



# Interactive Video Development With a Scientific-Based Ethnopedagogical Approach for Elementary School Students : An Analysis Review

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## OPEN ACCESS

ISSN 2548 2254 (online)

ISSN 2089 3833 (print)

Edited by:

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Received: 6 September 2023

Accepted: 23 November 2023

Published: 1 February 2024

Citation:

Makmun Raharjo, Erna

Retna Safitri, Harlin

(2024) Interactive Video

Development With a

Scientific-Based

Ethnopedagogical Approach

for Elementary School

Students : An Analysis

Review.

*Pedagogia: Jurnal Pendidikan*. 13:1.

doi: 10.21070/pedagogia.v13:1.1604

The aims of this research is to analyze the need for the development of interactive videos with a scientifically based ethnopedagogical approach for elementary school students. This research is a qualitative descriptive study. Data collection was carried out using a questionnaire method with 34 teachers as respondents. The research results show that students' difficulties in learning are mainly caused by teacher explanations that students cannot understand (37 percent). Teachers rarely use ICT-based media (41.2 percent) and most learning uses presentations (38.2 percent) and discussions (38.2 percent). As many as 73.5 percent of teachers use media downloaded from the internet. Barriers to media development are caused by only 14.7 percent of teachers being able to develop their media. Teachers experience difficulties in conveying material to students, so 79.4 percent of teachers want to develop interactive learning media. As many as 97.1 percent of teachers also want media to be developed with a scientific approach, 76.5 percent see the need to introduce local culture to support character education. The results of the analysis of supporting facilities show that 35.3 percent of schools have adequate internet access, 88.9 percent of students have laptops, and 11.1 percent have cell phones. The results of this research indicate the need to develop digital-based learning media to help students in learning. The research results also show that a scientifically based ethnopedagogical approach will be a good synergy in the learning media being developed.

**Keywords:** Video, Ethnopedagogy, Scientific, Character

## INTRODUCTION

Learning media is used to convey messages from the sender of the message to the recipient (Massie & Nababan, 2021). The use of educational media in the learning process can stimulate new desires and interests, generate motivation and stimulation for learning activities, and even increase the psychological effect of students (Farida, Destiniar, & Fuadiah, 2022). However, the use of media in learning must be adapted to the characteristics of each school, including at the elementary school level, because the contextuality in each school is not the same (Farida et al., 2022)(Zahwa et al., 2022) For this reason, media development needs to be done by design so that it fits the characteristics of students. The concept of an independent curriculum encourages character education which is carried out through the implementation of project-based learning on strengthening the profile of Pancasila students. This is relevant to the goals of national education to develop the potential of students to become human beings who believe in and fear God Almighty, have a noble character, are healthy, knowledgeable, capable, creative, independent, and become citizens of a democratic and responsible state. The curriculum also emphasizes diverse intra-curricular learning with more optimal content so that students have enough time to explore concepts and strengthen competence.

In its implementation, the teacher has the flexibility to choose various teaching tools so that learning can be adapted to the learning needs and interests of students. Project-based learning aims to develop soft skills and character according to the profile of Pancasila students. In this way, it is necessary to design meaningful learning strategies so that "Indonesian students are lifelong students who are competent, have character and behave according to Pancasila values." One strategy that can be implemented in developing learning that is conducive to achieving this goal is through the development of learning media. Learning media is used to help convey information in the form of material to students. Digital learning resources are understood as a combination of hardware and software that has the potential to overcome learning problems and facilitate learning activities (Dopo & Ismaniati, 2016). Digital learning resources help in providing solutions to overcome time and location gaps that are not possible to reach due to limited funds, transportation, or accessibility (Mustakerov, Mustakerov, & Borissova, 2017).

Learning resources that can be developed to support innovative and modern technology-based learning processes. A scientific approach is an approach that follows the concept of scientific research, which means that the learning process must include a series of research activities and be carried out by students to construct their knowledge. This approach is relevant to the educational paradigm in Era Society 5.0 which directs the education and learning process so that students have 4C competencies (creativity, critical thinking, collaboration, communication). The scientific approach is operationalized in the form of learning activities which include learning experiences in the form of activities of observing, asking, gathering information (trying), reasoning (associating), and communicating. Disclosure/research-based learning (discovery/inquiry learning), and problem-solving-based learning (problem-based learning, and project-based learning)

can be used to gain these five experiences.

On the other hand, Ethno pedagogy is an approach in education that offers a concept based on culture or local wisdom. Local wisdom itself is interpreted as a potential that must be given a new interpretation so that it is flexible to face the challenges of the times. That way, this approach will make the learning process able to build a quality education world to be able to produce quality resources, have expertise, be skilled, creative, productive, have positive behavior, and always love the culture of the homeland and country.

Ethno pedagogy emphasizes a harmonious relationship between educators and students so that learning activities become intra-personal relationships that touch the heart and are full of empathy. Ethno pedagogy is the actualization of learning to inculcate the local wisdom values of an ethnic group (Hastuti et al., 2020). Ethnopedagogy can help students develop the right attitude toward the values of a national culture (Rahmawati, Ridwan, Cahyana, & Wuryaningsih, 2020). Ethnopedagogy can improve student learning outcomes and effectively instill social values (Lestari & Bahri, 2021a). Ethno-pedagogy integration in science learning can provide meaningful learning for students to develop student engagement and cultural awareness (Rahmawati et al., 2020). A scientific-based ethnopedagogic approach can make learning integrated with innovative media and keep up with science and technology developments and pay attention to local wisdom values to strengthen character education.

Several previous studies have focused on the ethnopedagogical approach, but none has synergized it with a scientific approach. It is hoped that this research will provide a good synergy between character-based learning through an ethnopedagogic approach and scientific thinking skills according to 21st century competencies. In other words, the combination of an ethnopedagogic approach and a scientific approach will produce effective learning media.

The purpose of this research is as an initial study of gathering information in the context of needs analysis to design a draft of learning media with a scientific-based ethnopedagogic approach. Needs analysis is carried out through literature studies and field studies. Literature study by looking at the school curriculum and material concepts. Field studies are carried out by collecting information related to media use in the learning process. This needs analysis stage has a positive impact on the product being developed, with the evaluation stage at each stage minimizing the error rate or product shortage at the final stage of development.

## METHODS

The purpose of this study was to identify the need for the development of Interactive Video Development with a Scientific-Based Ethnopedagogical Approach for Elementary School Students. It is hoped that the results of the research will produce the right formula as the basis for developing media that will be used as a learning resource in mathematics in elementary schools. The research was conducted using a questionnaire to find the perceptions and needs of students about the learning media to be developed. Researchers deploy online-based questionnaire instruments. The sampling technique was carried out using simple random sampling. 34 respondents were involved in the

research who were teachers of mathematics subjects. Data were obtained from all respondents who filled out an electronic survey. The method used in collecting the initial information is literature study and field study. The literature study was carried out by collecting research and relevant sources and examining concepts in mathematics material as a basis for developing interactive multimedia with a scientific-based ethnopedagogic approach, while the field study was carried out by distributing media needs questionnaires using Google Forms to teachers from 18 schools in Palembang city. Data analysis was performed using descriptive and analytical techniques to reveal the meaning of the data. Data were analyzed descriptively. This needs analysis is the initial stage of the development model (Lee & Owens, 2004), namely analysis that aims to identify existing facts and determine ideal conditions by developing products that are appropriate to the problem.

## FINDINGS AND DISCUSSION

Needs analysis as a basis for developing interactive multimedia media development with a scientific-based ethnopedagogic approach is an initial activity before media development. The analysis carried out was a literature study on interactive multimedia with a scientific-based ethnopedagogic approach and analysis of material concepts. Needs analysis was carried out using a questionnaire consisting of several aspects including identifying problems in mathematics learning activities, availability of learning resources or learning media, ownership of private learning support facilities, interest in developing new learning media, and support for the school environment in learning activities.

Analysis of the need for the development of interactive multimedia with a scientific-based ethnopedagogic approach was carried out by collecting data using a questionnaire. The aspects analyzed include an analysis of mathematics learning in elementary schools, the availability of learning resources or learning media, the innovative media to be developed, and the availability of supporting facilities.

An analysis of learning mathematics in elementary schools includes what makes mathematics difficult for students to learn from the teacher's perspective, the teacher's intensity in using ICT-based media, interactive multimedia that is often used in learning, and the learning methods that have been used by teachers so far. The results of the needs analysis on the aspects of Mathematics Learning Analysis in Elementary Schools are shown in detail in Table 1 below.

[Table 1. about here]

The results of data collection showed that students' difficulties in learning mathematics were caused by the teacher's delivery method which students could not understand (44.1%), the number of formulas that had to be memorized (14.7%), the amount of material that needed to be learned (17.6%), the examples given were not sufficient. relevant (6%) and less optimal use of learning media (17.6%).

Some of the methods often used in learning are lectures (38.2%) assignments (38.2%), drills and exercises (14.8%),

and games (8.8%). In terms of the use of ICT-based media in learning, some teachers said they often used it (41.2%), and 44.1% said sometimes. As many as 11.8% said they rarely used ICT-based media, and even 2.9% of teachers said they had never used ICT-based media at all. The results of the needs analysis on the availability of learning resources or learning media are shown in detail in Table 2 below.

[Table 2. about here]

In the aspect of the availability of learning resources or learning media, the study results show that the interactive multimedia that is often used by teachers in learning is Interactive PPT (26.5%). Learning videos are 41.2%, using Flash is 23.5%, and other media are 8.8%. Generally, the interactive media used are obtained by making it yourself (26.5%) or downloading from the internet (73.5%). Whereas teachers who still use conventional media generally choose to use visual aids (35.3%), worksheets (23.5%), books (26.5%), and photos/pictures (14.7%). The results of the needs analysis on the aspects of innovative media to be developed are shown in detail in Table 3 below.

[Table 3. about here]

In collecting data about the need for a scientific approach in the development of interactive media, 76.5% of teachers said it was very necessary, 20.6% said it was necessary, and the remaining 2.9% of respondents said it was not necessary. The results of the questionnaire show that all respondents stated that the development of interactive multimedia is needed to support mathematics learning. In collecting data about the need to instill character values through learning media, the results of the study show that respondents gave the answers Very Necessary (91.2%), Necessary (5.9%), and Sufficiently Necessary (2.9%). Furthermore, for the need to introduce local cultural values to students through learning media, respondents stated that it was very necessary as much as 76.5% and as much as 23.5% as necessary.

In the aspect of ownership of private learning support facilities, the results of the questionnaire revealed that 91.2% of students had mobile devices or laptops (8.8%). The aspect of supporting the school environment reveals that the situation around the school is quite conducive and supports learning activities in class using multimedia. This is indicated by the availability of laptops (49.9%), adequate internet network (35.3%), and readiness of human resources to implement as much as 14.7%.

The results of the needs analysis on the aspect of the availability of supporting facilities are shown in detail in Figure 1 below.

[Figure 1. About here]

The results of the study showed that students' difficulties in learning mathematics were dominated by the teacher's delivery method which students could not understand (44.1%). This is influenced by the cognitive level of the elementary school level which is still in the concrete operational stage. Thus, the method used during learning determines the effectiveness of learning. However, an important principle in learning is to create a process

that directs students to carry out learning activities (Sutrisno, 2021); (Salim, Nasuka, & Abid, 2018).

So far, teachers use the lecture method (38.2%), followed by assignments (38.2%), then the drill and practice method (14.8%) and some use the game method (8.8%). Mathematics learning which is dominated by lectures is certainly boring for students. Learning tends to be verbal and abstract for students whose cognitive development is concrete and operational. Although several studies have shown that the lecture method can increase student activity and creativity, so that student learning achievement increases (Adisel et al., 2022), this method must of course be combined with the support of other aspects such as the availability of appropriate learning media.

The media used in learning include visual aids (35.3%), worksheets (23.5%), books (26.5%), and photos/pictures (14.7%). According to (Arsyad azhar., 2013) the limitation of print media is that it is difficult to display movement on the printed media page, then it is very rare for print media to design a text that emphasizes emotions, feelings, or attitudes, and if it is not treated properly it will be damaged or lost. (Kustiawan, 2016) added that print media in the form of textbooks sometimes uses word terminology so that the concepts explained become difficult to understand.

Dale's cone of experience states that through reading activities, a person only gains a 10% level in terms of remembering and understanding something in the text, whereas if someone only sees an image, then only a 30% level of memory and understanding is obtained. It is different if learning media is developed with good design, involving animated videos, graphics, audio, and interactivity will increase the effectiveness of material absorption reaching 80-90% (Wibawanto, 2017). When using interactive learning media, teachers get more of it by downloading it from the internet (73.5%), and some of it is obtained by making it themselves (26.5%). Good learning media is media that is by design, which is adapted to the characteristics of students. That way, media development is a necessity.

The results of the study showed that 97.1% of teachers stated that a scientific approach was needed in learning. This is necessary because the scientific approach is relevant to the educational paradigm in Era Society 5.0 which directs the education and learning process so that students have 4C competencies (creativity, critical thinking, collaboration, communication). The scientific approach is operationalized in the form of learning activities which include learning experiences in the form of activities of observing, asking, gathering information (trying), reasoning (associating), and communicating. To get these five experiences, learning can be done based on disclosure/research (discovery/inquiry learning), problem-solving-based learning (problem-based learning), and project-based learning (project-based learning).

The application of a scientific approach to integrated thematic learning is expected to increase students' understanding through creativity. The research revealed that the scientific approach is intended to provide students with an understanding of knowing various materials using a scientific approach, that information can come from anywhere, at any time, not depending on unidirectional information from the

teacher.

Besides, the research identified several problems in applying the scientific approach, namely (1) the teacher understood the meaning of the scientific approach but did not understand how to apply the scientific approach so in practice the steps of the scientific approach were not visible (2) student learning activities created by the teacher were generally still monotonous by reading books so that the learning process is less conducive due to students not being directly involved in the learning process (3) students' communication skills are limited to reporting the results of filling out worksheets in front of the class causing students to be less active in the learning process. Based on data obtained from research (Sristia, Aisyah, Meryansumayeka, Safitri, & Kurniawan, 2022) it is known that students must be given a lot of practice solving reasoning problems. However, what is noteworthy is that the application of the scientific approach can increase when paying attention to student characteristics, subject matter, facilities, and infrastructure to support the allocation of learning time and class conditions (Melinda & Desyandri, 2021).

The results of the questionnaire also showed that all respondents agreed that the development of interactive multimedia was needed to support mathematics learning. In collecting data about the need to instill character values through learning media, the results of the study show that respondents stated the need to introduce local cultural values to students through learning media. This is because ethnopedagogy can help students develop the right attitude toward the values of a national culture (Rahmawati et al., 2020).

Ethnopedagogy can also improve student learning outcomes and effectively instill social values (Lestari & Bahri, 2021b). In addition, the integration of ethnopedagogy in science learning can provide meaningful learning for students to develop student engagement and cultural awareness (Rahmawati et al., 2020). An ethnopedagogic approach adapted from traditional games based on local wisdom can develop children's psychomotor and cognitive abilities (Rasna & Pande Tresnayani, 2021).

However, currently, the integration of local wisdom in classroom learning is not optimal. Education and local wisdom values have not fully merged into a formidable new force in Indonesian education. As a result, the impact caused by education on the preservation of regional culture is very far from expectations (Ridwan, 2014). Various studies conducted show that an ethnopedagogical approach makes it possible to prepare teachers in the future to revive, strengthen, and preserve popular pedagogic traditions (Akhmetova, 2014).

The results of the study show that the media needed is media that inserts character values. Character values can be obtained from cultural values and local wisdom. This is appropriate to previous research conducted (Oktavianti & Ratnasari, 2018) shows that Ethno pedagogy as a learning approach that is implemented through learning activities that present media based on local wisdom is more effective. The use of local excellence-based media is often accompanied by various play activities, thus creating active, creative, effective, and fun learning. This shows that Ethno pedagogy can be successfully applied to learning in elementary schools if the implementation is presented through innovative learning such as media based on local wisdom.

Ethnopedagogical-oriented learning is very important to implement considering that Indonesia is a plural country consisting of various ethnic groups and ethnicities which of course have different cultures. More than that, globalization and technological developments can cause cultural changes in Indonesian society. If ethnopedagogical-oriented learning is not implemented early on, then in the future globalization and very rapid technological developments can shift local wisdom in society (Oktavianti & Ratnasari, 2018).

## CONCLUSIONS

The results showed that students' difficulties in learning mathematics were caused by the teacher's way of delivering that students could not understand, the number of formulas that had to be memorized, a lot of material that needed to be learned, the examples given were less relevant and the use of learning media that was not optimal. Some of the methods that teachers often use during learning are assignment lectures, drills and exercises, and games. In terms of the use of ICT-based media in learning it is still not optimal because of the limited ability of teachers to develop media so that teachers use more learning resources downloaded from the internet. The teacher states the need for a scientific approach in the development of interactive media as well as the need to introduce local cultural values to students through learning media. The aspect of supporting the school environment reveals that the school is quite conducive and supports learning activities in class using multimedia. This is indicated by the availability of tools and the readiness of human resources in implementing them. Thus, it is necessary to develop innovative learning media with a scientific-based ethnopedagogic approach and pay attention to local wisdom values to strengthen character education.

## ACKNOWLEDGMENTS

The researchers express their gratitude for the financial support provided by the DIPA budget of the Sriwijaya University Public Service Agency for the fiscal year 2023, by the Rector's Decree 0189/UN9.3.1/SK/2023 dated April 18, 2023.

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**Conflict of Interest Statement:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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**Table 1** | Results of Needs Analysis Aspects of Analysis of Mathematics Learning Development of Interactive Multimedia with a Scientific-Based Ethnopedagogic Approach

| Aspect   | Descriptor                                      | Results  |
|--|---|--|
| Analysis of Mathematics Learning in Elementary Schools | The cause of the material is difficult to study | The teacher's presentation was poorly understood by students (44.1%)<br>Lots of formulas to memorize (14.7%)<br>Lots of material to learn (17.6%)<br>Irrelevant examples (6%)<br>The use of learning media that is less than optimal (17.6%) |
|  | The learning method used by the teacher         | Lectures (38.2%)<br>Assignments (38.2%)<br>Drills and exercises (14.8%)<br>Games (8.8%).   |
|  | The use of ICT-based media in learning          | Always (0%)<br>Often (41.2%)<br>Sometimes (44.1%)<br>Rarely (11.8%)<br>Never (2.9%)  |



**Table 2 |** Results of Needs Analysis Aspect Availability of learning resources or learning media Development of Interactive Multimedia with a Scientific-Based Ethnopedagogic Approach

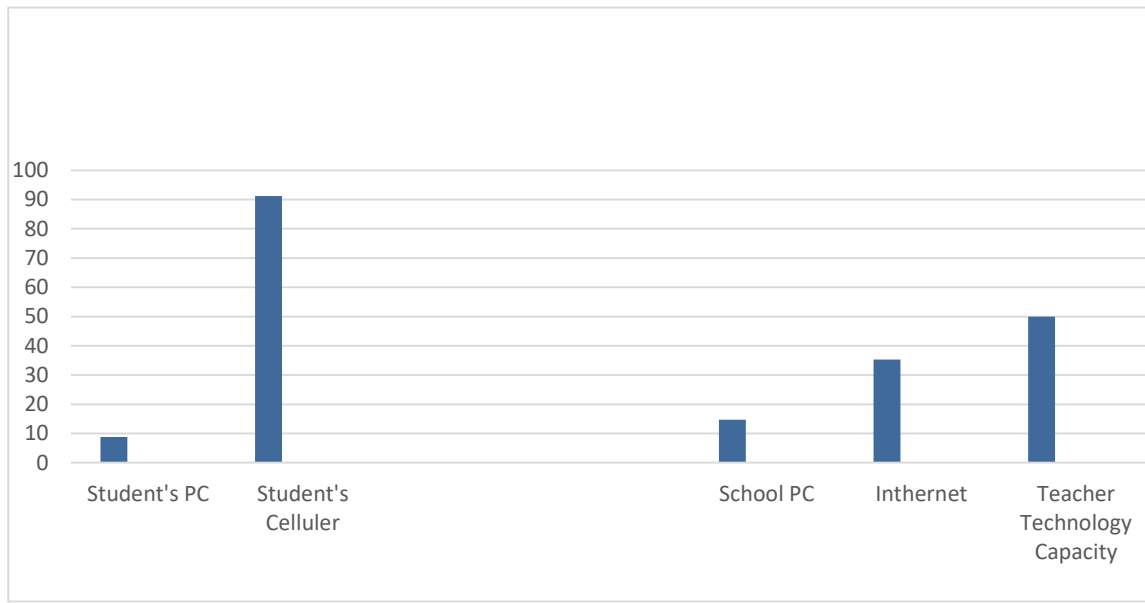
| Aspect   | Descriptor   | Results  |
|--|--|--|
| Availability of learning resources or learning media | The media used in learning other than ICT media      | Props (35.3%)<br>LKPD (23.5%)<br>Books (26.5%)<br>Photos/Images (14.7%)                  |
|  | Interactive multimedia used in learning              | Interactive PPT (26.5%)<br>Learning videos (41.2%)<br>Flash (23.5%)<br>Others (8.8%)     |
|  | How teachers obtain ICT-based media used in learning | Make your own (26.5%)<br>Downloads from the Internet (73.5%)<br>The school provided (0%) |

**Table 3** | Results of Needs Analysis for Innovative Media Aspects to be Developed Development of Interactive Multimedia with a Scientific-Based Ethnopedagogic Approach

| Aspect                           | Descriptor  | Results  |
|----------------------------------|---|--|
| Innovative media to be developed | The need to use interactive multimedia in the learning process                            | Yes (100%)<br>No (0%)  |
|                                  | The scientific approach in developed media  | Very Necessary (76.5%)<br>Need (20.6%)<br>Sufficiently Necessary (0%)<br>Not Necessary (2.9%)<br>Very Unnecessary (0%)   |
|                                  | The need for planting character values through learning media                             | Very Necessary (91.2%)<br>Need (5.9%)<br>Sufficiently Necessary (2.9 %)<br>Not Necessary (0%)<br>Very Unnecessary (0%)   |
|                                  | The need for the introduction of local cultural values to students through learning media | Very Necessary (76.5%)<br>Need (23.5%)<br>Sufficiently Necessary (0 %)<br>Not Necessary (0%)<br>Very Unnecessary (0%)<br>Very Necessary (76.5%)<br>Need (23.5%)<br>Sufficiently Necessary (0 %)<br>Not Necessary (0%)<br>Very Unnecessary (0%) |

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**Figure 1** | Results of Analysis of Needs Aspect Availability of Interactive Multimedia Development Facilities with a Scientific-Based Ethnopedagogic Approach