

## **REOG KENDANG DANCE: STUDY OF ETHNOSCIENCE AS A LEARNING SOURCE TO IMPROVE STUDENTS' AKHLAKUL KARIMAH**

**Anis Lailatul Fitriyah<sup>1</sup> & Tutik Sri Wahyuni<sup>2</sup>**

*Chemistry Department, Faculty of Tarbiyah and Teacher Training, UIN Sayyid Ali  
Rahmatullah Tulungagung  
Jl. Mayor Sujadi Timur No. 46 Tulungagung East Java 66221 Indonesia  
Email: [anislaifitriyah1202@gmail.com](mailto:anislaifitriyah1202@gmail.com)*

### **Abstract**

Ethnoscience-based learning is an innovation in education that combines culture and science. Through cultural philosophical values studied in ethnoscience, it is hoped that it can encourage students to do commendable actions (akhlakul karimah) in everyday life. Reog Kendang Dance, Tulungagung Regency can be an object of ethnoscience that needs to be studied further. The aim of this study is to describe the values of ethnoscience and akhlakul karimah in Reog Kendang Dance as a learning source. This study uses a qualitative descriptive method with data collection techniques from literature studies derived from relevant scientific books and articles. The data is analyzed through the process of data reduction, data display, and verification. The results of this study indicate that the study of ethnoscience in Reog Kendang dance includes ethnophysics, ethnochemistry, ethnobiology, and ethnomathematics. The ethnophysics in the Reog Kendang dance are the concept of work (W), work coefficient (P), mechanical advantage (K), temperature, and heat. Ethnobiology is found in the human movement system. Meanwhile, ethnochemistry is found in polymers, colloids, redox and electrochemistry, and elemental and organic chemistry. Ethnomathematics is contained in the concepts of circles, triangles, curved side spaces, the volume of rotating objects, and symmetry. Besides that, Reog Kendang dance also contains Islamic values in the form of morality, such as getting closer to Allah SWT, qana'ah, nationalism, helping others, and being polite and honest.

*Keywords: reog kendang, ethnoscience, learning source, akhlakul karimah*

### **Introduction**

The Indonesian nation is known as a nation with a variety of cultures with local wisdom values that have become the nation's identity. The development of science, technology, and information in the 21st century is speedy and full of competition, causing people to feel more familiar with foreign cultures than with their own culture (Dewi et al., 2020)(Aza Nuralita, 2020). This can impact the erosion of Indonesian cultural values among the community. One of the efforts that can be done to overcome this problem is to integrate culture into learning and reconstruct the community's original knowledge into scientific knowledge (Sawitri, Y., Asrizal., Kamus, Z., Afrizon, 2019). According to (Rahmawati, 2018) cultural emphasis in learning can raise students' awareness of their culture.

Ethnoscience is a learning approach that makes culture an object of study in science. Ethnoscience-based learning is an innovation in education to minimize the erosion of local cultural values by globalization (Puspasari et al., 2019). However, in reality, science learning is still rarely associated with science material in local culture. This is evident from a study conducted by (Sumarni, 2018) However, in reality, science learning is still rarely associated

with science material in local culture. This is evident from a study that shows that some teachers have not thought about science learning related to indigenous knowledge that develops in the community because they tend to focus on delivering the material contained in the syllabus. In addition, he found that some teachers find it challenging to integrate local culture with science learning. The application of ethnoscience-based learning has several benefits, including preserving regional culture, making learning more interesting (N. Azizah & Premono, 2021), and increasing conceptual understanding (Ardianti & Raida, 2022), and student learning outcomes (Putri et al., 2022).

Ethnoscience includes several disciplines, namely ethnophysics, ethnochemistry, ethnobiology, ethnomathematics, ethnomedics, indigenous agricultural practices and food processing technology (Abonyi et al., 2014). One of the problems in the application of ethnoscience learning is the integration of culture with scientific material (Rahmawati et al., 2020). Therefore, there is a need for an identification process for local culture that has the potential to be a source of ethnoscience learning.

Learning and teaching resources can be defined as instruments for presenting and transmitting certain educational materials. (Bušljeta, 2013). According to (Prastowo, 2013), learning resources are everything (can be objects, data, facts, ideas, people, and so on) that can lead to the learning process. There are many ethnoscience learning resources around. However, it is often not realized that something around and related to indigenous knowledge and culture that develops in society can be used as an object of ethnoscience. One of the cultures in Tulungagung Regency that can be used as an object of ethnoscience learning is the Reog Kendang art. Reog Kendang is an original dance from Tulungagung that six dancers play. Each dancer brings and plays a different type of drum instrument. This characteristic distinguishes the Reog Kendang dance from other Reog dances. This dance depicts the procession of Kedhirilaya troops while accompanying Queen Kalisuci to Mount Kelud to witness the results of Jathasura's work on the requirements that have been given (Yahya, 2019).

So far, the Reog Kendang dance has been performed as a performance at an official district-level event in Tulungagung, better known as an entertainment dance by the people of Tulungagung. Several previous studies discussed the reog kendang dance in terms of its choreography, symbolic meaning, and inculcation of moral values for students. Research that discusses ethnoscience studies by taking the object of the Tulungagung reog drum dance has never been done. On the other hand, reog kendang dance has the potential to be used as an ethnoscience-based learning resource.

The application of Reog Kendang dance in formal and non-formal education has been proven to provide positive moral values and character education. The application of Reog Kendang dance through extracurricular activities teaches students to perform good behaviors (*akhlakul karimah*) in everyday life, learn and practice to work together, be responsible, disciplined, and appreciate the process of creating this art (Nugraheni, 2018). Thus, it can be concluded that integrating the Reog Kendang dance into learning can help improve moral character as it has become the goal of Islamic education. This study aims to examine the values of ethnoscience and morality in Reog Kendang dance as a source of learning.

## **Method**

This study used a qualitative descriptive method with data collection techniques from a literature study. The data was obtained in the form of qualitative data from books and scientific articles relevant to the research conducted. The steps of data collection were (1) reading books and journals related to Reog Kendang dance and ethnoscience, (2) mastering

the material, (3) mastering the method, (4) searching and finding data, (5) analyzing data, (6) make comprehensive improvements, and (7) draw conclusions. The data obtained were analyzed using qualitative data analysis techniques through the process of (1) data reduction, researchers selected data in the form of words, sentences, or expressions to be analyzed, (2) data display, researchers displayed data that had been selected and analyzed the types of research methods, (3 ) verification, the researcher concludes the results of the analysis on the use of qualitative research methods used.

## **Results and Discussions**

Reog kendang dance is one of the original cultures of Tulungagung that still exists today and has become a typical icon of the Tulungagung district. This dance is usually performed to accompany events such as city birthdays, weddings, circumcisions, and annual ceremonies such as jamasan kyai upas spear. Reog Kendang dance is a depiction of the story of six Kedirilaya soldiers who accompanied Queen Kalisuci to Mount Kelud to see the results of Jathasura's work regarding the conditions he gave (Nurhayati, 2022).

The Reog Kendang dance tells the story of how difficult the journey was for the six soldiers and how heavy the burden of supplies was so that they walked hunched over and stumbled down steep valleys and up steep mountains. Arriving at the top of the mountain, the six soldiers circled the crater and looked inward until Queen Kalisuci fell into the crater. Then the soldiers threw stones and soil that dredged the crater so that Jathasura, who wanted to jump in to help Queen Kalisuci, was buried in the ground so that in the end, the soldiers got joy and victory.

### ***Study of Ethnoscience in Reog Kendang Dance***

The results of the Reog Kendang dance study show the potential for ethnoscience that can be used as a learning resource. Ethnoscience studies in Reog Kendang's dance include dance moves, clothing, accessories, make-up, and musical instruments to accompany the dance. The fields of ethnoscience studies in the Reog Kendang dance include ethnophysics, ethnochemistry, ethnobiology, and ethnomathematics.

The number of dancers in the Reog Kendang dance is six people. The six dancers perform movements in the form of configurations or floor movements. A mutually agreed choreographer develops free floor motions. However, you must still pay attention to the types of standard dance movements by relying on head and foot movements. The types of movements in the Reog Kendang dance are motions of baris, sundangan, andul, menthokan, gejoh bumi, ngongak sumur, midak kecik, lilingan, and sundang. Some of the Reog Kendang dance moves are shown in Figure 1.



Figure 1. (a) Sundangan motion; (b) lilingan motion; (c) Gejoh Bumi motion  
(L. N. Azizah et al., 2021)

The movements performed in the Reog Kendang dance show involve a series of physical activities carried out by the dancers. This has the potential to become an object of study in

entrophysics and ethnobiology. The ethnophysics elements in the reog kendang dance can be obtained from the variety of dance movements shown in Table 1.

Table 1. Ethnophysics in Reog Kendang Dance

No	Movements	Indigenous Knowledge of the Community	Concept of Physics
1.	Baris	The initial movement as the opening of the reog kendang dance.	- Work (W) - Work coefficient (P)
2.	Sundangan	The movement of the shoulders and head is like a buffalo heading.	- Mechanical advantage (K)
3.	Andul	The movement of swinging the right leg up or forward back.	- Temperature and heat
4.	Menthokan	The squatting walking movement mimics a walking menthok animal.	
5.	Gejoh bumi	The movement of the body position is slightly bent, the position of the right foot in front and the left foot in the back and the palm of the hand stirring the ground.	
6.	Ngongak sumur	The movement of the right foot forward and backward is like a person peeking in a well.	
7.	Midak kecil	Small jumping movements forward and backward use the right foot, while the left foot as the fulcrum.	
No	Movements	Indigenous Knowledge of the Community	Concept of Physics
8.	Lilingan	Paired movements with face to face	- Work (W)
9.	Pattetan	The movement of the right foot opens and rotates with the left foot as the axis.	- Work coefficient (P) - Mechanical advantage - Temperature and heat

The movement performed by the Reog Kendang dancer shows an activity carried out by humans using a certain amount of energy. This is relevant to one of the physics concepts, namely work (W). Meanwhile, the comparison between effort (W) and time (t) will produce a work coefficient (P). The effort made by the dancer to perform an efficient movement can be calculated through the mechanical advantage (K), which is the ratio between the force produced and the force exerted by the dancer. When dancing, the body performs an activity continuously so that the body temperature increases ( $\Delta T$ ), which is indicated by the body feeling hot. The increase in body temperature is proportional to the calorific value (Q) produced by the dancer (Nurhidayat et al., 2020).

The movements performed by dancers can also be used as objects of ethnobiological study. The ethnobiological element in the Reog Kendang dance is that dancers can perform a series of movements in dance performances because of the motion system or musculoskeletal system in humans. The locomotor system consists of two types of locomotion, namely active locomotion (muscles) and passive locomotion (bones)(Mercuningsari, 2019). In addition, when the dancer performs the movement, it also involves the relationship between bones such as hinge joints, for example, the joints in the knee and elbow that can bend, the bullet joints in the shoulder that connect the shoulder blades, and arm bones.

Reog Kendang dancers wear special costumes and accessories like a soldier. Dancers wear long sleeves combined with a cloth breastplate with a yellow motif and pants along the length of a hood. Dancers also use several attributes such as stagen, batik cloth (jarik), and colored sampur. On the head, dancers wear headbands, sumping, and iker that encircle the head. While on the legs, dancers wear white socks and gongseng. In addition, accessories such as daggers, wristbands, and kendang or dhodhog are tied using sampur. The costumes and accessories of the Reog Kendang dancers are shown in Figure 2.

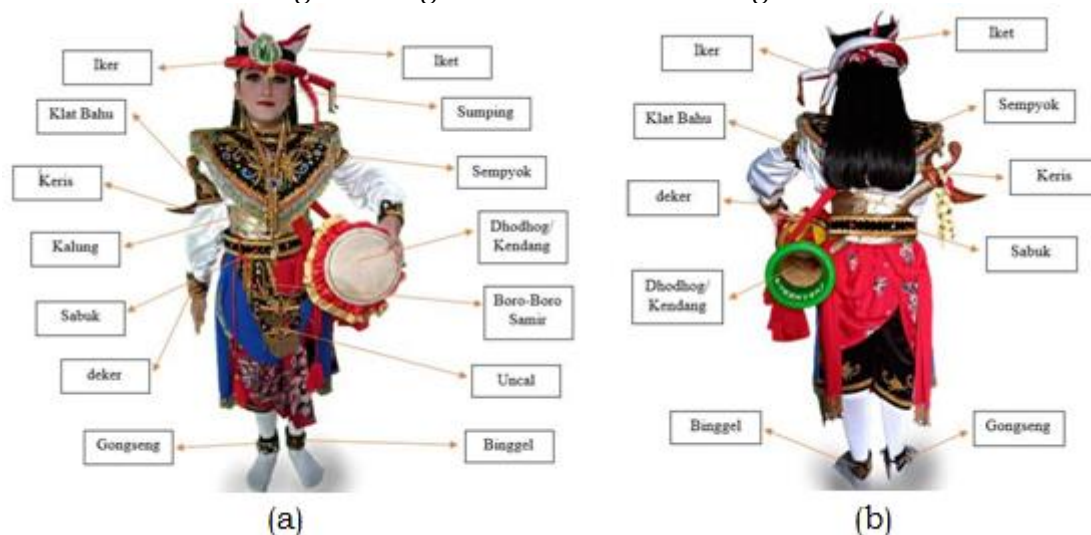


Figure 2. (a) Front View Costumes and Accessories; (b) Rare view costumes and accessories (L. N. Azizah et al., 2021)

The makeup of the Dancer Reog Kendang depicts the character of a soldier who is stubborn, dashing, brave, and elegant in carrying out his duties. Reog Kendang's makeup includes red and brown eyeshadow, black eyelids, chili red lipstick, and black eyebrows to give a scary but beautiful impression. The makeup of the Reog Kendang dancer is shown in Figure 3.



Figure 3. Reog Kendang Dancer Makeup (Lestari, 2014)

The costumes, accessories, and makeup of Reog kendang dancers can be used as objects of study in the field of ethnochemistry. Ethnochemical elements can be obtained from the results of the analysis of materials used in the manufacture of attributes used by dancers. The ethnochemistry in Reog Kendang dance are presented in Table 2.

Table 2. Ethnochemistry in Reog Kendang Dance

No	Attributes	Concept of Chemistry
1.	Drum	- Polymer Traditional musical instruments are made of wood and leather

		<p>which is a natural source of polymers. The types of natural polymers present in wood are lignin, hemicellulose and cellulose.</p> <ul style="list-style-type: none"> <li>- Colloid The paint used to color the drum is an example of a colloidal type of liquid sole. Sol is a colloidal system formed from the dispersed phase in the form of a solid and the dispersing phase in the form of a liquid.</li> </ul>
2.	Blade	<ul style="list-style-type: none"> <li>- Redox and Electrochemistry Corrosion occurs on the blades of the dagger. Corrosion is an electrochemical process derived from redox reactions due to the interaction of metals with their surroundings. Corrosion of metals is detrimental and occurs faster and faster when reacting with oxygen, acids, or bases.</li> <li>- Elemental chemistry (transitional elements of periods 3 and 4) The raw materials used in the process of making dagger blades and scabbards are chemical elements located in transition groups of periods 3 and 4 in the periodic system of elements, such as iron (Fe), nickel (Ni), brass (copper mixture (Cu), zinc (Zn), silver (Ag), and gold (Au)). The process of making daggers involves heating the metal at high temperatures, then forging, formed as expected. This is a characteristic of metallic chemical elements, that is, they have a high melting point, are malleable, and can be formed.</li> </ul>
No	Atributes	Concept of Chemistry
3.	Clothes, pants, long cloth ( <i>jarik</i> ), stagen and sampur	<ul style="list-style-type: none"> <li>- The fixtures are made of fabric. The fabric is cotton, made from the basic material of natural fibers derived from cotton seeds. The largest component in cotton fibers is cellulose which is a natural polymer. The structure of cellulose molecules has quite a large number of hydroxyl groups so cellulose is hygroscopic (able to absorb water). It is this hygroscopic property that can make the fabric comfortable to wear.</li> </ul>
4.	Cosmetics	<ul style="list-style-type: none"> <li>- Cosmetics used by reog kendang dancers are made from several mixtures of chemicals such as talc, benzalkonium chloride, triclosan, methylparaben, glycerin, and so on.</li> </ul>

One of the distinctive features that distinguish reog kendang dance from other reog dances is that each dancer performs while carrying and playing a different type of drum (dhodhog). There are six types of drum they are kerep drum, arang drum, imbal I drum, imbal II drum, keplak drum, and thrinting drum. The six drums were hit in different ways. The kerep, imbal I, and keplak drums are hit with a full palm, while the arang and imbal II drum are hit with the palm of the end. The thrinting drum is struck using a tool called a thrunthung.

In ancient times, the function of Reog Kendang dance was as a parade so the musical instrument was carried and played on foot. In addition to the drums played by dancers, reog kendang dance is usually accompanied by other musical instruments such as gongs, kempul, selompret, and kenong. The musical instruments used to accompany the Reog Kendang dance are shown in Figure 4.



Gambar 4. (a) gong; (b) kenong; (c) slomporet; (d) drum  
(Hayuhantika & Rahayu, 2019)

The ethnomathematics elements in the Reog Kendang dance are shown in Table 3. It shows the potential for the field of ethnomathematics studies. The musical instruments have a variety of shapes consisting of a combination of flat build and space building.

Table 3. Ethnomathematics in Reog Kendang dance

No	Musical Instruments	Concepts of Mathematics
1.	Gong	circles, curved side spaces, volume of rotating objects, and symmetry.
2.	Selomporet	Curved side spaces, volume of rotating objects, and symmetry.
3.	Kenong	circles, curved side spaces, volume of rotating objects, and symmetry.
4.	Drum/ <i>dhodhog</i>	circles, triangles, curved side spaces, volume of rotating objects, and symmetry.

Gong is formed from a combination of two space constructs with a circular surface. Similarly, the kenong is composed of two spaces, namely a tube. As for the slomporet, it is shaped like a chamber like a hooked cone. A hooked cone is a cone truncated by a plane parallel to the plane of the base (Lubis et al., 2018). While the drum or *dhodhog* is in the form of a space build and a hooked cone with a circular surface, there is an equilateral triangle motif on the outside of the drum.

### *Akhlakul Karimah Values in Reog Kendang Dance*

In addition to containing beautiful elements of art, Reog kendang dance also contains Islamic values. These values indicate good human qualities (*akhlakul karimah*) and his life journey in an exemplary world. The values of *akhlakul karimah* include:

#### **1. Getting closer to Allah SWT**

Reog Kendang consists of two words, reog, and kendang. The word reog comes from the Arabic "riyoqun" which means husnul khotimah (good end). It suggests that the journey of human life, which is covered with many sins and stains, can end well if the human being is aware and devoted to Allah SWT so that he can make him a perfect human being.

The word kendang comes from the Arabic "qada'a" which means brake. A human living on earth must realize that he will not live forever. Therefore, brakes are necessary to control behavior to avoid falling into horror. If the drum is hit, a "ndang" sound will be produced immediately. It hints at command to get closer to Allah SWT immediately (Alfiati, 2018).

## **2. Qana'ah**

Like other reog dances, reog kendang dance is usually performed accompanied by traditional musical instruments. One of the musical instruments used to accompany the reog kendang dance is kenong. Kenong comes from the Arabic word "qana'a" which means to receive Allah SWT's gifts. As creatures of Allah SWT, we are forbidden to complain about what happened. We are always obliged to pray and strive to be able to change our lives for the better. When played, kenong will produce the sound of nang, ning, nong, nung. Nang means "ana" (exists), ning (bening) means clear, nong means plong (understand), and nung means dumunung (conscious). It implies that after man exists, man thinks with a clear heart so that he can understand and realize his existence in the world because someone created it, namely Allah SWT.

## **3. Being kind and helping others**

Besides kendang and kenong, other musical instruments accompany the reog kendang dance, such as gong, kempul, and selompret. Gong means gung (majestic). Every charity done by man will one day be accounted for before the greatest (Allah SWT). Kempul comes from the Arabic word "kalafun" which means vengeance or reward. Angels will record everything we do. Therefore, we must always do good to be recorded as a good charity hereafter. Meanwhile, selompret comes from the Arabic "shuwarun" which means warning. Man's life in the world is only temporary, so we are always warned to do kindness.

## **4. Being polite**

One type of movement in Reog Kendang dance is menthokan and pettetan movements. The menthokan movement is a squat walking motion imitating a methok animal that is walking. This movement depicts the tribute of the soldiers who handed over things by squatting and condescending. It implies that man must have the nature of manners and andhap asor, and not brag even though he is better than others. Meanwhile, the pettetan movement shows the soldier's respect for Queen Kalisuci. It implies that human beings must have the nature of courtesy toward others.

## **5. Nationalism**

One of the attributes worn by the Reog Kendang dancer on the head is the iker. Iker is worn around his head in red and white which is the color of the Indonesian flag. The colors red and white are often used as a symbol of the struggle of the Indonesian nation before independence was achieved. In the Java War (1825-1830), for example, Prince Diponegoro's troops wore red and white banners when fighting the Dutch army in Yogyakarta and Central Java. Furthermore, red and white were also raised during the II Youth Congress in Jakarta on October 28, 1928, which resulted in the Youth Oath (Prinada, 2021). The Indonesian nation is a plural nation so all Indonesians must maintain unity and unity. This is where the principle of love for the homeland must be affirmed as one of the Indonesian scholars KH Muhammad Hasyim Asy'ari (1871-1947) who succeeded in originating the principle of hubbul wathani minal iman (love of the homeland part of the faith).

## **6. Being honest**

One of the attributes worn by Reog Kendang dancers is the long batik cloth (jarik). Jarik is wrapped around the waist outside the pants and then folded in front, crushed, and dangled in the middle. This method is called the supit urang method, which soldiers usually use. In addition to symbolizing soldiering, the way batik is worn also symbolizes honest nature, a characteristic of Javanese culture.



## Conclusion

The study of ethnoscience in Reog Kendang dance includes ethnophysics, ethnobiology, ethnochemistry, and ethnomathematics. The ethnophysics in the Reog Kendang dance are the concept of work, work coefficient, mechanical advantage, temperature, and heat. The ethnobiology is found in the human movement system. Meanwhile, ethnochemistry is found in polymers, colloids, redox and electrochemistry, and elemental and organic chemistry. The ethnomathematics is contained in the concepts of circles, triangles, curved side spaces, the volume of rotating objects, and symmetry. Besides that, Reog Kendang dance also contains Islamic values in the form of morality, such as getting closer to Allah SWT, qana'ah, nationalism, helping others, and being polite and honest.

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