried out using descriptive and inferential statistical techniques, namely:

Test validity media

The media validity test was conducted to determine the feasibility of media based on the assessment of media experts, material experts. The questionnaire score was analyzed by the formula:

$$Percentage\ Validity(\%) = \frac{skor\ yang\ diobservasi}{skor\ yang\ diharapkan} \times 100\%$$

The results of this calculation will be compared with the predetermined feasibility criteria table. If the percentage of validation is above 81%, the media is considered very valid and feasible to use without significant improvement can be seen in **Table 1** (Nabila et al., 2023)

Table 1. Learning media feasibility test criteria

Validity criteria	Validity level
81.00% - 100.00%	Very valid, can be used without repair or with a slight repair
61.00% - 80%	Quite valid, can be used but need moderate improvement
41.00% - 60.00%	Less valid, need large improvement, it is recommended not to be used
21.00% - 24.00%	Very invalid, not used

Practical testing

The practicality test of learning media developed in this study uses the questionnaire data response teachers and students are then analyzed using scale Likert 1-5.

Table 2. Scale likert

Answer	Score (score)
Very good	5
Good	4
Enough	3
Not enough	2
Very less	1

The score of the product trial assessment from students and educators is sought for the average and then converted into a statement to determine the practicality of the learning media developed (Sari et al., 2024) The conversion can be seen in the following table:

Table 3. Test criteria practical learning media

Practical Criteria	Practical level
81.00% - 100.00%	Very practical
61.00% - 80%	Quite practical
41.00% - 60.00%	Less practical
21.00% - 24.00%	Very impractical

Effectiveness Test

Normality data

Before testing the effectiveness of the media, testing normality in student learning outcomes both before and after the use of animated video. This normality test was carried out using *Kolmogorov-Smirnov* or *Shapiro-Wilk* with SPSS 25.0, based on the criteria:

$P > 0.05 \rightarrow$ normally distributed data

$P \geq 0.05 \rightarrow$ abnormally distributed data

If the data is normally distributed, the effective analysis is carried out by t-test. If it is not normal, then the Wilcoxon Signed Rank Test is used as an alternative.

Test t (paired sample t-test)

The t-test was used to compare learning outcomes before and after using *Doratoon-based* animation videos. Testing criteria:

$P > 0.05 \rightarrow$ there is a significant difference, meaning that the animation video is effective

$P \leq 0.05 \rightarrow$ there is no significant difference, meaning that the animation video is less effective.

RESULT AND DISCUSSION

Analysis Stage

The overall analysis stage is the initial process carried out to identify the object to be developed. Analysis activities include subject or material analysis, learning achievement analysis, learning objectives, and analysis of student characteristics. The implementation of this analysis aims to be the basis of initial considerations before continuing to the next development stage and to determine the direction and scope of the learning media to be made. Output from this stage in the form of draft media needs compiled based on the condition field. Stages analysis activities carried out by researchers can be seen in the following **Table 4**:

Table 4 . Stages of activities analysis animated video

Stages	Activity
Analysis	Needs analysis
	Data retrieval

At this stage, researchers conduct direct interviews with class VII mathematics teachers to explore information about problems in learning, the use of media that have been used, and responses students to fractional material material. In addition, class observations are also carried out to observe the learning process directly and record the characteristics of students. The results of this analysis are the basis in preparing learning media designs that are relevant to the needs of teachers and students, as well as adapted to the learning achievements and the purpose of class VII fraction material.

Table 5 . The results of data collection on the teacher

Problem	Need	Media solutions/design
The teacher still uses conventional media such as blackboards and packages.	Visual and digital learning media	Developing Doratoon -based animated videos to present material visually
Students have difficulty understanding fraction numbers because of abstract and memorization	Media that can visualize the concept of fraction	Compile material in the form of narrative and contextual animated video
There are no supporters of video -based learning in schools	Media that can attract students' attention and can be accessed flexible	Media is made interesting with animation, sound and color, and easy to play in class
Low student completeness level (87.5% has not reached KKM) on fractional material	Media that can improve student learning outcomes	The media are arranged in accordance with learning achievements and equipped with evaluation questions

The **Table 5** is the result of interviews and observations of class VII mathematics teachers. This data is used to design an animated video -based learning media that is right on target, in accordance with the conditions and real needs in the field.

Design Stage

The design is done after the analysis stage. All information on the results of the analysis is used to compile media designs to be developed. At this stage the design of learning media is designed in the form of instructional material outlines (GBIM) and *storyboard*. GBIM includes indicators, learning objectives, subject matter, and the flow of material delivery. Whereas *Storyboard* is used as a reference for making animated video to make it more directed and in accordance with the learning sequence.

Table 6. Stages of design activities

Stages	Activity
Design	Preparation of GBIM based on the results of the analysis
	Doratoon -based animated video animation storyboard preparation

Based on the results of the design phase, the following is displayed an example of the initial display of the animated video media based *Doratoon* that has been designed.



Figure 1. Title display

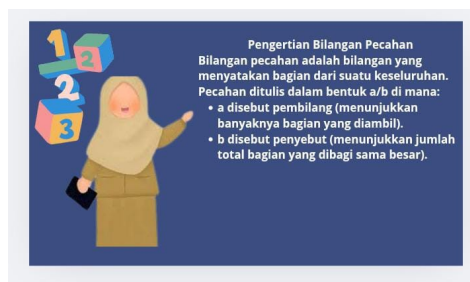


Figure 2. Display material



Figure 3. Display example problem

All of these displays are part of the results of media design at the design stage. After the media is finished designed, then it is then continued at the development stage to be made into a whole product using *platform Dorato*.

Development Stage (Development)

The development stage is the stage where the animated video is realized based on the design that has been arranged previously, namely GBIM and Storyboard. The development process is carried out using the DoratoOn platform, because it has visual animation features and sound narratives that are easy to use and suitable for visual learning mathematics. After the media is completed, a validation process is carried out by two experts, namely: media experts to assess visual appearance, animation quality, sound

clarity, and integration of designsili material to assess the suitability of content with learning indicators, the accuracy of concepts, and the feasibility of mathematical materials. This development process is the basis for producing the final product that will be tested to students.

Table 7. Stages of animated video development activities

Stages	Activity
Development	Making animated videos using the doratoon platform
	Validation of Media Experts and Material Experts
	Media revision based on input from experts

After the media is completed, a validation process is carried out by media experts and experts Material. Validation aims to assess the feasibility of the media from the aspects of appearance, content, and compliance with learning objectives. Here are the results of validation by media experts and material experts:

The results of media validation to media experts and material experts

Before implementing or testing teachers and students, it is necessary to do media validation and material validation to experts to test the feasibility of animated videos. There are several aspects and indicators that are in the media validation sheet and material experts that must be given an assessment by media experts and material experts. For the results of media validation and material expert validation can be seen in **Table 8** based on the criteria for assessing media validation scores and material validation according to Nabila et al., (2023) that the animated video is very feasible to be tested to students.

Table 8. Test of media validity

Aspect	Expert 1	Expert 2	Category
Media validation	88%	92%	Very valid
Material validation	94%	86%	Very valid

(Source of Researcher)

Validation results show that aspects of visual display and interactivity animation is appropriate, and the material presented has met the curriculum standards. Based on the validation results, there were several inputs and suggestions from the experts which were

used as the basis for making product revisions. The expert comments and the form of revisions made can be seen in the following table:

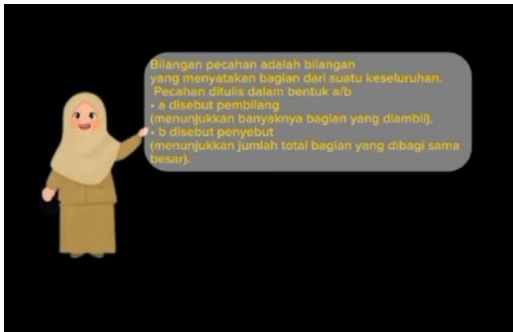
Revisions Based on Media Experts

Table 9. Media expert comments and suggestions

Validator	Comments and suggestions
Dr. Oktarini Khamilah Siregar, SE., M.Sc Lutfi Harfiah S. Kom	Black background is equated with a birutulisan that is too long Opening is added with identity

(Source of Researcher)

Table 10: Media expert revision

Before revision	After the revision
Black background is equated with the blue one and the writing is too long 	The background has been equated and the writing has been fixed 
Black background is equated with the blue one 	Background has been equated 
	

Before revision	After the revision
Opening is added with identity	Opening has been added before the slide knows the fraction
	

(Source of Researcher)

Revision Based on Material Expert

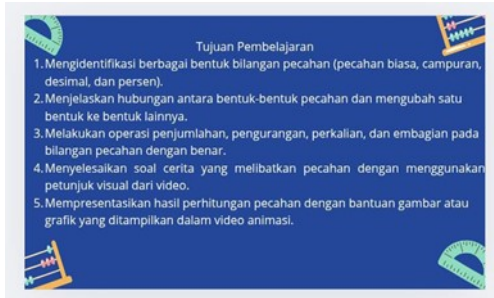
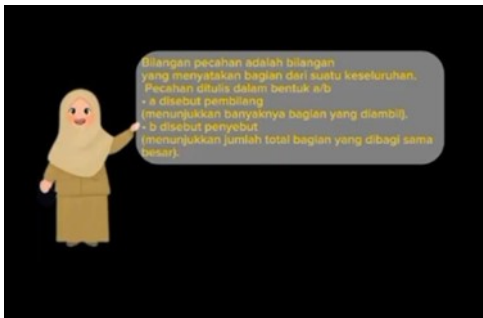
Table 11. Comments and suggestions from material experts

Validator	Comments and suggestions
Dwi Ardy Darmawan, M. Pd	Add the problem at the beginning
Arsyad Halomoan, M. Pd	Add basic competencies and learning objectives.

(Source of Researcher)

Table 12: Revised results of material validation

Before revision	After the revision
There is no problem in the preliminary	Initial problem
	
Add basic competencies	Basic competencies are added after the slide knows the fraction
	

Before revision	After the revision
Add video learning objectives 	Video Learning Objectives After Basic Competency Slide 
Add basic competencies 	Basic competencies are added after the slide knows the fraction 

(Source of Researcher)

Implementation Stage

After the product is developed and revised based on input from media experts and material experts, the media is declared suitable for testing. This implementation stage is carried out to find out how the media is used in the learning process as well as to measure the practicality and effectiveness of the media on student learning outcomes. Implementation was carried out in the form of a limited trial to 16 seventh grade students of MTs Pondok Pesantren Darul Qur'an. Activities at this stage include:

1. Giving *pre-test* to students to determine their initial ability before using the media.
2. Application of *Doratoon-based* animated video media in the math learning process.
3. Giving *post-test* after learning to find out the improvement of learning outcomes.
4. Distribution of practicality questionnaires to students and teachers to find out responses to the media used.

Based on the activities of this stage, we can see the practicality results and effectiveness results below:

Practicality Results of Students and Teachers

Practicality assessment is carried out to determine the extent to which the learning media developed can be used easily, interestingly, and useful for students and teachers in the learning process. The practicality instrument in the form of a 1-5 Likert scale questionnaire was given to 1 mathematics teacher and 16 seventh grade students after the media was used in the learning process. based on the results of the questionnaire recapitulation in **Table 13**:

Table 13. Practicality results of teachers and learners

Aspect	Score (%)	Category
Teacher response	87%	Very practical
Student response	84.37%	Very practical

(Source of Researcher)

Based on **Table 13**, the results of practical analysis show that the learning media based video animation Doratoon getting a practical score of 87% of the teacher and 84.37% of students, which is included in the very practical category. This shows that this media is easy to use in learning, does not require a lot of tables the one, as well as attracting students.

Effective results an media

After all validation is done with decent results, the animated video can be tested to students. Before the animated video is given to students, the activity carried out is pre-test to measure student knowledge of fractional numbers material. After the pre-test activity, the questioning is carried out to deepen student knowledge and display animated video with the help of a projector. After that, it is necessary to deliver the material in the animated video with a duration of about 30 minutes. After the material delivery activities, post-test is carried out as an evaluation of learning. After completing the post-test, the effectiveness test is carried out. The effectiveness test was carried out to find out whether the Doratoon -based animated video media that had been developed was able to improve student learning outcomes. Effectiveness is tested through a comparison of students' pre-test and post-test values before and after using the media. Data analysis was carried out using inferential statistical tests through the help of SPSS software, namely:

Test normality

The normality test can be seen in **Table 14** :

Table 14. Test calculation table normality

Tests of normality						
	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistics	DF	Sig.	Statistics	DF	Sig.
Preetest	,178	16	,189	,924	16	,193
Posttest	,205	16	,072	,930	16	,242

(SPSS Source 25.0)

Because the value of $P > 0.05$, data distributed normal so that the effectiveness test can be done using *paired sample t-test*

Hypothesis test

Hypothesis test can be see in **Table 15**:

Table 15. Table of simple test results t test t

Paired samples test									
		Paired Differences							
		Mean	STD. Deviation	STD. Mean error	95% Confidence Interval of the Difference		t	DF	Sig. (2-tailed)
					Lower	Upper			
Pair 1	Posttest - Preetest	17,50000	7,07107	1,76777	13,73209	21,26791	9,899	15	,000

(Source of Researcher)

Based on **Table 15** the paired sample t-test results show an increase in learning outcomes from 53.13% (pre-test) to 70.63% (post-test) with a difference of 17.50 points. T-count value = 9,899 and $P = 0,000$ ($p < 0.05$) then H_0 is rejected and H_1 is accepted, which means there are significant differences before and after the use of the media. These results prove that Doratoon -based animated videos are effective in increasing students' understanding of fractional material material, in line with previous research which shows that animation -based media can significantly improve student learning outcomes.

Evaluation Phase

The evaluation stage is done by analyzing the animated video on student learning outcomes by calculating the pre-test results with the results of the post-test that has been

obtained during the trials to students and the normality test and the paired sample t-test test on student data to find out the comparison and effectiveness of the pre-test and post-test in the Doratoon-based animation video

Based on the results of this study shows that the developed Doratoon -based animated video media has a level of validity, practicality, and excellent effectiveness. Validation carried out by two media experts and two material experts showed a high score, each ranging from 86% to 94%. This indicates that the media developed has met quality standards in terms of visuals, material content, and integration in delivering concepts. The high validation results are in line with opinions (Septiyani, 2023) which states that audio-visual learning media, especially in the form of animated video, have the ability to increase students' interests and understanding.

This media not only presents information in visual form and interesting sound, but is also able to describe abstract concepts, such as fractions, become more concrete and easy to understand. The use of colors, moving animation, and narration that supports enriching student learning experiences, while reducing cognitive burden when studying new material. In terms of practicality, this media is considered very practical by teachers and students. The teacher feels helped because the media can be used without the need for special technical skills and can be run with simple equipment available in schools such as LCD Projectors. Meanwhile, students feel that this animated video is interesting, easy to understand, and increase their motivation in following mathematics learning. These results reinforce findings (Septiyani, 2023), which states that interactive animation media can increase student enthusiasm and understanding because of its attractive and easily accessible appearance.

The effectiveness of the media has also proven significant. The Paired Sample T-Test test results show that there is an increase in students' average scores from 53.13% in the pre-test to 70.63% in post-test, with a difference of 17.50 points and a significance value of 0,000. This means that the use of Doratoon based animated videos has a real impact on increasing student learning outcomes. These results are consistent with multimedia learning theory by (Septiyani, 2023 which states that the learning process becomes more effective if information is delivered through visual and auditory channels simultaneously, because it maximizes short -term memory work in understanding and storing new information. Furthermore, another advantage of this media is the flexibility of its use. Animated video can be used both in the classroom and outside the classroom for independent learning. This allows students to access the subject matter at any time and

repeat the explanation according to their needs, something that is difficult to do with conventional lecture methods.

Overall, the development of these media has a positive impact not only on students' cognitive achievement, but also on a more enjoyable and meaningful learning experience. This research also makes an important contribution to technology-based learning innovations in the madrasah environment, which may still rarely integrate digital media optimally. This success shows that *platforms* like *Doratoon* have great potential in the development of learning media in the future. The *platform* offers easy access, rich interactive features, and the ability to deliver material in a more lively and contextual way. Therefore, it is important for teachers and educational institutions to start exploring and adopting similar technologies to answer the challenges of 21st-century learning that demand creativity, innovation, and adaptation to the times.

CONCLUSION

Based on the results of the research, it can be concluded that learning media in the form of Doratoon-based animation videos on fractional number material in grade VII MTs has proven to be valid, practical, and effective. Validation from media experts and subject matter experts shows that this media is very suitable for use in learning. In addition, the results of the practicality test showed that teachers and students responded positively to this medium because it was easy to use and interesting. The effectiveness test through the comparison of *pre-test* and *post-test* results showed a significant increase, proving that this media is able to improve student learning outcomes. Therefore, Doratoon-based animation video media can be used as an innovative alternative in supporting more fun and meaningful mathematics learning.

SUGGESTION

Based on the conclusions that have been described earlier, here are some recommendations that can be conveyed by researchers in relation to this study:

1. With this Doratoon-based *animation learning media*, students are able to adapt this animation learning concept into their learning process for other materials.
2. Through the use of this Doratoon-based *animation learning media*, it is hoped that future research can consider the application of different methods.
3. For researchers, in order to deepen their understanding of other software in order to continue to develop a variety of educational vehicles.

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