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Utilization of the Local Wisdom of the South Aceh Community 'Peutron Aneuk' as a Biology Learning Resource in High Schools

Najira [1,*], Siti Sriyati [2]

Biology Education Master's Study Program, Indonesian Education University, Bandung-Indonesia
[1] najirapv10@gmail.com; [2]sriyati@upi.edu
* Corresponding author: najirapv10@gmail.com

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ABSTRACT

Local wisdom, such as the *Peutron Aneuk* tradition practiced in Southern Aceh, represents a valuable national asset and potential learning resource. This research explores the *Peutron Aneuk* tradition to identify its potential applications within biology education. By employing a qualitative methodology, specifically a literature review combined with interviews of local traditional elders, this study investigates the cultural significance and practical applications of *Peutron Aneuk*. The findings illustrate how elements of this tradition can be integrated into biology curricula, offering a culturally relevant and engaging approach to learning. The results highlight the relevance of *Peutron Aneuk* to various biological concepts, particularly biodiversity. This study contributes to understanding how local wisdom can enrich and enhance educational practices.

Keywords: Local wisdom, South Aceh, *Peutron Aneuk*, Learning resources, Biology

Introduction

Humans are cultural creatures, and culture and civilization refer to something unique that involves nature and humans (Capra, 2002). The world is where humans live, which influences each other's way of life; there is a human instinct to survive and develop, and it is realized through creative forms that we now call culture (CA Peursen, 1988). Through culture, various local identities are formed (Njatrijani, 2018). However, until now, the existence of culture and cultural values possessed by the Indonesian people has not been optimal in the world of education as a form of community character; there is a social phenomenon, namely the use of technology which introduces other emerging cultures lately it is quite worrying (Daniar, 2015). As time progresses, all humans in culture, education, economics, and others will face many global challenges in the form of developments in the era of disruption and globalization (Atmojo & Sajidan, 2020; Thompson & Miller, 2017; Musa et al., 2012) plus the use of technology in the world of education is increasingly experiencing growth and progress (Najira et al., 2024)

Conceptions of local wisdom must be passed down from generation to generation through fairy tales, legends, and traditional advice as a strategy for transforming values that are considered important for children to have, so that learning is needed that has high meaning and relevance to the real empowerment of community life, based on reality that they face (Daniar, 2015). One of the local wisdoms in Indonesia is *Peutron Aneuk* in South Aceh. *Peutron Aneuk* is bringing a baby down to the ground through a tradition or ritual carried out by the Acehnese people, who have various practices. The meaning of the term *Peutron Aneuk* is to lower the baby from the house to the ground because, in general, the houses of the people of Aceh in the past were houses on stilts or what is often called now Rumoh Aceh, which was held on the 44th day after the completion of the *madeung* tradition (Darwis, 2011). *Peutron Aneuk* is one of the local wisdoms that can be part of local wisdom-based education to build national civility based on wisdom and the diversity of values and culture of community life (Surasmi, 2012). Local wisdom cannot be transferred, but through modeling and the availability of a conducive environment, wisdom can be developed as learning material in schools as character development and cultural preservation (Ferrari & Potworowski, 2008). This research was carried out as a literature review by researchers to collect data related to the relationship between the implementation of the *Peutron Aneuk* culture, which can be used for biology learning in schools. Education that is used and oriented in helping the biology teaching process in the world of education. Hopefully, this literature review will provide an overview of utilization that can be used as a reference for required biology teaching.

Methods

The research was conducted using a qualitative approach to understand the meaning, perspectives, and experiences related to the *Peutron Aneuk* tradition, particularly how this tradition can be linked to biology education. The data collected includes information from interviews with traditional elders and literature reviews. Interviews were used to explore the "Indigenous knowledge" or local community perspectives on *Peutron Aneuk*, while the literature review aimed to connect this Indigenous knowledge with relevant scientific knowledge, particularly in the field of biology (Widiarsa, 2019). This type of data is qualitative, consisting of narratives, interpretations, and meanings. Data triangulation was also carried out to enhance the validity of the findings by comparing data from various sources, including interviews with multiple traditional elders and information from the literature. This triangulation process improves the credibility and validity of the data used in the research (Sugiyono, 2015).

Results and Discussion

Based on the research activities carried out, the results of this research are in the form of original science, which is the view or meaning of local wisdom itself, and scientific science, which is based on the results of previous research. The research results are explained in the following table.

Table 1. Original events and science *Peutron Aneuk*

No.	Incident	Original Science	Scientific Science	Material	E and F Phase Relevance
1.	*Peusijeukis* is a traditional Acehnese ceremony that aims as a form of gratitude to God Almighty with a series of activities using various plants with three special plants.	The rice surrounding the baby's body aims to facilitate sustenance because it is the staple food of the Acehnese people.	Rice is a food source of energy with a high carbohydrate content but low protein (Ratnawati, 2012). Rice is a staple food for most Indonesians (Suryani et al., 2017).	Digestive system and Biodiversity	**Phase E**: Understanding the role of rice as a staple food and its energy content. Relates to sustainability (SDGs) and biodiversity in ecosystems.
		On naleung samboe (Cynodon dactylon) is sturdy and difficult to uproot, a symbol of the solidity of stance and ethics, both in religious and social life.	Its growth is fast, and its endurance is high. With a deep root system, the roots of this grass can grow up to 2 meters below the ground surface (Khairunnisak, 2020).	Biodiversity and Plant Tissue.	**Phase E**: Study of plant biodiversity and the ecological roles of grass species.
		On sidejuek (*Bryophyllum pinnatum*) as a symbol of medicine to cure internal diseases.	*Bryophyllum pinnatum, commonly known as Pattharcaṭṭa, is* used traditionally in ethnomedical practice for the treatment of kidney stones and urinary tract insufficiency (Yadav, 2016).		
		On manek manoe (*Aerva lanata*), Flowers are scattered along the leaf axils, which are used as an illustration/ beauty of life given by Allah SWT.	The *Aerva lanata* plant has beautiful small flowers scattered in the leaf axils, whitish white or greenish in color, in the leaf axils with 2 - 4 spines, 0.5 - 3.0 cm long (Goyal, 2011).		

No.	Incident	Original Science	Scientific Science	Material	E and F Phase Relevance
2.	*Cuko Oek* is cutting or shaving hair, done by cutting the baby's hair. This activity is accompanied by *aqiqah* for the baby.	Hair cutting to remove congenital hair and to grow new hair like its parents, which is healthier, more fertile, and thicker.	Shaving your hair is a very good recommendation from the Prophet to be carried out when a new child is born on the seventh day (Setiawan, 2020) The benefits of shaving hair for babies include shaving the baby's hair, which can prevent visual disturbances in the baby's eyes and make the hair more radiant, beautiful, strong, and healthy (Divika, 2019). This is influenced by genetic factors, which are responsible for the density, length, color, and texture of hair (Porter, 1971).	Genetics and inheritance of traits.	**Phase F**: Understanding genetic inheritance and physical traits, such as hair structure, linked to genetic factors and health.
3.	*Peucicapis* offers a series of activities to provide various tastes of food to babies	This activity uses fruit and fried chicken, which contain sweet, salty, bland, and sour flavors, smeared on the baby's tongue, getting to know various tastes for the first time, and the goal is to understand life to always be grateful.	The tongue is a sensory organ that functions to feel the taste stimulation of food that enters our mouth. The tongue can respond to or sense various types of tastes such as sweet, bitter, sour, and salty (Ganong, 2002).	Digestive systems and biodiversity	**Phase E**: Study of the digestive system and sensory biology, particularly taste receptors and the role of food in bodily functions.
4.	*Plah Boh U* activity: Splitting a coconut on a cloth covered by a baby that touches the ground.	It is said that when they grow up, Acehnese babies will be brave, brave, and useful for religion and society.	Splitting a coconut is only symbolic in the *Peutron Aneuk* activity (Riana et al., 2023). Coconut heads and water can be used. People can use coconuts as basic ingredients for making oil, drinks	Biodiversity and the digestive system of food substances.	**Phase E:** Study the structure and growth of plants like banana trees and their importance in local ecosystems and human society. **Phase F**: Study the chemical properties

No.	Incident	Original Science	Scientific Science	Material	E and F Phase Relevance
			and medicine (Apriyanti et al., 2017).		of sucrose and its role as a carbohydrate source for energy in the human digestive system.
5.	*Meusilek/ Basilek* is a silat activity carried out by traditional martial artists/leaders so that babies have the courage to live their lives. This activity is closed by cutting plants that were deliberately planted by the baby's parents.	*Tagak jo Step, where the martial artist will step, squat,* and stand as a symbol of guiding the baby to always be healthy while on the right path.	Standing, squatting, and stepping movements are very useful for improving cardiovascular health, muscle mass, and fat burning (Munandar, 2022).	Circulation system, movement, and metabolic systems	**Phase F**: Explore the benefits of physical activity on health, focusing on the cardiovascular system and metabolic processes.
		Silek Limo formed a noble and respectful attitude and personality bowed to the elder.	The greeting movement involves the whole body bending, which involves the spine, and there are saddle joints allowing it to move back and forth and from side to side (Center for Scientific Journals, 2022).		
		Cutting an Areca tree (*Areca catechu* L) means a bitter journey in life, according to the taste of the areca nut.	Areca nut trees have a bitter and warm taste and contain alkaloids composed of arecoline (Subroto, 2006).	Biodiversity	**Phase E**: Link to plant chemical compositions and their medicinal properties, studying the role of alkaloids in plants.
		Cutting banana trees (*Musa paradisiaca*), babies must be strong to face the twists and turns of life in various levels of society.	Banana plant stems have a layered arrangement from the young part on the inside to the old part on the outside (Yuliono et al., 2013).		
		Cutting sugar cane (*Saccharum officinarum*) is a sweet ending after facing the problems that occur.	Sugarcane stems contain approximately 20% sucrose (Syukur, 2006).		

Traditional activities in *Peutron Aneuk* conducted by the Acehnese community can serve as a rich and profound learning tool for students in the context of science education, particularly in Phases E and F. Each activity in *Peutron Aneuk* carries cultural values along with scientific concepts related to biology and chemistry principles. For example, in the Peusijeuk ceremony, the rice surrounding the baby's body as a symbol of prosperity illustrates the role of rice as an important energy source for the human body. This aligns with Phase E-learning, which discusses biodiversity, the importance of staple foods in ecosystems, and how food sources like rice become part of the energy chain within the body.

Another activity, such as *Naleung Samboe*, which involves the *Cynodon dactylon* grass, can also be used to understand the concept of biodiversity. This grass can grow rapidly and strongly, reflecting the ecological system and the resilience of plants to environmental conditions. This concept is directly related to Phase E, which emphasizes understanding biodiversity and how each organism plays an important role in the sustainability of ecosystems.

On the other hand, the *Cuko Oek* ceremony, which involves shaving the baby's hair to mark the beginning of a new phase in life, can be linked to Phase F, particularly in lessons about genetics and the inheritance of traits. Shaving the baby's hair as a symbol of physical change can be understood as an introduction to biological changes, such as hair growth influenced by genetic factors.

The *Peucicap* ceremony, which introduces the baby to different food tastes, also provides an opportunity to explore the human digestive system. The lesson on how the human body responds to sweet, bitter, sour, and salty tastes through the tongue aligns with the digestive system discussions in Phase E. Similarly, the *Plah Boh U* activity, which involves breaking a coconut, can lead to an understanding of biodiversity and the uses of plants in daily life, both in terms of nutrition and as a natural resource with health benefits.

Activities like *Meusilek/Basilek*, which involve martial arts movements, have relevance to Phase F as they teach about the body's movement system and the importance of physical activity in maintaining health. Additionally, cutting trees like *Areca catechu* (betel nut) and *Musa paradisiaca* (banana) can also be linked to biodiversity topics and understanding the nutritional content of plants, forming the foundation of Phase E learning about natural resources essential for human life.

Based on the table above, local wisdom from *Peutron Aneuk* can be a source of learning materials for studying biology. There are six materials offered as biology learning materials. The percentage of materials most offered is calculated in the table above, and the following results are obtained:

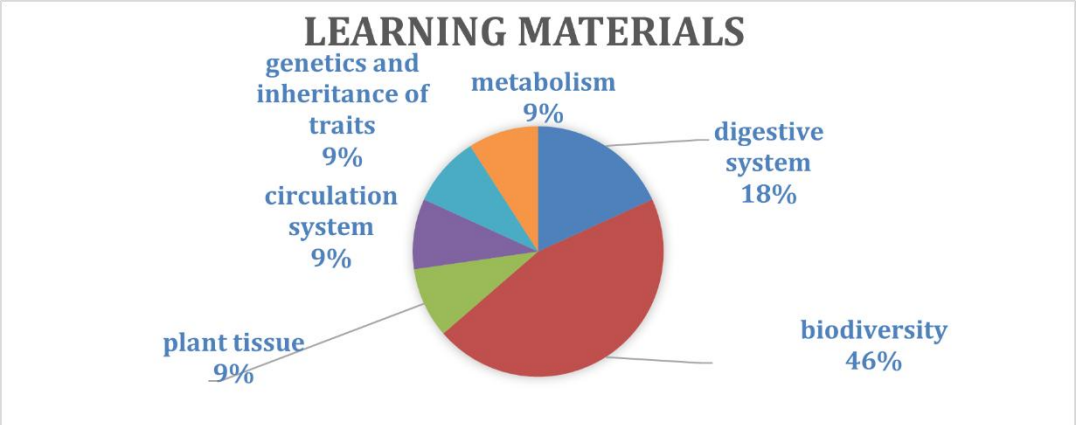

Figure 1. Biology learning materials

Based on the graph above, the diversity material has the highest percentage, namely 46%, so *Peutron Aneuk* has the potential to be taught because the facts in the field show that the application of biodiversity learning is still not implemented effectively; this learning does not get more attention from students because it is presented only centered on content. Material in textbooks (Yusni et al., 2023). Biodiversity learning still needs to be re-evaluated and then innovated in its implementation to increase students' learning interest and motivation (Qomariyah et al., 2019).

This learning is implemented in Biology subjects, Phase E - Phase F, according to the Educational Standards, Curriculum and Assessment Agency of the Ministry of Education, Culture, Research and Technology of the Republic of Indonesia in 2022. At the end of phase E, students can create solutions to problems based on local, national, or global issues related to understanding the diversity of living things and their roles, viruses and their roles, biological and technological innovation, ecosystem components, and interactions between components and environmental changes. At the end of phase F, students can describe cell structure and the bioprocesses that occur, such as membrane transport and cell division; analyze the relationship between the structure of organs in an organ system and its function as well as abnormalities or disturbances that arise in the organ system; understand the function of enzymes and recognize the metabolic processes that occur in the body; and have the ability to apply the concepts of inheritance, growth, and development, evaluate new ideas regarding evolution, and innovate biological technology.

Conclusion

Based on the research findings, *Peutron Aneuk* is a cultural heritage still preserved by the people of South Aceh and is very close to students' lives. Therefore, it is important to involve the activities of *Peutron Aneuk* in biology learning, especially in the topic of biodiversity, which has the highest percentage (46%). This activity can serve as relevant and contextual teaching material in Phases E and F, which connect local issues with biological concepts such as ecosystems and biodiversity while integrating traditional values. As a solution, implementing Citizen Science can be an effective approach. By directly observing the plants used in *Peutron Aneuk*, students can learn about the biodiversity around them. Students can observe the growth of traditional plants, document their development, and understand the role of these plants in the local ecosystem. Teachers can create learning modules that link biological concepts with these traditional activities. In addition, field activities or inviting community leaders as guest speakers can enrich students' learning experiences. This approach helps students understand scientific concepts more practically and contextually. By combining science and culture, students can learn about preserving biodiversity and local traditions. Citizen Science allows students to directly contribute to collecting scientific data while deepening their understanding of sustainability and cultural preservation.

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