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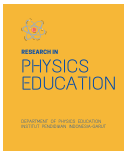

ARTICLE

The role of culture-based learning on primary school students' interest and understanding of Material Form concepts

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Abstract

This research was conducted to emphasize the significance of positive learning interest and deep understanding of concepts among students. Culture-based learning serves as an alternative pedagogical approach aimed at enhancing students' interest and comprehension of concepts. Quantitative descriptive methodology was employed, utilizing a pre-experimental one-group pretest-posttest design. The research sample comprised fifth-grade students from a public elementary school in Indonesia. The research instruments included observation guidelines, questionnaires, and test questions. The findings revealed that the implementation of culture-based learning yielded an average score of 94%, indicating a very good outcome. Students' interest in learning significantly improved following culture-based instruction, with an average score of 85.92%. Moreover, students' understanding of concepts showed notable enhancement post-treatment, with average scores rising from 59% in the pretest to 81% in the posttest.

Keywords: Culture-based learning, primary school, students' interest, students' understanding

1. Introduction

Natural science is one of the subjects currently taught across various educational levels, including primary, secondary, and tertiary education institutions. Natural science encompasses the study of the universe and its contents, as well as various events within it, which experts then analyze through a series of precise and cautious scientific processes to develop it further (Sujana 2014). Consequently, high learning interest and a solid understanding of concepts by students are essential for effective learning in natural science. While every subject has its enthusiasts, there are also students who may not incline towards natural science. This subject is closely associated with observation and experimentation, making it appealing to students (Sujana 2014), who noted that natural science education is characterized by observation, practical work, and experimentation, which contribute to its attractiveness to students.

Positive learning interest naturally translates into a deeper understanding of concepts among students. However, in practice, natural science instruction still struggles with low engagement and

activity levels, particularly among fifth-grade students (KHairina, Syafrina, et al. 2017). Furthermore, student understanding of concepts remains inadequate, attributed to various inhibiting factors. Research conducted indicates that low understanding of natural science concepts among students is partly due to the lack of diverse learning resources beyond textbooks and teachers' summaries (Susanti, Asrin, and Khair 2021).

Culture-based learning emerges as a pedagogical strategy integrating local cultural elements into the learning process. Cultural learning as a comprehensive and holistic learning activity rooted in diverse manifestations or group agreements (Johannes et al. 2019). In this context, culture-based learning serves as a medium for delivering instructional content, incorporating cultural elements into instructional media, methods, and materials. These cultural elements encompass religious values, customs, regional cuisines, traditional attire, indigenous games, ancestral wisdom, and various local cultural practices found in Indonesia.

Based on the foregoing, high learning interest and understanding of concepts are crucial for students. However, researchers have observed low learning interest among students, particularly in Indonesia. Therefore, strategies must be developed to enhance students' learning interest and conceptual understanding. Implementing culture-based learning is one such effort. Consequently, further research is warranted to ascertain the role of culture-based learning in fostering students' learning interest and conceptual understanding. The research problem formulated in this study is: What is the role of culture-based learning in influencing students' learning interest and conceptual understanding?

2. Literature Framework

2.1 Culture-Based Learning

Learning processes, in general, can occur anywhere without constraints of place and time. However, formal learning activities have measurable objectives and clear scopes, primarily conducted within educational institutions. Meanwhile, culture, as defined by Webster's New Collegiate Dictionary (Sumarto 2018), refers to integrated patterns of human behavior encompassing thoughts, conversations, actions, and artifacts, which rely on individuals' capacity to absorb and transmit knowledge to future generations. Culture-based learning is a strategy that creates a learning environment integrating cultural experiences into learning (Johannes et al. 2019). In other words, each learning material is associated with cultural elements, especially those of the learners' local and broader Indonesian cultures. Cultural elements in culture-based learning can be incorporated into learning frameworks, including material selection, teaching methods, learning media, and assessment tools such as test questions. Education is also a dynamic form of cultural expression as culture can bring about changes in the field of education (Ismail, Nasrulloh, and Gumilar 2020). Culture-based learning is significant as it not only facilitates formal learning but also acquaints learners with their local culture. It is hoped that culture-based learning will enhance learners' understanding of the subject matter by relating it to their everyday culture. Moreover, learners are expected to develop a deeper appreciation for and preservation of their local and Indonesian cultures as education in Indonesia is inseparable from ethnic, cultural, and identity considerations (Firdaus and Badriyah 2018).

2.2 Learning Interest

Several factors influence the quality of outcomes or understanding, one of which is interest. Interest is the inclination towards feelings of pleasure, attention, earnestness, and having motives to achieve a goal (Sirait 2016). Learning interest arises from learners' hearts and souls when learning activities are engaging and align with their daily activities. Furthermore, learners' interest is piqued when they are actively involved in problem-solving during learning activities, generating their own thoughts. When learners have a positive or high learning interest, they can gain various understandings of concepts and achieve good learning outcomes (Charli, Ariani, and Asmara 2019). Therefore,

learning interest becomes crucial when learners are required to understand a subject matter or concept. Learning interest is interpreted as the learner's condition characterized by fondness and high enthusiasm for an activity, reflected in their enjoyment, interest, attention, and involvement in learning (Friantini and Winata 2019). In essence, learning interest is a feeling arising from an individual's heart and mind, namely the learner, encompassing pleasure, high spirits, enthusiasm, fondness, interest, and attention towards a learning activity (KHairina, Syafrina, et al. 2017).

2.3 Conceptual Understanding

The term "understanding" originates from the word "understand," which signifies correctness. Understanding itself denotes a process undertaken to comprehend something (Kholidah and Sujadi 2018). Furthermore, understanding is one of the cognitive domains that surpass mere knowledge and serves as the foundation for developing insight (Deliany, Hidayat, and Nurhayati 2019). On the other hand, a concept is an idea or notion that is perfect and carries meaning about the understanding of an object based on experience (Kholidah and Sujadi 2018). In science learning, conceptual understanding holds significant importance for learners. By grasping concepts in science, learners can effectively address issues within science education. This statement is consistent with the assertion another researcher (Deliany, Hidayat, and Nurhayati 2019), who states that understanding scientific concepts involves a mental and intellectual development process to accommodate new concepts and assimilate them with previously acquired ones, thereby forming a new knowledge structure. Learners' conceptual understanding serves as the foundation for comprehending other more complex concepts. When learners' conceptual understanding is low, their understanding of other concepts becomes erroneous. This aligns with the statement, suggesting that learners who do not grasp concepts well may find subsequent concepts difficult, which will later serve as the basis for learning (Alighiri, Drastisianti, and Susilaningsih 2018).

2.4 Change of State of Matter

Natural sciences or science, indeed, have quite a few branches of knowledge. Natural Science is the science that examines the universe and its contents, along with the events within it, and then experts carry out various scientific activities with precision and caution to develop it further (Sujana 2014). Thus, it is no wonder that when talking about science, the process is always based on deep thought, preceded by observation to draw conclusions. One of the learning materials in elementary school from the science subject is the change of state of matter. We certainly know that fundamentally, things in the world will change. For example, when we make ice cubes, initially it is in liquid form, but when frozen, it becomes solid, yet when eaten or stored under the sun's rays, the ice will melt again. Before understanding the change of state of matter, we must first know that the properties of matter are divided into three parts: solid, liquid, and gas. The change of state of matter is a change from one state to another. This can be caused by releasing or absorbing heat. This change occurs when atoms/compounds can reach a certain point (Herawati 2019; Widiyanto and Wahyuni 2020).

3. Research Method

3.1 Research design

The research conducted utilized a method known as quantitative descriptive method. Descriptive research is a type of research where current events or phenomena are described (Jayusman and Shavab 2020). Meanwhile, quantitative research is a method based on positivistic principles (concrete data) (Sugiyono 2016), where the data in the research are numerical and later calculated using statistical tests related to the issue being studied to draw conclusions. This research applied the One-Group Pretest-Posttest Design pre-experimental research design. In this research design, the first step is to conduct an initial test (pretest) before implementing the treatment. Then, at the end, a final

test (posttest) is conducted to determine the impact of the treatment that has been applied. One experimental class used in the research forms the basis for the utilization of this design.

3.2 Participants and research instruments

The subjects in this study are students sitting in the fifth-grade classroom of elementary school, more specifically, the sample for the study consists of fifth-grade students from on public elementary school in Indonesia. In the context of the instrument test, instruments can be referred to as guidelines for observation, interviews, questionnaires, or documentation tailored to the method used. Observation guidelines, interest questionnaires, and test questions are the instruments used in this study (Saputra et al. 2020).

3.3 Data analysis

Data analysis is a process of systematically seeking and organizing interview data, field notes, and documentation by organizing data into categories, elaborating on units, synthesizing, forming patterns, selecting what is most important and will be studied, and drawing conclusions that will make it easy for people to understand (Sugiyono 2016). Furthermore, this research utilizes quantitative descriptive data analysis. The presentation of data in quantitative descriptive analysis can be in the form of tables, graphs, diagrams, and so on. Descriptive statistics are statistics used to analyze data by describing or portraying the collected data as it is without intending to make general conclusions or generalizations. The presentation of data in quantitative descriptive analysis can be in the form of tables, graphs, diagrams, and so on. The presented data is then described based on its results.

4. Result of the research and discussion

Learning planning is the process of arranging the material to be taught, the media to be used, the selection of methods and approaches applied, as well as the types of assessment within a predetermined allocation of time to achieve a formulated competency (Widyanto and Wahyuni, 2020). After preparing the learning, of course, learning activities are carried out. The implementation process of these learning activities is very important, and in this study, it obtained an average score of 0.93, which means very good. In the implementation of learning activities, teachers apply a contextual approach with lecture, discussion, and question-and-answer methods (Parhan and Sutedja 2019). They state that learning using a contextual approach is designed to integrate knowledge and actions in learning activities that are carried out in a more concrete, realistic, current, tangible, enjoyable, and meaningful way by finding the essential meaning behind theoretical material. The average score obtained from the ability to apply this learning approach is 0.93, with a very good interpretation. Meanwhile, the teachers' ability to master teaching materials and use learning media each obtained averages of 0.95 and 1.00, respectively, with all interpretations being very good. Furthermore, in the implementation of learning, the teachers' attitudes in learning activities are also observed, where in this study, they obtained an average of 1.00, with a very good interpretation. And finally, looking at the teachers' ability to conduct evaluations, they obtained an average score of 0.90, with a very good interpretation. This interpretation does not mean that the grades obtained by the students must also be good, as it depends on the abilities of each individual student.

Based on the indicators of students' attention in cultural-based science learning, it amounts to 84%. Attention is focusing psychic energy on one or more objects and the level of awareness one has towards an activity. The highly positive attention of students to cultural-based science learning on the topic of changes in the state of matter is based on the stimuli provided by the teacher and the content of the learning material associated with cultural elements, thus able to capture the students' attention (Saputri, Siswanto, and Sukamto 2019). After students have high attention, interest will naturally arise within them. From the results of the learning interest questionnaire, the interest indicator obtained an average score of 88.17%, meaning very positive. From these results, it can be

Table 1. Data of learning observation

No	Aspects measured	Score	Means
1	Activity of the initial lesson	41	0,93
2	Attitudes in the learning process	16	1,00
3	Mastering learning materials	19	0,95
4	Learning process	26	0,93
5	Applying approach	26	0,93
6	The ability to use leaning media	20	1,00
7	Assessment ability	18	0,90
8	The ability to finish the learning proces	16	1,00
Total score		182	
Total average in percentage		94%	
Interpretation		Very good	

seen that students are very interested in culture-based learning on the topic of changes in the state of matter. Meanwhile, the third learning interest indicator is enjoyment. With a sense of enjoyment in learning activities, it correlates with the smoothness of understanding the taught material. In cultural-based science learning, students expressed their enjoyment with an average score of 87.08%, with a very positive interpretation. The last indicator is engagement. In cultural-based science learning, applying a contextual approach will certainly make students play a crucial role in the learning process. With an average score of 84.38%, with a very positive interpretation, this clearly shows that students acknowledge themselves as fully engaged and active in the learning process.

Table 2. Learning interest of students

Indicators	Number of statements	Obtained scores	Maximum scores	Percentage	Interpretation
Attention	2, 5, 7, 14, 15	504	600	84,00	Very positive
Attraction	3, 4, 6, 8, 13	529	600	88,17	Very positive
Happiness	1, 9, 12, 16	418	480	87,08	Very positive
Engagement	10, 11, 17, 18	405	480	84,38	Very positive
Total percentage				85,92%	Very positive

From the results of descriptive statistical testing, it is known that the smallest value from the pretest is 20, the maximum value is 90, and the mean is 59%. After conducting treatment or implementing cultural-based science learning, the pretest results were obtained with a minimum value of 60 and a maximum value of 100, with an average of 81%. This means that from Table 3, it can already be seen that there is a significant increase from the pretest to the posttest results of the students.

Table 3. Data of descriptive statistics

Test	N	Range	Scores		Mean	Std.Deviation	Variance	
			Minimum	Maximum			Statistics	Std error
Pretest	30	70	20	90	59,00	17,489	305,862	-,417
Posttest	30	40	60	100	81,00	13,983	195,517	-,109

Referring to Table 4, it is found that the pretest value of 0.140 > 0.05, which can be interpreted as the data having a normal distribution. Meanwhile, for the posttest data, 0.007 < 0.05, indicating that the data values have a non-normal distribution. Therefore, the next step is to perform the Wilcoxon

test because the posttest data have a non-normal distribution. Based on the pretest and posttest data through SPSS version 23, the result of asymp. Sig (2-tailed) is 0.000 < 0.05, rejecting the null hypothesis (Ho) and accepting the alternative hypothesis (H). This means that there are different results between the pretest and posttest conducted by the students.

Referring to Table 4, the average N-Gain score of the students is 0.56, interpreted as moderate. Based on the analysis of data conducted on the pretest and posttest values of the students, starting from descriptive statistical tests, normality tests, Wilcoxon tests, and normalized gain value tests, it can be concluded that there is an improvement in students' conceptual understanding from before engaging in culture-based learning to after participating in culture-based learning activities on the topic of changes in the state of matter.

Table 4. The data of normality test

Tests	Normality test by Shapiro-Wilk		
	Statistics	Df	Sig
Pretest	0,947	30	0,140
Postest	0,897	30	0,007

5. Conclusion

The conclusion of this study is that the implementation of culturally based learning on the topic of changes in the state of matter has been very successful, with an average total score of 94% and a very good interpretation. Students' interest in culturally based learning can be considered very positive, with an average questionnaire score of 85.92%. Students' understanding of concepts before culturally based learning had an average of 59%. However, after treatment with culturally based learning, students' understanding of concepts increased to an average of 81%. Similarly, the results of the Wilcoxon test indicate a result of 0.000 < 0.05, meaning there is a difference between the pretest and posttest results of the students. As for the magnitude of the role provided by culturally based learning, seen from the results of the normalized gain test on students' understanding of concepts, it has a moderate role.

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