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SCIENCE EDUCATION BASED ON CIREBON LOCAL CULINARY FOOD

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Abstract

Cirebon is an area that has rich culture, including culinary. Science education or at school is known as the Natural Sciences (IPA), is expected to integrate the cultural heritage of culinary in Cirebon without compromising the activity of science process containaed in it. The process of science in learning the concept of food and nutrition at schools can be done by observing Cirebon local foods available in the students' neighborhood. The Nutrient content of Cirebon local foods such *as sega jamblang, empal gentong, sega lengko, tahu gejrot, and kerupuk melarat* is very useful to our health. In addition, Cirebon local foods are made from various materials and can be consumed by everyone. Science education based on Cirebon local culinary food also performed as one step instill a sense of pride to the students to love the environment and cultural heritage of Cirebon local culinary food that is tasty and contains good nutrients for our health.

Keywords: sience education, science process, nutrients, Cirebon local culinary food

1.0 INTRODUCTION

The Cirebon is one of the districts in West Java that includes the north coast region (north coast). Cirebon is West Java region bordering the eastern part of Central Java. This position makes Cirebon as a strategic area that is not only used as a haven, but also used as a tourist destination who cross the path of the north coast.

In addition, Cirebon is a community center of Ciayumajakuning (Cirebon, Indramayu, Majalengka and Kuningan), in which there is a potential economic turnaround. In an article on website pages DPD (Regional Representative Council of the Republic of Indonesia) in 2010 revealed that "Ciayumajakuning is a new economic power and large in West Java after Bandung Raya. Through projections in 2028, the region became a prestigious center of economic growth. If it realizes, Ciayumajakuning in 2028 will become a giant magnet economy, not only at national level but also at the level of South-East Asia".

Potentials owned by Cirebon include art, batik and Cirebon local culinary foods. Cirebon typical foods such as *sega jamblang, empal gentong, sega lengko, tahu gejrot,* and *kerupuk melarat* are interesting potential to be studied, not only from their unique taste, but also the ingredients and nutritional content. Nutrient content contained in that food need to be the object of research or observation by students in learning science so that they understand the content and its benefits for the body.

Science learning will be more interesting if it is done through a process in a concrete science. According to Mehmet (2006), "students who are active in the learning activities will have an understanding and better learning outcomes than students who only listen to the teacher's explanation and passive during learning activities take place". This is due in science, involves not only the ability to think, but also the skills to support students' understanding of the process of learning. Prasetyo (2013) revealed the science learning should facilitate learners to think and speak and work through minds-on and hands-on science.

The concept of food and nutrients Cirebon local culinary food can be used as observation material for students in learning science. This is done to instill a sense of love and pride to the students of the culinary culture. Their love toward traditional foods need to be instilled from an early age so that they are not only familiar with fast food by foreign brands which are increasingly rampant available in this city. By knowing Cirebon local culinary food early, it is expected that they will be proud of culinary heritage that has been handed down.

Cirebon local culinary foods are easily found in many areas in Cirebon that they become real objects of interest to be studied by the various levels of education from elementary school, junior high school, high school, and higher education level. Materials to make a wide range of the foods need to be learned by going through the process of science so that students will be more proud towards the potential of Cirebon local culinary food. R. Doran et al. (1998) suggested that "studying the science is not only studying the collection of knowledge, but students are encouraged to recognize the object, the symptoms and problems of nature, study, and found the conclusions or concepts of nature through scientific activities or processes of science (scientific process)". This suggests that science education can be developed with local knowledge base Cirebon local culinary food.

Johan, AG (2011) argues that "local knowledge-based education is education that teaches learners are always close to the concrete situations they face daily. Local wisdom education model is an example of education that has high relevance for the development of life skills, with a foothold on empowering students to skills and local potential in each area". According to this opinion, local wisdom is a great potential to become a learning object from different perspectives includes science learning. Thus, it needs a research of science education in which students learn the local wisdom as a culinary to get the students know and have a sense of pride in the local culture.

2.0 LITERATURE STUDY

In Science or Natural science, IPA is one of the science related to the environment. Science relates to product and process. Product related to the facts, concepts, or principles, while process associated with the skills to find the facts, concepts, and principles of IPA. Ministry of Education (2006) revealed that the "IPA deals with how to find out about a systematic nature, so that the IPA is not only a mastery of knowledge in the form of a collection of facts, concepts, or principles, but also a process of discovery". The learning process of science emphasizes providing direct experience to the students to develop skills and competencies to be able to explore and understand the universe around scientifically.

Carin and Sund (Bundu, 2006) revealed that "science is a knowledge of the universe which is based on the data, collected through observation and experiment so that in it contains a product, process, and human behavior". The development of science process skills into the main thing in science education, because the process of science linking new experiences with students previous experiences. In addition, the process of science can expand the ideas and concepts acquired by the students so that learning becomes more meaningful. This is in line with the opinion of Harlen (1999) that “Science process skills are significant for meaningful learning as well; it involves linking new experiences to previous ones and extending ideas and concepts to include a progressively wider range of related phenomena. If these skills are not developed sufficiently, pupils cannot interpret knowledge, for example, relevant evidence is not collected, or conclusions are based selectively on those findings confirming initial preconceptions and ignore contrary evidence, then the emerging concepts will not help understanding the world around. Thus the development of scientific process skills has to be the major goal of science education”.

The process of science would be more meaningful if the object of observation in finding the real is located in the nearby neighborhood. In addition, it has a higher significance when compared with the observed phenomenon that is far from the student environment. So that Cirebon culture is the closest thing to the students and has a higher significance compared with the phenomenon outside. Including Cirebon culinary heritage is an object that is fit to become learning object for students.

Cirebon local culinary foods become the characteristics of this city. Cirebon local food includes *sega jamblang, empal gentong, sega lengko, tahu gejrot,* and *kerupuk melarat.* In addition to daily food made by people, culinary variety is often used as a culinary destination for tourists or people who cross the north coast region. Various typical culinary Cirebon, has its own uniqueness. The various types of cuisine can be used as material science learning for students both at school and outside of school.

3.0 RESEARCH METHOD

This research was conducted with descriptive qualitative approach. Sugiyono (2012) suggested "qualitative research used to examine the condition of natural objects, where the researcher is a key instrument. Technique data collecting is done by triangulation (combined), data analysis is inductive, and qualitative research results further emphasize the significance rather than generalization". Data were taken with the study of science curriculum at school, field observation, and literature study of the previous research. The data were collected then analyzed by triangulation technique and described in order to be used as a rationale for doing the next research.

4.0 FINDINGS AND DISCUSSION

Education science based on Cirebon local culinary food gives learning to students at schools of various types of food available in their environment. Cirebon local culinary food is an interesting object to be made of learning materials. The way that is done in education science based on Cirebon local culinary food is by doing the activities that lead the process of science on the environment so that the learning can be more meaningful. This statement is also what Paidi has proposed (2012) that

"some positive reasons for the use of the environment as the ingredients, context, and learning resources are: 1) the environment can enrich the materials and learning activities, 2) the use of environment allows for the learning process become more meaningful and functional, because the children faced by the actual condition, 3) intensive interaction with the surrounding is more likely to prepare the close and positive feeling for the students toward the various natural phenomena".

Science education activities based on Cirebon local culinary food is one of the steps to instill students' sense of pride to have more love to the environment in surrounding and proud of the cultural heritage of Cirebon local culinary food. Khusniati (2012) revealed that "science learning model application based on local wisdom is to do the observations of a culture that exists in the community to be reconstructed all scientific concepts which are finally able to grow the value of conservation character learners". Culinary heritage should always be conserved without overriding the progress of science, so that the process of science learning must be packed with interesting, complete with the process of science without removing the existing cultural heritage.

The study of science in formal lessons is learned from elementary and secondary schools, until college. The object of science is the environment around us. On the curriculum of KTSP SD (Depdiknas, 2006), the scope of the material science is divided into four namely 1) living things and the life process, 2) things/matter, the attributes and consequently, 3) energy and its amendments, 4) the earth and the universe. The scope of the material science for junior high school students which being studied with science studies for elementary science are the sam, but the level of depth and breadth are different. Also in high school, the scope of science is spread in the subject of physics, chemistry and biology. So based on the material, objects that learned in science is the same but has differential in its breadth and depth accordance with the ability and stages children to think.

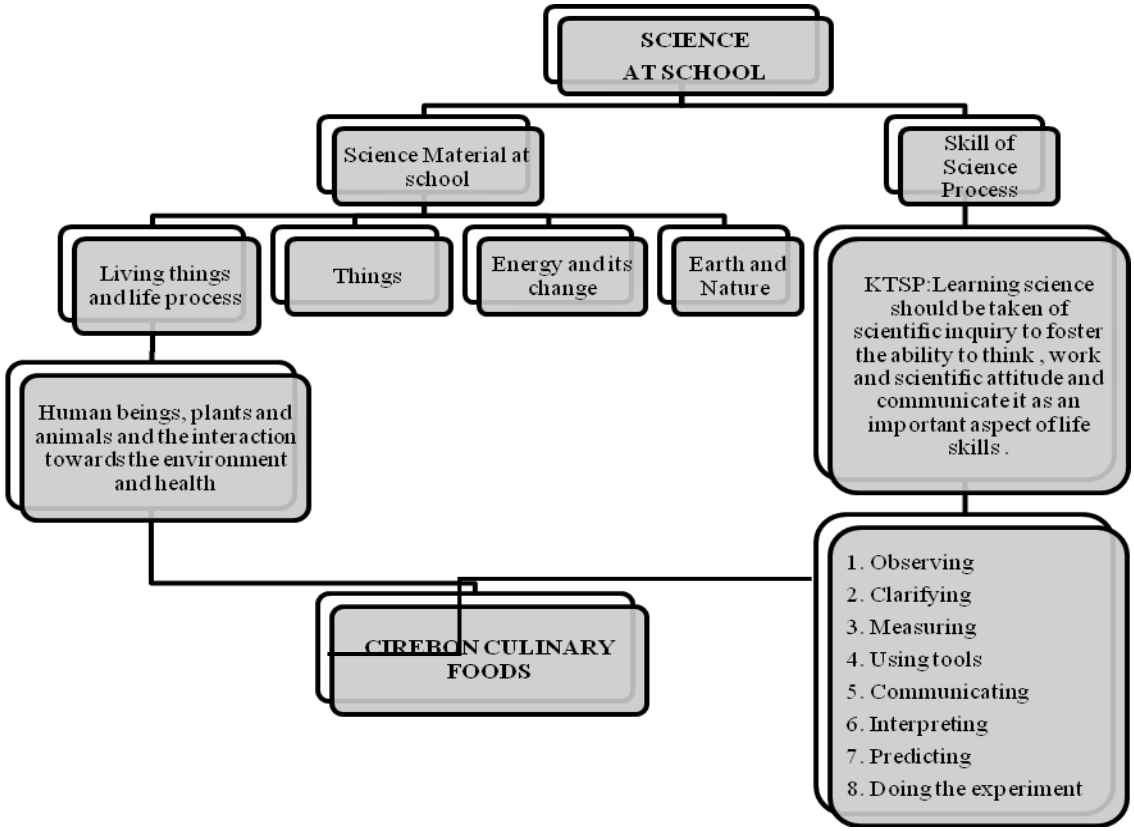

Figure 1
The connection between science learning and Cirebon local culinary foods

One of the science materials at the schools is the concept of living things and the process of life. In the concept of the material discussed about the concept of food and nutrition. The food is a

necessity that is needed by every man. The foods between one area and other have its own specialty not only from the ingredients, shape but also its taste.

The variety of Cirebon local culinary food which can be made in the study of science education at schools including *sega jamblang, empal gentong, sega lengko, tahu gejrot, and kerupuk melarat*. The study of science that can be examined in Cirebon local culinary food is a type of food, nutrition, and the stages process of making up to its rendering result so that it is hoped that students will be more creative in analyzing a material.

a.Sega Jamblang

Sega jamblang is one of the popular Cirebon local culinary foods. "*Sega*" in Bahasa Indonesia is "*nasi* is rice", while "Jamblang" is one of the villages in Cirebon. This culinary food is considered to be fast food that is served traditionally.

Nurdin M Noer Zaman (Cirebontrust: 2015) told that "Jamblang food lovers are not hard to order the menu. Everything is available on the table and they can choose to taste. The uniqueness is because the rice is wrapped in teak leaves. *Sega jamblang* will not be stale, because teak leaves have greater pores than the other leaves. *Sega jamblang* feels fluffier, although it saved more than three days". The size of the wrapping of nasi jamblang is very small, only adult's handsfree. Various menu and the nutrient of *sega jamblang* can be seen in table 1.

Table 1
***Sega Jamblang* Menu**

No	Menu	Main ingridients
1	Rice	Rice
2	Sambel goring	Chilli
3	Quil egg satay	Quil egg
4	Potato satay	Potato
5	Intestine satay	Chicken instentine
6	Clam satay	Clam
7	Prawn satay	Prawn
8	Perkedel	Potato and egg
9	Lungs fried	Cow's lungs
10	Brain satay	Cow's brain
11	Black Squid	Squid
12	Tofu stews	Tofu
13	Meat or liver stews	Meat and cow's liver
14	Balado eggplant	Eggplant and chilli
15	Omelette	Egg
16	Fried egg	Egg
17	Chilli fried egg	Egg and chilli
18	Rendang egg	Egg
19	Fish stews	Fish
20	Salted fish	Jambal roti fish
21	Fried tempe	Tempe
22	Fried tempe with flour	Tempe
23	Fried tofu	Tofu
24	Fried oncom	Oncom
25	Fried oncom with flour	Oncom
26	Fried chicken	Chicken
27	Dendeng	Meat
28	Dendeng ati	Cow's liver
29	Egg plant soup	Eggplant
30	Oreg tofu and tempe	Tofu and tempe
31	Oreg oncom	Oncom
32	Oreg tauco	Tauco
33	Sambal terasi	Chilli, tomato, terasi

No	Menu	Main ingridients
34	Teri Pepes	Ikan teri
35	tofu skin Pepes	Tofu
36	Pepes tahu	Tofu
37	Prawn Pepes	Prawn
38	Crab Pepes	Crab
39	Clam Pepes	Clam
40	Dage Pepes	Oncom

*Sources : direct observation

There are a lot of choices of menu and variety make *sega jamblang* become healthy food for the body because it has a very complete content from calories, protein, fat, carbohydrates, calcium, posfor, iron, vitamin A, vitamin B1, vitamin C, and water.

b. Empal gentong

Empal gentong is one of popular Cirebon local food because of its taste. The way to cook *empal gentong* almost the same as to cook "gulai" generally, but *empal gentong* cooked in large earthenware jug with the firewood. The main material used to make *empal gentong* is beef and the other cow's innards such as lung, intestines and coconut milk. *empal gentong* usually serves with lontong or rice. To add the flavors usually *empal gentong* also serves with fried onion, chives and chili paste dry grind. *empal gentong* has very rich nutrition, such as calories, protein, fat, potassium, phosphorus, iron, vitamin A, vitamin B1, vitamin C and water.

c. Sega lengko

Sega lengko is a simple Cirebon local food yet have complete nutrition. *Sega* (rice) lengko made with non fats ingridients namely white warm rice, fried tempe, fried tofu, cucumber, bean sprouts, leaf chives, fried onion, peanut, and sweet soy sauce.

The way to serve it is tempe and tofu cut into small pieces and placed on a plate of warm rice. Next, cucumber that has been cut into small pieces, and tauge placed on it. Then, drenched peanut, sown leaf pieces chives and given sufficiently soy sauce until it is golden brown. Finally it sown fried onion on it.Nutritient that contains in *sega lengko* is complete enough because it consists of various ingredients. The ingredients of carbohydrate obtained from white rice. While high protein, iron, B complex, phosphorus, omega 3 and antioxidants contained in tofu, tempe and soy sauce. While cucumber rich of fiber and vitamin A, B1, B2, C, and malonat acid are good for body. Antioxidant in tempe is very good for body to reduce the risk of heart disease.

d. Tahu gejrot

Another Cirebon local food is *tahu gejrot*. Tahu gejrot consists of tofu that already fried dry, chili, red onion, garlic, and water, soy sauce and brown sugar. Sugar water usually put in a bottle.

How to make it is very simple, first fried tofu cut and placed on a small plate namely *cobek* made from clay. On the other *cobek*, chili, red onion, garlic bruised coarse using small *ulek*. After that, sugar water is snapped onto *cobek* that already contains chili and onions. Then sprinkled on *cobek* that already contains tofu. Tahu gejrot is served in small *cobek* and eaten by using *biting* or small stick as a replacement for the fork to pin on the tofu that has been cut to pieces.

On a news media of Kabar Cirebon (2015) is written the term of "*tahu gejrot* start from the thinner red sugar water in small bottle should be snapped onto *cobek*, so it will produce the sound of the *jrot jrot jrot*. Because of that sound then people call it *tahu gejrot* or snapped tofu, until now this food still remains in the hearts of Cirebonese".

Tahu gejrot as one of Cirebon typical foods contains calories, carbohydrates, protein, fat, calcium, phosphorus, iron, vitamin B1, and water. Therefore, this Cirebon typical food made from tofu is very useful to reduce bad cholesterol in the body so that can reduce the risk of heart desease. Fosfor that contained in tofu also plays an important role in the transportation and the release of oxygen to the entire body so that could spur production of energy.

e. Kerupuk melarat

Kerupuk melarat is Cirebon local snack. It is made from tapioca flour. *Kerupuk melarat* has a unique taste. Process in frying it is done without the oil but using the sand. The sand that is used is not the vain sand, but the sand that comes from the hill which already passing through the filtration process. After the sand is cleaned and dried then it can be used to fry *kerupuk melarat*.

The presentation of *kerupuk melarat* can be eaten directly or with various sambal like sambal terasi and sambal oncom. *Kerupuk melarat* contains carbohydrates, fats and proteins because they are made from tapioca flour so that although as a snack, it contains good nutrition to be consumed.

Cirebon local culinary food such as *sega jamblang, empal gentong, sega lengko, tahu gejrot and kerupuk melarat*, basically are made from plants/vegetables, the meat and fish. The three basic materials are needed for our body. In addition, ingredients *sega jamblang* generator is the ingredients that are lawful and good. This is in accordance with the word of Allah SWT in Al-Quran in al-Baqarah verse 57.

وَظَلَّلْنَا عَلَيْكُمُ الْغَمَامَ وَأَنزَلْنَا عَلَيْكُمُ الْمَنَّ وَالسَّلْوَىٰ ۖ كُلُوا مِن طَيِّبَاتِ
مَا رَزَقْنَاكُمْ ۖ وَمَا ظَلَمُونَا وَلَٰكِن كَانُوا أَنفُسَهُمْ يَظْلِمُونَ ﴿٥٧﴾

Means: "And we gave you with the cloud, and We have sent down to you Manna and quails, saying". Eat of the good things We have provided for you; and they wronged Us; but they wronged themselves." (Al-Baqarah: 57)

Cirebon local culinary food has variety ingridients in its content. The content is very useful for the body. The Qur'an has been giving advice to human being to consume variety of vegetables and meat. Verse of the Qur'an connected with vegetables is Al-Baqara verse 61 " ... Remember when you say, O Moses we cannot be with one kind of food, then ask for us to your Lord so that he issued to us what the moonlight earth, namely vegetables, cucumbers, garlic, lentils and onions...". In addition, the verse in the Qur'an associated with ordering to eat meat and fish (Thayyarah, 2013) are:

1. Al-Qur'an in Ath-Thur verse 22 "We bestow on them with any kind of fruit and meat that they want".
2. Al-Qur'an in An-Nhl verse 5 "He created the cattle for you; him (feathers) that warm and various benefits, and some can you eat".
3. Al-Qur'an in An-Nhl verse 14 ", is Allah Who has made the sea (for you), so that you eat of the flesh fresh (fish)".

Various nutrients that exist in the food have a different function. Surbakti (2010) explains the various functions of the substance that is in food include as follows:

a. Carbohydrate useful as the main source of energy that is required for the movement, the former source of energy reserves, give the taste of satisfied.
b. Fat is useful as a source of energy, dissolve vitamin, and long workout sense of satisfied.
c. Protein function for the growth and maintenance of the formation of the ties of the essential body Regulating water balance, keep the fiscal neutrality of the body, the formation of antibodies, carry the nutrients, energy source.
d. Vitamins function as biokatalisator, i.e. a role to facilitate the reaction in the body, and as antioxidants, i.e. the substance to avoid the free radicals.
e. Minerals like potassium, fosfor, and phosphorus is working to help the reaction of functional body, for example to keep the order metabolism.

Cirebon local culinary foods have been filled with the elements of the nutrition that is needed by the human body. Good nutrition with specific flavor expected to become one of the factors of students' pride so that the subject is not excluded by various western foods. To introduce Cirebon

local culinary food, is expected of community paradigm to respect Cirebon ocal food as the ancient, and turned into a pride especially for Cirebonese and expected that those culinary food will be more nasionalize even in worldwide by the existence of scientific study on the local wisdom.

5.0 CONCLUSIONS

Education science based in Cirebon local culinary food is one of the activities of the lesson the students that is integrated at school to know the various types of food available in the students' neighbourhood through a series of science process. Those series are done in an integrated way to understand the various Cirebon culinary from the point of view of science. This activity provides the understanding of the students to know the various existing culinary area also formed about the ingredients, nutrition and its benefit for the body. In addition, education is also aims to instill a sense of pride to the students to preserve the cultural heritage of culinary Cirebon. This is because of the foods are lawful, have a unique taste and contain many nutrition.

This research provides recommendations for teachers, principals, Education officers and various related agencies to begin to raise the local culture as one of the studies that need to be learned by students from an early age significantly. By the integration in the concrete is expected to the students will have much more love and proud to the existing of local culture. In addition, through this integration expected local culture in Indonesia will be introduced in the world.

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