



Implementation of Ethnomathematics in Mathematics Learning Videos for First Grade of Elementary School

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ABSTRAK

Media pembelajaran yang digunakan untuk mendukung proses pembelajaran pada masa pandemi Covid-19 bagi siswa kelas I SD masih belum tersedia, sehingga mengakibatkan proses pembelajaran dan pemahaman siswa terhadap pembelajaran khususnya isi materi matematika belum optimal. Semakin baik media pembelajaran maka semakin baik pula kompetensi siswa. Penelitian ini bertujuan untuk membuat dan mengetahui kelayakan media video pembelajaran matematika berbasis etnomatematika pada konten materi geometri padat. Penelitian ini menggunakan model pengembangan ADDIE dengan menggunakan metode pengumpulan data: angket, observasi, dan wawancara tidak terstruktur. Metode analisis data yang digunakan adalah deskriptif kualitatif dan deskriptif kuantitatif. Subjek penelitian ini adalah ahli materi, ahli desain, dan ahli media pembelajaran, dan subjek uji adalah siswa kelas satu sekolah dasar. Hasil penelitian pengembangan adalah perancangan produk media pembelajaran matematika berbasis etnomatematika dan kelayakan media video pembelajaran. Matematika berdasarkan hasil penilaian ahli materi pembelajaran (93,75%), ahli desain pembelajaran (100%), ahli media pembelajaran (95%), uji coba individu (92,36%), dan uji coba kelompok kecil (93,05%). Sehingga video pembelajaran matematika berbasis etnomatematika pengenalan materi geometri untuk siswa kelas satu SD layak digunakan dan dapat meningkatkan kompetensi siswa. Penelitian ini menyiratkan bahwa siswa dapat belajar matematika dengan menggunakan video pembelajaran secara mandiri, bermakna, dan menyenangkan, serta memotivasi guru untuk mengembangkan berbagai media pembelajaran.

ABSTRACT

Learning media used to support the learning process during the Covid-19 pandemic for grade I elementary school students is still unavailable, resulting in the learning process and students' understanding of learning, especially the content of mathematics material, is not optimal. The better the learning media, the better the student's competence. This study aims to create and determine the feasibility of ethnomathematics-based mathematics learning video media on the content of the solid geometry material. This study used the ADDIE development model using data collection methods: questionnaire, observation, and unstructured interviews. The method of data analysis used is descriptive qualitative and descriptive quantitative. The subjects of this research are material experts, design experts, and learning media experts, and the test subjects are first-grade elementary school students. Development research results are product design for ethnomathematics-based mathematics learning media and the feasibility of instructional video media. Mathematics based on the results of the assessment of learning material expert (93.75%), learning design expert (100%), learning media expert (95%), individual trial (92.36%), and a small group trial (93.05%). So, the ethnomathematics-based mathematics learning video introducing geometry material for first-grade elementary school students is feasible to use and can improve student competence. This research implies that students can learn mathematics using learning videos independently, meaningfully, and fun, and motivate teachers to develop various learning media.

1. INTRODUCTION

Advances in science and technology encourage the development of human civilization. Various elements of life are not free from the influence of technology, including educational practices and all aspects involved (Semara & Agung, 2021; Sukarini & Manuaba, 2021). The demands of the times that expect quality human

resources encourage education to continue to adapt and develop to maintain its relevance in society (Listiwati & Qomariah, 2020; Wardani & Syofyan, 2018). Education is a door to forming and producing quality human resources (Ammy & Wahyuni, 2020; Ferreira et al., 2018). As is the case in mathematics education which helps prepare and develop students to have competencies that have been defined and needed in society, such as the ability to reason critically, creatively, actively, collaborate, think logically analytically, and express views and opinions as well as the findings in the learning process (Farah & Budiyo, 2018; Zulaekhoh & Hakim, 2021). Mathematics learning at the elementary school level plays an important role in the mathematics learning process at the next level because elementary school students learn about basic mathematical concepts that are closely related to students' daily lives (Andersson & Palm, 2018; Hayati, 2021). However, mathematics is often viewed negatively and becomes a scourge by students because they think mathematics is a subject or content that is difficult to understand, abstract, scary, and uninteresting (Biassari et al., 2021; K. G. Permatasari, 2021). Thus, from several research results, it was found that not a few students were lazy to learn mathematics, had low interest in participating in mathematics learning activities, were afraid to convey their lack of understanding regarding the material, and resulted in low students' mathematical abilities (K. G. Permatasari, 2021; A. P. Wulandari & Renda, 2020). By exploring the factors causing students' poor outlook and performance in learning mathematics, several factors were found related to internal and external factors (Saputra et al., 2018; I. Sari et al., 2020). More specifically, it is also explained that the factors that influence the level of student achievement in mathematics are related to the personality of each student, the instructional used in learning, and the environment (Wardana & Damayani, 2017; A. P. Wulandari & Renda, 2020). Factors originating from within or personal students relate to aspects of interest, motivation, level of intelligence, and several other things. Regarding the problems that occur in the learning process, it is found that students have difficulties in learning mathematics which include difficulties in understanding mathematical concepts, difficulty concentrating while studying, difficulties in solving problems, exercises, or assignments given until the impact is seen that there is still low mathematical competence and results learn math students (Al Husna et al., 2021; Haryadi & Selviani, 2021; R. K. Sari, 2019; Titis & Sari, 2019).

The results showed that factors from outside students, such as teachers and instructional learning, also gave rise to problems in learning mathematics content; namely, teachers were more dominant in teaching using lectures. They had not maximized the use of learning media because it was seen that there were mathematical materials that did not allow teachers to use concrete media and did not. All learning media are considered capable of bridging the process of delivering mathematics material to students so that teachers maintain the old learning patterns (I. S. Permatasari et al., 2019; K. G. Permatasari, 2021; D. Wulandari & Sari, 2019). Problems in learning mathematics content are exacerbated by changes in learning patterns as a form of government response to prevent the spread of the Covid-19 virus. It has caused massive and simultaneous online learning to be implemented since March 2020. Online learning has benefits such as being able to streamline and streamline learning activities because of learning activities. It can be prepared in a shorter time, can be done from anywhere, and save costs for preparing printed teaching materials because they can be distributed easily to students (Handayani, 2020; Sadikin & Hamidah, 2020). However, online learning also has disadvantages such as reducing social interaction between students and between students and teachers, requiring more costs in procuring devices and internet connections, and online learning is less able to accommodate those who are not yet fluent in using electronic devices in learning (W. A. F. Dewi, 2020; Sadikin & Hamidah, 2020). This deficiency is increasingly dominating with the lack of preparation from all education personnel in implementing online learning so that new problems emerge and exacerbate old problems in the learning process. The data collection results in the field showed that teachers and students experienced problems while implementing online learning. Constraints, in general, include limited internet access, limited devices that support online learning, and limited time for teachers to assist and guide students. In particular, from the teacher's side, it is not easy to prepare and carry out learning activities because teachers are not proficient in using technology-based devices or features in the learning process and the procurement of learning media. So, the efforts made by the teacher are still limited to sharing Youtube videos and giving assignments after students watch the video. The efforts made by the teacher have not been maximized because the videos obtained from Youtube have not met the learning needs of elementary school students, especially in first grade. After all, the language used is still too complicated, do not direct students to achieve learning goals, and the way the material is presented is still abstract. From the students' side, it was stated that students had difficulty participating in online learning activities, especially on abstract mathematics content. Students who are not fluent in reading also have difficulty processing text information in books and the teacher's media, so students cannot learn optimally. The lack of variety of learning used by teachers and textbooks from schools that are not visually attractive also make students easily feel bored and find it difficult to concentrate on learning activities. Problems in the learning process resulted in the low learning outcomes of first graders, especially in mathematics. Problems in learning activities cannot be ignored. One of the solutions for prevention and control is optimizing the use of learning tools. Various learning tools are available according to their function. Learning media are part of learning tools that play an important role in achieving learning objectives. Through learning media, interaction and information transfer processes can occur to students, as well as stimulate students' interest and motivation to participate in learning activities to the

fullest (Pratiwi & Meilani, 2018; Riayah & Fakhriyana, 2021). Learning video media is one of the media that combines visual components with audio components into a series of products to support the process of delivering information appropriately (Suryani & Seto, 2020; Yuniarni et al., 2019). Through learning videos, benefits are obtained, namely, transferring learning from learning resources to students as learning subjects are carried out effectively (Diantari & Gede Agung, 2021; Mayang Ayu Sunami & Aslam, 2021). Learning activities become more interesting because there are variations in learning. Helping to present material or messages, because learning videos can present objects, events, or explanations that are difficult to find directly or cannot be presented in the classroom with various considerations, can accommodate students with different learning styles and characteristics as visuals and auditory, while also helping students who have difficulty reading or hearing difficulties. Video learning media is easy to store, share and access by teachers and students (Fitri & Ardipa, 2021; I. Sari et al., 2020). In addition, to maximize efforts to overcome problems in learning, it is necessary to combine learning video media by applying ethnomathematical approaches and Realistic Mathematics Education (RME). Ethnomathematics is a mathematical approach that uses culture as a gateway to study and examine more deeply related to mathematics. In mathematics and culture, relationships have been formed for a long time in the application to people's lives (Hariastuti, 2017; Zayyadi, 2017). By applying a culture that is close to students in the mathematics learning process, it can empower students in learning activities, increase awareness of culture and its relevance to learning in schools, and create meaningful learning for students (N. P. D. M. Dewi & Agustika, 2022; Febriyanti & Ain, 2021). Meaningfulness can be realized through ethnomathematics because students learn about mathematical material such as geometry through special cultural objects that are already known or known to students, so that in it, there is a process of constructing new knowledge that is combined with old knowledge previously possessed by students (N. P. D. M. Dewi & Agustika, 2022; Febriani et al., 2019). Research on ethnomathematics in several Indonesian cultures has been carried out, and it is proven that a culture has a mathematical concept that can be used to study mathematics. Like the Balinese sewing culture, which can be used to study and teach geometry materials such as flat shapes to students (N. P. D. M. Dewi & Agustika, 2022; Puspawati & Wulandari, 2018). Culture in the marriage of the people of Yogyakarta in the study of statistics (Khuzaini & Nurjanah, 2019). The significance of the ethnomathematical approach is in line with Realistic Mathematics Education (RME), which also emphasizes activities that create student experiences and real or contextual conditions in the mathematics learning process so that students can construct their abilities and develop them according to students' needs independently (Hidayat et al., 2020; Kurino, 2017). It is evidenced by the research results, which state that applying RME in learning geometry materials and combined with concrete learning media can improve student learning achievement because students become easier to understand geometry materials and motivated students to learn (Setyawan, 2020).

Seeing the gap between expectations and reality and the urgency in the learning process, the development of ethnomathematics-based mathematics learning videos in introducing first-grade elementary school classroom geometry materials needs to be implemented. This study is in line with previous research, which found that the application of learning videos was able to increase students' learning enthusiasm, was able to support the process of knowledge construction in students, and was able to streamline the implementation of learning (Sinaga et al., 2022; Wisada et al., 2019). Previous findings stated that applying ethnomathematics in learning improves student learning outcomes because students realize the relevance of learning to real life (Mahendra, 2017; Yuzianah et al., 2019). In several studies on the development of teaching materials that apply ethnomathematics, it has been found that the product development meets the eligibility criteria and is valid for use in learning (N. P. D. M. Dewi & Agustika, 2022; Khalimah et al., 2017). In terms of applying Realistic Mathematics Education in learning mathematics, it is also obtained that it can optimize the learning outcomes of elementary school students, such as in the material of geometric figures and fractions (Astuti, 2018; Elwijaya et al., 2021; Kurino, 2017). In addition, the effort to combine learning videos with ethnomathematics is in line with the paradigm shift regarding the implementation of mathematics learning which is currently process-oriented, expecting more student activity, and upholding meaningfulness in learning (Asmara & Junaedi, 2018; Yudha, 2019). The implementation of ethnomathematics in mathematics learning videos containing the introduction of first-grade elementary school classroom geometry materials has never been carried out before. The collaboration between ethnomathematics and Realistic Mathematics Education in learning video content provides students with meaningful and concrete learning opportunities. Students can see Balinese culture, which has a relationship with the content of the material being studied with an attractive appearance so that students' self-motivation increases and has a positive impact on the quality of learning, as well as students' mathematics learning outcomes. This study aims to create and describe the feasibility of implementing ethnomathematics in the learning video content to introduce first-grade elementary school classroom geometry materials.

2. METHOD

This research belongs to the type of research and development. By applying the ADDIE approach, ethnomathematics-based learning videos are produced. The development procedure includes the analysis stage, planning stage, development stage, and evaluation stage. The analysis phase was carried out to determine the

learning needs and characteristics of first-grade elementary school students. The results of the analysis stage are used to carry out the planning stage, which aims to design products and complementary instruments, such as learning implementation plans and product assessment instruments. In the third stage, learning videos were developed, including making background images, compiling materials, recording, sound recording, editing, and exporting videos to DVD. Experts and first-grade elementary school students also carried out a video learning feasibility test at the development stage. The fourth stage is the evaluation carried out to evaluate the implementation of the development procedures and product development results. The participants in this study included one expert on mathematics learning materials, one on instructional design, one on learning media, and 12 first-grade elementary school students. The implementation of product feasibility testing begins with expert testing and making improvements. Product feasibility tests are carried out by first-grade elementary school students in individual trials and small group trials of first-grade elementary school students, as well as making improvements based on suggestions by students. The research data were obtained using interviews, questionnaires, and observation. Interviews were conducted to collect information related to the implementation of learning, obstacles, teacher needs, and the availability of learning tools. The instrument used in conducting the interview was an interview guide. A questionnaire was given at the analysis stage to analyze the needs and characteristics of students. At the development stage, a questionnaire was used to assess the feasibility of learning videos. The instrument used a questionnaire, while the implementation of the observation used an observation guide instrument through interviews and qualitative data. Meanwhile, through the questionnaire method, qualitative data were obtained in responses, criticisms, and suggestions, as well as quantitative data in the form of respondents' statement scores. The grid of indicators for assessing the feasibility of learning videos in the questionnaire is described in [Table 1](#).

Table 1. Product Assessment in the Questionnaire

Learning Video Media Assessment Indicators on the Questionnaire			
Learning Material Expert	Learning Design Expert	Learning Media Expert	Product Trial on Students
1. The compatibility of the material in the media with the Basic Competencies	1. Clarity of the description of learning objectives	1. The smooth operation of the learning video	1. The attraction of the opening of the learning video
2. The compatibility of the content of the material with the indicators	2. Availability of media usage instructions	2. The ability of video media to help students understand the material	2. Readability of the text on the learning video
3. The compatibility of the content of the material with the learning objectives	3. Regularity of material presentation	3. Video ability to replay	3. Clarity of images in learning videos
4. Validity of the content of the material loaded	4. Completeness of materials	4. Accuracy of video duration	4. Clarity of voice in learning videos
5. Consistent delivery of material content	5. Ability to motivate students	5. The attraction of the prefix of the learning video	5. Interesting use of color in learning videos
6. Completeness of material coverage	6. Clarity of instructions on practice questions	6. Readability of writing on learning videos	6. Ease of understanding the material through learning videos
7. The meaning of the material content	7. Alignment of learning indicators with evaluation questions	7. Clarity of images in learning videos	7. Clarity of the material described in the learning video
8. Accuracy in choosing media		8. Appropriateness of background image selection	8. The ability of learning videos to give students enthusiasm for learning
9. Clarity of presentation of concepts in the material		9. Accuracy in the use of color	9. Ease of students to use learning videos
10. The accuracy of the material with practice		10. Clarity of voice in learning videos	11. The attraction of the opening

Learning Video Media Assessment Indicators on the Questionnaire			
Learning Material Expert	Learning Design Expert	Learning Media Expert	Product Trial on Students
questions			of the learning video
12. Alignment of the use of language in the material with the level of student development		11. Accuracy of layout presentation	
13. Language harmony with applicable language rules			

(Suartama, 2016)

The data obtained in this study were analyzed by two methods, namely quantitative descriptive and qualitative descriptive methods. The quantitative descriptive in this study was used to analyze the data in the form of scores obtained from the product assessment questionnaire using the Likert scale, namely a score of 1 for strongly disagree, a score of 2 for disagreeing, a score of 3 for agreeing, and a score of 4 for a strongly agree statement. The percentage score is calculated to be interpreted based on the achievement level conversion table in Table 2.

Table 2. Conversion of Learning Video Achievement Rate

No	Achievement Level (%)	Learning Video Qualification	Description
1	90-100	Very Good/ Very Decent	No need to revise
2	75-89	Good/ Decent	Slightly revised
3	65-74	Good Enough/Decent Enough	Revised sufficiently
4	55-64	Not Good / Not Worth it	Many things have been revised
5	0-54	Very Poor / Not Worth it	Repeated product

The qualitative descriptive method is used to analyze data in the form of comments, suggestions, and criticisms obtained from respondents to be further processed and presented in sentences to draw a research conclusion.

3. RESULT AND DISCUSSION

Result

Learning videos can be used to support the implementation of quality and meaningful learning for students because they can contain informative content with presentations that can be made as attractive as possible in audio-visual form. This development research resulted in a learning video that implements ethnomathematics in introducing spatial figures for first-grade elementary school students. The learning video was developed based on the ADDIE model procedure but was only carried out in four stages: analysis, planning, development, and evaluation. The results of the field analysis found that the change in learning patterns from offline to online caused many obstacles for teachers and students. Teachers find it difficult to facilitate learning activities due to limited equipment, quotas, and the ability to use IT-based tools, resulting in less variety of media and learning methods teachers use. In addition, teachers find it difficult to invite students to carry out learning through video conferencing due to the busyness of parents and the limitations of learning tools on the part of students, which makes online learning activities only limited to activities in Whats App Group. From the students' side, they admit that students have learning difficulties and problems understanding the material because there are students who are not fluent in reading. Students admit that online learning activities are boring because they cannot interact with friends and the media used by the teacher is monotonous. The books provided by the school are also not following the wishes and needs of first-grade students because the books provided by the school are in poor condition, not complete with explanatory pictures, and the material presented is still abstract, so students have difficulty learning only with the media of books or texts given by the teacher. . Seeing the problems experienced related to the content of learning mathematics, namely the introduction of spatial structures, curriculum analysis was carried out and determined the basic competencies that would be included in the development product. Basic competencies and indicators of competency achievement are described in Table 3.

Table 3. Basic Competencies and Indicators of Achievement of First-Grade Mathematics Content Competence in Elementary School

Basic competencies	Indicators
3.6 Recognizing geometry and flat shapes using various concrete objects.	3.6.1 Mentioning objects that are in the form of geometry 3.6.2 Distinguishing objects that are in the form of geometry 3.6.3 Determining objects that are in the form of geometry 3.6.4 Classifying objects in the form of geometry 3.6.5 Analyzing objects in the form of geometry

The results of the analysis and planning for learning video products were carried out. The product specified is a mathematics learning video that implements the ethnomathematics of Balinese Hindu culture for the introduction of flat shapes in the first grade of elementary school. The planning stage begins by planning the devices that will be used in making learning videos. The result was determined that the hardware used consisted of a camera for video recording, a tripod, a spotlight for lighting in the video, a Stabilizer Ronin SC to maintain video stability, a clip-on for recording sound, laptops, and devices. The software used is Microsoft Power Point 2019 to create material and make it into a video, Adobe Premiere Pro 2020 for video editing, PhotoShop Cc 2021, Adobe Illustrator 2020, and Procreate to create videos or as background images. After determining the device used, it is continued with workflow planning and display of learning videos. Then the preparation of the learning implementation plan and the instruments that will be used in the product feasibility test are carried out. The third stage development procedure is the execution of learning video development which starts from the process of making images, and compiling space recognition materials, followed by the process of recording video and sound (dubbing), exporting PowerPoint files into videos, editing learning videos, rendering videos, and the process of making the final video on a CD. After the learning video development process is carried out, followed by the supervisor's guidance, a product feasibility test is carried out. The feasibility test is divided into three stages, starting with an expert test carried out by mathematicians, design experts, and learning media experts. Based on the results of the expert assessment, the video production was declared feasible with several suggestions and inputs. So minor repairs were carried out and then continued with the implementation of product testing by students. The feasibility test students begin with an individual test involving three students based on the results of learning mathematics. After being declared eligible based on individual test results, the product was tested in a small group test using nine first-grade elementary school students as subjects. The feasibility test results showed a positive response. The product of ethnomathematics implementation in the learning video content of the introduction to the first-grade elementary school classroom was declared feasible with the translation of the percentage scores in Table 4.

Table 4. The Results of the Learning Video Feasibility Test

No	Feasibility Test Subject	Result	Product Qualification	Product Description
1.	Learning Material Expert	93,75%	Very Decent	No revision needed
2.	Learning Design Expert	100 %	Very Decent	No revision needed
3.	Learning Media Expert	95%	Very Decent	No revision needed
4.	Individual Trial	92,36%	Very Decent	No revision needed
5.	Small Group Trial	93,05%	Very Decent	No revision needed

The learning video product received revised input from material experts in implementing the feasibility test. Each geometry was asked to be colored as a depiction that it was a spatial shape formed by a flat plane. Furthermore, design experts are advised to make the color of objects with background colors contrast and change the order of the video display, namely from concrete objects to more in-depth explanations and containing abstract concepts, adjusting the learning cycle of elementary school students. These developments and improvements resulted in a learning video for introducing spatial figures presented in Figure 1.

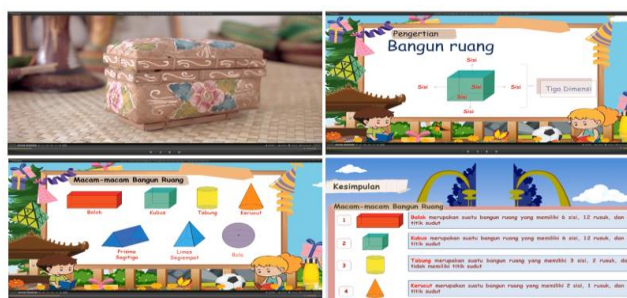


Figure 1. Display of an Ethnomathematics-Based Learning Video for The Introduction of First-Grade Elementary School Classrooms

The evaluation stage is the fourth development procedure based on the ADDIE model. Evaluation is carried out as a form of accountability in product development. The evaluation carried out is the evaluation of the development process. Assessed the suitability of the product with the needs of the analysis results, the suitability of the product with planning, and the completeness of the product in the development stage, so that the learning video product developed is feasible in terms of product quality and feasible in terms of use in learning.

Discussion

Efforts to optimize learning activities require media to help transfer learning from learning resources to students to the maximum, meaningful, and able to stimulate students' attention to follow learning activities with focus stably. The product of this development research is a mathematics learning video that implements ethnomathematics in introducing first-grade elementary school classroom materials. The product developed has been declared feasible based on the results of the product feasibility test by experts and first-grade elementary school students as research subjects. The learning video was developed by applying the ADDIE model. This model was chosen as a development procedure because it has stages that are systematically structured so that the process of developing learning tools can be carried out effectively. In addition, the development steps in the ADDIE model are also easy to apply and remain relevant to various developments of the times, especially in the educational aspect, because each learning device developed has gone through careful analysis and planning stages and is always evaluated so that the resulting product will be of high quality and appropriate student needs in the field (Sugihartini & Yudiana, 2018). The video development process begins with an analysis of conditions in the field. The analysis process is needed to obtain real conditions regarding the needs and problems experienced by teachers and students in learning activities so that the development process and the products produced are right on target (Cahyadi, 2019; Rayanto & Sugianti, 2020). As a learning media, the determination of learning videos as development products has been considered following aspects of the selection of learning media, among others, namely, the ability of the media to bridge the learning transfer process, the suitability of the media with the target subject, the suitability of the media with instructional objectives, the ability to stimulate student interest in learning, media capabilities help teachers solve learning problems, then help teachers carry out learning to the fullest, and help students develop their potential and achieve the expected competencies (Anggraeni, 2019; Rahma, 2019). In this development, learning videos were also chosen because they fit the needs of first graders who were not entirely able to read fluently. In addition, learning videos can contain text, audio as background music and explanations, images, and animations that help visualize abstract objects to students. Thus, the abstract concepts contained in the mathematics content can be learned by first graders in a simple, interesting, and relevant way to the life around students. Based on the analysis results, mathematics learning videos were planned and produced. The planning of the instructional video design determines the direction of the implementation of development research. It becomes one of the indicators of the suitability of the development results with the needs in the field. The validity of the product feasibility is based on the results of the product feasibility test and evaluation of the development implementation. This learning video product implements an ethnomathematical approach in bringing students to learn the introduction of abstract geometric shapes. Ethnomathematics accommodates the learning process of elementary school students in the concrete operational stage so that by applying ethnomathematics, students are taught mathematical material from concrete stages to abstract concepts (Silvia & Mulyani, 2019; Zayyadi, 2017). Balinese culture, closely related to religious ceremonies and all its infrastructure, has important spiritual values and is close to the people. But besides that, it can also be used in mathematics learning activities such as geometry, flat shapes, and space shapes. With the use of ethnomathematics, the material for the introduction of spatial structures can be understood in a concrete and meaningful way, because the cultural objects used such as *keben* or *sok asi*, *sanggah cucuk*, *kulkul caru*, and *tumpang* are objects that students easily find both in the home, school, and school environment. as well as in society. Ethnomathematics helps students find the relationship between mathematics and the prevailing culture in society. Ethnomathematics also encourages students' awareness of the culture around them and creates a sense of belonging and love for their culture (Andriono, 2021; Irawan & Kencanawaty, 2017).

Learning video products have met the criteria as learning media. It is based on the results of expert and student assessments in implementing the feasibility test. Concrete evidence about the feasibility of the developed mathematics learning video can be seen from several things, such as the material in the learning video that follows the instructional objectives that have been set. Then in the aspect of learning design, ethnomathematics and realistic mathematics follow the implementation of learning for elementary school students, especially in first grade in teaching the content of spatial recognition material. Furthermore, from the aspect of learning media, both the appearance, audio, content, and method of use have been declared feasible because the video has an attractive appearance, uses bright and contrasting coloring according to the interests of elementary school students, and is equipped with supporting audio and pictures that help students those who are not fluent in reading to understand still the material, the duration of the video is only about 10 minutes which is the ideal duration in learning. The use of videos that are easy to repeat and play makes these ethnomathematics-based

mathematics learning video media suitable for the needs of teachers and first graders of elementary school. The feasibility of learning videos that implement ethnomathematics in the content of the introduction of first-grade classroom geometry materials in elementary schools is in line with the results of previous studies, which showed that the implementation of ethnomathematics into learning could increase the meaning of mathematics learning activities, which raises awareness and motivation in students to study mathematics in an integrated manner. pleasant (Irawan & Kencanawaty, 2017; Subakti et al., 2021). Students' mathematical ability and problem-solving have also increased by applying ethnomathematics to learning activities (Sarwoedi et al., 2018). Moreover, the combination of realistic mathematics learning with ethnomathematics can also clearly affect students' mathematical competence compared to conventional mathematics learning (Heryan & Zamzaili, 2018; Uskono et al., 2020). This finding is reinforced by the findings of previous studies stating that the results of mathematics learning that the application of instructional video media is also declared feasible and significantly able to maximize the performance of student learning outcomes seen from the increase in the percentage of student learning outcomes (Octavyanti & Wulandari, 2021; Prastica et al., 2021). Thus, the results of this development research regarding the feasibility of learning videos that apply ethnomathematics to the content of the introduction of geometry materials in first grade of elementary schools are valid. The learning videos from this development research have the advantage of having an attractive appearance according to the characteristics of low-grade students, using simple language that is easy to understand, and, following the stages of students' language development, using culture as an introduction to space recognition material, making it easier for students to build concepts about shapes. The space of objects that are close to students introduces the culture that is near students. Learning videos also increase students' awareness of the relevance of mathematics material in everyday life and provide meaningful learning activities because students construct all new knowledge about geometry from old knowledge about Balinese culture independently, as well as learning videos according to online learning conditions or offline so that media products can be used in both learning models. With the advantages it has. This development has implications for the availability of learning tools that suit the needs of first-grade students and can realize the expectations of the 2013 curriculum that supports meaningful learning based on local wisdom. In addition, the results of this study also add to the record of the success of learning media in optimizing learning activities, so that teachers and all parties involved in educational practice can use the results of this research to improve and develop quality education. This research is limited to the development and feasibility test of the implementation of ethnomathematics in the learning video content of the introduction to geometry first grade elementary school classrooms, so that in the future it is hoped that there will be research to test the effectiveness of the product, or new research on the development of other teaching materials. Thus, the variety of learning tools at the elementary school level is growing and can encourage improving the quality of learning and human resources.

4. CONCLUSION

Development research by following the ADDIE procedure in four stages has produced an ethnomathematics-based learning video on the content of first-grade introduction material that is feasible to be applied in the learning process in elementary schools. This research has implications for the availability of learning media for the first grade of an elementary school following the 2013 curriculum, which can motivate students to learn mathematics in a concrete, meaningful, and fun way. In addition, it also encourages teachers and all parties in the world of education to continue to make improvements and developments in the implementation of learning so that they can support the maximum student development process.

5. REFERENCES

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