Ethnomatematics Based Learning Video Media on Mathematical Content

Ni Komang Indah Juliantini[1*], Alexander Hamonanangan Simamora[2], I Gde Wawan Sudatha[3] (iD)

[1,2,3] Ilmu Pendidikan Psikologi dan Bimbingan, Universitas Pendidikan Ganesha, Singaraja, Indonesia

ABSTRAK

Kurangnya media pembelajaran yang inovatif saat pembelajaran serta kurangnya penanaman konsep pada mata pelajaran matematika menyebabkan pembelajaran kurang bermakna. Penelitian pengembangan ini bertujuan untuk mengetahui rancang bangun, kelayakan, dan mengetahui efektivitas Video Pembelajaran Matematika berbasis Etnomatematika pada materi kecepatan siswa kelas V SD. Penelitian ini tergolong kedalam jenis penelitian pengembangan yang dikembangkan dengan menggunakan model ADDIE. Subjek uji coba penelitian ini adalah ahli isi (materi) pembelajaran, ahli desain pembelajaran, ahli media pembelajaran, dan 24 siswa kelas V SD. Pengumpulan data dalam penelitian dilakukan menggunakan metode kuesioner dan metode tes. Teknik analisis data menggunakan teknik analisis data kualitatif, analisis data deskritif kuantitatif, dan statistika inferensial (uji-t). Hasil penelitian menunjukkan bahwa penilaian ahli media pembelajaran memperoleh persentase sebesar 94,79% dengan kualifikasi sangat baik, hasil penilaian ahli desain pembelajaran memperoleh persentase sebesar 95,83% dengan kualifikasi sangat baik, hasil penilaian ahli materi memperoleh persentase sebesar 97,41% dengan kualifikasi sangat baik, hasil penilaian siswa melalui uji coba perorangan memperoleh persentase sebesar 97,22% dengan kualifikasi sangat baik, hasil penilaian siswa melalui kelompok kecil memperoleh persentase sebesar 98,29% dengan kualifikasi sangat baik. Disimpulkan bahwa media video pembelajaran berbasis etnomatematika pada muatan matematika materi kecepatan siswa kelas V SD dapat membantu siswa dalam meningkatkan pemahaman konsep belajar siswa terutama pada mata pelajaran matematika, sehingga dapat meningkatkan hasil belajar siswa.

ABSTRACT

The lack of innovative learning media during learning and the lack of instilling concepts in mathematics causes learning to be less meaningful. This development research aims to determine the design, feasibility, and effectiveness of Ethnomatematics-based Mathematics Learning Videos on speed material for fifth-grade elementary school students. This research belongs to the type of development research that was developed using the ADDIE model. The subjects of this research trial were learning content (material) experts, instructional design experts, instructional media experts, and 24 fifth-grade elementary school students. Data collection in the study was carried out using the questionnaire method and the test method. Data analysis techniques using qualitative data analysis techniques, quantitative descriptive data analysis, and inferential statistics (t-test). The results showed that the assessment of learning media experts obtained a percentage of 94.79% with very good qualifications, the results of the assessment of learning design experts obtained a percentage of 95.83% with very good qualifications, the results of the assessment of material experts obtained a percentage of 97.41% with qualifications very good, the results of student assessments through individual trials obtained a percentage of 97.22% with very good qualifications, the results of student assessments through small groups obtained a percentage of 98.29% with very good qualifications. It was concluded that the ethnomathematics-based instructional video media on the mathematics content of speed material for fifth-grade elementary school students could help students improve their understanding of learning concepts, especially in mathematics, to improve student learning outcomes.

Corresponding author
E-mail addresses: jltniindah@gmail.com (Ni Komang Indah Juliantini)

1. INTRODUCTION

The era of globalization always develops with innovations. One thing that does not stop innovating as time goes by is education. Education can run well if it implements guidelines known as the curriculum (Rahayu et al., 2022; Septikasari & Nugraha, 2020). The 2013 curriculum focuses on students learning to be active and able to think critically. Critical thinking is a thinking process to process the knowledge gained in order to be able to solve problems and make decisions with rational and accountable reasons (Kartikasari & Widjajanti, 2017; Winoto & Prasetyo, 2020). One of the subjects that require students to be able to think critically is mathematics. Because it is an exact science that forms the basis of other sciences, mathematics is interrelated (Adrian et al., 2020; Dewi & Suniasih, 2022). Mathematics education is carried out to develop students' thinking abilities so that later, students can solve various problems in everyday life, especially problems related to mathematical concepts (Marjuki et al., 2021; Suseno et al., 2020; Widiarti et al., 2021). To be able to fulfill these objectives, mathematics learning can be carried out by utilizing the use of learning media. Media can help concretize various abstract concepts presented in mathematical material (Ario, 2019; Hasiru et al., 2021; Isnaini et al., 2023). Learning media is one of the factors that support the success of the learning process in schools because the media can help the process of delivering information or messages in lessons from teachers to students or vice versa (Biassari et al., 2021; Putri & Agustika, 2022).

The reality in the field shows that the intensity of media use in the learning process is still relatively low. Teachers tend to use more textbook media with the lecture method (Andriani et al., 2019; Suantiani & Wiarta, 2022). It creates a stigma that mathematics is difficult and boring (Dewi & Suniasih, 2022; Primadewi & Agustika, 2022). The results of observations carried out at SD Lab Undiksha show that the mathematics learning outcomes of fifth-grade students are still relatively low. It is shown by 24 students, 13 of whom scored below the Minimum Completeness Criteria, which means around 54% of students scored below the Minimum Completeness Criteria.

Meanwhile, 11 other students scored above the Minimum Completeness Criteria, which means around 45% of students scored above the Minimum Completeness Criteria. In this case, the Minimum Completeness Criteria at SD Lab Undiksha is 75. The number of students who get low scores is because the learning process is still teacher-centered and the availability of teaching materials that do not support the learning process properly. In addition, the teacher's lack of innovation in creating interesting media makes students easily bored and bored when participating in mathematics learning. If allowed to continue, this will certainly impact not achieving learning objectives properly.

One of the efforts that can be made to overcome this problem is by using learning video media. Video learning is a form of digital media that combines audio and visual effects (Ilsa et al., 2020; Octavyanti & Wulandari, 2021). Video media allows students to listen to learning interestingly through animation and images presented in one video (Fitria & Fuadiah, 2022; Riayah & Fakhriyana, 2021). One learning video show can present various topics and then be accompanied by evaluations (Heryandi & Nur`aini, 2022; Prasetya et al., 2021). Using interesting learning video media will increase student motivation and learning outcomes so that the media is effectively used for learning (Novera et al., 2022; Nurdin et al., 2019). The use of learning video media will be more effective if it is accompanied by ethnomathematics-based learning. Ethnomathematics is a mathematical concept influenced and adapted from local culture (Dewi & Suniasih, 2022; Kuswidi et al., 2021). An ethnomathematics study is carried out to understand the belief system, thinking and behavior of a group of people in mathematics, which is then used as a basis for presenting meaningful mathematics learning for students (Ilham et al., 2023; Nurhasanah & Puspitasari, 2022). Ethnomathematics studies outlined in the student learning process will make it easier for students to understand various mathematical concepts. It is because the existing material concepts will be linked to the surrounding environment and various objects in the child's life, so it will be easier to understand (Nurhasanah & Puspitasari, 2022; Pratiwi & Pujiastuti, 2020; Widiantari et al., 2022).

Several studies that have been conducted previously revealed that ethnomathematics-based mathematics learning videos containing material on the introduction of flat shapes are suitable for use in learning and can improve student learning outcomes (Dewi & Suniasih, 2022). Other research results reveal that ethnomathematics-based educational videos suit mathematics learning media in vocational schools (Lisgianto & Suhendri, 2021). The results of the next study revealed that the E-Worksheet for Interactive Students based on Balinese ethnomathematics on fourth-grade elementary school flat shapes is feasible to use and can improve student mathematics learning outcomes (Mahendri & Agustika, 2022). Based on some of these research results, it can be said that ethnomathematics-based learning video media positively influences student learning outcomes. In previous research, no studies have specifically discussed the development of ethnomathematics-based learning video media for the mathematics content of fifth-grade elementary school students. So, this research is focused on this study to determine the design, feasibility, and effectiveness of ethnomathematics-based mathematics learning videos on fifth-grade elementary school students' speed material.

2. METHOD

This research is a type of research and development (R&D). The development model used in this research is the ADDIE development model. The selection of this development model is based on the consideration that the ADDIE model is a simple development model with systematic, clear and easy work procedures. In addition, this development model allows developers to evaluate and revise continuously in the phases being passed so that the product produced is valid and reliable. The ADDIE development model consists of five steps, namely the analysis stage, the design stage, the development stage, the implementation stage, and the evaluation stage. The first stage, namely the analysis stage, is carried out through the process of curriculum analysis, analysis of student characteristics, analysis of competence, analysis of learning activities and analysis of learning facilities. The second stage is the design stage, which is carried out by designing product development designs based on the analysis data obtained. The activities carried out at this stage are determining the software for Learning Videos, making flowcharts and storyboards, compiling assessment instruments, and compiling lesson plans for learning Mathematics.

The third stage is the development stage. At this stage, the activities carried out are the combination of various materials such as text, images, audio, lesson material, summaries and evaluations into a complete product in the form of Learning Video media using the videoscribe and Filmora applications as the main application and assisted by several other applications/software to design images. The fourth stage is the implementation stage. At this stage, the activities carried out are testing the validity of the product that has been developed. Product validation involves review by experts (learning content experts, learning design experts, learning media experts) testing on students through individual trials and small group trials. This assessment aims to determine the quality of the product that has been made, whether the product quality is good, medium or poor, and test effectiveness. This effectiveness test was carried out at the pre-test and post-test stages. The effectiveness test was carried out in fifth grade. The fifth stage is the evaluation stage. At this stage, the activities carried out, namely the data obtained during the evaluation, are used to perfect the Learning Video being developed so that it can be declared valid. In other words, this evaluation stage determines to what extent the product has achieved its goals and objectives.

Product trials are used to collect data to determine the level of suitability of the product produced. The design for testing this research product consists of expert testing and student testing. Expert tests include material expert tests, design expert tests, and media expert tests. Meanwhile, student trials include individual trials and small group trials. The test subjects in this research included one fifth-grade homeroom teacher who is an expert in Mathematics, one lecturer who is an expert in design, and one who is an expert in learning media. At the same time, the test subjects to students as a whole amounted to 24 fifth-grade students of SD Lab Undiksha. The results of the product trials on students included 3 sixth graders of SD Lab Undiksha for individual trials and 6 sixth grade SD Lab Undiksha for small group trials. For small individual trials, students are grouped based on 1 high potential student, 1 medium potential student, and 1 low potential student. Meanwhile, for small group trials, students were grouped based on 2 high potential students, 2 medium potential students, and 2 low potential students. Experts, including material, design and media, first test the product's suitability. After that, a revision stage was carried out according to input provided by experts. Furthermore, because the product has been revised, the product is given to students starting from individual and small group trials. The type of data used in this research uses qualitative data collected from input results, responses obtained from questionnaire results, and quantitative data collected through questionnaires in the form of numbers. The method used to collect data is using questionnaires and test methods. Questionnaires are used to collect data on the results of expert reviews and product tests on students. In contrast, the test method is used to collect data on the results of tests on the effectiveness of using Learning Video media. The grid of instruments used can be seen in Table 1.

Table 1. Instrument Grid

Trial aspect	Indicator
Individual and Small-Group Testing	1. The attractiveness of the opening video
	2. Readability of the text in the video
	3. Pictures in the video
	4. The clarity of the narrator's voice
	5. Video color attractiveness
	6. Clarity of description of the material
	7. The material is easy to understand
	8. Media can provide and increase enthusiasm for learning
	9. Ease of use of media

Trial aspect	Indicator
Design Expert	1. Suitability to learning objectives 2. Consistency between objectives, materials and evaluation 3. Provide appropriate study instructions 4. Submission of material contains logical steps 5. Helps remember previous knowledge and abilities 6. Allow students to learn independently 7. Provide appropriate examples in the presentation 8. Contains practice questions for understanding material concepts 9. Instructions for working on questions are clear and easy to understand
Materials Expert	1. Appropriateness between material and basic competencies 2. Appropriateness between the material and the learning indicators 3. Appropriateness between the material and the learning objectives 4. The truth of the material content 5. Depth of material charge 6. Coverage of material content 7. The importance of the material discussed 8. Interest in the material 9. Appropriateness between the material and the characteristics of students 10. Accuracy in the use of media that supports the material 11. The material is easy to understand 12. The material shows conditions in real-life 13. Material can be logified 14. Difficulty level of questions
Media Expert	1. Ease of use of media products 2. Media products can help students understand the material 3. Video can be played back 4. Video time duration 5. Readability of the text on the video 6. Consistency of the theme 7. Use of appropriate images 8. Use of fonts, appropriate font sizes 9. Composition and color combination that match and right 10. Appropriate accompaniment music is supported 11. The use of appropriate and appropriate narrative 12. The composition of the screen display (screen design) is harmonious and balanced.

This development research uses three data analysis methods and techniques: quantitative descriptive, qualitative analysis, and inferential statistical. The quantitative analysis method is a way of processing data that is arranged systematically in the form of numbers or percentages. The qualitative analysis method is a way of processing data that is arranged in the form of sentences or words. This analysis technique includes interview results, product feasibility criteria, comments, suggestions, responses, and criticism. The percentage results obtained are then converted to a level of achievement on a scale of 5, as in Table 2, to make a decision.

Table 2. Conversion of Achievement Levels with a Scale of 5

Achievement Level (%)	Qualification	Description
90-100	Very good	No need to revise
75-89	Good	Slightly revised
65-74	Enough	Revised sufficiently
55-64	Not enough	Many things have been revised
0-54	Less	Repeated in making the product

The inferential statistical method is data processing carried out by applying inferential statistical formulas to test research hypotheses regarding the product being developed, and conclusions are drawn from the results of testing these hypotheses. This technique determines product effectiveness by analyzing the results of measuring test instruments before and after students use learning videos. Data was collected

using pre-test and post-test to find out the results of the test instrument measurements. Before the test is given, the instrument has been tested before the instrument is used so that the validity and reliability, the test's difficulty level, and the test's different powers are known. Validity was calculated using the point biserial correlation formula. It was found that 20 test items had a r pbi > r table value, so 20 questions were declared valid for use in the test. Reliability was calculated using the Kuder Richardson 20 (KR-20) formula. The value was found to be 0.92, which was included in the criteria for a high degree of reliability. After calculating the test difficulty level using the formula, the test difficulty value was 0.49, which is included in the "medium" question criteria. Meanwhile, after calculating, the different power tests obtained 9 questions with good status, 2 questions with quite good status, 4 with very good status, and 5 with poor status. After that, the pre-test and post-test results given to students will be analyzed using the dependent sample t-test to determine the difference between the pre-test and post-test results. Before testing the hypothesis using the dependent sample t-test, it is necessary to carry out prerequisite tests, including normality and homogeneity.

3. RESULT AND DISCUSSION

Result

The product developed in this research is an Ethnomathematics-based Mathematics Learning Video media on Mathematics content speed material for fifth-grade students at SD Lab Undiksha. Ethnomathematics-based learning video media was developed using the ADDIE development research model. The first stage that is carried out is analysis, which consists of curriculum analysis, student characteristics analysis, facilities analysis, and learning activities. In the curriculum analysis, after interviewing with the fifth-grade homeroom teacher at SD Lab Undiksha, information was obtained that fifth-grade students had been using the 2013 curriculum since 2016. Based on the analysis of student characteristics, it was found that students enjoyed playing, moving, working in groups and learning. I like to demonstrate something live. Besides that, based on the analysis of student characteristics, it was found that the activeness of students in participating in learning tended to be low. It was seen from the 24 fifth-grade students, only 6 people or only 25%. Other results were found in the analysis of student characteristics using a questionnaire: many students had difficulty understanding mathematics material, were bored with conventional learning methods, and tended to like learning using audio-visual media. Based on the results of the analysis of facilities at SD Lab Undiksha, it was found that there were computer, blackboard, LCD and projector lab facilities that could be operated properly. In this way, the development of Learning Videos can be applied well to students. Based on the analysis of learning activities by conducting observations and interviews, it was found that during learning activities, students were not able to learn independently. It was due to the unavailability of interactive learning media that students became quickly bored with learning. Based on the results of this analysis, learning media is needed to support students to learn independently, such as learning videos. Learning videos are equipped with text, images, audio and motivation, making learning more active and interesting.

The second stage is the design stage. At this stage, five steps are carried out. The first step is preparing the main software used in developing Learning Videos in Filmora and PowerPoint and preparing the required tools in the form of greenscreen cellphones. The second step is to develop a lesson plan to direct learning activities to students using Video Learning to take place well so that the learning steps can be systematically arranged. The third step is to create a flowchart and storyboard to describe the Learning Video workflow to support learning. The fourth step is compiling an assessment instrument to determine the validity of the product being developed. The instruments created are instruments for content experts, design experts, learning media experts, individual trial instruments, and small groups. The fifth step is compiling tests for students to determine the effectiveness of the product being developed. The tests are made in the form of pre-test and post-test tests.

The third stage is the development stage. At this stage, the development of the Learning Video product is carried out by collecting teaching material, the teaching material is obtained from the module and syllabus for the first semester of the fifth grade and other sources that are relevant to the material raised. All learning resources used to develop Learning Videos, such as text, images, and animations, are combined using the Filmora application as the main software to become Learning Videos. After the teaching materials for developing Learning Videos are combined and become complete learning media, proceed with making Learning Videos that can be accessed via laptops, computers, or smartphones. The results of the development of the Learning Video that has been developed is presented in Figure 1.

Figure 1. Display of Ethnomathematics-Based Learning Videos

After the learning videos are ready, the learning videos are then tested for feasibility by experts, namely learning content experts, design experts, and learning media experts. Then, individual, small, and large group trials are carried out on students. The results of expert tests and product trials on students are presented in Table 3.

Table 3. Percentage of Validity Results of Learning Video Development

No.	Test Subjects	Validity Results	Description
1	Learning Content Expert Test	97.41%	Very good
2	Learning Design Expert Test	95.83%	Very good
3	Learning Media Expert Test	94.79%	Very good
4	Individual Trial	97.22%	Very good
5	Small Group Trial	98.29%	Very good

The results of expert tests and product trials on students show that Ethnomatematics-based Mathematics Learning Video media is feasible to use in the learning process. However, there are some inputs or suggestions from experts to improve the developed Ethnomatematics-based Mathematical Learning Video media. The Learning Video Media has been revised according to input, comments, or suggestions from experts so that the Learning Video media is perfect for use in the learning process for fifth-grade students at SD Lab Undiksha.

The fourth stage is the implementation stage. At this stage, the feasible products are applied in the learning process to determine effectiveness by giving pre-test and post-test questions. At this stage, the test is given twice, namely before students use the product to test the level of student's initial knowledge of the material presented and after students use the product to test the level of student's knowledge of the material presented. Before carrying out the post-test, students are given treatment by using the final product suitable for the learning process. Based on the results of the effectiveness test, it was found that the average pre-test score of students was 62.29, which was in the 50-65 range, so it was classified as low qualification, while the post-test average score was 86.87, which was in the 80-89 range, so it was highly qualified. From the average pre-test and post-test scores, it can be seen that there has been an increase when using Ethnomatematics-Based Learning Videos, which were developed according to the characteristics of fifth-grade elementary school students. Apart from that, there was an increase in qualifications from the pre-test and post-test from low to high. Thus, it can be concluded that Learning Videos can improve the Mathematics knowledge competency of students in the VA SD Lab Undiksha class. Based on the results of the effectiveness test with the independent sample t-test calculation formula that has been carried out, it is obtained that t count = 2.192 while the t table value is 2.101. It means that t count > t table so that H0 is rejected and H1 is accepted. Therefore, it can be concluded that developing Ethnomatematics-based Learning Videos on the Balinese culture of diversity in the Mathematics content of

Fifth Grade Students at SD Lab Undiksha in the Academic Year 2022/2023 is effective in improving Mathematics learning outcomes.

The fifth stage is evaluation, which is carried out at the end of each stage, starting from analysis, design, and development through formative evaluation. In contrast, summative evaluation is based on the effectiveness test results. It is known that there is an increase in the average student test results when using Ethnomatematics-based Mathematics Learning Video media on content speed material. The pre-test had an average of 62.29, which qualified as low, and the post-test had an average of 86.87 with high qualifications. So, it can be concluded that there was an increase in the competence of Mathematical knowledge before and after using the Ethnomatematics-based Mathematical Learning Video media in the Mathematical content for speed material for fifth-grade students of SD Lab Undiksha Academic Year 2022/2023.

Discussion

This development research produced Ethnomatematics-based Mathematical Learning Video media on the subject matter of speed Mathematics. The media developed is different from other Learning Video media because no one has developed Learning Video media using an Ethnomathematics basis for fifth-grade students at Undiksha Lab Elementary School. Based on the results of the analysis that has been carried out, several findings were obtained in this research. First, ethnomathematics-based learning video media is used in the learning process because it can facilitate students in learning and understanding the material well. After all, the images and text can motivate students to Study. This learning video contains Mathematics learning, so it can make it easier for students to understand the material because it can concretize abstract material, thus providing more active learning opportunities for students (Heryandi & Nur`aini, 2022; Prasetya et al., 2021). By presenting learning objects using the right media, the message conveyed during learning can be realistic, so it has a good impact on students to increase their experience (Agustini & Ngarti, 2020; Salsabila et al., 2020). This research uses the ADDIE development research model to develop Learning Videos for fifth grade Mathematics at SD Lab Undiksha. The selection of this model is based on the consideration that the ADDIE model is one of many product-oriented learning design models (Hidayat & Nizar, 2021; Ulum et al., 2020). ADDIE is a coherent and systematic framework for organizing design and development research activities (Rustandi & Rismayanti, 2021). Learning videos can connect material and the student's sick environment, namely culture, so that it can make it easier for students to understand abstract material by associating new information with relevant concepts that have been learned by students (Setyowati & Mawardi, 2018; Tarmidzi, 2019). Associating learning Mathematics with culture can have a positive impact on Mathematics skills for elementary school children in understanding Mathematical concepts and encouraging students to make connections between knowledge and its application in everyday life (Octavyanti & Wulandari, 2021; Pratiwi & Pujiastuti, 2020).

The second finding shows that the material presented in the ethnomathematics-based mathematics learning video media is based on the learning objectives, indicators and competency standards. A media will be good if it pays attention to the scope of learning objectives, competencies and indicators (Ferdianto & Setiyani, 2018; Komariah et al., 2018). Good teaching materials must be appropriate and in harmony with the learning design because these factors are interrelated to create effectiveness in learning (Ario, 2019; Hasiru et al., 2021; Isnaini et al., 2023). Regarding the content of the Learning Video, the compatibility between the basis of the Learning Video and the material is appropriate and can be applied in real life (Biassari et al., 2021; Putri & Agustika, 2022). Improving motivating students to understand the subject matter they are studying can be done by relating the material to the context of their daily lives so that students have knowledge or skills that can be reflectively applied from one problem to other problems (Marjuki et al., 2021; Suseno et al., 2020; Widiarti et al., 2021). Making a connection between material and everyday life can train students to think critically and skillfully so that students can find and create something useful for themselves and others (Andriani et al., 2019; Suantiani & Wiarta, 2022).

The third finding shows that the learning videos developed are by message design principles because developing learning videos pays attention to design principles. Videos based on message design theories will provide many conveniences for readers and vice versa. In designing learning videos, message design principles must be considered so that students can understand the message to be conveyed and not confuse students (Heryandi & Nur`aini, 2022; Prasetya et al., 2021). The clarity of the image with the material also greatly affects the clarity of the message that will be informed in the media (Ilsa et al., 2020; Octavyanti & Wulandari, 2021). One of the principles of designing images in a media is to provide clear instructions or information to interpret so that there are no misperceptions (Novera et al., 2022; Nurdin et al., 2019). One of the strong factors that make this Learning Video media suitable for use in the learning process is that in Ethnomathematics-based Learning Videos for fifth-grade students, the material can be easily understood, and Learning Videos can motivate students to learn. The higher motivation of students in learning, of course, will increase students' interest in learning, especially in Mathematics, so that student

learning outcomes increase. With a high interest in student learning, the material presented will be easier to understand, impacting student learning outcomes, and learning objectives will be achieved as desired (Setiawan et al., 2022; Wardani & Suniasih, 2022).

The fourth finding shows that the learning videos developed can improve student learning outcomes through an effectiveness test with pre-test results at low and post-test at high qualification. It means there is an increase in student learning outcomes after using Ethnomatematics-based Mathematics Learning Video media. Therefore, developing Ethnomatematics-based Mathematical Learning Video media that introduces flat shapes is effective in the learning process because it can improve student learning outcomes. The results obtained in this study are in line with the results of previous research, which also revealed that ethnomathematics-based mathematics learning videos on the content of flat shape introduction material are appropriate for use in learning and can improve student learning outcomes (Dewi & Suniasih, 2022). Other research results reveal that ethnomathematics-based educational videos suit mathematics learning media in vocational schools (Lisgianto & Suhendri, 2021). Further research revealed that the interactive Student E-Worksheet based on Balinese stitching ethnomathematics in fourth-grade elementary school material is suitable for use and can improve students' mathematics learning outcomes (Mahendri & Agustika, 2022). So, based on some of these research results, it can be said that ethnomathematics-based learning video media positively influences student learning outcomes.

4. CONCLUSION

Based on the results of the data analysis carried out, it can be concluded that the ethnomathematics-based instructional video media in the mathematics content of the speed material for fifth-grade elementary school students that was developed obtained very good qualifications, which is where this media is feasible to be applied in the learning process which can help students improve their understanding of concepts. Student learning, especially in mathematics, to improve student learning outcomes.

5. REFERENCES

Adrian, Q. J., Ambarwari, A., & Lubis, M. (2020). Perancangan Buku Elektronik Pada Pelajaran Matematika Bangun Ruang Sekolah Dasar Berbasis Augmented Reality. *Simetris: Jurnal Teknik Mesin, Elektro Dan Ilmu Komputer*, *11*(1), 171–176. https://doi.org/10.24176/simet.v11i1.3842.

Agustini, K., & Ngarti, J. G. (2020). Pengembangan Video Pembelajaran Untuk Meningkatkan Motivasi Belajar Siswa Menggunakan Model R & D. *Jurnal Ilmiah Pendidikan Dan Pembelajaran*, *4*(4), 62–78. https://doi.org/10.23887/jipp.v4i1.18403.

Andriani, S., Sunismi, & Fuady, A. (2019). Pengembangan Video Pembelajaran Matematika Interaktif Berbasis Realistik Pada Materi Aritmatika Kelas VII SMP. *Jurnal Penelitian, Pendidikan Dan Pembelajaran (JP3)*, *14*(7), 77–83. http://riset.unisma.ac.id/index.php/jp3/article/view/3815.

Ario, M. (2019). Pengembangan Video Pembelajaran Materi Integral Pada Pembelajaran Flipped Classroom. *Aksioma: Jurnal Program Studi Pendidikan Matematika*, *8*(1), 20–31. https://doi.org/10.24127/ajpm.v8i1.1709.

Biassari, I., Putri, K. E., & Kholifah, S. (2021). Peningkatan Hasil Belajar Matematika pada Materi Kecepatan Menggunakan Media Video Pembelajaran Interaktif di Sekolah Dasar. *Jurnal Basicedu*, *5*(4), 2322–2329. https://doi.org/10.31004/basicedu.v5i4.1139.

Dewi, P. D. P., & Suniasih, W. (2022). Media Video Pembelajaran Matematika Berbasis Etnomatematika pada Muatan Materi Pengenalan Bangun Datar. *Jurnal Edutech Undiksha*, *10*(1), 156–166. https://doi.org/10.23887/jeu.v10i1.44775.

Ferdianto, F., & Setiyani, S. (2018). Pengembangan Bahan Ajar Media Pembelajaran Berbasis Kearifan Lokal Mahasiswa Pendidikan Matematika. *JNPM (Jurnal Nasional Pendidikan Matematika)*, *2*(1), 37. https://doi.org/10.33603/jnpm.v2i1.781.

Fitria, S., & Fuadiah, N. F. (2022). Pengembangan Video Pembelajaran Interaktif Materi Peluang Pada Siswa SMP. *Apotema: Jurnal Program Studi Pendidikan Matematika*, *8*(1), 51–56. https://doi.org/10.31597/ja.v8i1.744.

Hasiru, D., Badu, S. Q., & Uno, H. B. (2021). Media-Media Pembelajaran Efektif dalam Membantu Pembelajaran Matematika Jarak Jauh. *Jambura Journal of Mathematics Education*, *2*(2), 59–69. https://doi.org/10.34312/jmathedu.v2i2.10587.

Heryandi, Y., & Nur`aini, N. (2022). Pengaruh Penggunaan Media Video Pembelajaran Untuk Mereduksi Miskonsepsi Matematika Siswa. *Integral : Pendidikan Matematika*, *13*(1), 13–25. https://doi.org/10.32534/jnr.v13i1.3108.

Hidayat, F., & Nizar, M. (2021). Model Addie (Analysis, Design, Development, Implementation and Evaluation) Dalam Pembelajaran Pendidikan Agama Islam. *Jurnal Inovasi Pendidikan Agama Islam (JIPAI)*, *1*(1), 28–38. https://doi.org/10.15575/jipai.v1i1.11042.

Ilham, M., Marchy, F., Naser, D. M., & Abdurrahman. (2023). Analisis Bibliometrik: Tren Penelitian Etnomatematika dalam Pembelajaran Matematika di Indonesia (2017-2022). *Jurnal Ilmiah Pendidikan Matematika)*, *11*(2), 267–279. http://e-journal.unipma.ac.id/index.php/jipm.

Ilsa, A., F, F., & Harun, M. (2020). Pengembangan Video Pembelajaran dengan Menggunakan Aplikasi Powerdirector 18 di Sekolah Dasar. *Jurnal Basicedu*, *5*(1), 288–300. https://doi.org/10.31004/basicedu.v5i1.643.

Isnaini, S. N., Firman, F., & Desyandri, D. (2023). Penggunaan Media Video Pembelajaran Dalam Meningkatkan Minat Belajar Matematika Siswa Di Sekolah Dasar. *Alpen: Jurnal Pendidikan Dasar*, *7*(1), 42–51. https://doi.org/10.24929/alpen.v7i1.183.

Kartikasari, A., & Widjajanti, D. B. (2017). The Effectiveness of Problem-Based Learning Approach Based on Multiple Intelligences in Student's Achievement, Mathematical Connection Ability, and Self-Esteem. *Journal of Physics: Conference Series*, *812*(1), 012097. https://doi.org/10.1088/1742-6596/812/1/012097.

Komariah, S., Suhendri, H., & Hakim, A. R. (2018). Pengembangan Media Pembelajaran Matematika Siswa SMP Berbasis Android. *JKPM (Jurnal Kajian Pendidikan Matematika)*, *4*(1), 43. https://doi.org/10.30998/jkpm.v4i1.2805.

Kuswidi, I., Lestari, D. F., Arfinanti, N., & Azka, R. (2021). Eksplorasi Etnomatematika pada Permainan Tradisional Layangan (Pemahaman Materi Bangun Datar Layang-Layang dan Pengembangan Karakter). *Jurnal Pengembangan Pembelajaran Matematika*, *3*(2), 129–137. https://doi.org/10.14421/jppm.2021.32.129-137.

Lisgianto, A., & Suhendri, H. (2021). Pengembangan Video Edukatif Volume Bangun Ruang Berbasis Etnomatematika Makanan Tradisonal Via Youtube. *Jurnal Derivat: Jurnal Matematika Dan Pendidikan Matematika*, *8*(2), 107–116. https://doi.org/10.31316/j.derivat.v8i2.1964.

Mahendri, P. D., & Agustika, G. N. S. (2022). E-LKPD Interaktif berbasis Etnomatematika Jejahitan Bali pada Materi Bangun Datar Kelas IV SD. *Mimbar PGSD Undiksha*, *10*(1), 94–104. https://doi.org/10.23887/jjpgsd.v10i1.45350.

Marjuki, B. A., Zuhairi, Z., & Wildaniati, Y. (2021). Pengaruh Penggunaan Media Video Interaktif Terhadap Hasil Belajar Matematika Siswa MTS Ma'arif 2 Nurul Huda Lampung Timur. *Linear: Journal of Mathematics Education*, *1*(1), 71. https://doi.org/10.32332/linear.v2i2.3819.

Novera, R. D., Sukasno, S., & Sofiarini, A. (2022). Pengembangan Video Pembelajaran Matematika Berbasis Powtoon Menggunakan Konsep Etnomatematika di Sekolah Dasar. *Jurnal Basicedu*, *6*(4), 7161–7173. https://doi.org/10.31004/basicedu.v6i4.3404.

Nurdin, E., Ma'aruf, A., Amir, Z., Risnawati, R., Noviarni, N., & Azmi, M. P. (2019). Pemanfaatan video pembelajaran berbasis Geogebra untuk meningkatkan kemampuan pemahaman konsep matematis siswa SMK. *Jurnal Riset Pendidikan Matematika*, *6*(1), 87–98. https://doi.org/10.21831/jrpm.v6i1.18421.

Nurhasanah, W. F., & Puspitasari, N. (2022). Studi Etnomatematika Rumah Adat Kampung Pulo Desa Cangkuang Kabupaten Garut. *Plusminus: Jurnal Pendidikan Matematika*, *2*(1), 27–38. https://doi.org/10.31980/plusminus.v2i1.1587.

Octavyanti, N. P. L., & Wulandari, I. G. A. A. (2021). Pengembangan Video Pembelajaran Berbasis Pendekatan Kontekstual Pada Mata Pelajaran Matematika Kelas IV SD. *Jurnal Edutech Undiksha*, *9*(1). https://doi.org/10.23887/jeu.v9i1.32223.

Prasetya, A., Ignatius, I. W. S., & Putrini, M. (2021). Pengembangan Video Animasi Pembelajaran Pada Mata Pelajaran Matematika. *Jurnal Penelitian Dan Pengembangan Pendidikan*, *5*(1), 60–68. https://doi.org/10.23887/jppp.v5i1.32509.

Pratiwi, J. W., & Pujiastuti, H. (2020). Eksplorasi Etnomatematika pada Permainan Tradisional Kelereng. *Jurnal Pendidikan Matematika Raflesia*, *5*(2), 1–12. https://ejournal.unib.ac.id/index.php/jpmr/article/view/11405.

Primadewi, A., & Agustika, S. (2022). Video Animasi Berorientasi Problem-Based Learning untuk Meningkatkan Motivasi Belajar Matematika Siswa Kelas IV SD. *Jurnal Edutech Undiksha*, *10*(1), 167–177. https://doi.org//10.23887/jeu.v10i1.46477.

Putri, I. A. M. A., & Agustika, G. N. (2022). Pemanfaatan Video Pembelajaran Berbasis Etnomatematika dalam Meningkatkan Pemahaman Konsep Bangun Datar pada Siswa Kelas IV Sekolah Dasar. *Mimbar Ilmu*, *27*(2), 279–291. https://doi.org/10.23887/mi.v27i2.50699.

Rahayu, R., Iskandar, S., & Abidin, Y. (2022). Inovasi Pembelajaran Abad 21 dan Penerapannya di Indonesia. *Jurnal Basicedu*, *6*(2), 2099–2104. https://doi.org/10.31004/basicedu.v6i2.2082.

Riayah, S., & Fakhriyana, D. (2021). Optimalisasi Pembelajaran dalam Jaringan (Daring) dengan Media Pembelajaran Video Interaktif Terhadap Pemahaman Matematis Siswa. *Jurnal Pendidikan Matematika (Kudus)*, *4*(1), 19. https://doi.org/10.21043/jmtk.v4i1.10147.

Rustandi, A., & Rismayanti. (2021). Penerapan Model ADDIE dalam Pengembangan Media Pembelajaran di SMPN 22 Kota Samarinda. *Jurnal Fasilkom*, *11*(2), 57–60. https://doi.org/10.37859/jf.v11i2.2546.

Salsabila, U. H., Sofia, M. N., Seviarica, H. P., & Hikmah, M. N. (2020). Urgensi Penggunaan Media Audiovisual Dalam Meningkatkan Motivasi Pembelajaran Daring Di Sekolah Dasar. *Insania : Jurnal Pemikiran Alternatif Kependidikan*, *25*(2), 284–304. https://doi.org/10.24090/insania.v25i2.4221.

Septikasari, R., & Nugraha, R. (2020). Keterampilan 4C Abad 21 Dalam Pembelajaran Pendidikan Dasar. *Journal of the American College of Cardiology*, *75*(20), 2635–2638. https://doi.org/10.1016/j.jacc.2020.04.015.

Setiawan, A., Nugroho, W., & Widyaningtyas, D. (2022). Pengaruh Minat Belajar Terhadap Hasil Belajar Siswa Kelas VI SDN 1 Gamping. *Tanggap : Jurnal Riset Dan Inovasi Pendidikan Dasar*, *2*(2), 92–109. https://doi.org/10.55933/tjripd.v2i2.373.

Setyowati, N., & Mawardi, M. (2018). Sinergi Project Based Learning dan Pembelajaran Bermakna untuk Meningkatkan Hasil Belajar Matematika. *Scholaria: Jurnal Pendidikan Dan Kebudayaan*, *8*(3), 253–263. https://doi.org/10.24246/j.js.2018.v8.i3.p253-263.

Suantiani, N. M. A., & Wiarta, I. W. (2022). Video Pembelajaran Berbasis Pendekatan Kontekstual Pada Muatan Matematika. *Jurnal Penelitian Dan Pengembangan Pendidikan*, *6*(1), 64–71. https://doi.org/10.23887/jppp.v6i1.45455.

Suseno, P. U., Ismail, Y., & Ismail, S. (2020). Pengembangan Media Pembelajaran Matematika Video Interaktif berbasis Multimedia. *Jambura Journal of Mathematics Education*, *1*(2), 59–74. https://doi.org/10.34312/jmathedu.v1i2.7272.

Tarmidzi, T. (2019). Belajar Bermakna (Meaningful Learning) Ausubel Menggunakan Model Pembelajaran Dan Evaluasi Peta Konsep (Concept Mapping) Untuk Meningkatkan Kemampuan Pemahaman Konsep Mahasiswa Calon Guru Sekolah Dasar Pada Mata Kuliah Konsep Dasar IPA. *Caruban: Jurnal Ilmiah Ilmu Pendidikan Dasar*, *1*(2), 131. https://doi.org/10.33603/.v1i2.2504.

Ulum, M. K., Eka, E., & Ysh, A. S. (2020). Keefektifan Model Pembelajaran Addie Terhadap Hasil Belajar Matematika. *Jurnal Penelitian Dan Pengembangan Pendidikan*, *4*(1), 98. https://doi.org/10.23887/jppp.v4i1.24774.

Wardani, W. P., & Suniasih, N. W. (2022). E-LKPD Interaktif Berbasis Kearifan Lokal pada Materi Aksara Bali Kelas V Sekolah Dasar. *Mimbar Ilmu*, *27*(1), 173–182. https://doi.org/10.23887/mi.v27i1.44586

Widiantari, N. K. K., Suparta, I. N., & Sariyasa, S. (2022). Meningkatkan Literasi Numerasi dan Pendidikan Karakter dengan E-Modul Bermuatan Etnomatematika di Era Pandemi Covid-19. *JIPM (Jurnal Ilmiah Pendidikan Matematika)*, *10*(2), 331. https://doi.org/10.25273/jipm.v10i2.10218.

Widiarti, N. K., Sudarma, I. K., & Tegeh, I. M. (2021). Meningkatkan Hasil Belajar Matematika Kelas V SD Melalui Media Video Pembelajaran. *Jurnal Edutech Undiksha*, *9*(2), 195. https://doi.org/10.23887/jeu.v9i2.38376.

Winoto, Y. C., & Prasetyo, T. (2020). Efektivitas Model Problem Based Learning Dan Discovery Learning Terhadap Kemampuan Berpikir Kritis Siswa Sekolah Dasar. *Jurnal Basicedu*, *4*(2), 228–238. https://doi.org/10.31004/basicedu.v4i2.348.