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Development Of Class X Mathematics Learning Media Powtoon On The Merdeka Curriculum

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Abstract

This research was conducted with the aim of producing innovative powtoon-based learning media to help implement the Merdeka Curriculum in Mathematics Lessons on SPLTV material which has a valid and practical category and has a potential effect, especially on students' mathematical problem solving skills. This research was conducted using the Research and Development (R&D) research procedure using the ADDIE model which has five stages, namely analysis, design, development, implementation, evaluation. The data collection techniques used are questionnaires, test questions and interviews. The research subjects were grade X students at MAN 2 Palembang. The results of this study indicate that the powtoon animation video developed has a valid category with a score of 3.9 from the Media Expert and 4.6 from the Material Expert. Meanwhile, the practicality questionnaire shows a score of 4.2 for the One-to-One trial which contains 3 students with different abilities, then 4.06 for the Small Group test which consists of 3 groups where each group contains 3 members who work together in solving problems, and finally 4.2 for the Field Test which consists of 1 class X.6 which contains 30 students. . While the potential effect on this powtoon animation video can be seen from the learning outcomes of students who show learning outcomes with an average of 81 which states that learning media provides a potential effect on very good learning outcomes. In addition, not only does it provide a potential effect on learning outcomes but new findings that learning animation videos are also able to increase student motivation and interest in exploring SPLTV material.

Keywords : Video, Animation, Powtoon, Learning Outcomes.

Introduction

The world of education has always been inextricably linked to technological advancement, which is progressing at a rapid pace. Through this evolution, students' and instructors' identities can grow with the information they possess (Santika, 2021). However, as educators, we can teach skills that must be acquired in the school setting because the purpose of children attending school is to receive the best education possible.

The advent of the twenty-first century presents a significant challenge to the national education system in terms of training human resources (HR) to compete effectively in the global age. As a result, changes are required in an area of research that serves as a universal science, encouraging the growth of other fields of study (Nurtasari et al, 2023). In an autonomous curriculum, instructors have the ability to interpret the curriculum independently before explaining it to pupils, and the school has the freedom to administer the curriculum based on school conditions (Angelina et al., 2024). If the necessary facilities and infrastructure are there, the learning process will go smoothly. One of the issues that should be addressed and improved.

The learning process has a significant impact on students' knowledge of the subject being studied, as well as the importance of selecting appropriate media in the learning process so that students do

not struggle to grasp the information provided (Jaya et al., 2014). Learning will no longer be boring thanks to interactive and entertaining learning material. Interactive media is a combination of text, images, video, animation, and sound. A teacher must be judicious in using easy-to-understand material, particularly in mathematics learning, so that pupils can grasp it. Especially in the Independent Curriculum, where students must comprehend reasoning while working on mathematics issues relevant to daily life (Sa'diyah et al., 2023).

According to Ayu et al.'s 2023 research, Canva Learning Media Can Increase Learning Motivation in Independent Curriculum Learning. That in order to implement the Independent Curriculum, instructors and students must be ready to adapt to technology advances. When implementing the Independent Curriculum, it is critical to employ select media. In this study, the media that can help with the implementation of the Independent Curriculum include design and animation. The study discovered that educators/ teachers may construct video-based learning media to increase subject matter clarity for students while following the Independent Learning curriculum (Ayu Masfufah et al., 2022).

One of the schools that began implementing the Merdeka Curriculum is Madrasah Aliyah Negeri 2 Palembang. Based on the results of interviews with one of the Mathematics teachers who teaches in Class X Mathematics and who applies the Merdeka Curriculum, it is true that the Merdeka Curriculum is applied to develop students' ability to apply theories and concepts in Mathematics lessons to be implemented in real life. Therefore, in mathematics lessons in the Merdeka Curriculum, there are currently many story problems that hone students' reasoning skills.

The instructor was then interviewed about the problems she encountered while implementing the autonomous curriculum. And there are other hurdles to the adoption of the Independent Curriculum, including the fact that many students continue to struggle with story issues while developing their reasoning abilities. Students' ability to reason and apply the meaning of the story issue to the mathematical notion to be computed remains rather poor. This is evidenced by the results of researchers' observations of students learning the Three Variable Linear Equation System (SPLTV) material, which show that student learning outcomes remain low and that the media used to facilitate student understanding needs to be improved or developed. According to one class of 32 students, only 6 kids are able to work on mathematics problems in the form of narrative problems while implementing the autonomous curriculum and receive scores over 70; the remaining 26 students struggle and receive scores of 70 or lower. The Mathematics instructor submitted the following value data for students' SPLTV scores in one of the X classes:

Table 1. Student score data in one of the X classes at MAN 2 Palembang SPLTV Subject

Name initials	Value	Name initials	Value
AM	85	MFK	70
AAR	68	MRS	60
ANF	60	MRR	68
AAH	60	MRSJ	87
ANNK	65	MSAF	66
AU	60	NKA	78
DA	65	RJH	55
DAPS	75	RDA	82
JRR	82	SA	50
LDL	70	SF	55
MW	65	SKN	60

MHR	68	SRP	68
MNR	50	SAU	68
MFA	60	SVF	60
MZA	55	ZAF	62
MA	68	ZEA	60

Source : Mathematics Teacher MAN 2 Palembang

According to the mathematics lecturer at MAN 2 Palembang, narrative problems demonstrate students' higher-order thinking ability. As a consequence, thinking abilities are an important aspect for students since they may help in brain activity when understanding and retaining lessons. Higher-order thinking skills help students to think carefully and extensively about mathematical problems that they may encounter in everyday life. According to the mathematics instructor at MAN 2 Palembang, there is a need for learning media aid to help students solve narrative issues on SPLTV (System of Linear Equations of Three Variables) material, which usually involves a sort of problem that challenges students' thinking abilities.

Due to these issues, efforts must be made to resolve them. Based on the findings of researchers' talks with instructors at Madrasah Aliyah Negeri 2 Palembang and prior study, it is required to update the media utilized for instruction. Based on the factual data gathered by past study, in the task of implementing the autonomous curriculum, it is essential to utilize media that create moving animations (video animation). There are several software apps that may be integrated into daily life and used as learning materials. However, for this challenge, the author chose to use Powtoon Animation materials. Powtoon is an online tool that lets you easily create cartoon animations and video presentations. Powtoon is an online tool that features handwriting animation, cartoon animation, and provides transition effects to give a lively impression and easy timing. (Puspitarini, 2018)

This Powtoon medium has never been employed in teacher education at MAN 2 Palembang, nor has there been any research into its development. So that it may be used as a reference during the teaching and learning process. Researchers also strive to introduce learning using the powtoon medium. Learning utilizing Powtoon videos may make learning sessions more engaging, preventing students from becoming bored. To assist instructors and students in implementing the Merdeka Curriculum, researchers are interested in producing learning media that incorporates Powtoon media into math classes. Based on the concerns highlighted, the researcher wishes to perform a study named "Development of Class X Mathematics Learning Media at Madrasah Aliyah Negeri 2 Palembang Based on Powtoon on the Independent Curriculum.".

Methods

The research methods should elaborate on the method utilized in addressing the issues including the method of analysis. It should contain enough details allowing the reader to evaluate the appropriateness of methods as well as the reliability and validity of findings.

This form of study is referred to as development research or R&D. In this example, work is being carried out to test Powtoon Animation media for use as one of the mediums that aids in the study of Mathematics SPLTV subject as applied through the Merdeka Curriculum. This study employs a research and development (R&D) approach. According to Dick and Carry (Jayanti, 2017), and adapted using the ADDIE paradigm, which comprises

five stages: analysis, design, development, implementation, and evaluation. The ADDIE model was chosen in research with the goal of developing media capable of producing goods and methods that are systematically tested, assessed, and modified to fulfill the required requirements.

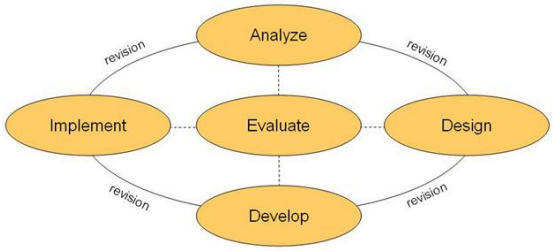


Figure 1. ADDIE's Research Chart

The following are the steps taken in research based on the ADDIE model:

a. Analysis

Analysis is the first step that must be taken by a learning media developer. The steps in this analysis stage are analyzing curriculum and materials, analyzing facilities, and analyzing student needs.

b. Design

In the second stage, the design is carried out based on the information obtained at the analysis stage. The design of Powtoon-based learning videos as media is collecting materials and other supporting materials, preparing the Powtoon-based learning media framework, preparing the assessment instruments, and preparing the assessment instruments.

c. Development

This is the production stage, where everything created during the design stage becomes a reality. The end output is a Powtoon-based learning video organized according to the structure that has been defined. Development is carried out by a group of professionals who are related to the study issue discussed. This development's specialists include media and material experts. With numerous stages to generate media, the specialists include:

a) Provide media suitable for expert evaluation.
b) Media developers deliver questions tailored to media validity criteria.
c) Experts complete a questionnaire and suggest improvements for the developer.

d. Implementation

After the development stage is carried out, the next step is the implementation of Powtoon-based Learning Media tested in real classes. This Powtoon-based Learning Media will be implemented in class X MAN 2 Palembang. The product trial aims to determine the quality of Learning Media from the aspect of practicality. The practicality aspect of Learning Media can be obtained from the responses of students and teachers when using the learning media developed. The following is a summary of the implementation of Powtoon Animation Video Media :

a) One-to-One Trial
b) Small Group Test
c) Field Test

e. Evaluation

This evaluation stage consists of two types of evaluation, namely formative evaluation and summative evaluation. Formative evaluation is carried out at the end of each stage of the ADDIE development model which is analyzed first. While the summative

evaluation will be carried out at the end of the development of learning media after conducting valid tests and practical tests.

This development research collects both qualitative and quantitative data. To add value to cartoon-based learning media, quantitative data was collected from multiple experts, including material and media experts, in the form of questionnaire entries, questionnaires in individual trials, and questionnaires in field trials. Qualitative data is collected through comments and suggestions during validation, individual trials, small group testing, and field experiments.

Results and Discussion

This research was compiled in order to provide one of the media as an alternative that students and teachers can use, which is expected to make it easier to implement the Merdeka Curriculum. This research was conducted at MAN 2 Palembang for class X students. As the research design has been prepared in the previous chapter, the results of research on the development of learning media on the material of the Powtoon-based system of linear equations of three variables (SPLTV) will answer the problem formulation in the form of developing learning media on the material of the Powtoon-based system of linear equations of three variables (SPLTV) which is valid, practical and has a potential effect for use in implementing the Merdeka Curriculum. The research procedure was carried out with the ADDIE development model (Analyse, Design, Development, Implementation, Evaluation). By using this model, the following research results were obtained:

a. Analysis

Analysis is carried out in research in order to find out the needs in compiling media, adjusting to the situation at the research location. Analysis is the initial stage in this research; the points analyzed are as follows by According to the results of the curriculum study completed at MAN 2 Palembang, the Merdeka curriculum is implemented there. The curriculum was only implemented at MAN 2 Palembang in the 2023/2024 school year for class X, while classes XI and XII continue to use the Revised Curriculum 13. The appropriate CP/ATP files utilized at MAN 2 Palembang are as follows:

FASE E ALJABAR
KURIKULUM MERDEKA MATEMATIKA WAJIB
MAN 2 PALEMBANG

Capaian Pembelajaran : Pada akhir fase E, Peserta didik dapat menggunakan sistem persamaan linear tiga variabel, sistem pertidaksamaan linear dua variabel, persamaan dan fungsi kuadrat dan persamaan dan fungsi eksponensial dalam menyelesaikan masalah.

Alur Tujuan Pembelajaran Fase E :

Elemen	Capaian Pembelajaran	Konten	Tujuan Pembelajaran	Alur Tujuan Pembelajaran
Aljabar dan Fungsi (A)	Di akhir fase E, peserta didik dapat menyelesaikan masalah yang berkaitan dengan sistem persamaan linear tiga variabel dan sistem pertidaksamaan linear dua variabel.	Sistem persamaan linear tiga variabel	A.1 Mengidentifikasi dan menyelesaikan masalah yang berkaitan dengan system persamaan linear (SPL) tiga variabel dalam menyelesaikan masalah kontekstual.	Menjelaskan konsep sistem persamaan linear tiga variabel
				Menentukan himpunan penyelesaian dari system persamaan linear tiga variabel
				Menggunakan sistem persamaan linear tiga variabel untuk menyelesaikan masalah
		Sistem pertidaksamaan linear dua variabel	A.2 Mengidnetifikasi dan menyelesaikan masalah kontekstual dengan memodelkan ke dalam sistem pertidaksamaan linear (SPtL) dua variabel.	Menjelaskan konsep system pertidaksamaan linear dua variabel
				Menentukan himpunan penyelesaian dari system persamaan linear dua variabel
				Menggunakan sistem pertidaksamaan linear dua variabel untuk menyelesaikan masalah

Figure 2. CP and ATP of MAN 2 Palembang's

Then, the analysis of facilities at MAN 2 Palembang was carried out to find out whether the school tools supported the use of video-based learning media. Based on the results of the researcher's observations in the classroom at MAN 2 Palembang, Infocus, speakers, screens, and Wi-Fi are adequate. In addition, students are also allowed to bring electronic devices

such as cell phones to help the learning take place.

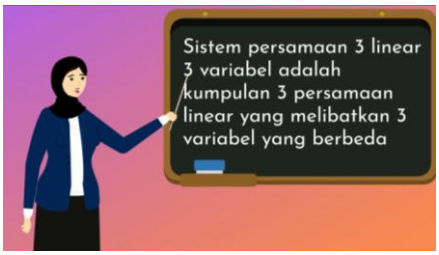
According to the findings of interviews with three students regarding the analysis of student needs in the implementation of learning using the independent curriculum, there is a need for media as a tool for the learning process, and the interviews also revealed that students require a more detailed explanation because they find it difficult if they only rely on books and there is no innovation to carry out the learning process, particularly in Mathematics.

b. Design

At this stage, researchers carried out the media design process with the material of the Three Variable Linear Equation System (SPLTV), which was carried out through several stages. First, researchers collected references to the Three Variable Linear Equation System (SPLTV) material, which was not only fixated on printed books but also used references from several learning websites. Then, researchers also collect various kinds of design references that will be used to create learning videos from internet sources such as YouTube, websites, and social media. In the last stage, researchers designed the media.

In the process of designing the media, researchers used the Powtoon platform to design it, which was then designed in such a way as to produce a good learning video. The following table 2 contains a display of media product designs that have been developed by researchers.

Tabel 1. Powtoon Learning Media Design Results

No.	**Hasil Desain** dan **Keterangan**
1.	 **The Main Cover :** The main cover of the animated video media contains the researcher's bio and the title of the research as an identifier of the video.
2.	 **Opening Material:** Explaining the purpose of making an animation video and explaining the learning outcomes and objectives in the Merdeka curriculum that will be compiled in the learning video.
3.	 **Material 1:** Contains the main material that explains what the Three Variable Linear Equation System (SPLTV) is which provides a definition and understanding of the Three Variable Linear Equation System (SPLTV).
4.	

Material 2:
Contains methods that can solve the problem of solving the Three Variable Linear Equation System (SPLTV).

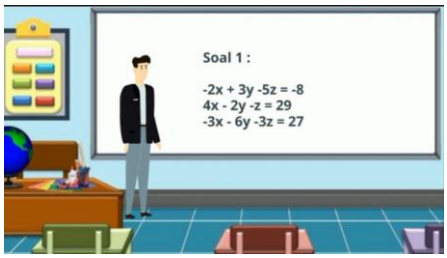
5.

Material 3:
In this material are examples of problems in each method used. In the substitution and mixture methods, examples of problems that are already in the form of equations are used.

6.

Material 4:
In this material is an example of a problem in the elimination method material that uses the form of story problems and problems in everyday life.

7.



Material 5 :
After explaining the solutions in the various methods available, problems are then given as a form of measuring students' abilities.

8.

Closing :
At the end of the video, motivation is given for students to work on problems with enthusiasm.

Source : Design stage analysis results

c. Development

The next stage carried out after the design stage is the development stage. At this stage, the design results that have been designed at the previous stage will be validated by experts to be developed. This is done so that the media that has been designed before can become media that is valid and feasible to implement. The results of the expert's validation are as follows:

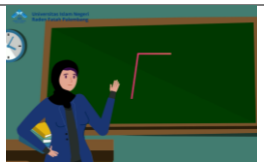
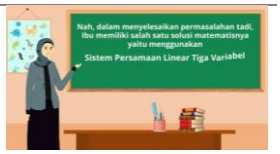
Table 3. Results of Media Expert Validation

No.	Aspect	Validity	Category
1.	Media Usability	4,0	Valid
2.	Clarity of Reading and Audio	3,67	Valid
3.	Quality of Animation Video Design and Illustration	4,0	Valid
	Total	**3,9**	**Valid**

Source : primary data processing results

Then, after showing the learning media that has been designed, the validator provides several assessments based on the questionnaire that has been prepared along with the following improvements:

No	Before Revision	After Revision
1.	 On the cover is the title of the thesis and the identity of UIN Raden Fatah Palembang.	 Designed a simpler cover and only included the Material Title.

2.	 There is no sound in the animation given. Give sound to every mouth movement in the animation.	 Every time the animation gives an explanation, there is voice dubbing.	
3.	 The writing of the equation has a color that does not match the background and is too small, it should be clarified.	 The writing of equations is clarified and a clearer set of explanations is given.	
4.	 Too many designs are only limited to explanation rather than animation, so the application of Merdeka Curriculum in utilizing technology is not yet visible.	 The video has been designed with full animation that describes the material. Not only limited to moving books to video form.  Given the stages in problem solving as applied in the ATP of the Merdeka curriculum that solving SPLTV problems in the Merdeka Curriculum goes through several stages.	
5.	 The colors used on slides 9 and 10 are too flashy and varied. Use 1 clear color only .	 The explanation on the revised slide was removed due to the revision from the material expert to not include material that is not related to the SPLTV explanation.	However, the suggestion regarding the use of colors has been applied in such a way in the latest design so as not to use colors that are too varied, because the design is prepared like a high school / MA child, not a kindergarten / pre-school child.
6.	 The font size of slides 20-21 is clarified. Slide 28-29 enlarged.		The slide was removed because it was not recommended by the Material Expert validator to be included because it was not related to the SPLTV Material.

Based on the results of the validation carried out by the Media Expert, it was found that the total score of the validity level of all scores assessed was 3.9 in the range of $3.4 < \bar{x} \leq 4.2$, based on the results of the interview with Validator, it was found that the media used was valid and feasible to use as a video animation media for learning mathematics SPLTV material with several major revisions according to the suggestions and comments from the validators.

Then, further development was carried out with material expert validators with the following results:

Table 4. Results of Media Expert Validation

No.	Aspect	Validity	Category
1.	Content	5,0	V.Valid
2.	The accuracy of the material	4,6	V.Valid
3.	Evidence of Material	4,3	V.Valid
	Total	**4,6**	**V.Valid**

Source : primary data processing results

Then, after showing the learning media that has been designed, the validator provides several assessments based on the questionnaire that has been prepared along with the following improvements:

No	Before Revision	After Revision
1.	 Explanation of CP/ATP should not be included, because the video is presented for the understanding of students not teachers. It is better to give an introduction to the problem in the video and go straight to the core of the material, not too much introduction about CP/ATP.	 At the beginning of the video, school children's problems are given in SPLTV material so that students are able to use SPLTV in solving everyday problems.
2.	 The questions given are not in the form of general equations, give problems in the form of story problems. This is because the SPLTV material in the Merdeka Curriculum emphasizes problems in the form of projects/implementation in everyday life.	 Two SPLTV problems are presented in the form of stories (problems in everyday life).
3.	 Use numbers that are easier to calculate.	 After discussion, the numbers used are simpler than the previous numbers.

The expert analyzed the content and found that the overall validity level of all tested scores is 4.6, falling within the range of $4.2 < \bar{x} \leq 5$. Interviews with Validator revealed that the animated video material need more development. As a consequence, it is possible to conclude that the information in the media developed is extremely genuine and suitable for use in schools as a video animation medium for learning mathematics SPLTV material, with some slight alterations as a sort of augmentation to improve the film even more. Next, after conducting expert validation, One-to-One trials were also conducted with the following results:

Students who participated in the One-to-One Trial with the initials IT, PE, and A. The three students have different background abilities in mathematics. The ability was measured by the researcher during the three students studied in the tutor and seen from the interactions made by the three students. And the researcher concluded that the three students had different mathematical abilities, namely high, medium, and low. Dengan hasil sebagai berikut :

Table 5. Result Questionnaire *One-to-One Trial*

No	Name	Questionnaire points										Result
		1	2	3	4	5	6	7	8	9	10	
1	A	5	4	3	4	4	5	4	5	4	3	4,1
2	IT	5	5	4	4	4	4	4	4	4	5	4,3
3	PE	5	5	5	4	4	5	3	3	5	5	4,4
Final Score												**4,2**
Category												**V. Valid**

Based on the table of the results of the validity questionnaire for the One-to-One Trial stage of students, it shows that the Powtoon-based animated video media is in the results of 4.2 in the range of $4.2 < \bar{x} \leq 5$ so it can be concluded that the animated

video media is very valid for use at school as media that can be accessed anywhere and anytime. Also supported by the results of the interviews, the students explained that the animated video was quite interesting and different from the usual way of learning. And the video is suitable for learning at home. However, students provide input to be uploaded on YouTube.

d. Implementation

The next stage carried out after the development stage is product implementation, the implementation stage is the stage where a product that has been developed will be operated in actual circumstances or stages that realize the situation in the classroom in the use of animated video media. there are 2 stages at the implementation stage, namely Small Group and Field Test. After conducting a limited test phase on 3 students, the researcher proceeded to the small group trial phase consisting of 9 students of class X.7 who were randomly selected. And the following results of the questionnaire answered by the small group stage students are as follows:

Table 6. Result Questionnaire *Small Group Test*

No	Initial Name	Result
1	ARP	4,2
	AP	4,2
	FK	4,2
2	ARJ	4,2
	KSR	4,2
	MAA	4,2
3	MF	3,8
	NMP	3,8
	SU	3,8
Final Score		**4,06**
Category		**Very Practical**

The students scored 4.06 on the practicality questionnaire for the small group test, falling within the range of $4.2 < x < 5$. These findings imply that the Powtoon animated video format is a useful learning aid. According to the interview results, the animated video medium is very useful in helping students understand learning content, particularly narrative concerns and complex information such as the Three Variable Linear Equation System (SPLTV). Animated videos may present extensive explanations and complex topics in a more digestible and interesting style. This advantage makes films an acceptable alternative for self-learning outside of school, as students may revisit and study the subject at any moment without regard to time or location.

In addition, the interviews showed that the neat and attractive design and visual appearance of the animated videos helped students to focus and understand the material better. With good quality videos, students can be more interested in learning material that is usually considered difficult, such as math.

As for some suggestions on the results, these animated videos should cover more topics from various subjects, not only mathematics, so that the benefits are wider. In addition, it is important to expand the distribution of the videos through social media platforms and learning apps to make them more accessible to many students. The videos should have an attractive and uncluttered design to keep students focused, and the material presented needs to be complete and structured to support comprehension. This media has great potential to be an effective learning tool if uploaded on social media platforms so that it can be accessed by more students. Thus,

the use of animated videos as learning media not only improves students' understanding but also motivates them to learn independently outside of school hours. After the small group test, a field test was conducted on class X.6. Researchers used questionnaires to collect comments in the field trial, just as they did in the previous stage. Researchers also interviewed other students with high, medium, and poor ability to remark on the tested material. The following are the findings of the questionnaire filled out by students based on their assessment when providing an assessment:

Table 5. Result Questionnaire *Field Test*

No	Initial Name	Result
1	AM	4,0
2	AAR	4,1
3	ANF	4,9
4	AAH	4,4
5	ANNK	4,4
6	AU	3,6
7	DA	4,4
8	DAPS	4,5
9	JRR	4,0
10	LDL	4,7
11	MW	4,2
12	MHR	3,6
13	MNR	4,0
14	MFA	3,8
15	MZA	3,8
16	MA	3,8
17	MFK	4,0
18	MRS	4,7
19	MRR	4,2
20	MRSJ	4,1
21	MSAF	4,9
22	NKA	4,2
23	RJH	4,4
24	RDA	4,6
25	SA	4,6
26	SRP	3,9
27	SAU	4,5
28	SVF	3,5
29	ZAF	4,7
30	ZEA	4,0
	Final Score	**4,2**
	Category	**Very Practical**

After assessing the practicality points of the animated video, then we need to measure the potential effect on student learning outcomes. This is measured through the value obtained by students when solving the problems tested in the form of questions at the end of the animated video. The results of the student's final scores are as follows:

Table 6. Recapitulation of Student Learning Outcomes at the Field Test stage

No	**Name**	**Nilai Perpoint**								Result
		Soal 1				**Soal 2**				
		A	**B**	**C**	**D**	**A**	**B**	**C**	**D**	
1	AM	5	10	30	5	5	10	30	5	100
2	AAR	5	10	30	0	5	10	25	5	90
3	ANF	5	0	30	5	5	10	30	5	90
4	AAH	5	10	30	0	5	10	10	0	70
5	ANNK	5	10	0	0	5	10	0	5	35
6	AU	5	10	20	0	5	10	20	0	70
7	DA	5	10	30	0	5	10	20	0	80
8	DAPS	5	10	30	5	5	10	30	5	100
9	JRR	5	10	30	5	5	10	30	5	100
10	LDL	5	0	30	5	0	10	20	0	70
11	MW	5	10	20	0	5	10	20	0	70
12	MHR	5	10	20	0	5	10	30	5	85
13	MNR	5	10	30	0	5	10	30	0	90
14	MFA	5	10	15	0	5	10	20	0	65
15	MZA	5	10	30	0	5	10	30	0	90
16	MA	5	10	15	0	5	10	20	0	65
17	MFK	5	10	30	0	5	10	20	0	70
18	MRS	5	10	20	0	5	10	20	0	70
19	MRR	5	10	15	0	5	10	20	0	65
20	MRSJ	5	10	30	5	5	10	30	5	100

21	MSAF	5	10	30	0	5	10	30	0	90
22	NKA	5	10	30	5	5	10	30	5	100
23	RJH	5	10	30	0	5	10	30	5	90
24	RDA	5	10	20	0	5	10	20	0	70
25	SA	5	10	30	5	5	10	30	0	95
26	SRP	5	10	0	0	5	5	20	0	45
27	SAU	5	10	30	0	5	10	30	0	90
28	SVF	5	10	30	5	5	10	20	0	85
29	ZAF	5	10	30	5	5	10	30	0	95
30	ZEA	5	10	30	0	5	10	30	0	90
Final Score										81
Category										V. Good

Based on these results, it can be seen that there are 20 students who get very good grades, 8 students get good grades, and 2 students get poor grades. Based on these data, an average value of 81 is obtained, which is in the range of 80-100, which states that the results of student learning on learning media are very good. This states that the animated Powtoon video used as a learning medium has a potential effect on very good learning outcomes. In the next stage, interviews were conducted with 3 students who were representatives in providing opinions about the animated Powtoon video on their learning outcomes. The 3 students who were taken were students who got very good grades, namely AM students who got good grades, namely LDL and students who got less good grades, namely SRP. The results of the interview are as follows are According to AM, he was able to do the questions well because he honed his skills by watching the animated video carefully from beginning to end, and then he repeated the parts that he did not understand until he understood how to do it from the initial stage of the work to the conclusion asked. According to him, learning media in the form of animated videos is very helpful in supporting abilities, especially abilities in mathematics lessons that need to be honed many times to be understood.

According to AAH, he was able to do the questions well because he followed the directions given by the video. There were several mistakes made, namely mistakes at the end, so he did not get a perfect score. In terms of how to do it and the stages in solving the problem, the explanation in the video was quite understandable. It is very unfortunate that at the end of the work he was not careful in doing it, even though in the video given there were directions to conclude what was asked in each story question.

According to SRP, he was less able to do the questions because he did not understand the storyline in the question, and he did not try to work with the stages given. He only watched it briefly and immediately worked on the questions without watching until he understood them. At the implementation stage, results have been obtained and will be used to improve the media so that it can support learning of mathematics subjects well.

e. Evaluation

The researcher conducted a final evaluation of the activities carried out in the process of producing animated video products as media by referring to the data obtained in several previous processes. This was done as a form of evaluation to perfect the media produced. In this study, the product developed in the form of animated video media based on powtoon with a focus on the material of the Three Variable Linear Equation System was declared valid by the validator team, practical from the results of

the student response questionnaire, and has a potential effect from the results of written tests by students, so that this media can be used with minor revisions.

Conclusion

Mathematics learning media using animated powtoon videos is stated to meet the validity criteria in this study obtained from the results of the instrument that has been validated by experts at the development stage. Where the validation questionnaire filled out by experts is a tool to collect assessments both quantitatively and qualitatively regarding the validity of the media.

Mathematics learning media using animated powtoon videos is stated to be practical, as can be seen from the results of the questionnaire instrument and the results of interviews given at the one-to-one, small group and field trial stages which state that the media developed is very interesting, the language used is also easy to use and understand, and the learning process is more enjoyable.

Mathematics learning media using animated powtoon videos has a potential effect with a Good category with an average result from the student test of 81.4, meaning that it is in the range of 80-100, stating that the media created has a potential effect on Very Good learning outcomes. And provides new findings that students feel they have a high level of learning motivation by providing animated videos. This is supported because some students said that with the animated video they feel interested in learning and students also feel that they can be reviewed repeatedly. So that students can feel not bored to learn, the online learning platform has allowed students to access learning resources flexibly anywhere and anytime.

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