



Glocalization of Bull Racing: A Program for Preservation *Kerapan Sapi* as Madurese Local Wisdom

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Abstract

The research-based on three backgrounds such as the competence and experience of researchers related to the context of local wisdom research; the potency of local wisdom in Madura; and the researchers are team teaching of the course physics local wisdom for Undergraduate Program of Physics education. *Kerapan sapi* is one of Madura's local cultures, which combines art, tradition, and competition. This type of research is a mixed-method with exploratory sequential design. The implementation of this research was carried out in Tengket Village, Bangkalan Regency. Data collection was collected based on observation, documentation studies, interviews, FGD, and questionnaires. The main object of this research is several *Kerapan Sapi* teams in Tengket Village, especially *Trobos Sakti*. Several factors for becoming the *Kerapan Sapi* champion were the division of team tasks, strategies to win, and support from the village government. *Trobos Sakti* divides his team's tasks into three parts: maintenance, competition, and owner sections; each part has its role. *Trobos Sakti* has several agendas and strategies for his race cows, such as feeding the cows with grass, exercising, bathing the cows, cleaning the cows' cages, and joining several competitions from regency level to national level. The contribution of *Kerapan sapi* to education is to open the understanding and application of *Kerapan sapi* culture to study material, especially physics material, in senior high school.

Keywords: bull racing; globalization, localization; local wisdom; Madura

Abstrak

Penelitian ini berdasarkan tiga latar belakang seperti kompetensi dan pengalaman peneliti terkait dengan konteks penelitian kearifan lokal; potensi kearifan lokal di Madura; dan peneliti adalah tim pengajar mata kuliah kearifan lokal fisika di S1 Pendidikan Fisika. Kerapan sapi merupakan salah satu budaya lokal Madura yang mengandung perpaduan seni, tradisi, dan kompetisi. Jenis penelitian ini adalah metode campuran dengan desain sekuensial eksploratif. Pelaksanaan penelitian ini dilakukan di Desa Tengket, Kabupaten Bangkalan. Pengumpulan data dilakukan berdasarkan observasi, studi dokumentasi, wawancara, FGD, dan angket. Objek utama dalam penelitian ini adalah beberapa tim Kerapan Sapi di Desa Tengket khususnya Trobos Sakti. Beberapa faktor untuk menjadi juara Kerapan Sapi adalah pembagian tugas tim, strategi menang dan dukungan dari pemerintah desa. Trobos Sakti membagi tugas timnya menjadi 3 bagian: bagian pemeliharaan, bagian kompetisi, dan bagian pemilik yang masing-masing bagian memiliki perannya sendiri. Trobos Sakti memiliki beberapa agenda dan strategi untuk seperti memberi makan sapi dengan rumput, berolahraga, memandikan sapi, membersihkan kandang sapi, dan mengikuti beberapa kompetisi dari tingkat kabupaten hingga tingkat nasional. Kontribusi Kerapan sapi terhadap pendidikan adalah membuka pemahaman dan penerapan budaya Kerapan sapi untuk materi pembelajaran khususnya materi fisika di SMA.

Keywords: kerapan sapi; globalisasi, lokalisasi; kearifan lokal; Madura

Introduction

The research was motivated by three rationale backgrounds. Firstly, it was the competence and experience of researchers related to the context of local wisdom research. Secondly, there is a potency of local wisdom, namely *Kerapan Sapi* in Tengket village, Arosbaya district, Bangkalan regency, which has not been optimized. Thirdly, the researchers are team teaching of the course physics local wisdom for the Undergraduate Program of Physics Education (UPPE). The researchers have experience in research related to ethnosience (Suprpto, Prahani, and Deta, 2021), culturally-based education (CBE) (Suprpto et al., 2021), place based-education (PBE) (Suprpto et al., 2019), and local wisdom, especially in the field of science (Suprpto et al., 2021; Suprpto et al., 2021; Suprpto et al., 2019). In 2019, the first author received a national grant to optimize Indonesian local wisdom, especially in

technoparks and tourism objects in East Java” (Suprpto et al., 2019). In addition, the authors who are members of the Philosophy and Physics Education Curriculum research group are currently teaching and developing the Independent Learning Independent Campus (MBKM) course: physics local wisdom, which facilitates students to apply knowledge and skills related to local wisdom in the context of science in the community for the independent learning program outside the campus.

Previously, local wisdom's potency in *Tengket Village* has not been optimized. This village is located on the west coast of the island of Madura. It has regional potential in the agricultural, livestock, plantation, and tourism sectors and is very suitable as a partner in implementing the MBKM program. In particular, the *Bangkalan* district's tourism sector policy emphasizes structuring tourism objects directed at attracting tourists to create employment opportunities that will be able to support development. The orientation of tourism development policies increases regional cultural tourism objects (Pemkab Bangkalan, 2021). This is where the role of universities is needed.

Tengket Village has potential that has developed and continues to be preserved in the tourism sector, namely nature tourism, cultural and historical tourism, and special interest tourism. The cultural and historical tourism category includes bull racing, which is supported by the village livestock sector, with cattle as the primary commodity.

The urgency of this research is that the bull race can be viewed from culture, sociology, politics, and education in the context of metaphysics and physics. For example, preliminary research has also been produced through the physics local wisdom course on the relationship between *keleles* (jockey riding media) in bull racing and the concept of physics: Newton's laws. Here, place-based education (PBE) contributes to the preservation of local wisdom in certain areas.

Kerapan Sapi is a traditional culture of local wisdom which contains a blend of art, tradition, and competition. In it, there are elements such as *tokang tongko'* (jockey), *ambhin* (oversized cow clothes that carry the characteristics of each region), *obhit* (headdress containing a spiritual message), *keleles* (media riding a jockey), and *anjar* (strands of cloth wrapped in decorate *keleles* which are always odd) (Astutik and Sarmini, 2014). In addition,

there are *caraks* (cow caretakers), *slag* (supporters including cow owners, friends, neighbors, *dukhon*), and *saronen*. Each of these terms has unique characteristics.

This research was focused on *Tengket Village, Arosbaya District, Bangkalan Regency* as a research partner village (Figure 1).



Figure 1. Location of research partners, *Tengket Village, Arosbaya District, Bangkalan Regency*

Tengket Village has potential that has developed and continues to be preserved, namely nature tourism and cultural and historical tourism. The cultural and historical tourism category includes bull racing, supported by the village livestock sector, with the primary commodities being beef cattle, buffalo, goats, native chickens, ducks, and stuck. Through the GBR (Glocalization of bull racing) program, this research will help make the village development program a success while preserving the heritage of the local wisdom of the Madurese community.

Meanwhile, "think globally, act locally" is an expression that can be used to represent research that has been carried out. One of the efforts that can be given in education is to explore the potential of local wisdom that exists and is integrated with education by adjusting to global developments. So, the synergy of the concepts of localization and globalization, which presents the concept of glocalization, is essential to support the preservation of Madurese bull racing. Therefore, the researchers realized the research project entitled: Glocalization

of Bull Racing (GBR) Program. The program's primary purpose is to preserve *kerapan sapi* in *Tengket* village as Madurese local wisdom.

Specifically, the research questions of this research are:

1. To what extent do **the role** of personnel in Madurese bull racing?
2. What **strategies** for the bull race team to become the bull race champion?
3. What are **the efforts** of the village government and the bull race team to make the bull race tourism village an embodiment of the preservation of local wisdom?

Literature Review

Research in *Tengket* Village is part of Place-Based Education (PBE). PBE itself is an educational model that explores various local pearls of wisdom that can be integrated into various fields, including education. PBE benefits the research team with authentic and meaningful learning by exploring various local wisdom, culture, and experiences from the community (Eduinnovation and Teton Science Schools, 2017). PBE is an educational model that explores various local wisdom that can be integrated into learning, including physics, which provides geographical advantages for authentic, meaningful student learning by exploring various local wisdom, cultures, and experiences from the community. The objectives of PBE are to increase teacher-student and community interaction and involvement, stimulate academic learning outcomes, and impact the wider community. Therefore, PBE and local wisdom are two interrelated latent variables or abstractions that produce a new "PBE-local wisdom" (Coker, 2017). PBE has the opportunity to promote the local wisdom of a place, a region, or an area.

Meanwhile, *Local wisdom* is a system of knowledge, truth, and community identity collected by the local community and verified and utilized by the local community while also taking into account the local context (Nasrudin, 2011). Local wisdom can be understood as a human effort by using his mind (cognition) to act and behave toward something, object, or event in a specific space. Wisdom is understood as a person's ability to use his mind in acting or behaving due to an assessment of something, an object, or an event that occurs. *Wisdom* is often defined as '*kearifan*' (Ridwan, 2007). Local specifically refers to a limited interaction space with a limited value system. The

interaction pattern in the interaction space that has been designed is called the setting. The setting is an interaction space where a person can arrange face-to-face relationships in his environment. A life set that has been formed will directly produce values. These values will be the basis of their relationship or become a reference for their behavior (Ridwan, 2007).

Kerapan sapi is a native culture of Madura, which has been known since the 14th century AD. In ancient times, cows were the only fastest means of transportation in Madura and were widely used by the community, especially elite or royal communities. *Kerapan sapi* is an example of culture and entertainment for the Madurese community that has been carried out for generations and it deserves to be preserved from old generations to future generations (Thomas, 2016). *Kerapan sapi* was made to help the Madurese community interact and communicate with others (Darong et al., 2021). Interaction and communication resulted in the formation of social groups (Suprpto, 2017). *Kerapan Sapi* culture can integrate traditional values into modern values. This culture is used as a tool to gain honor and pride (modern values); it can be proven by giving encouragement and support through traditional tools such as ringing used cans and the presence of catfish on cows as a traditional Madurese tool.

This research supports the government in exploring the local wisdom of an area so that it becomes the primary basis for strengthening social capital. In the world of education, local wisdom and cultural values should be taught to children as early as possible because the future of a nation depends on students. If the local wisdom is appropriately maintained, the nation will become a developed nation. In addition, the need for a reference model that the world of education and society must display as a hidden curriculum. As for universities, a learning model based on local wisdom, it can be done by reconstructing indigenous science into scientific science. The application of the local wisdom-based science learning model is by observing a culture that exists in the community and then reconstructing its scientific concepts, which can grow the value of the conservation character of students. For village communities, particularly, the GBR program that will be carried out can help make village development successful, especially related to local wisdom and bullock culture tourism.

Methods

The research method used combines quantitative-qualitative research (mixed method) with exploratory sequential design (Suprpto, 2017; Creswell, 2011; Creswell, 2012). This research targets the villagers of *Tengket Arosbaya* and their bull racing culture. The research involved physics education students and sociology students as action participants, so the “Participatory Action Research”-PAR strategy was used in the study.

The study began with qualitative data collection through observation, documentation studies, and interviews related to the culture of bullocks as local wisdom. This research uses interactive models of Miles and Huberman to analyze observation and interviews data, such as data collection, data reduction, data presentation, and verification with triangulation to test the validity and credibility of data (Zuhdi, 2018; Kasanova et al., 2021). The targeted respondents were village heads, village officials, community leaders, cultural leaders, religious leaders, village youths, cultural experts, and physicists related to bull racing. Furthermore, the PAR-research team conducted a Focus Group Discussion (FGD) to share perceptions. Quantitative data collection was carried out through the distribution of a questionnaire related to physics and cultural content related to local wisdom in cattle and university students (PAR) to find out how far the relationship between physics concepts and culture based on bull race local wisdom and the formal curriculum (Creswell, 2012).

Results

The Role of Personnel in Madurese Bull Racing

Each bull racing team has some personnel with different and distinct roles. The maintenance, competition, and owner sections are among the three sections. From the owner section, if the cows do not run optimally or if things are not typical, such as cows running off the track, elders, and teachers of Islam (*Kyai*) advise the bull racing team. Furthermore, the owner selects Madura’s cows for the Bull Racing competition based on their quality.

During a race part of the competition section, a jockey rides a cow. The last part of the team is the maintenance section. The cow will be fed grasses in

the morning and herbal drinks in the evening by the cow's feeder to build the cows' tendon muscle (Hasan, 2012). The herbal drink contains village chicken eggs, *krating daeng* (energy drink), and honey.

Table 1. The ingredients of herbal drink for bull race cows

Ingredients	Quantity	Function
Village Chicken Egg	15	As a source of protein and increase cows' stamina (Bakhtra et al., 2016)
Honey	Honey to taste	To prevent some diseases especially low stamina (Aryanta, 2019)
<i>Krating daeng</i>	2 bottle @150 ml	Increase cows' stamina (Barus, 2018)

After that, the cow's feeder takes the cows for a leisurely walk. As a result, the cow's cage will be cleaned every morning and evening by the keeper's animal cage. Cows also bathed him in the morning and dried them out in the sun.

Each bull racing team has *pangereng* and equipment team. The equipment team will check *keleles* to ensure that they have not been used previously and are in good working order. They also prepare the basecamp for the cows and their team during bull racing day competition. When the cows are being run, the *pangereng* team makes noise and keeps the cow's path clear of obstacles.

The Strategies for The Bull Race Team to Become the Bull Race Champion

Strategies to become the bull race champion are divided into 2: short-term and long-term strategies. In the short term, the strategies to be a winner of a bull racing competition include treatment given to the racing cow and exercise. Before the competition, a mixture of village chicken eggs, honey, and energy drink is given as a herbal drink. Besides, cows eat the tips of grass (good quality). Then, the cows are bathed and dried every day in the morning. The

cows are in a shared cage to build chemistry with other cows. Cows use *keleles* which use root bamboo (*tangghe'en*).



Figure 2. *Keleles*

Table 2. The agenda per month for bull race team

Agenda	Type	Week				Description
		1	2	3	4	
Feeding the cows with grass	Primer					Every day in the morning
Exercise/track with other	Primer					Twice a month
The herbal drink is given to cows	Primer					Every day in the night
Running Training	Primer					Every day in the morning
Bathed the cows	Primer					Every day in the morning
Cleaning the cows' cage	Primer					Every day in the morning and in the evening
Join <i>tangghe'en</i> competition	Optional					Annual event before <i>kerapan sapi</i> competition
Join annual <i>kerapan sapi</i> competition	Optional					Annual event in district region (held in October or December)

Every two weeks, cows are run or tracked by a jockey. Cows are given massages in the field to prevent cramping while running and warm balm to help their muscles work at their best. The cows are bathed in water every time they walk down the track. The cows are fed after the race. To ensure a quick cooling down, the cows are bathed in rubbing alcohol. A *trekeng* that fits the cow's tail is used by the jockey to increase the cows' velocity.



Figure 3. *Trekeng*



Figure 4. Cows' feeder batched the cows after competition

The jockey has chemistry with cows from training to competition. The *kaleles'* slope is adjusted to the height of the cow. The tightness of the *kaleles* tie adjusts the cow's height because it can affect the cow's straight running. When Started, Cows are surrounded by noise to make them feel disturbed and run away.

To avoid interfering with the cow's running focus at the finish line, the team ensures no spectators approach the track closer than ± 1 meter. The team also allows space for the cow to finish its run. For long-term strategies, the team's owner selects a high-quality cow with many potentials to be a winner

like descendants from the winner, Madurese Sapi "*sapeh mera*" and makes a descendant from this to be the next cow to change it.

Table 3. The characteristics of bull race cows

Characteristics	Description
Height	Around 102-109 cm
Skin	Red Skin
Age	Young
Horns	The size and shape of the horns must be same and pointing outwards
Eyes	Round, and the area around them is dark (Nugraha, 2015)
Chest size	Wide Because of chest circumference is an indicator of the capacity of the cow's body, such as the heart and lungs, the width of the cow's chest is measured. The ability of the heart and lungs in the cardiovascular system to support the cow's running speed is demonstrated by a large chest circumference (Agustina and Hidayati, 2022)

In bull racing competition, there are several classes for classifying cows, which are presented in the table below.

Table 5. The class specification of bull race

Full A	Full B	Full C
Height: >109 cm	Height: \pm 108 cm	Height: \pm 102 cm
Note: The height of cow determines the clusters during the race		

The Efforts of The Village Government and The Bull Race Team to Make the Bull Race Tourism Village as An Embodiment of The Preservation of Local Wisdom

The community in *Tengket* Village considers that bull race competition as their hobby. Then, the village government recognizes the high cost of treating it. So, the government only can help residents who already have bull race cows. Until the district held the annual event, the government, especially the village

government, until the district held the annual event is only supported by the tourism department. *Kerapan sapi* competition is a celebration of local culture after the harvesting season. The village government is a facilitator in developing his hobby. If any tourism comes to the village, The village government indeed can select its team to be the primary object in the village. Besides that, the family of a team cow has a high privilege because it is famous around this village if they have got champion of the bull race.

Discussion

Kerapan sapi is a local culture that is worldwide because many foreign and national tourists want to see the bull race. Madura Island has 4 districts where each district has several districts. Each sub-district has a cow to enter the competition. In this study, the team that became the object was *Trobos Sakti* who came from *Tengket Village, Arosbaya District, Bangkalan Regency*. *Trobos Sakti* won the district level bull race and sold for 500 million for a pair of cows. The reciprocity that previously was based on the spiritual values was altered into a purely economic exchange based on profit (Kadir, 2018).

Several factors for the victory of the *Trobos Sakti* team, among others, was the division of team tasks, strategies to win and support from the village government. *Trobos Sakti* divides his team's tasks into 3 parts, namely among others: maintenance section, competition Section, and owner Section. Each part has its own role. *Trobos Sakti* has three pairs of bulls with different types and clusters. Table 6 explain the characteristics of one pair of *Trobos Sakti*'s cows.

Table 6. The characteristics of *Trobos Sakti*'s cows

Characteristics	Description
Height	108 cm (Full B) and 102 cm (Full C)
Front leg length	71 cm (Full B) and 56 cm (Full C)
Behind leg length	65,5 cm (Full B) and 63 cm (Full C)
Body length	151 cm (Full B) and 170 cm (Full C)

Based on the table above, the pairs of cows have different heights. The data explain that front and behind leg lengths are not the same. So, the team has strategies for their position during a competition. Cows with long leg lengths can get longer steps than cows with short leg lengths. However, long leg length mostly entered the high-class competition with many tricky opponents in competition. From low-class competition, mostly entered short leg length. A winner's probability is to use a short leg length with a different leg between cows like *Trobos Sakti*' strategies.

The cows used in the *kerapan sapi* competition are Madura cows, which have unique characteristics that make them wilder and more vicious than cows from another Madura (Fauzuna, 2020). *Saleh kerrap* are chosen for a variety of reasons, including wavy coats, slender legs, a wide chest and buttocks, a proportional body, and a short tail (Agustina and Hidayati, 2022)

The *Tropos Sakti* team has a strategy divided into short-term and long-term. Short-term strategy related to herbal drink and cow care. Long-term strategy regarding cattle quality and breeding. The herbal drink is given to cows at 21.00 o'clock or night. After the herbal drink is given to cows, the cows are rested until the morning, and then the cows are taken out of the cage to carry out their running training routine. After that, the cows are fed with grass and bathed by the cows' feeder. The nutrients in herbal drinks, as well as weight training, can help build cows' muscle, improve muscle function, burn fat, and increase their running speed (Azhar and Deden, 2013; Taufiq and Hidayah, 2013a; Taufiq and Hidayah, 2013b; Bayani, 2016; Jaelani et al., 2021).

Kyai plays an essential role in determining the best time to go to the arena and the best path to take. According to Fauzuna (2020), the Madura community believes that losing in the bull race means losing the cow and its owner and losing the power of kyai (lo' mandhah). In Madurese's Culture, the hierarchy of obedience is from slogan "*Bhuppa', happy, Guru, ratoh*". It means (father, mother, teacher and government) is a priority obedience to religion (Rahman, 2017).

The relationship between physics concepts and culture based on bull race local wisdom can explain during the competition. The cows have run a certain runway distance in a short time. According to observe runway distance

is 200 meters and time is 18,8 seconds. So, according to the concept a straight motion, the cows have velocity is 10,64 m/s.

$$s = vt$$

$$v = \frac{s}{t} = \frac{200}{18,8} = 10,64 \text{ m/s}$$

During the cows run, cows get acceleration while initial velocity is zero. So there is GLBB concept, namely

$$s = v_0t + \frac{1}{2}at^2$$

$$s = \frac{1}{2}at^2$$

$$v_t = v_0 + at$$

$$v_t = at$$

$$v_t^2 = v_0^2 + 2as$$

$$v_t^2 = 2as$$

In addition, when the bull runs, the jockeys need to maintain his position so he does not fall. Jockey must control the directions of cow's movement according to the track. To achieve an equilibrium position, the jockey needs to focus on *keleles*, which is relate to concept physics, namely

$$\sum \tau = 0$$

$$\sum F = 0$$

$$\sum F \cdot r = 0$$

The village government of *Tengket* always supports the activities carried out by the *Trobos Sakti* team. Starting from registering the name of the team when called by the tourism office to represent the *Arosbaya* sub-district, becoming a tourist destination for national and foreign tourists, as well as fame for the team's family because it is known by the *Arosbaya* sub-district community as the only cattle owner in the village.

Conclusion

Kerapan Sapi is not just a simple competition but a strategic competition. Every Tim who joins *Kerapan Sapi*'s competition has their role of personnel.

This research focus is on The *Trobos Sakti* team. *Trobos Sakti* team uses three parts of a team a maintenance section, a competition section, and an owner section. This way to make different support personnel in different situations (prepare, compete, and discuss) so the cows get good quality support. Every team entering a bull racing competition wants to be a winner, but the winner does not come from a cow but is the main focus of team strategies. *Trobos Sakti* team uses a different size of cows with a short leg length to enter a low-class competition. Different cows can make one side drive to the other side, so the cows do not fall out from the track. *Kiai* is the main person in the competition to support *dua'* to be a winner. Maintenance and message for cows is a high cost, so the village government did not support from material (money) but can support from promotion and opportunity to *Trobos Sakti* team be an exceptional team and pride of the village. Several physics concepts can be implemented in the formal curriculum, especially in physics learning, such as straight motion, accelerated linear motion, and torque.

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