

Ethno-STEAM Based E-Comic “Lilis Lamiang”, is it Necessary to Use it on Science Learning in Elementary Schools?

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Received: March 12, 2024

Revised: July 01, 2024

Accepted: October 25, 2024

Published: October 31, 2024

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DOI: [10.29303/jppipa.v10i10.8337](https://doi.org/10.29303/jppipa.v10i10.8337)

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Abstract: This research aims to analyze the response to the needs of ethno-STEAM based e-comic “lilis lamiang” for elementary school students. In this study we focus to analyze the teacher and student perception about the development of the local wisdom module, especially to increase learning outcome. The research method is descriptive and qualitative by used surveys to collect data. Data collection was carried out by distributing questionnaires to 2 elementary school teacher and to 20 student 5th grade students, SDN 4 Menteng in Palangkaraya City, Central Kalimantan. The collected data were analyzed using descriptive analysis. The results of this research showed that teachers have never developed their own teaching materials based on local potential in Central Kalimantan, while students are of the opinion that the use of teaching materials based on local potential will make learning activities more interesting. This research concluded that the development of ethno-STEAM based e-comic especially about lilis lamiang very important thing to do based on teacher and student perception and important to continue in the next research to develop the module.

Keywords: Lilis lamiang Central Kalimantan; Local wisdom; Student learning outcome

Introduction

Indonesia has a various local wisdom in the form of plant, animal or culture, especially in central Kalimantan. Local wisdom in the form of plants that usually use by the Dayak tribe in Central Kalimantan as a traditional medicine (Azhari et al., 2022; Zannah et al., 2023) as a source of nutrition (Zannah et al., 2022), as an antibacterial soap (Zaini et al., 2020) and local wisdom in the form of culture (Wardani, 2020). This various local wisdom will certainly be very beneficial if used as learning resources in natural and social science subjects, especially at the elementary school.

Integration of local wisdom in natural and social science subjects can make the material presented more concrete, this is in line with the characteristics of students at elementary school level (Anggoro et al., 2023; Suwanto et al., 2024). Teachers need to use information

about student characteristics to create learning experiences which is meaningful (Keiler, 2018; Kostianen et al., 2018; Orland-Barak et al., 2021; Susiani et al., 2022; Uerz et al., 2018).

Learning experiences which is meaningful can help students to have a skill that can help them to face the 21st century challenges successfully (Almazroa et al., 2023; González-Salamanca et al., 2020; Zaini et al., 2020). Various approach need to be offered to increase the 21st century skills (Khahro et al., 2022; Liesa-Orús et al., 2020; Taar et al., 2022). One of them is by implementing learning resources based on local wisdom, especially from central Kalimantan in in learning activities in elementary schools.

By implementing learning resources based on local wisdom, can create student-centered activities by building interaction between teacher and student (Hähkiöniemi et al., 2022). The use of learning resources

How to Cite:

Sabella, W., & Zannah, F. (2024). Ethno-STEAM Based E-Comic “Lilis Lamiang”, is it Necessary to Use it on Science Learning in Elementary Schools?. *Jurnal Penelitian Pendidikan IPA*, 10(10), 7431–7436. <https://doi.org/10.29303/jppipa.v10i10.8337>

based on local wisdom also refers to the phenomenon of education including globalization of education, culture and national character (Ulfah et al., 2023), so that it can create meaningful learning activities that can impact on the results of students' learning outcomes.

In fact, local wisdom based learning is very important for students because can improve students acquire intelligence in thinking, behaving and responsible behavior in preserving integrity, stability, and congruent interaction with nature (Ningrum et al., 2018). Therefore, it is very important to apply it to learning activities because in fact, local wisdom can connecting the human with the surrounding environment where enable leaners to learn and connect then contribute to the sustainable creation of new knowledge (Kwangmuang et al., 2021).

The application of local wisdom-based learning activities is very important, one of which can be the application of learning media in the classroom. Interesting learning media that can be applied in the learning at elementary school level include comics (Wicaksono et al., 2018).

Based on the results of previous research, learning media in the form of comics has an impact on improvement student motivation, scientific literacy skills and critical thinking skills (Badeo et al., 2021; Fananta et al., 2019; Priyadi et al., 2023). These results show that the use of learning media in the form of comics has great potential for use in learning activities, especially that discuss about local wisdom in the central Kalimantan that is "Lilis lamiang".

However, developing a learning source based on local wisdom especially local wisdom form central Kalimantan become a major challenge in elementary school. Based on this fact, initial assumptions estimate that it is important to develop learning resources in the form of comic that integrate the local wisdom of Central Kalimantan. The purpose of this study was to analyze the teacher and student perception about the development of the local wisdom comic, especially about etnoSTEAM based "Lilis lamiang".

Method

The method of this research is a descriptive and qualitative by used surveys to collect data about need analysis related to the etno-STEAM based e-comic "lilis lamiang". And this research is a part of research and development research with the ADDIE model. ADDIE model consists of 5 stages, that is analyze, design, development, implementation and evaluation (Mellawen et al., 2024). The research was conducted at elementary school in Central Kalimantan, Palangkaraya city. The research respondents were 2 teachers and 29 elementary school students in 4th grade, SDN 4 Menteng

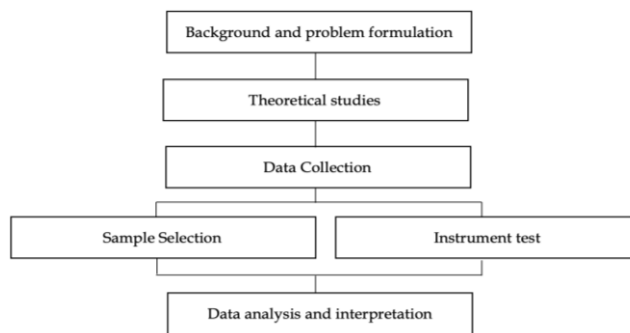


Figure 1. Research design

The research starts with quantitative research and continues with qualitative research following an explanatory strategy. In this research, the instrument that used is questionnaire to analyze the student and teacher perceptions about etno-STEAM based e-comic about lilis lamiang that could improve student learning outcome.

Data analysis techniques that used in this study are data collection, data reduction, data display and verification (Kumar, 2014). Data collection began with researchers distributing questionnaires to 2 teacher respondents and 29 elementary school students determined purposefully. Then, the data obtained from student and teacher's questionnaire were analyzed by grouping the answers from the teacher and student respondents based on the questionnaire questions, then give a score to each answer according to the scoring criteria and then calculate the total score of the answer.

The questionnaire used the Guttman scale with answer choices "Yes" or "No". Answers "Yes" get a score of "1" and answers "No" not get a score or "0". All answers are then calculated based on percentage (Rosaria et al., 2023).

Result and Discussion

The results of this research found several facts regarding the perceptions of teachers and elementary school students regarding the ethno-STEAM based e-comic which has the potential to improve student science process skills, after distributing questionnaires to 29 student 4th grade elementary school students, SDN 4 Menteng. The results shown in table 1.

Based on table 1, the conclusion is most students stated that the use of examples based on something typical in Central Kalimantan was important to use in learning activities. All of student state that they don't know about "Lilis Lamiang" as a one of the as one of the typical souvenirs from Central Kalimantan. Lilis Lamiang is a type of jewelry made of beads which is made from Lamiang stone coloured red, and for the Dayak tribe, Lamiang as a symbol of honesty and steadfastness (Sriyana et al., 2020).

Table 1. The Results of Interpretation of Student's Perception

Question	Percentage (%)	
	Yes	No
During classroom learning activities, has the teacher ever used concrete learning media as a learning resource?	100	0
In your opinion, do teachers need to use concrete learning media in learning activities, especially in science and science subjects?	100	0
While teaching in class, especially in science and science subjects, has the teacher also used learning media in the form of comics?	70	30
Do you think it would be fun if teachers used comics as a learning medium in class?	100	0
To your knowledge, have you ever prepared a textbook that you wrote yourself, especially for science subjects?	0	100
To your knowledge, have you ever written comics yourself, especially for science subjects? Specifically regarding the characteristics of the form of substances/materials?	0	100
When your teacher teaches the material "characteristics of forms of substances/materials", do you think the teacher needs to integrate with the local potential that exists in Central Kalimantan as a learning resource?	80	20
Do you know about "lilis lamiang"?	0	100
Has your teacher ever used "lilis lamiang" as a learning resource, especially in science and science subjects, especially in the material "characteristics of forms of substances/materials"?	0	100
In your opinion, would it be interesting if teachers used examples based on local potential in Central Kalimantan as learning resources, especially in science material?	100	0

Based on this meaning, it shows that Lilis Lamiang has a deep meaning for the Dayak tribe in central Kalimantan, but unfortunately there are still few people who know this meaning of Lilis Lamiang. These results show that there is a need to introduce local potential to the community, one of which is through educational facilities.

One of the ways to integrate local potential in learning activities is through the use of local potential as a learning resource. The use of learning resources that are closely related to students' daily lives has several benefits, such as the lessons can be stored in long-term memory because learning experience is a determinant of the success of students' knowledge construction process (Putri et al., 2021).

The use of learning resources based on local wisdom needs to be developed because based on the previous studies can increase student motivation (Bulkani et al., 2022) and learning outcome (Mellawen et al., 2024) that because have a lot of influence on the learning process (Doyan et al., 2020) and it is in line with the desired competency development in the era of industrial revolution 4.0 (Singh et al., 2020).

These findings form the basis that teachers need to use learning resources that are closely related to students' daily lives, so that the material presented can be stored in long-term memory. One of them is using various local potentials such as Lilis Lamiang as learning resources, one of which is in natural science learning and students, especially about the material "characteristics of form of substances/materials".

Research related to the use of local wisdom-based learning resources has been widely carried out, especially in elementary school. First, the implementation of local wisdom based learning has impact to the student character (Sugiyono et al., 2017).

Next, the animation learning media based on local wisdom also can improve student learning outcome in elementary schools (Bulkani et al., 2022). Furthermore, other research also shows that the use of natural science big book with baduy local wisdom base media development has positive impact to the student learning process (Andriana et al., 2017).

After reviewing student perceptions, an analysis was also carried out on teacher perceptions regarding the use of local potential as a learning resource. That has been carried out by distributing questionnaires to 2 teachers at elementary school in Palangkaraya City which is shown in table 2. Based on table 2, the conclusion is most of teacher agree that is important to use the surrounding environment as a learning resource. But in fact, teachers have yet to develop their own comic that are integrated with local potential in Central Kalimantan, especially about "Lilis lamiang".

Teachers are usually required to master various competencies (Meling, 2022), one of which is no less important is the teacher's skills in preparing teaching materials to be applied to learning activities. One of the causes of the lack of teachers developing their own teaching materials is caused by internal factors. The teachers usually have confidence in their social abilities but lack confidence in their pedagogical abilities (Ammoneit et al., 2022). This of course needs to be addressed immediately in order to improve the quality of education through increasing teacher competence.

Integration of local potential in learning activities as a learning resource in elementary schools, one of which can be learning media in the form of comics. Based on the results of previous research, it shows that the use of learning media in the form of comics is very necessary in learning activities, one of which is at the elementary school level (Wicaksono et al., 2018).

Table 2. The Results of Interpretation of Teacher's Perception

Question	Percentage (%)	
	Yes	No
During classroom learning activities, have you ever used concrete learning media as a learning resource?	100	0
Do you think it is necessary for you as a teacher to use concrete learning media in learning activities, especially in science subjects?	100	0
While teaching in class, especially in science and science subjects, has the teacher also used learning media in the form of comics?	20	100
Do you think it would be fun if you (the teacher) used comics as a learning medium in class?	80	0
Have you ever prepared a textbook that you wrote yourself, especially for science subjects?	0	100
Have you ever written comics yourself, especially in science subjects? Specifically regarding the characteristics of the form of substances/materials?	0	100
When you teach the material "characteristics of forms of substances/materials", do you think it is necessary to integrate with local potential in Central Kalimantan as a learning resource?	100	0
Do you know about "lilis lamiang"?	100	0
Have you ever used "lilis lamiang" as a learning resource, especially in science and science subjects, especially in the material "characteristics of forms of substances/materials"?	0	100
In your opinion, would it be interesting if you used examples based on local potential in Central Kalimantan as a learning resource, especially in science material?	100	0

Apart from that, the results of other studies also show that educational comic with the local wisdom can foster morality of elementary school students (Murti et al., 2020). Furthermore, the other research also show that the science comic based on local culture can improve elementary school character of environmental care and awareness (Istiqomah et al., 2020).

Conclusion

This research concluded that the development of e-comic about Lilis lamiang very important thing to do based on teacher and student perception. Teachers need to use learning resources that are closely related to students' daily lives, so that the material presented can be stored in long-term memory. One of them is using various local potentials as learning resources like Lilis lamiang jewelry which is very closely related to the principles of the Dayak community in Central Kalimantan. This research. This research is the reason for the next research to develop the module.

Acknowledgments

The author would like to thank to Directorate General of Vocational Education, Ministry of Education, Culture, Research and Technology of the Republic of Indonesia for the support in compiling this article.

Author Contributions

The roles of the authors in this research are divided into executor that is WS and advisor in this research that is FZ.

Funding

This research received external funding from the Directorate General of Vocational Education, Ministry of Education, Culture, Research and Technology of the Republic of Indonesia for the 2024 funding year.

Conflicts of Interests

The authors declare no conflict of interest.

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