

Learning of Local Wisdom About Food Security in Rural Primary School: Identification of Materials and Learning Strategies

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Abstract: Research-based on local wisdom has been carried out to facilitate students to learn not only about science that has its roots in the west but also about local wisdom from ancestral heritage and applies from generation to generation, especially about food security. This research is a case study that aims to identify the potential of kindergarten about food retention to be taught in local elementary schools and learning strategies. The study was conducted in Tawangmangu, Karanganyar Regency, Central Java. The participants were 42 local people, 32 primary school teachers and 8 officials in the basic education institutions. Semi-open questionnaires and in-depth interviews were used to collect data. Data were analyzed quantitatively and qualitatively. The results showed that food preservation in kindergarten in *Tawangmangu* which has the potential to be taught to elementary school students includes the myths of Mondosiyo and the *Dhukutan* myth, *Mondosiyo* and *Dhukutan* traditional ceremonies, procedures for making food made from corn, procedures for making offerings, non-rice farming systems, systems protect the environment, and medicinal plants. The recommended learning strategy is to bring students close to the source of material through practice, field studies, and bring in local knowledge experts as resource persons

Keywords: *learning, material learning, local wisdom, food security, primary school*

INTRODUCTION

Since ancient times, Indonesia has been known as an agrarian country so farming is a profession that is widely cultivated in Indonesia, especially in rural areas. However, farming is seen as a hereditary profession of his family. Since childhood, a farmer's child has been invited to the fields or fields to help his parents. Eventually, the farmer's child will automatically be able to do farming with the experience he has. However, at this time young people in rural areas do not want to inherit their parents' profession as farmers. They prefer to work as in other sectors, for example, be civil servants, trade, factory workers. Even though the average age of farmers in Indonesia is above 60 years. Without the regeneration of farmers can threaten the sustainability of agriculture in Indonesia.

Regeneration can be done in various ways, one of which is by introducing young people to local wisdom related to agriculture. This is because local wisdom in developing countries is synonymous with food problems (Gadgil et al., 2000). As stated Yuan et al. (2014) agriculture is not just a farming activity that produces agricultural products. Analysis of Lachlan, Jagiit, and Sandra (2017) found that farmers who apply traditional knowledge-based farming systems. succeeded in overcoming the crisis occurring in India rather than using a modern system

From the agricultural practices carried out by the ancestors there have been many cultures and local wisdom born that should be proud and exemplified, for example traditional ceremonies performed before planting and after harvesting in several regions in Indonesia. Therefore, local wisdom and cultural heritage that develops in rural communities are the result of the habits of the local community or community culture as a form of adaptation to nature and the environment in which they live, including in terms of food security. This kind of local

wisdom is also owned by indigenous people in the Tawangmangu Karanganyar District of Indonesia. However, the owner of the local wisdom had begun to be forgotten by the owner so that it needed to be sought so that the younger generation could still access it (Sudadi, Murtini, Widyastuti, 2016). One recommended way is to integrate local wisdom in school learning (Battiste, 2008; Kimmerer, 2002). Thus, it can be stated that in order to maintain the literacy of the agricultural system in Tawangmangu, it is possible to achieve this through the integration of local wisdom about food retention in formal education and it must be instilled early on in children. Starting from simple things, such as getting to know folklore, traditional ceremonies, introducing various kinds of native Tawangmangu plants to conducting teaching and learning activities directly in the fields to introduce agriculture.

Education based on local wisdom is education that teaches students to stay close to the concrete situations they face everyday. The education model based on local wisdom is an example of education that has high relevance for life improvement skills, based on the empowerment of local skills and potential in each region (Laksono, 2018). Therefore, it is understandable that to find and explore parts of functional literacy learning materials, one of the main sources is local wisdom. Learning material is everything that becomes the contents of the curriculum that must be mastered by students in accordance with basic competencies to achieve competency standards of each subject in a particular educational unit (Wina, 2008). Learning material is the most important part of the learning process, even in subject-centered teaching; material is the core of learning activities. Furthermore, teaching materials are materials or lessons that are held systematically, used by teachers and students in the learning process (Andi, 2011).

Local wisdom has several principles in social life and can be used as guidelines in daily life, as stated by Ahmad (2010: 5) that local wisdom is an unwritten rules that serve as a reference for society that covers all aspects of life. Sartini (2004: 28) said that one of the local wisdoms that exist throughout the archipelago is the regional language and culture. Language is an important part of culture. As a communication tool in society it has an important role in maintaining the culture of a community because language utilizes the signs that exist in the environment of a society. Local wisdom is also reflected in the culture of the people. The cultural elements according to Koentjaraningrat (in Ratna, 2011: 395), namely: 1) the tools of human life, such as: home, clothing, household appliances, and various forms of equipment associated with human needs in everyday life; 2) livelihoods, such as: agriculture, animal husbandry, fisheries, and so on with their respective economic systems and production; 3) social systems, such as: kinship, social organization, politics, law, and so on; 4) the system of language (and literature), both oral and written; 5) arts with various types, such as: fine arts, sound arts, motion arts, and so on; 6) knowledge systems, including various forms of human experience in relation to the nature of objectivity, empirical facts; and 7) religious systems, various forms of human experience in relation to subjectivity, beliefs, and various forms of belief. From these opinions, the classification presented by Koentjaraningrat is more detailed and comprehensive than the other classifications.

The purpose of this study was to document the potential of local wisdom about food retention in Tawangmangu District as teaching material and strategies for teaching local wisdom in elementary schools. The classification system for mapping the potential of local wisdom of food retention in Tawangmangu which is applied refers to the Koentjaraningrat classification which states there are 7 elements, namely equipment, livelihoods, social systems, language and literary systems, arts, knowledge systems, and religious systems.

METHOD

Indented style This research is a case study, which examines the potential of local skills, challenges, and learning strategies in elementary schools. The study was conducted in Tawangmangu District, Karanganyar Regency, Central Java Province, which is known as a tourism area because of its green and beautiful nature. It is located on the slope of Mount Lawu so the air is cool. Therefore, the area is a tourist destination (see Figure 1).



Figure 1. Tawangmangu Maps

Participants in this study were 42 local communities, 32 elementary school teachers, and 8 education officials in Tawangmangu. The selection of participants from local communities is based on differences in age (young-adult-old), gender (male-female), and occupation (farmer-trader-entrepreneur-public servant). The selection of participants from the teacher group was based on the representation of all primary schools in the subdistrict center because students in these schools came from all the villages in Tawangmangu District. The education officials include the principal of the primary school, the school supervisor and the head of the regional technical implementation unit for basic education. Participant identification is done by purposive sampling and snow ball sampling. Data collection through half-open questionnaires, in-depth interviews, and focus group discussions. The data obtained are then analyzed using an interactive model (Miles & Huberman, 2004).

RESULTS AND DISCUSSION

The purpose of this study is to identify elements of local wisdom as teaching material in elementary schools and learning strategies, so that the results of the study are also focused on these two things. The descriptions of each are presented below.

The element of local wisdom about food security as a learning material

Based on the Koentjaraningrat classification system, there are 7 elements of local wisdom, namely equipment, livelihoods, social systems, language and literary systems, arts, knowledge systems, and religious systems. In mapping local wisdom in Tawangmangu, the classification also uses the system. From the results of discussions and interviews, relevant elements of local wisdom about food retention in Tawangmangu are used as learning material for elementary

school students including elements of language, literature, arts and knowledge systems. A brief description can be read in Table 1 and Table 2.

Table 1. Local Wisdom of Food Security in the Language, Literature, and Arts Elements

No	The element of local wisdom	Description
1	Narotama folktale	This folktale tells of a commander named Narotama who became a pioneer of planting and processing corn in the village of Nglurah. Previously residents planted their land with rice and always failed to harvest so that there was a lack of food which caused many people to starve to death. They do not know that land with sharp slopes and high rainfall is not suitable for rice cultivation. Because of Narotama's guidance, residents no longer lack food. In his old age, Narotama changed its name to Kyai Penggung.
2	Prabu Baka folktale	This folktale tells of a king named Prabu Baka who eats humans. One by one its citizens take turns to be their meal. One time a hermit named Gatutkaca proposed himself to be the king's meal. King Baka swallowed whole body of Gatotkaca. Because of his magic, Gatotkaca can jump out of Prabu Baka's stomach. They fought a few days of war. Finally, Prabu Baka's body was slammed into a rock. Before he died, Prabu Baka realized his mistake and donated all parts of his body for the welfare of his people. Instantly his body turned into various crops and vegetables.
3	<i>Dhukutan</i> clean village ceremony	The Dhukutan village cleansing ceremony was held in Nglurah Village as a form of belief that the events in the Narotama folklore actually happened. The event procession included gathering by each family in the Pendapa, a procession bringing offerings made from corn and pulses to Menggung site, brawl by throwing corn rice at each other to commemorate the war that had occurred between Kyai Penggung and Nyai Penggung, mutual apologizing between two groups have done brawls, <i>reog</i> performances and Javanese dances, <i>campur sari</i> performances
4	<i>Mondosiyo</i> clean village ceremony	The clean ceremony of the village of Mondosiyo was carried out in the villages of Pancot, Blumbang, and Kalisoro as an expression of the belief that the events in the cheerful people of Prabu Baka had actually taken place. The procession of this event was the gathering of offerings by each family in <i>Pundhen Bale Patokan</i> , the slaughtering of <i>kendhit</i> goats (white or black hair wrapped around his stomach) and roosters, the distribution of <i>gandhik</i> (corn flour cakes), the <i>Pancot reog</i> attraction, washing away the <i>gilang</i> stones where Prabu Baka died, the procession surrounding the village, the release and the struggle for live chickens by donations of people who are aware, <i>wayang kulit</i> performances
5	Reog Pancot	Reog performance with the main player wearing a lion head-shaped mask known as the "Lion Barong" and other players wearing clown masks dancing around with gamelan music
6	Gamelan <i>thok prol</i>	Gamelan village of Pancot consisting of <i>kenong</i> and <i>kempul</i> beaten with a slow frequency to accompany the event to wash away <i>gilang</i> stones
7	The meaning of offerings	The symbolic meaning of offerings includes: - <i>tumpeng</i> of corn rice shaped like a pyramid as a symbol as a symbol to the almighty - <i>gandhik</i> or cakes made from corn flour in the form of cow's as a symbol of God's grace in the form of livestock for humans - <i>tempe</i> burn as a symbol of simple life - <i>palawija</i> 'crops' stew as a symbol of offerings from the earth for humans - <i>cengkir</i> 'young coconut' derived from Javanese words <i>kenceng ing pikir</i> 'strong in thinking' which contains the message that humans have strong thoughts/intentions accompanied by strong prayers also in aspiring something to be achieved

Table 2. Local Wisdom of Food Retention in Elements of Knowledge Systems

No	The element of local wisdom	Description
1	<i>Tumpang sari</i> 'intercropping' system	Intercropping is a method of farming by planting two or more plants in one field at the same time on plants with one harvest season, for example leeks with shallots and mustard greens, corn, yams, and cassava. Planting two to four kinds of vegetables on one land is intended to ward off pests, anticipate the drop in prices of certain types of vegetables, also to meet the needs of vegetables in the family
2	Irrigation system	Arrangements for water use to water vegetable gardens or secondary crops, especially during the dry season by <i>jogotirto</i> 'water guard'. The system applied is to use a 'water ration card' system that contains schedules and water rations for each farm owner.
3	Harvest system	The use of intercropping systems has the consequence of a separate harvest system, which is based not only on the age of the plant but also on economic considerations. The types of vegetables that are selling well are harvested first.
4	The procedure for making offerings	Procedures for making corn rice, side dishes for offerings (<i>bothok arek</i> 'banana stems', coconut <i>bothok</i> , grilled <i>tempe</i>), a pair of cakes from corn flour in various shapes
5	The procedure for arranging offerings	The procedure for arranging offerings on a bamboo plate called <i>encek</i> , how to arrange the offerings such as young coconut, boiled palawija, corn cake, coconut flower
6	The procedure for making corn rice	The procedure for making corn rice includes several steps, including soaking the corn overnight, pounding corn, filtering the corn that has been crushed, broiling corn flour.
7	The procedure for making traditional cakes	There are several traditional cakes, among others -White <i>gandhik</i> is a cake made from corn flour mixed with shredded coconut without sugar -Red <i>gandhik</i> is a cake made from corn flour mixed with grated coconut and brown sugar - <i>Tawonan</i> is a cake made from shelled corn mixed with brown sugar - <i>Pular</i> is shelled corn given turmeric
8	Procedure for making <i>encek</i>	<i>Encek</i> is a place to offer offerings on village clean ways made from banana bark, bamboo blades, and banana leaves
9	<i>Rewang</i> system	Mutual cooperation system and help each other in doing activities / activities, for example making offerings and dishes at traditional ceremonies
10	<i>Musyawah</i> system	Deliberation is the process of discussing joint problems to reach mutual agreement. Deliberative decision making is carried out as a way to avoid voting that results in freedom and group obtaining.
11	Utilization of medicinal plants	Other medicinal plants that are often used by residents, such as tempuyung leaves, new China, and clover. These plants grow wild in agricultural and residential areas. Tempuyung leaves are known as kidney stone medicines, new Chinese leaves to treat menstrual disorders and hemorrhoids, while clover is a medicine for tonsils and shortness of breath.

From the results of interviews and focus group discussions with teachers and officials in the basic education sector identified elements of local wisdom food retention as material in learning for students from grade 1 to grade 6 in elementary schools. The basis for consideration of the selection of these materials is the basic competence in the 2013 curriculum and the theme of the lesson. The division of material submitted can be read in Table 3.

Table 3. Examples of Distribution of Local Wisdom Learning Materials

Grade	Theme	Subtheme	Local wisdom material
I	Theme 2: My passion	Like to read	Reads about Narotama and Mondsiyo folklore
	Theme 7: Objects, animals and plants around me	Plants around me	Traditional medicinal plants
II	Theme 1: Get along well	Living in harmony in the community	Deliberation system and <i>rewang</i> system
	Theme 2: Playing in my neighborhood	Play at tourist attractions	Cultural attractions (Cetho Temple, Penggung site, Goa Pringgodani)
III	Theme 2: Loving plants and animals	Benefits of plants for human life	Efficacy of traditional medicinal plants
	Theme 5 : Weather	The effect of climate change on human life	Intercropping and irrigation systems
	Theme a 8: Scout	I like to work	The procedure for making traditional food
IV	Theme 1: The happiness of togetherness	Cultural Diversity of My Nation	<i>Reog Pancot</i> , <i>gamelan thok prol</i> , procedures for making offerings
	Theme 8: The area where I live	he uniqueness of my place of residence	Clean traditional ceremony ceremony of the village of <i>Dhukutan</i> and <i>Mondosiyo</i>
V	Theme 3: Healthy food	The importance of healthy food for the body	Corn rice and traditional cakes (cakes made from corn and crops)
	Theme 8: Our environment is our friends	Environmental preservation efforts	Forest reforestation and irrigation system
VI	Theme 2: Unity in difference	Get along well in difference	Performing traditional village clean ceremonies
	Theme 5: Entrepreneur	Hard work bears success	The procedure for making corn rice and traditional cakes

Strategies for learning local wisdom in elementary schools

Based on data obtained from semi-open questionnaires, interviews, and focus group discussions obtained local wisdom learning design in elementary schools with innovative methods. The understanding of innovative methods here refers to learning strategies that encourage students to be motivated in perceiving teaching materials in the form of elements of local wisdom. These methods include reading using the SQ3R method (survey, question, read, recite, review), reading using the PQRS method (preview, question, read, state), storytelling in pairs, jigsaw model group work, STAD model group work, field trips, problem based-learning, and project-based learning. The examples of learning scenarios with the strategy are as follows.

Steps in storytelling in pairs for class 1

The type of cooperative model structured couples according to Lie (2010: 46) has advantages: (1) increasing student participation in the learning process; (2) this model is suitable for simple tasks; (3) students' opportunities to contribute to the group more; (4) interaction within groups is easy; (5) group formation is easier to do. In addition to these strengths the weaknesses of this model are: (1) Many groups must be monitored; (2) The ideas that appear are few; and (3) if there are differences of opinion it is not easy to find other thoughts. The following learning steps are the results of the scenario modification according to Lie (2010).

- (1) The teacher introduces the story, for example the Narotama story that will be told. This activity can activate student schemata in starting learning.
- (2) The teacher guides students to form groups of two people. Grouping is based on differences in students' speaking abilities).
- (3) The teacher presents a short version of Narotama's story verbally, while showing pictures of the characters and sticking them on the board
- (4) After finishing the story, the teacher gives an example of how to retell Narotama's story by pointing at the picture of each character
- (5) Students and their partner mates practice retelling Narotama folklore
- (6) The teacher offers a group who voluntarily tells stories in front of the class with their partners
- (7) Other groups pay attention and give an assessment by sticking a emoticon face card on the blackboard (there are five emoticaon faces to choose from, namely laughing, laughing, smiling, sad, crying)
- (8) Students and teachers count and conclude peer ratings
- (9) The teacher gives comments, reinforces and confirms the speaking exercises.
- (10) The teacher appoints another group to appear in front of the class to tell Narotama's story
- (11) Other groups pay attention and give an assessment by sticking a emoticon face card on the blackboard
- (12) The teacher responds, confirms the learning that takes place.
- (13) The teacher gives follow up on learning

Steps for learning to read for class 2

Below is an example outlined the steps of intensive reading learning with several reading methods. The application of the SQ3R (Survey-Question-Read-Recite-Review) method is as follows.

- (1) The teacher distributes 5 paragraph reading texts entitled Village Clean Ceremony of Mondosiyo
- (2) The teacher guides students to read the text for 5 minutes (survey)
- (3) The teacher and students write down 5 or 6 key words related to the reading
- (4) Students guided by the teacher formulate questions (question). The questions that are formulated are linked to keywords and repeat this process until the questions for a number of keywords are identified previously
- (5) Students read independently in a slower way than previous reading activities (read). Time is adjusted to the quality and quantity of the text and is full of concentration by paying more attention to the sections relevant to the question formulation
- (6) Students are asked to state (without speaking) or write down the contents read by answering questions that have been formulated in their own words and repeat this process on the next question (recite)
- (7) Students review the parts that need to be deepened or check the truth of answers to questions that are formulated before reading

Writing learning steps for grade 5

In writing activities there is a process approach which includes the prewriting, writing, revision, editing, and publication stages (Tompkins, 1990: 29). For example writing descriptive paragraphs cooperatively, on topic selection (prewriting phase), developing the framework into

draft writing (writing stage), correcting the writing content (revision stage), correcting language errors (editing stage, then pasting it on the writing board or reading out in front of the class (the publication stage) is done in pairs, but cooperative activities can be carried out at certain stages, for example the revision and editing stages, below are examples of steps for learning how to write farming procedures with intercropping systems based on series drawings for fifth grade students SD with the process approach as follows:

- (1) The teacher shows a series of pictures (photos) in the form of a series of events of vegetable farming with intercropping and irrigation systems
- (2) The teacher gives an example of a skeleton based on the series drawings
- (3) The students complete the outline of the essay that the teacher begins
- (4) The teacher gives an example of developing several topics that are in the framework of the essay
- (5) The students continue to develop topics from the teacher exemplified
- (6) The teacher gives an example of improving the contents of the essay
- (7) The students continue to improve the organization of the contents of the teacher exemplified
- (8) The teacher gives an example of improving the use of language in essays
- (9) The students continue to improve the use of language from the example
- (10) Students see the series drawings in the textbook
- (11) The students arrange the outline in accordance with the series drawings
- (12) The students develop each topic in the framework of the composition into a series of paragraphs so that it becomes a draft essay
- (13) The students exchange draft drafts with friends next to or in front of them (under the teacher's guide)
- (14) The students give feedback to the organization of the content and use of language (in certain rules, such as the use of uppercase letters and writing words) in the writing of a friend who needs to be corrected under the teacher's guide by giving a specific sign, such as a question mark
- (15) The students return the essays of their friends
- (16) The students make revisions to the organization of the contents of their writing based on feedback from friends
- (17) The students make language edits based on peer feedback
- (18) The students rewrite their respective essays and provide illustrations as students wish to become final essays,
- (19) The teacher evaluates and analyzes the results of student writing as a material consideration of the level of learning success
- (20) The students display all writing on the display board

As stated by Indrianti, Khutobah, and Latif (2017) that education based on local wisdom is a planned effort through the exploration and utilization of local potentials wisely in an effort to create a learning atmosphere and learning process so that students actively develop their potential to recognize and maintain their ancestral heritage. Local wisdom in the environment near the school needs to be introduced and instilled in students. This is so that education produces graduates that are relevant to the needs of graduates and employment (McKeown, 2002). Environmentally oriented education is education that applies principles and methodologies towards the formation of life skills of its students through an integrated curriculum developed in schools. Primary schools need to develop mature and effective learning. Therefore, good learning design models that can be made reference by teachers need to

be developed such as the use of innovative methods. Learning that uses environmental observation techniques by utilizing the potential of local wisdom in elementary schools is one of the effective learning strategies.

Local wisdom is the main capital of the community in building itself without damaging the social order that is adaptive to the surrounding natural environment (Aryanto, 2014). A local wisdom can be developed systemically and systematically so that it can enrich and strengthen the identity of national culture (Fitrahayunitisna & Zulvarina, 2017). It is not impossible that local wisdom can play an important role in building the nation's character. This is in line with the condition of the Indonesian nation being serious in instilling character education, including the character of food retention, it seems that local wisdom learning can go hand in hand and support each other's goals. As Peow (2015) found that the hard character in Chinese society is inspired by the stories of the local treaty. This is in line with the opinions of Agusman, Suyitno, and Pratiwi (2018) who explained that teaching local wisdom can help education as a whole if its scope includes four benefits, namely: helping with language skills, increasing cultural knowledge, developing creativity and taste, and supporting character building. In line with this, Musanna (2011: 596) states that local wisdom can be placed as a basis for models and implementation of character education in the country to realize a more 'down to earth' education.

As a cultural heritage, because of this, local wisdom needs to be preserved and preserved. Kurnilasari, Yahanan, and Rahim (2018) revealed that exploring and preserving various elements of local wisdom, local traditions and institutions, including beneficial norms and customs can function effectively in building the nation's character. The value of local wisdom is very important to be taught to students in schools, namely to foster a love of local wisdom and can build student character. Agusman, Suyitno, and Pratiwi (2018) suggested that local wisdom can filter out external influences and minimize the negative effects of social change. As Wati, Sumarwati and Saddhono (2019) found that the tradition of returning to the village every time a village cleansing ceremony was held was able to maintain family values in the Tawangmangu community. Therefore, it is not excessive if Tsuji and Ho (2002) claim that indigenous peoples use their own ways to manage nature and the environment.

CONCLUSION

Referring to the cultural classification according to Koentjaraningrat, the treasury of local wisdom regarding food security in Tawangmangu includes 7 elements, namely equipment, livelihoods, social systems, language and literary systems, arts, knowledge systems, and religious systems. However, not all of these elements are relevant as teaching material for elementary school students. Based on various considerations, especially related to student age, characteristics of student parents, curriculum, availability of school facilities and infrastructures, as well as teacher competence, identified three appropriate elements, namely elements of language and literature, arts, and knowledge systems. The learning strategies that are possible to apply include reading with the SQ3R method (survey, question, read, recite, review), reading with the PQRS method (preview, question, read, state), storytelling in pairs, jigsaw model group work, STAD model group work, field trips, problem-based learning, and project-based learning

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