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Ethnosains of The Javanese Community "The Body Funeral Process" as A Resource of Basic Science Learning

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Abstract: The purpose of this study is to reveal the natural science concept of the funeral process for the bodies of the Javanese people. This research is a qualitative research method of phenomonology. This research involved the Brebes community who carried out this activity. Data collection techniques used are interviews and scientific documents. The research instrument used was interviews. The validity of the data was obtained using the triangulation method. Data analysis techniques namely data reduction, presentation and drawing conclusions. The results of this study the process of burial of the bodies of the Brebes community includes 4 (four) activities: (1) bathing, (2) shrouding, (3) lighting, and (4) burying. The funeral process for bodies can be reconstructed into formal science/science at school. The depth of the grave is the standard measurement, which is 160 cm and 2 meters long and the height of the pile of soil is 75 cm. The circle that is placed on the head of the deceased serves as a pillow, 7 of which are placed between the neck and head, the hip area, and the feet. The body is laid on its side and facing the Qibla. The wood used as "tenger"/tombstone is of the teak/albasiar type. The body was closed using a board. The type of soil used for graves that has a loose texture. The types of flowers sprinkled over the grave are jasmine, magnolia, and roses. The process of treating the corpse has been carried out from generation to generation. The burial process of the corpse can be used as a learning resource for basic science courses in science teaching.

Keywords: Culture; Ethnoscince; Funeral; Learning Resources; Religion

Introduction

The relationship between Islam, which the majority of Indonesia's population adheres to, and native culture (local culture) cannot be separated and the two are mutually supportive and reinforcing parts (Miharja, 2014). Javanese society is very thick relationship with religion, tradition and culture. Until recently, Javanese traditions and culture have dominated Indonesia's national traditions and culture. The Javanese people have traditions and culture that are heavily influenced by Hindu and Buddhist teachings and beliefs even though they already have different beliefs or religions, such as Islam, Christianity, or others (Marzuki, 2015). One of the burial processes that has religious, cultural, and scientific views. Burial is the process of burying the body in a field location that is provided for the purposes of burial of the bodies of people who have died. Javanese people have a variety of burial processes that cannot be separated from religious relations, and funeral culture usually includes a ritual given to the corpse depending on culture and religion (Ningrum, 2020).

Funeral procedures are procedures carried out to complete the process with the terms and conditions that apply and the parties involved. In the funeral process, there are several stages that are carried out, namely the time of implementation, the procedure for carrying out it and the parties involved in the funeral tradition (Lukman, 2021). The funeral process includes 4 (four) activities: (1) washing, (2) shrouding, (3) lighting, and (4)

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burying. The burial process is already owned by the community and passed down from generation to generation. Therefore, the funeral process which is the object of the activities of a deceased person has the potential to be studied from a scientific perspective. The purpose of this article is to examine the scientific aspects of the community's burial process. The study was analyzed from the aspect of ethnoscience.

Ethnoscience as knowledge related to objects and natural events that are organized in the knowledge of society and is produced from certain cultures (Abonyi, 2002), in the fields of agriculture, astronomy, medical practice, mathematics, engineering, architecture, military science, and ecology (Snively & Corsighia, 2001). Knowledge of science owned by certain communities is obtained through processes such as observation, classification , and problem solving by including all aspects of culture (Arsana, et al, 2013) so that it transforms between original science and scientific science which is an ethnoscience study (Battiste & Henderson, 2009). The process of scientific reconstruction or the formation of scientific knowledge originating from public knowledge consists of several stages, namely identification, verification and formulation (Battiste, 2002).

The process of burial of bodies is studied in terms of science (IPA) and used as material for basic science studies in universities. The relationship between religion, science and culture is one of the efforts to improve the quality of the implementation of science learning. Khozin (2016) a new paradigm of the integration of science and Islam is important to develop into a model. Learning science that connects with religion has a positive impact on student learning outcomes. Emzulia & Madzalin (2014) learning science integrates increasing motivation and understanding of concepts, providing meaningful learning experiences (Gamal & Mahalle, 2012; Taskin, 2014), and thinking skills (Khasanah, 2018). Views, opinions, attitudes, and knowledge will be built by a person through interaction with the socio-cultural context in living history and interpreted as a religion adhered to (Mansour, 2008). The integration of science and religion which is packaged in science learning has a positive impact so that in this study religious elements are linked to science learning. It approaches the integration of science and religion and tries to bring religious beliefs closer to scientific theory (Afalo, 2018). Mahmudah (2016) states that a new breakthrough is teaching that combines religious (spiritual) science and science (science). Abdullah (2014) connects religion and science in the forms of conflict, freedom, dialogue and integration. The four forms of this model are very important for Indonesia to study.

Research on the study of the process of corpses from the aspect of local wisdom is studied from sociology, religion, and education, and culture. Research by Yusof, et al (2017) on the use of natural materials in the process of managing the bodies of Malay natural migrants. Maskur, et al (2017) the process of managing Bajau cultural remains. Santoso (2012) the process of managing Muslim corpses in Surakarta. Putri, et al (2021) analysis of Truyan's funeral traditions. Hanifaf & Sukandari (2021) cultural values of death rituals in the Bedouin tribe. Latif (2020) acculturation of Buleang Karua culture. The purpose of this research is to analyze the ethnoscientific aspects of the process of managing the bodies. Research that examines the process of managing the bodies of the Brebes Javanese community from the ethnoscience aspect as a source of learning science in tertiary institutions so that as far as the researcher's understanding is concerned , this research is novel . The results of this study contribute to basic science learning resources in tertiary institutions from the aspects of religion, culture, and science so that they are able to provide information that is interdisciplinary in science and constructive learning from the community.

The position of ethnoscience as a source of scientific knowledge for students in learning basic concepts sans. Apart from being a source of knowledge, ethnoscience can serve as a source of knowledge and as a learning approach. Research that examines the success of the ethnoscience approach to optimize thinking skills, scientific work and learning outcomes. The learning approach that connects science concepts with the original knowledge of the community resulting from culture and students interpreting the natural phenomena they experience in their lives is called the ethnoscientic approach (Joseph, 2010). The characteristics of ethnoscience learning are transformed through observation, classification , and problem solving from science and culture in society (Abonyi, 2002) through scientific investigation (Sudarmin, 2015), and the process of reconstructing original science into scientific science (Ogawa, 2019). Stanley & Brickhouse (2001) suggest that learning science in schools balances Western science (normal science, science learned in class) with original science (traditional science) by using a cross-cultural approach. Baker & Taylor (2007) stated that if science learning at school does not pay attention to the native culture and environment of the child, the consequence is that students will reject or accept only some of the science concepts developed in learning. The ethnoscience approach provides learning that connects existing science in society and is capable of being transformed into formal science. The characteristics of ethnoscience learning carry out the process of transforming indigenous knowledge through observation, classification, and problem solving from science and culture in society (Abonyi, 2002) through

scientific investigation (Sudarmin, 2014), and the process of reconstructing original science into scientific science (Sarwi et al, 2019).

Science learning that involves elements of local culture and science in an organized manner adds to students' interest in science and is understood by students (Sudarmin, 2014), respects one's own culture (Novia et al. , 2015), nationalism (Atmojo, 2012), and is oriented towards learning effective because it strengthens the process of assimilation and accommodation in students (Supriyadi et al. , 2016). Sudarmin (2017) ethnoscience integrated science learning has three forms, namely complementary models, integrated models, and separate models. In this study, examines the process of preserving the remains from a scientific aspect so as to link religion and science. Barbour (Abdullah, 2014) connects religion and science in the form of conflict, freedom, dialogue, and integration. The technique of conflict is involving scientific materialism and religion. The technique of freedom is to separate religion and science into two different areas. Both can be distinguished based on the problems studied, the domains referred to, and the methods (existentialism and neo-orthodoxy) used and the two languages and their two different functions (the analytic tradition). The dialogue technique is to consider presuppositions in scientific endeavors, or to explore in method parallels between science and religion. The integration technique , namely presenting science or religion, contributes to the development of both.

The impact of science and religion learning optimizes the achievement of academic and non-academic learning outcomes. Wahyuni et al. (2017) concluded that students experienced an increase in religious attitudes, discipline and responsibility. Rahmaniati & Supramono (2015) the integration of science and religion and culture can improve students' decision making on issues and can relate them to Islamic values. Ramadanti (2017) learning science integrated with Islamic values can improve understanding of concepts. Emzulia & Madzalin (2014) learning science with the integration of religion can increase motivation and understanding of concepts, provide meaningful learning experiences (Taskin, 2014) , and thinking skills (Khasanah, 2018). Views, opinions, attitudes, and knowledge will be constructed by someone through interaction with the socio-cultural context in living history and interpreted as a religion adhered to (Mansour, 2008).

Of treating corpses in society are indeed different. However, the source of the teachings of the Prophet Muhmmad SAW for Muslims in Indonesia is used as a basis for managing corpses. Especially in Indonesia, which has different tribes and cultures. But specifically the Prophet also gave signs which should be done and which should not be done (Riyadi, 2013). Nurdin (2016) how to wash the body begins with the body being gently seated and tilted backwards. The person who washes puts his right hand on his shoulder with his thumb in the crook of the nape, and his knees support the back of the body, then massages the stomach of the body with his left hand to remove any dirt. Then the body is stretched out and its genitals are cleaned with the left hand wrapped in a patchwork cloth. The teeth and nostrils are cleaned and it is sunnah to give priority to the right organ. Shrouding or wrapping with white cloth is fardhu kifayah. The obligation to shroud and all arrangements for the corpse is taken from the corpse's inheritance. The shroud for the male corpse consists of 3 (three) pieces of white cloth. The shroud for the female corpse consists of 5 (five) sheets, namely: long cloth, brackets, head scarf, long cloth for washing, covering the waist to the feet. Long cloth to cover hips and thighs, shroud for children consists of 1 (one) white cloth or 3 (three) white cloths. Mainly the shroud: white cloth, clean, holy, simple, strong (Dahlan, 2020).

Method

This research is a qualitative research. The research method used in this research is phenomonology. According to Creswell (2011) qualitative research is a type of research that explores and understands the meaning in a number of individuals or groups of people that originate from social problems. Miles & Huberman (2014) that phenomenology is a view of thinking that emphasizes a focus on human subjective experiences and interpretations of the world. This study reveals the process of burial of bodies from a scientific aspect. Data collection techniques in this study used interviews and document studies. The subject of this study is an individual who is trusted by the community to carry out the funeral process as the primary data source. Secondary data was obtained from scientific articles that examined the burial process and science. The analysis technique uses data reduction, data presentation, and verification steps (Miles & Huberman, 2014). The steps taken in this stage are as follows: (a) Develop an interview instrument; (b) conducting interviews with subjects and conducting literature studies; (c) perform data analysis; (d) conclude. This research was conducted in May 2023.

Result and Discussion

The results of in-depth interviews with informants obtained information that knowledge about preserving corpses was passed down from generation to generation. Since 1991, the respondent has joined his

father in taking care of the bodies so that he continues what his father had done long ago as taking care of the bodies, caretaker and grave digger. This skill was obtained from his father because as a caretaker of graves, he had been introduced to how to dig graves since he was young, gradually he got used to it and at the same time now his father has passed away so he continues. The reason for passing on this expertise is because nowadays the next generation rarely wants to continue as an officer, so he continues the struggle of his father which was carried out a long time ago, and as a side job. After the body is washed, shrouded, and prayed. The next step is to measure the size of the corpse, but still make it approximately 2 m long and 160 cm deep. The tool used is a papah crowbar to make initial lines/measurements, then a hoe is used to deepen the ground, a papah crowbar is used to tidy up the inner wall area of the grave, then after it is 160 cm deep the grave in the lower area is made a "hedgehog".

Shape the indentation according to the size of the indentation of the body in an oblique position and then trim it so that the corpse is inserted and affixed to the ground in an oblique position. Usually, the size follows the size of a child's or parent's corpse, but usually for a parent's corpse the length is 2 m, and the depth is 160 cm. Pillow-like balls in the process of digging graves function as supports for the corpse, because during his lifetime he slept on mattresses and pillows, so even when he died he laid them on the ground, and the earth balls instead of pillows, as supports for the head, neck, hip area, ankles, totaling 7 earth cushions and circles.

In accordance with Islamic teachings, the corpse is tilted so that it faces the Qibla and touches the ground because we as Muslims even when we are dead we pray so we are faced with the Qibla. Soil that can become a grave, soil that has a fairly strong texture density, mounds of earth in graves according to Islamic law, because if a corpse has been put in the grave, there is a 75 cm high space as the area for the corpse inside and a covering board is given, so that when the soil returns in the grave there is a mound, and usually the Islamic community can mark which is the new grave or the old grave, the new grave then has a mound of earth as a symbol of the person who has just died and has just been buried. The tools used to dig the grave are hoes to deepen the soil and take the soil, crowbars to make the side area of the grave and at the same time deepen it. Flowers sprinkled on it, because some believe that sprinkling flowers is a sunnah, and some do not believe that it is a sunnah, the function is as a light for the deceased in the grave. There is no specific recommendation on what kind of flowers to sprinkle on the grave, but usually the types of flowers used are kantil flowers, roses, pandan leaves, paper flowers, jasmine flowers. The existence of gravestones / "tenger " on graves is a sign for people who are still alive, that all humans will die because they come from the ground, so they will return to the ground, so a tombstone is marked on the grave as a reminder of humans who are still alive.

The name on the tombstone is given a name as a reminder to fellow human beings when passing a grave and reading the name on a tombstone, usually use teak wood, iron wood. The information conveyed by the respondents, an analysis of the relationship between science and the funeral process of the body was carried out. The results of the analysis of the relationship between science and burial are presented in Table 1.

Table 1. The Relationship between Funeral Processes, Religion, Culture, and Science as Learning Resources

The process of handling the corpse	Religious Aspects	Cultural Aspects	Science Concept
Bathing the Corpse	From Umm 'Athiyyah, an Ansar woman ra said: Rasulullah SAW. met us at the death of our daughter, then said: "Take a bath by pouring water mixed with bidara leaves three times, five times, or more than that, if you think it is necessary, and make the last one with camphor (fragrances) or something similar, and when you're done let me know	The process of washing the corpse is carried out by a person who has been trusted to carry out the process and according to the sex of the corpse. Closest relatives join in washing the body. Equipment used soap, and cloth. For certain circumstances the condition of the corpse died due to a potentially infectious disease, use gloves and masks. Human belief is born in a holy state, dies in a holy state. Water has a symbol to purify and bathing has a meaning to neutralize. The body is placed in a quiet place on a high place such as a wooden plank or something else and covered with cloth. The person who washes the corpse sits slightly tilted back with the support of his right hand,	Humans have a process of removing waste products from the body's metabolism. The organs of the human excretory system are the kidneys, lungs, skin, liver and large intestine. The process of washing the corpse is an effort to ensure that residual substances do not cause an impact on the people around them who participate in the funeral process. The process of washing the corpse is a prevention of disease transmission from people who have died to people who are still living.

The process of handling the corpse	Religious Aspects	Cultural Aspects	Science Concept
		while his left hand massages the stomach of the corpse with emphasis so that what is inside comes out. Then the bather wraps his left hand with a cloth or glove and washes the front and back holes of the corpse. Then clean his mouth and nose and perform his ablution as a living person does. Washing the head and face of the deceased or bodies using soap or other things and combing the hair if it has hair. In this way, all the people who bathed the body evenly distributed water over the body of the deceased. This is only counted once wash. It is sunnah to repeat two more times as the washing is done so that the three washings are complete. It is also recommended to mix a little camphor at the end of washing if the deceased is not in ihram.	
Shrouding the Corpse	Shroud the corpse properly. Prophet Saw. said: "If one of you shrouds his brother, then he should shroud him properly" (HR. Ahmad, Muslim, and Abu Daud from Jabir). Wear a white shroud. Shroud the corpses of men with three layers and female corpses with five layers. These five layers consist of a sarong, clothes brackets, a veil, then a wrapper and then another layer of wrapping. Scrub the corpse with a kind of sandalwood, which is the usual perfume for corpses, except for corpses that are in ihram.	The process of shrouding the corpse is carried out by a person who is trusted by the community for the process of preserving the corpse. In addition, close relatives join in shrouding the corpse. Arrange the shroud that has been cut into each section in an orderly manner. Then, lift the body covered with cloth and place it on the shroud parallel to it, and sprinkle it with perfume or with camphor and cotton.	The use of white shrouds and cotton according to religious teachings is a sunnah, the teachings of the Prophet Muhammad. White cloth does not cause soil pollution or can be decomposed (biogradable) because it is without fabric dyes. In addition, the fabric has a composition of 95% cellulose, 1.3% protein, 1.6% lin, 3% sugar and organic acids and the rest are other chemical compounds. The concept of natural science that can be connected with the process of shrouding the corpse is environmental pollution. In addition, the use of camphor / camphor. Camphor can be discussed as a topic of atoms, molecules, compounds.
The process of lighting the corpse	From Salamah bin al-Akwa' ra, he said, “The Prophet shallallahu 'alaihi wa sallam once brought a corpse, so he would pray for it. Then he asked, 'Does this person have a debt . They replied: "No ", so the Prophet sallallaahu 'alaihi wa sallam prayed for the body. Then came another corpse. He asked: "Does he have a debt. They replied: “Yes ”. He said, 'Pray your friends.' Abu Qatadah said: "I will bear the debt, O Messenger of Allah." Then he prayed over the corpse. (Narrated by Bukhari)	The order of the most important parties to carry out the funeral prayer is: (a). the person who was bequeathed by the deceased on condition that he is not wicked or an expert on heresy; (b) clerics or Islamic Religious Education and Characteristics of 118 prominent leaders at the burial place; (c) the parents of the deceased and so on up; (d) the children of the corpse and so on down; (e) immediate family, and (f) all Muslims.	Praying for the corpse for the science concept which discussed the motion system. When performing the prayer there is movement of the muscles and joints during the process of blazing the corpse.

The process of handling the corpse	Religious Aspects	Cultural Aspects	Science Concept
Funeral Process of the Body	Take care of the corpse immediately. Because if the corpse is a righteous person, it means you have accelerated goodness for him. And if the body is other than a righteous person, it means you have put ugliness on your shoulders." (HR Bukhari no 1315 and Muslim no 944)	It is permissible to bury the body at any time, but there are 3 times that should be avoided, namely: - The sun has just risen, wait for it to rise. - When the sun is in the middle (when it's scorching hot/at noon time), it leans to the west. - When the sun is almost setting, until it sets perfectly. b) The sequence and stages - The body is lifted to be placed in the grave. Do it slowly. The body is put into the grave, starting from the head first and moving towards the feet. If this is not possible, it is permissible to lower it from the Qibla direction. In the grave, the body is placed in an oblique position on the lower right side of the stomach, and facing the Qiblah. - The cheeks and feet of the corpse should be pinned to the ground by opening the shroud. Similarly, the straps removed.	In the process of burial, the IPA concept that can be connected is the principal quantity and the derived quantity as well as the measurement from the activity of measuring the body, from the process of making the grave. Another concept is the cycle of energy and nutrients. When the corpse is buried in the grave, the process of decomposition occurs. The body will be broken down by decomposers so that within a few months there will be skeletal bones left. After several months of death, nothing remains. Another concept that can be discussed is about cells.

The process of burial of bodies can be seen studied from cultural and scientific aspects so that it has the potential to become a source of student learning for basic science courses. The process of washing, shrouding, praying, and burying the corpse can be related to the science concept of unit size, excretory system, respiratory system, energy cycle, soil layers, chemical compounds, and environmental pollutants. Indigenous culture and Western (alternative) modern science culture may complement each other in the everyday world experience of students. The introduction of ethnoscience in the classroom will represent different cultural backgrounds and might help improve the interpretation of knowledge (Khoiri et al, 2018), thereby making science more relevant to students in culturally diverse classrooms (Beer et al., 2022).

The integration of indigenous knowledge into the school curriculum may help to enable students to gain positive experiences and develop appropriate attitudes toward science. Ethnoscience which is used as a learning resource is supported by research (Tasungwa, 2019) that indigenous community knowledge about disaster mitigation is used as a learning resource in schools. Furthermore, the Bedouins have knowledge of natural medicine, astronomy, agriculture (Zidny et al., 2021), salt making by the Madurese (Hadi & Ahied, 2017), regional specialties of Surabaya "Pudak" (Yuliana et al., 2021), typical food of the Batang region such as "megono", and "serabi" (Ridho et al., 2021), a regional dance called the Remo Dance (Suryanti et al., 2020) , "tambi uma " tribe in the Ende area (Lidi et al. ., 2020) are studies that use entoscience as a source of learning science.

The ethnoscience approach helps students to maintain the wisdom values of their local culture (Ngasike, 2011). Science research , culture integrated with religion concluded that it can increase student motivation at Najran Arab university Arabia (Ahmed, 2018) . Research in Indonesia that integrates values religion , science, and culture concluded that students experience an increase in religious attitudes, discipline and responsibility (Wahyuni et al., 2017), making decisions about problems and being able to relate them to in Islamic values (Rahmaniati & Supramono, 2015). The results of this study can be used for science learning in elementary schools (SD), junior high schools (SMP), high schools (SMP) with Islamic characteristics/ government schools and universities that study religion, culture, and science. The results of this study are applied as an effort to realize innovation in science learning.

Conclusion

The process of managing the bodies from the stages of bathing, shrouding, praying, and burying can be studied from religion, culture and science. Learning resources for Basic Science in tertiary institutions can examine the process of managing corpses, especially the process of managing the bodies of Muslims.

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Winarto constructing and reviewing the literature. Dwi Hesti Kristyaningrum reviewed the literature and edited the manuscript by Aji Pamungkas and Putri Wulandari. All authors read and approve the final manuscript.

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Conflicts of Interest
The authors declare no conflict of interest.

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