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DEVELOPMENT OF EDPUZZLE-BASED LEARNING VIDEOS TO IMPROVE NUMERACY LITERACY SKILLS IN CLASS VII OF SMP NEGERI 14 DENPASAR: A FORMATIVE ANALYSIS

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ABSTRACT

Minimum Competency Assessment (MCA) is an assessment that involves students in taking numeracy literacy tests and is determined by the government with the aim of determining the quality of a school. This study aims to determine the development steps and quality of edpuzzle-based learning videos with numeracy literacy coverage at SMP Negeri 14 Denpasar. To achieve the goal, this research is a development research. The development steps are based on the ADDIE method with five stages, namely analyze, design, development, implementation, and evaluation. The data generated is sourced from validators and students using two data collection techniques, namely tests and questionnaires. The validity test got the "very good" category, with details of the material validity value for each media of 0.96, and the media validity for the number media got a value of 0.90 with the "very good" category and for the other three media got a value of 0.91 with the "very good" category. During field trials, there were two types of tests, namely effectiveness tests with a value of 62.92 so as to get the "effective" category, and practicality tests using the distribution of student response questionnaires so that they get a value of 74% which is included in the "practical" category with information that can be used with small revisions. Based on the results obtained, it can be concluded that the edpuzzle-based learning videos produced are valid, effective, and practical.

Keywords: Learning Videos, Minimum Competency Assessment, Edpuzzle

1. Introduction

The evaluation system in Indonesia is regulated in Law Number 20 of 2003 concerning the National Education System Chapter XVI articles 57 to 59 concerning Evaluation (Kemdikbud 2021) stated that National education quality regulations are always taken into consideration for the responsibility of education administrators to related parties. These considerations are carried out by an independent body repeatedly, globally, clearly and structured to take into account the quality of national education standards (Nanda Novita in Rohim, et al in 2021). According to Rohim, et al. in 2021, using National Examination results as a requirement for students to graduate in learning is not appropriate. This can be seen from the results of world calculations regarding education in Indonesia which state that the quality of education in Indonesia is ranked 62nd out of 72 participating countries. This was reported by PISA in 2015 which is a world level assessment program where the academic results of students aged 15 years will be tested. This shows that the quality of education in Indonesia is far behind compared to other countries. Therefore, the Ministry of Education and Culture in 2021 stipulated the Minister of Education and Culture of the Republic of Indonesia Regulation Number 17 concerning National Assessment (Kemdikbud, 2021). Where the national exam which was previously used as a graduation requirement for the final level in an educational unit was replaced by MCA.

Assessment is a measurement tool that functions to obtain clear and factual data regarding students' abilities in understanding certain material. MCA is carried out to obtain data to improve the education system with the hope of being able to improve students' academic results (Rohim, et al, 2021). In Rijoly and Patty's research conducted in 2021, namely Understanding the Implementation of MCA for Teachers in Kec. Salahutu District. Central Maluku states that AKM is implemented at the SD/MI/SDLB level and equivalent, specifically for class 5 with a total of 30 students, SMP/MTs/SMPLB for the

equivalent, specifically for class 8 with a total of 45 students, and for SMA/MA/SMALB and SMK/MAK the equivalent, specifically Class 11 has 45 students. The selection of representatives was chosen randomly by the Ministry of Education and Culture with an additional 5 reserve students for each level. MCA is part of the National Assessment (NA). In contrast to the National Examination which determines graduation and is taken by all final year students, AKM is only taken by some students, but is used to evaluate the quality of learning and is not a determining factor in passing. However, the school is still preparing all students, because the samples will be chosen randomly.

A similar thing happened at SMPN 14 Denpasar, based on the first observations carried out at the school, it was found that educators were aware of the change in the National Examination to MCA and had taken steps to overcome it but it was not optimal, considering that this school had only been established for 2 years. The implementation of the first wave of AKM was carried out by this school in November 2021, but because the school had just been established at that time, and the change in National Examination to AKM seemed sudden, making SMPN 14 Denpasar have grades and criteria that were not satisfactory enough for several aspects, because The preparation and readiness of the school is not yet complete. The results of the AKM assessment carried out by the school in the first wave can be seen from the scores and criteria obtained in the image below.

Table 1 MCA Research School Values

Indicator Number	Indicator Description	Your School Grades	Achievements
A.1	Proportion of students with basic literacy skills	8.89%	Elementary
A.2	Proportion of students with basic numeracy skills	44.44%	Elementary
D.2	Reflection and improvement of learning by teachers	1.83	Passive

From the table above, the columns in red are marked as significant improvements or improvements must be made to change the results to complete. The school had quite a lot to fix at that time. For columns that are yellow, it means that they must be increased again so that the criteria are met or completed. And the color green means the criteria have been met. One indicator that has not been met is D.2 Reflection and learning by teachers, because educators only use repetitive methods to carry out learning and there is no visible reflective process.

Apart from problems regarding MCA, problems were also encountered in the learning media, namely the type and quality of learning videos. Where in this school, during the Covid-19 pandemic, almost all educators used learning video media to support students' learning when undergoing online learning and it was found that the learning videos used by educators had weaknesses, namely: 1) they were not interactive, 2) there was no space. discussion, 3) students' acceptance of learning varies, some cannot just look and listen without being explained. Even though the learning videos look fun and not boring due to the non-monotonous activities, the school also does not turn a blind eye to seeing existing weaknesses.

As a solution to the problem above, researchers provide a solution in the form of a learning video based on edpuzzle by bringing numeracy literacy learning which is included in the AKM trial. If learning videos are developed well, then learning videos have several advantages. Munir in Batubara and Ariani (2016) explains the advantages of using learning videos, namely: 1) can explain situations and processes that exist in the real world, 2) can clarify the meaning of the material, if other components are added such as text, images or videos especially for procedural processes, 3) video viewers can repeat parts they don't understand, 4) more effective and efficient in teaching theory and practice. Supporting the explanation above,

Aqib in Hardianti and Asri (2017) revealed the benefits of learning videos, namely: 1) teaching and learning activities are much clearer and more varied, 2) learning is more active, flexible and efficient because it can be done anywhere and at any time , 3) able to improve the quality of students' learning, 4) create a positive attitude in learning towards theory or practice, 5) increase the role of teachers to be more positive and productive. This is also emphasized in the Development of Learning Videos to Increase Student Learning Motivation Using R&D in 2020, Agustini and Ngarti explained that learning videos are very good to use as learning media, because there are benefits, as follows: 1) time is more efficient, 2) students are much more active, 3) able to explain the material in detail, 4) can be used by every student who has a different learning system, 5) makes it easier for educators not to use conventional learning periodically. Based on the three opinions above, it can be concluded that using learning videos is much more effective and efficient because they can be repeated, and improve the quality of learning outcomes for students who have various learning styles. Students need assistance that provides an audio-visual impression of the available text material. So the integration of learning videos becomes a necessity to solve student problems, especially those related to the intensity of learning repetition. Learning with instructional videos provides fun learning and provides an effective learning atmosphere (Naidoo and Hajaree 2021). Interactive media based on animated videos can also increase student learning motivation (Rachmavita 2020). This is supported by Harahap research in 2022 which concluded that learning assisted by learning videos can improve students' problem solving abilities (Harahap, Ahmad, and Lumbantobing 2022).

Edpuzzle is an application platform that provides various types of videos as media to support learning material. This application has advantages that can improve student learning outcomes, one of which was revealed by Qadriani, et al in 2021, namely that videos in the Edpuzzle application cannot skip the content (skip) of the video, where the video also stops when students switch applications (tab). so that students can focus on the material being played in this edpuzzle application. Apart from that, if this video contains questions from the author, the audience cannot get through it without answering the question first. This of course aims to discipline the audience so that they study the material seriously, not just watch. So many other advantages. The effectiveness of using the edpuzzle application was revealed by Sundi, et al in 2020 in his research which stated that 95% of activities using edpuzzle in increasing learning motivation were considered effective in increasing insight and helping people in online learning during the past Covid-19 pandemic.

The use of edpuzzle-based learning videos is very appropriate for taking numeracy literacy material, because with the help of the edpuzzle application, students do not play around in learning the material. In edpuzzle, of course you have to answer the questions given by the author, otherwise the learning video cannot continue and returns to the previous explanation. Apart from that, solving questions regarding numeracy literacy requires strong concentration. The material used also leads to logic and is always ordered. Ordered in this case means that the longer it goes, the more difficult it will be and of course they are interrelated. Therefore, edpuzzle-based learning videos are very appropriate in supporting numeracy literacy learning.

2. Research Methods

This research is research into the development of the ADDIE model. The ADDIE model is an abbreviation of the five stages, namely analyze, design, development, implementation, and evaluation (Branch 2009). The aim of using this method is as a guide or direction in developing edpuzzle-based learning video products. The development stages in this article are described as follows.

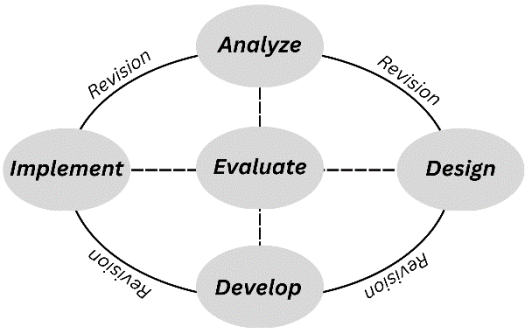

Figure 1 Stages of the ADDIE Method

In this research, we developed an Edpuzzle-based learning video with literacy and numeracy content. The components of literacy and numeracy used in this research are presented in the table below.

Table 2 Components of Numeracy Literacy

Numeracy Literacy Components	Independent Curriculum Mathematics Coverage
Estimating and calculating with whole numbers	Number
Using fractions, decimals. percent, and comparison	Number
Recognize and use patterns and relationships	Algebra
Using spatial reasoning	Geometry
Using measurements	Measurement
Interpret statistical information	Data Analysis and Opportunities

Analysis The results of this product are in the form of learning videos. The product of this research was then evaluated in a formative manner involving media experts, material experts and grade 7 students at SMP Negeri 14 Denpasar. This formative evaluation includes tests such as validity, practicality and effectiveness tests. Data and Opportunities

Validity tests are carried out to determine the accuracy of the learning videos developed as seen from the material and media aspects. This test involves media experts and material experts as validators. The scoring results obtained are processed using an average formula, which is then classified using the following conversion guide.

Table 3 Validity Test Conversion Guidelines

Scoring range	Classification
$X \geq 0{,}80$	Very Valid
$0{,}60 \leq X < 0{,}80$	Valid
$0{,}40 \leq X < 0{,}60$	Fairly Valid
$0{,}20 \leq X < 0{,}40$	Less Valid
$X < 0{,}20$	Very Invalid

The next test carried out was a practicality test. Data for this test is obtained from the response questionnaire scores given to students. Practicality analysis uses the following formula.

$$Vp = \frac{TSEp}{S\ maks} x100\%$$

Information:

Vp = Practicality Validation

TSEp = Total Empirical Practicality Score

S maks = Expected Maximum Score

The results of this calculation are then converted qualitatively using the guidelines presented in the table below.

Table 4 Practicality Test Assessment Weights

Criteria	Code	Category	Description
75,01% - 100%	4	Very Practical	Can be used without revision
50,01% - 75,00%	3	Practical	Can be used with minor revisions
25,01% - 50,00%	2	Less Practical	Recommended for use
00,00% - 25,00%	1	Not Practical	Can not be used

Next, an effectiveness test was carried out by quantitatively analyzing the scores obtained by students after taking the numeracy literacy test. The results of this analysis, in the form of an average numeracy literacy ability score, were converted using the guidelines presented in the table below.

Table 5 Effectiveness Test Conversion Guidelines

No	Range of average scores	Conversion
1.	$75 \leq \bar{X} \leq 100$	Very effective
2.	$58 \leq \bar{X} < 75$	Efective
3.	$42 \leq \bar{X} < 58$	Moderate
4.	$25 \leq \bar{X} < 42$	Less
5.	$16{,}67 \leq \bar{X} \leq 25$	Very Less

3. Results and Discussion

From data analysis, the following results were obtained.

a) Validity Test

Validity testing was carried out with material and media experts. Validity test results from material experts obtained results as in the table below.

Table 6 Material Validity Test Classification Results

No	Material	Average Results	Classification
1.	Number	0,96	Very Good
2.	Algebra	0,96	Very Good
3.	Geometry	0,96	Very Good
4.	Analysis and Opportunities	0,96	Very Good

The results of the validity test from media experts obtained results as in the table below.

Table 7 Media Validity Test Classification Results

No	Material	Average Score	Classification
1.	Number	0,90	Very Good
2.	Algebra	0,91	Very Good
3.	Geometry	0,91	Very Good
4.	Analysis and Opportunities	0,91	Very Good

From the results of validity tests from both material and media experts above, it can be concluded that Edpuzzle-based learning videos are declared content valid and suitable for field testing.

b) Practicality test

Data for the practicality test was obtained from student response questionnaires given after the field trial process. This student response was given to find out what students view about the Edpuzzle-based learning video that was developed. The test results obtained a result of 74%, classified according to Table 5, obtaining a practical classification with the information that it can be used with minor revisions.

c) Effectiveness Test

Effectiveness testing is carried out by giving pre-tests and post-tests to students. The results of this test can be seen in the table below.

Table 8 Average Results of Pre-test and Post-test

No	Types of tests	Average
1.	*Pre-test*	43,86
2.	*Post-test*	62,92

From the results in the table above, it can be concluded that there has been an increase in the average numeracy literacy ability of students, namely 19.06. If compared with the conversion guidelines in table 5, the post-test results are categorized as effective.

From the results of validity, practicality and effectiveness tests, it was found that the Edpuzzle-based learning video product was categorized as valid, practical and effective so it could be concluded that the product developed had good quality.

4. Conclusion

From the research results that have been obtained, it can be concluded that the product in the form of Edpuzlle-based learning videos is categorized as good, where it has been declared valid, practical and effective.

The results of this research are important input for further research, especially those examining numeracy literacy skills. In addition, other schools with the same problem can use the same product to improve students' numeracy literacy skills.

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