

ETHNOSCIENCE STUDY OF SEDEKAH BUMI BANGSRI JEPARA VILLAGE IN ELEMENTARY SCHOOL SCIENCE SUBJECTS

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Abstract

The rapid flow of globalization can threaten the fading of local cultural values in Indonesia. This can be a challenge for the Indonesian people to choose between maintaining or eliminating the existing environmental culture. Therefore, an approach is needed, namely ethnoscience in the learning process. This study aims to describe the ethnoscience of Sedekah Bumi in Bangsri Jepara Village in elementary science material. The method used is qualitative with a phenomenology research design. The subject of this research was village heads and village officials. The data was obtained by observation, interview, and documentation. Data validation was conducted through triangulation. Based on the research results, it is known that ethnoscience learning can be integrated into elementary science learning, as evidenced in every series of almsgiving activities in Bangsri Jepara Village, including *ingkang damar murup*, colossal dance, shadow puppets, buffalo slaughter, and the *penjor* festival. Based on the research that has been done, it is concluded that science content is integrated into grade III, IV, and V SD materials. Grade III material that is integrated with the alms of the earth is a change in the form of objects and the benefits of plants for humans. Grade IV material is the style of motion, the relationship between form and function of animal and plant body parts, and light. Grade V materials are heat transfer, human organs, and the classification of animals based on the type of food they eat. Then, in addition to SD material, namely the emulsion in coconut milk and nutrients in the soil in plants. It is hoped that this research will not only be able to integrate the Sedekah Bumi culture with elementary science material but that students can also relate the almsgiving culture with cultural preservation activities.

Keywords: Ethnoscience, Sedekah Bumi Bangsri Jepara Village, Natural Sciences

Abstrak

*Derasnya arus globalisasi dapat mengancam lunturnya nilai-nilai budaya lokal di Indonesia. Hal ini dapat menjadi tantangan tersendiri bagi masyarakat Indonesia untuk memilih antara mempertahankan atau menghilangkan budaya lingkungan yang ada. Maka dari itu, diperlukan suatu pendekatan yaitu etnosains dalam proses pembelajaran. Penelitian ini bertujuan untuk mendeskripsikan etnosains sedekah bumi Desa Bangsri Jepara dalam materi IPA SD. Metode yang digunakan ialah kualitatif dengan desain penelitian fenomenologi. Subjek dalam penelitian ini adalah kepala desa dan perangkat desa. Data diperoleh dengan observasi, wawancara, dan dokumentasi. Kemudian validasi data dilakukan melalui triangulasi. Berdasarkan hasil penelitian diketahui bahwa pembelajaran etnosains dapat diintegrasikan kedalam pembelajaran ilmu pengetahuan alam sekolah dasar yang dibuktikan pada setiap rangkaian kegiatan sedekah bumi di Desa Bangsri Jepara meliputi *ingkang damar murup*, tari kolosal, wayang kulit, penyembelihan kerbau, dan festival penjor. Berdasarkan penelitian yang sudah dilakukan diperoleh integrasi muatan IPA pada materi kelas III, IV, dan V SD. Adapun materi kelas III yang terintegrasi sedekah bumi adalah perubahan wujud pada benda dan manfaat tumbuhan bagi manusia. Materi kelas IV adalah gaya gerak, hubungan bentuk dan fungsi bagian tubuh hewan dan tumbuhan, dan cahaya. Materi kelas V adalah perpindahan kalor, organ tubuh manusia, dan penggolongan hewan berdasarkan jenis makanannya. Kemudian selain materi SD yaitu emulsi pada santan dan unsur hara dalam tanah pada tanaman. Penelitian ini diharapkan tidak hanya mampu mengintegrasikan kebudayaan sedekah bumi dengan materi IPA SD, akan tetapi peserta didik juga dapat mengorelasikan kebudayaan sedekah bumi dengan kegiatan pelestarian budaya.*

Kata Kunci: Etnosains, Sedekah Bumi Desa Bangsri Jepara, Ilmu Pengetahuan Alam

Background

Bhineka Tunggal Ika is the motto of the Indonesian nation, which means that although different but still one. The diversity that occurs in Indonesia is formed due to ethnic and cultural diversity. Two things are closely related, namely globalization and culture. According to Mahdayeni, humans are social creatures who are bound and involved in certain behaviors that eventually turn into a culture that changes their behavior¹. This makes culture has an important role in every community in shaping good and bad habits when socializing. The rapid flow of globalization can threaten the fading of local cultural values in Indonesia. Therefore, this situation is a challenge for Indonesian people to choose between preserving or abandoning the existing local culture. Local wisdom is one of the positive identities that serve as a filter for various cultural elements that must be maintained and characterize the local community². By implementing these aspects of cultural values into the education system, the government and society are able to preserve local wisdom while still upholding Indonesian cultural values³.

The different cultural traits that define each region give it its own identity. The ownership of cultural diversity allows it to be scientifically researched or used as a learning resource. One of the famous local wisdom in Java is *Sedekah Bumi*⁴. Based on Rachmawati's opinion, each location has a unique way of organizing *sedekah bumi*⁵. The tradition of *sedekah bumi* is practiced differently in

each place, but the main purpose of the procession of transferring the community's crops to nature remains the same. *Sedekah bumi* is usually performed after the harvest and can be seen as a rescue effort or an act of gratitude towards the earth⁶. *Sedekah bumi* has become an annual routine for all elements of the Bangsri Village community, Jepara, starting from village officials, heads of RT / RW, and religious leaders since ancient times until now.

In addition to mastering concepts, students are expected to be able to apply the knowledge gained in real-world situations, develop a scientific outlook by appreciating nature, and hone mental and physical abilities so that they can contribute to solving environmental problems⁷. Students make direct observations using ethnosience-based learning to recognize scientific problems, provide scientific explanations for events, and draw conclusions. One of the local wisdom, *sedekah bumi*, can be integrated into elementary science learning by applying ethnosience-based learning. Ethnosience-based science learning shows that students can be directly involved in discovering concepts and revealing phenomena in the environment around students⁸. Therefore, by utilizing the local understanding of regional culture, students can understand new information or content. Ethnosience covers the scope of people's culture and regional production⁹. According to Atmojo, by using the concept of the environment with culture as a source of education, especially local culture, ethnosience education

¹ Mahdayeni, *Manusia dan Kebudayaan (Manusia dan Sejarah Kebudayaan, Manusia dalam Keanekaragaman Budaya dan Peradaban, Manusia dan Sumber Penghidupan)*, Tadbir: Jurnal Manajemen Pendidikan Islam, Vol.7, No.2, 2019, hal 154–165

² Pingge, H.D, *Kearifan Lokal Dan Penerapannya Di Sekolah*, Jurnal Edukasi Sumba (JES), Vol.1, No.2, 2017

³ Zahrawati et al, *The Effect Of Organizational Culture On Self-Concept And Discipline Toward Self-Regulated Learning*, Vol.24, No.2, 2021, hal 290–302

⁴ Hidayatulloh F.S, *Sedekah Bumi Dusun Cisampih Cilacap*, EI-HARAKAH (TERAKREDITASI), Vol.15, No.1, 2013, hal 1-17

⁵ Rahmawati F dan Atmojo I.R.W, *Etnosains Pasar Terapung Kalimantan Selatan dalam Materi Ilmu Pengetahuan Alam*

(IPA) Sekolah Dasar, Jurnal Basicedu, Vol.5, No.6, 2021, hal 6280-6287

⁶ Hidayatulloh F.S, *Sedekah Bumi Dusun Cisampih Cilacap*, EI-HARAKAH (TERAKREDITASI), Vol.15, No.1, 2013, hal 1-17

⁷ Sayekti I.C dan Kinasih A.M, *Kemampuan Guru Menerapkan Keterampilan Proses Sains Dalam Pembelajaran IPA Pada Siswa Sekolah Dasar*, Profesi Pendidikan Dasar, Vol.4, No.1, 2017, hal 97–105

⁸ Suastra I.W and Pujani N.M, *Ethnosience-Based Science Learning Model to Develop Critical Thinking Ability and Local Cultural Concern for Junior High School Students in Lombok*, Vol.7, No.20, 2021

⁹ Sarwi, *The Analysis of Ethnosience-Based Science Literacy and Character Development Using Guided Inquiry Model*, Journal of Physics: Conference Series, Vol.1567, No.2, 2020

provides a strong emphasis on value education to produce more useful learning outcomes¹⁰. As a result, the ethnoscience approach can be used by a teacher as a substitute approach to improve student achievement.

Based on research on ethnoscience learning that has been conducted by several previous researchers. First, the results show that schools have used the ethnoscience approach in learning even though it has not been planned. Science learning includes the process of making cassava tape, making *serabi*, making *batik*, visiting an ice factory, and observing the environment around the school¹¹. Second, the findings state that knowledge of ethnoscience affects the pedagogical competence of elementary school teachers¹². Based on this, ethnoscience-based learning is important for teachers to be able to teach much better by connecting ethnoscience into learning activities.

The third relevant research, for grade V elementary school students in semester II, made an ethnoscience-based module on rice field ecosystem material. This module has been confirmed to be practicable for use in education¹³. When creating a scientific curriculum for elementary schools, this research can be used as a guide. Fourth, it can conclude that science classes for grade IV elementary schools can use the floating market component. The utilization of Indonesian natural resources, such as rivers, *klotok* boats, floating markets of vegetables, freshwater fish, river water that is sold when it is finished, *wadai* or Banjar specialties, and *air*¹⁴. Fifth, the results showed that the average science content in grade IV can be integrated into the scope of

ethnoscience towards the local potential of Gresik city which includes *sedekah bumi*, Delegan Beach, milkfish market, and cultural carnival.

Based on the explanation above, it would be better if in learning activities teachers include ethnoscience. In line with Wati's opinion that ethnoscience-integrated science teaching materials encourage students to explore existing knowledge in the region and engage directly with local culture¹⁵. This research is unique because it transforms conventional wisdom into ethnoscience studies with the hope that students will quickly grasp concepts and be able to gain scientific insights from the local culture. In addition, there has been no study of basic scientific education in Bangsri Village, Central Java, using the ethnoscience approach of *sedekah bumi*. The purpose of this research is to characterize in terms of basic science ethnoscience *sedekah bumi* in the community of Bangsri Jepara. This research can be utilized as a consideration in the development of science textbooks that include ethnoscience and integrate with local potential.

Method

This research utilizes qualitative methodology, which is a research approach based on the post-positivist school of thought, to study the condition of natural objects¹⁶. The researcher acts as a key instrument in this study and the emphasis on meaning in research findings is placed above generalization. The research design used is phenomenology by observing phenomena that occur in human life, where researchers try to enter into the conceptual world of the subjects being studied so that they understand what and how an

¹⁰ Atmojo, *Science Learning Integrated Ethnoscience to Increase Scientific Literacy and Scientific Character*. Journal of Physics: Conference Series, Vol.1254, No.1, 2019

¹¹ Puspasari et al, *Implementasi Etnosains dalam Pembelajaran IPA di SD Muhammadiyah Alam Surya Mentari Surakarta*, SEJ (Science Education Journal), Vol.3, No.1, 2019, hal 25–31

¹² Kurniawan et al, *Ethnoscience investigation in primary schools: Impact on science learning*, Universal Journal of Educational Research, Vol.7, No.12, 2019, hal 2789–2795

¹³ Hafiza, *Pengembangan Modul Berbasis Etnosains dalam Mata Pelajaran IPA Materi Ekosistem Sawah di SD Negeri 28*

Kelas V di Suku Gumai Tanjung Sakti (Pagar Alam), Repository IAIN Bengkulu, 2021

¹⁴ Rahmawati F dan Atmojo I.R.W, *Etnosains Pasar Terapung Kalimantan Selatan dalam Materi Ilmu Pengetahuan Alam (IPA) Sekolah Dasar*, Jurnal Basicedu, Vol.5, No.6, 2021, hal 6280–6287

¹⁵ Wati et al, *Analysis Of Student Scientific Literacy: Study On Learning Using Ethnoscience Integrated Science Teaching Materials Based On Guided Inquiry*, J. Pijar MIPA, Vol.16, No.5, 2021, hal 625–630

¹⁶ Abdussamad, Zuchri, *Metode Penelitian Kualitatif*, 2021.

understanding is developed by them around events in everyday life¹⁷. The subjects in this research are village heads and village officials who are experts and understand about *sedekah bumi*, while the object of this research is ethnoscience *sedekah bumi* in elementary science subjects.

Observation, interview, and documentation procedures were used as data collection strategies in the ethnoscience investigation. The observation was carried out by observing the natural appearance at the research location which was the source of the emergence of the *sedekah bumi* tradition by the people of Bangsri Jepara Village. Interviews were used to obtain information on the *sedekah bumi* tradition. Documentation used pictures of *sedekah bumi* tradition activities. While the data analysis procedure includes 1) data collection is recorded in field notes obtained from interviews, observations, and documentation; 2) reduction is carried out after the data is collected to compile the findings that will be used; 3) presentation of data in the form of tables; and finally 4) drawing conclusions¹⁸. Then validate the data using triangulation techniques obtained through interviews then checked with observation and documentation.

Results and Discussion

Results

Jepara has a diversity of local wisdom that is still preserved today, one of which is *sedekah bumi*. *Sedekah bumi* is a form of preservation and gratitude of the village community for the harvest and the blessings that have been given by Allah SWT. The tradition of *sedekah bumi* is held annually in the month of Dhulhijjah or after the harvest on Friday Pon with the traditions of each village. For the people of Bangsri Jepara Village, the implementation of *sedekah bumi* is held with the aim of the safety of the entire community for the coming year, getting abundant crops, and if there is a problem that can be resolved so that the implementation of earth alms is mandatory. If not, the worst could happen. Therefore, the earth alms

tradition must be carried out every year because it is to save the earth of Bangsri Village and also preserve culture. This is in line with the opinion of the Head of Bangsri Village, namely through cultural preservation, it aims to reawaken people's awareness of culture through *sedekah bumi* in the hope of getting an element of togetherness so that the community together comes to witness and enjoy the *sedekah bumi* celebration and together work together in terms of cleanliness before and after the implementation of *sedekah bumi*.

Village officials and one of the hereditary successors in the implementation of *sedekah bumi* conveyed that there is a procession of the main tradition of *sedekah bumi* including a procession of praying together in 6 places, namely *watu lumpang*, *banyu urip*, *dukub watu*, *mbah mendung*, *swadang*, and *grinjingan* which are sacred places and places of ancestors or elders. Activities in this prayer ritual include holding *tablil* and *manaqin*. This is a form of gratitude wherever we pray, considering that God's earth is the earth created by Allah SWT. Any place is considered to be used for prayer and does not have to be carried out in certain places. The reason it must be carried out in certain places is that it is considered a *petilasan* or historical place and also as a form of preservation of these places. In line with the opinion of the Head of Bangsri Village, the implementation of *sedekah bumi* in ancient times was usually carried out in haunted places such as in *punden* or places where people who were considered to be forerunners ate. Then, there were rituals by giving offerings that were considered unclean, so in modern times *sedekah bumi* is used as a form of cultural preservation..

The implementation of *sedekah bumi* is expected to maintain places that are considered historical places or shrines. The application of religious norms carried out in the *sedekah bumi* is by asking for blessings and safety and asking Allah SWT as a form of gratitude for the blessings given, especially related to the earth alms in the form of a bumper harvest and praying for parents, teachers,

¹⁷ Sutarna, *Metode Penelitian Pendidikan*, 2022.

¹⁸ Miles et al, *Qualitative Data Analysis*, 2014.

ancestors, and warriors who have fought for and built Bangsri Village. So the implementation of *sedekah bumi* is usually carried out in sacred and historic places such as tombs and *pundens* because as a shrine that has been visited by someone or an important and influential figure in the area.



Figure 1. Prayer gathering in Banyu Urip Village

Figure 1 is one of the places where the prayer is held, namely in the village of Banyu Urip which has its own characteristics, namely *ingkung damar murup*. *Inkung* or *dekem* is a chicken served whole and beautifully arranged. In Javanese tradition, *ingkung* means *enggala jungkung* or *enggala manekung* which means to immediately prostrate and worship or *dhiker* completely to Allah SWT. The *damar murup* is a living lamp that has the meaning of lighting which is currently replaced using candles. Therefore, *ingkung damar murup* is the position of human consciousness before God with the body and a sense of humility and resignation that Allah SWT is the light of the entire universe. If associated with science knowledge, *ingkung* or chicken is included in the material "Heat Transfer Around Us" class V theme 6 subtheme 2 in the process of cooking chicken which experiences heat transfer by convection, and coconut milk which is used as an ingredient in cooking *ingkung*. Then on the *damar murup* into the material "Changes in the Form of Objects" grade III theme 3 subtheme 3 on the candle used changes its form when lit from solid to liquid. So in the procession of *selamatan* prayers together, Banyu Urip village has its own uniqueness, which requires each family card to bring *ingkung damar murup* during the procession.



Picture 2. Buffalo slaughtering

Figure 2 shows the procession of buffaloes slaughtered at the house of the village chief or head of Bangsri before the shadow puppet show. The buffaloes slaughtered must be male buffaloes. The meat from the slaughter will be distributed to all the people of Bangsri Village. The slaughter is a form of gratitude from the village community for what Allah SWT has given for all his gifts through the earth for our livelihood so far in the form of abundant crops. As a form of respect and appreciation from the community for the land we have been on, we throw all the dirt on the ground and we live by planting all kinds of food sources from the soil. If it is related to science knowledge, the buffalo slaughter procession is included in the material "Classification of Animals Based on the Type of Food" grade V theme 5 subtheme 1 because buffaloes are herbivorous animals, and in the material "Relationship between the Form and Function of Animal and Plant Body Parts" in grade IV theme 3 subtheme 2 because during the buffalo slaughter procession can pay attention to the shape of the body and its function. So, the buffalo slaughtering procession is a form of community gratitude for the abundance of crops given by Allah SWT and the slaughter is carried out at the village head's house.



Figure 3. A shadow puppet show

In Figure 3, the whole procession of *sedekah bumi* is closed with the culmination of a shadow puppet show held on Friday Pon at the house of the village leader or head of Bangsri Village. The shadow puppet show is attended by the entire community of Bangsri Village. Muh is one of the local sons from Bangsri Village who plays shadow puppets or is usually called a *dalang*. The type of story or shadow puppet play last year was “*Mbangun Deso*” which means that it is expected to be a new spirit for residents, officials, and officials in the future so that they can work together and realize the progress and welfare of Bangsri Village.

Originally, Sunan Kalijaga’s shadow puppets, which were used to spread Islam throughout Java, are thought to be the source of the *Sedekah Bumi* tradition in Bangsri Village, Jepara. These shadow puppet shows incorporate clearly understood meanings or statements of Islamic material. The figure of Werkudara, for example, represents prayer. Because there is no squatting movement during prayer, Werkudara is rumored to be unable to squat. It is a story meant to inspire Muslims to fulfill their religious obligation to pray. If it is related to science knowledge, the shadow puppet show is included in the material “Force and Motion” grade IV theme 8 subtheme 2 when the puppeteer plays the puppets in all directions, the material “Human and Animal Organs” grade V theme 5 subtheme 1 which can be seen from the puppeteers who play the puppets using their hands, and the material “Light” grade IV theme 5 subtheme 2 on the shadow effects displayed during the show. So the shadow puppet show is the culmination of the whole series of earth alms processions that can be enjoyed by the entire community of Bangsri Village and for the course of the story every year always changes.

There were additional activities at the end of the *sedekah bumi* event carried out by the people of Bangsri Village for two days including a mural festival, mural painting, *campur sari*, skateboard performance, music performance, drum band, bazaar, *penjor* festival, *germas* gymnastics and aerobics, *silat*, *gambyong* dance, *barongan*, and colossal *warokan*. The implementation of *sedekah*

bumi is also a celebration of the village’s birthday because there is no village anniversary, unlike the regency which has an anniversary. Bangsri Village, through cultural preservation, aims to reawaken the community’s awareness of culture through *sedekah bumi*, especially since Bangsri Village has a number of cultural achievers or art groups, including gamelan craftsmen, puppeteers, *sinden*, and dance groups.



Figure 4. *Penjor* Festival

In Figure 4, each village has a series of cultural arts festivals that are diverse and of course different. Through joint deliberation, Bangsri Village decided to choose the *penjor* festival, which had not yet been held in other villages. *Penjor* is the traditional art of stringing *janur*. According to Mr. Sunaryo, nowadays the community, in general, has begun to forget the art of stringing *janur* because it can be seen from events or activities such as weddings if in ancient times the community jointly made the *janur* itself, but nowadays it is all taken care of by the organizer or event organizer. In addition, *penjor* is presented as a way for residents to express gratitude for all the blessings bestowed on them by God in Javanese culture since hundreds of years ago. The *penjor*’s complementary flower, *mayang*, has been established as a symbol of harmony for all citizens. Therefore, the *penjor* festival can reawaken people’s awareness that we must preserve the *penjor* as a form of cultural wealth. The Bangsri village held a competition for the art of stringing *janur* between citizen associations and each neighborhood sent *penjor* or *janur* which was stuck in neat rows on the side of the field. Bangsri Village has run the first *penjor* festival in 2022 and will include the *penjor* festival

as a routine activity in the *sedekah bumi* series and has also prepared a budget. If associated with science, the *penjor* festival is included in the material “Relationship between Form and Function and Body Parts of Animals and Plants” Grade IV theme 3 subtheme 2 can be seen from coconut trees that have roots, stems, leaves, flowers, and fruit. So, the *penjor* festival is a festival made to preserve *penjor* or *janur* by holding a competition to string *janur* between citizen associations.



Figure 5. Colossal Dance

Figure 5 is a dance in the *sedekah bumi* festival which stages a ballet entitled *Suronggotho Dewi Wiji* which tells the history of Bangsri Village and a colossal *warokan* dance like a warrior so that the creation of this *warokan* dance in the hope of giving birth to warriors, champions, and fighters both through schools, etc. This dance is the result of the creativity of Jepara’s sons. This dance is the result of the creativity of the sons of Jepara. This activity is a form of collaboration between activists or art lovers, especially dance, in order to enliven and collaborate with all schools in the Bangsri sub-district and teachers involving 500 dancers. This colossal dance is only limited to a series of commemorations of *sedekah bumi* of Bangsri Village, which means that it can be held every year and can also be replaced with other activities. If associated with science knowledge, colossal dance is included in the material “Force and Motion” grade IV theme 8 subtheme 2 because the dancer’s movements are influenced by the force and material “Human and Animal Organs” grade V

theme 5 subtheme 1 which can be seen by the body of a dancer while dancing. So, colossal dance is a dance performed en masse by many groups of dancers who perform a variety of dances such as *gambyong*, *barongan*, and *warokan*.

Discussion

The place of implementation of *sedekah bumi* is carried out in many places starting from the process of praying together in 6 places including *watu lumpang*, *banyu urip*, *dukuh watu*, *mbah mendung*, *swadang*, and *grinjingan*, followed by a series of festivals held at the Bangsri Village field, buffalo slaughtering and puppet shows performed at the village head's house. *Sedekah bumi* according to the people of Bangsri Village is a form of gratitude for the harvest given by Allah SWT. They feel the need to do it because they harvest abundant fruits because they live on the earth, eat and drink there, grow crops there too (in the ground), and give alms to the land as a sign of gratitude¹⁹. This is the purpose and reason why it is necessary to carry out *sedekah bumi*. If associated with science material, farmers use soil media to grow crops. The unconsolidated mineral materials that makeup soil are found on the earth's surface and have been and will continue to be influenced by genetic and environmental factors, such as organisms (macro and micro), climate (including humidity and temperature), parent material, and topography at any given time. Soil has nutrients and is an important medium for plants to grow in, as plants absorb food from the soil for their growth process.

At the prayer meeting, the making of *ingkung* or chicken which is served as a whole and neatly arranged in one place involves a scientific process in the form of convection heat transfer when cooking chicken. Heat transfer is when heat energy is transferred from something hotter to something cooler. In the process of making *ingkung*, first, wash the chicken and leave it whole then sauté the spices and put them in the pot, then add the whole

¹⁹ Hidayatulloh F.S, *Sedekah Bumi Dusun Cisampih Cilacap*, EI-HARAKAH (TERAKREDITASI), Vol.15, No.1, 2013, hal 1-17

chicken and coconut milk and cook over medium heat until the chicken is tender and the sauce shrinks. The cooked chicken experiences heat transfer by convection. According to Melinda & Saputra, convection is the process of heat transfer through media without the use of intermediary materials²⁰. The coconut milk used is then put through a scientific procedure as well. Coconut milk is aged coconut meat extracted into a milky white natural oil-in-water emulsion with or without the addition of water²¹. Oil and water are the two liquids that form the liquid dispersion phase of coconut milk. Therefore, when boiling, cold water will go down and hot coconut milk will rise from below so that convection rotation occurs. The process of making *ingkung* can be integrated into the material "Heat Transfer Around Us" grade V theme 6 subtheme 2.

In the procession of *selamatan doa bersama* in Banyu Urip village, people are required to bring *ingkung damar murup*. *Damar murup* is a candle placed right in front of each *ingkung* brought by each family. The candle is lit during the procession of praying together and involves a scientific process when the candle is lit by burning the wick with a match then passing through a heating process and then melting, changing the shape of the candle, changing it from solid to liquid. The event of changing the form of solid objects into liquid occurs because the surrounding temperature becomes hot²². However, when the candle is extinguished, the surrounding temperature will drop so that what was originally a liquid turns into a solid and the candle will change its form to liquid. Another example is found in Utami's research which shows that if a block of ice is exposed to sunlight over time it will melt and turn into water. As a result, the ice block melts, changing from a solid state to a liquid state. Through the procession of prayers together, students can learn science

from *damar murup*, namely the material "Changes in the Form of Objects" grade III theme 3 subtheme 3.

The process of slaughtering buffalo animals certainly pays attention to procedures in accordance with Islamic law, namely reading *bismillah* and slaughtering the neck veins first. This is supported by the opinion of Awaludin & Nugraheni, animals whose meat is allowed for consumption cannot be consumed unless they are killed in accordance with sharia or in a way that is very comparable to it²³. Buffaloes are a group of herbivorous animals that are widely hunted and cultivated by humans. If associated in elementary science material, it is included in the material "Classification of Animals Based on the Type of Food" grade V theme 5 subtheme 1. In the process of slaughtering buffaloes, students can see the slaughtering process and pay attention to the body shape and know each function of the buffalo's body. The buffalo's body shape includes 2 ears, a nose, 2 eyes, a mouth, and 4 legs, buffalo's skin tends to be thick with coarse fur and has 2 horns that curve above the head with sharp tips. Buffaloes also have similarities with cows, and horses, which have similar sizes and shapes. Through buffalo slaughtering activities, students can learn science, namely on the material "Relationship between the Form and Function of Animal and Plant Body Parts" grade IV theme 3 subtheme 2.

A shadow puppet show is performed by a puppeteer who plays the puppets by holding the bottom stick of the shadow puppet with one hand, then the other hand holds the hand drive on the shadow puppet. Then it is moved by shaking. This results in a force of motion where the movement of the puppets is caused by the puppeteer playing the puppets in all directions. A puppeteer must

²⁰ Melinda & Saputra, *Canva Sebagai Media Pembelajaran Ipa Materi*, (JIPD) Jurnal Inovasi Pendidikan Dasar, Vol.5, No.2, 2021, hal 96–101

²¹ Sidik, *Pengaruh Penambahan Emulsifier Dan Stabilizer Terhadap Kualitas Santan Kelapa*, Jurnal Mipa Unsrat Online, Vol.2, No.2, 2013, hal 79–83

²² Wandini, *Metode Eksperimen Pada Proses Pembelajaran Perubahan Wujud Benda Pada Sekolah Dasar*, Jurnal Pendidikan Dan Koseling, 4, 2022, hal 2014–2020

²³ Awaludin A dan Y.R. Nugraheni, *Teknik Handling Dan Penyembelihan Hewan Qurban*, Jurnal Pengabdian Masyarakat Peternakan, Vol.2, No.2, 2017, hal 84–97

have strength in the hands in playing the puppets. The strength in the puppeteer's hand is a force. Pushing or pulling an object is called force. When pushing and pulling requires effort, the force used is visible in the movement of the puppets²⁴. Based on the activities of shadow puppet shows can be integrated into the material "Force and Motion" grade IV theme 8 subtheme 2, besides that there are cultural values throughout the history of shadow puppets which are traditional arts native to Indonesia. Findings on relevant research of shadow puppet show in the tradition of *sedekah bumi* can be associated with the material of the force of motion²⁵. In addition, students can also learn material about "Human and Animal Organs" grade V theme 5 subtheme 1 of the human body that can be seen from a puppeteer who uses his hands to move the puppets. Then the place where the shadow puppet show is performed at night must be in a place that has minimal light so that there is a shadow effect from the puppets. Students can learn material about "Light" grade IV theme 5 subtheme 2.

Penjor or *janur* has only been used as a wrapper for traditional cakes such as *ketupat*, *clorot*, and *lepet*. This led the village head to organize an art competition between citizen associations to provide innovations in preserving *penjor* other than for cake wrapping. *Janur* is a young coconut leaf that is golden yellow in color. The plant parts of the coconut tree include roots, trunk, leaves, flowers, and fruit. Through *penjor* festival activities, students can learn science, namely in the material "The Relationship between the Form and Function of Animal and Plant Body Parts" grade IV theme 3 subtheme 2. Then, the function of each part of the human body, coconut trees are plants that have many benefits for humans.

Students can learn science on the benefits of coconut trees, namely on the material "Loving Plants and Animals" grade III theme 2 subtheme 1.

In colossal dance, there are various dances performed by groups of dancers such as *gambyong*, *barongan*, and *warokan* dances. Students can learn science through a dancer in *warokan* dance who produces dance movements ranging from the head, body, hands, and feet which have their own strength for dancers to stomp their feet while dancing. This is corroborated by the opinion of Khutniah & Iryanti, the main component of motion that combines the concepts of energy, space, and time is motion²⁶. The movement made by the dancer is influenced by the style. Based colossal dance activities can be integrated into the material "Force and Motion" grade IV theme 8 subtheme 2, besides that there are cultural values throughout the history of dance which is the original traditional art of Indonesia. The findings in the relevant research of remo dance performances in the earth alms tradition can be associated with the material of motion styles²⁷. In addition, students can also learn material about "Human and Animal Organs" grade V theme 5 subtheme 1 of the human body that can be seen from a dancer who moves his body while dancing.

Based on the discussion above, the series of *sedekah bumi* culture that can be integrated into elementary science learning are presented in Table 1 below.

²⁴ Agustina dan Desstya, *Studi Eksplorasi Konsep Gaya Dan Gerak Pada Tari Dhadak Merak Reog Ponorogo*, Basicedu, Vol.6, No.4, 2022, hal 5624–31

²⁵ Wardani & Devi, *Analisis Muatan IPA Kelas 4 Berdasarkan Karakteristik Etnosains Berbasis Potensi Lokal Kota Gresik*, 2022

²⁶ Khutniah & Iryanti, *Upaya Mempertahankan Eksistensi Tari Kridha Jati di Sanggar Hayu Budaya Kelurahan*

Pengkol Jepara, JOGED Jurnal Seni Tari, Vol.3, No.1, 2012, hal 36–48

²⁷ Wardani & Devi, *Analisis Muatan IPA Kelas 4 Berdasarkan Karakteristik Etnosains Berbasis Potensi Lokal Kota Gresik*, 2022

Table 1. Reconstruction of Original Science into Scientific Science

Potential and Indigenous Knowledge	Scientific Knowledge	Elementary Science Materials
The joint prayer together is a form of gratitude for the people of Bangsri Village by bringing <i>ingkung damar murup</i> during the joint prayer ceremony procession for each community in 1 KK (Family Card).	<i>Inkung is a whole chicken which means to immediately prostrate and worship or dhiker completely to Allah SWT. Damar murup is a candle that has the meaning of lighting. In the process of cooking ingkung experiencing heat transfer, and the materials used are coconut milk which has a liquid dispersed phase (oil) and a liquid dispersing medium (water), and candles that change the form of solid to liquid.</i>	- Heat - Transfer - Change of Form of Objects
The buffalo slaughtered must be male because of the request of the elders.	Buffaloes are a group of herbivorous animals. Buffaloes have body parts that have functions. The buffalo's body shape includes 2 ears, a nose, 2 eyes, a mouth, 4 legs, buffalo skin which tends to be thick with rough fur, and has 2 horns that curve above the head with sharp tips.	- Classificati on of animals based on the type of food they eat - Animals around us
The shadow puppet show is performed in a place with minimal light.	Wayang <i>kulit</i> moves because it is moved by the puppeteer. The puppeteer moves the puppets using his hands to produce force. In shadow puppet shows, people can see the shadow of the puppets that come from the reflection of light.	- Force and Motion - Human Body Organs Light

<i>Penjor</i> or <i>janur</i> festival is made from young coconut leaves.	Young coconut leaves are quite flexible and easy to shape when molded. The parts of the plant body in coconut trees include 1) roots; 2) trunk; 3) leaves; 4) flowers; and 5) fruit. Coconut trees have many benefits for humans.	- Plants around us - Loving Plants
People believe that <i>warokan</i> dancers are possessed by spirits so they move nimbly.	A <i>warokan</i> dancer produces dance movements starting from the head, body, hands, and feet which have their own strength for dancers to stomp their feet while dancing so as to produce a style of motion.	- Force and Motion - Human Organs

Conclusion

Based on scientific science related to ethnoscience with elementary science materials, namely heat transfer material in the process of cooking *ingkung* and coconut milk ingredients which are emulsions, material changes in the form of objects in *damar murup* in the form of candles, material on the form and function of the animal body and the classification of animals based on the type of food in the procession of slaughtering buffaloes, material on the force of motion, human organs, The next science material is the form and function of the plant body and the benefits of plants at the *penjor* festival, the same material as the shadow puppet show, namely the force of motion and human organs in colossal dance, on the purpose of implementing *sedekah bumi* which uses soil media which has nutrients for the process of plant growth. This is expected to not only be able to preserve a national culture but elementary school students are also able to correlate the earth alms culture of Bangsri Jepara Village with cultural preservation activities. Suggestions for future researchers can further deepen the elementary

science material on ethnoscience *sedekah bumi* in Bangsri Jepara Village.

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