# STUDY ON SCIENCE LITERACY AS A POWER BASE MAKING CHARACTER EDUCATION PRIMARY LEVEL

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*Abstract*

*This paper aims to examine the concept of scientific literacy as the basis to realize the strength of character education for elementary level. Science education is now becoming an important agenda discussed at national and international levels. International network of scientists to discuss the fundamental problems of natural phenomena and the impact of technological developments to the improvement of health and living standards of the world community. One of the features and characteristics of human beings are thinking, and thus direct human subjects. The role of science education to be important in preparing the human / child enters the world of life. Science education has great potential and strategic role in preparing qualified human resources to face the era of industrialization and globalization. This potential will be realized if the science education able to produce students who are proficient in their field and able to successfully cultivate a culture with logical thinking, creative thinking, problem solving, critical, control technology and adaptive to changes and development of the times. Meanings of the mastery of scientific knowledge as a whole for the learners will have implications on the ability to apply his knowledge to face the challenges of life in ways that menjujnjung high character values and a positive culture through literacy-based science learning or science literacy.*
***Keywords**: Science literacy, nature science, character education*

## Introduction

Community life today has grown as the rapid development of science and technology, human demand for more and more able to work hard to adjust in all aspects of life. Aspects of education is critical to the reciprocation of a life which is getting stronger competition. Thus the educational process is expected to form a human science literacy and technology completely. In addition, education is expected to act as a bridge between the individual and his environment in the midst of growing globalization, so that an individual is able to act as qualified human resources. Science education has an important role in preparing children to enter the world of life. Science is essentially a product and process. Science products includes facts, concepts, principles, theories and laws. While the science process includes ways acquire, develop and apply knowledge, including how to work, how to think, how to solve problems and how to behave. herefore science systematically formulated, mainly based on experimental observations and induction. Science education has great potential and strategic role in preparing qualified human resources to face the era of industrialization and globalization. This potential will be realized if the science education able to produce students who are proficient in their field and able to grow logical thinking skills, creative thinking, problem-solving skills, critical, control technology and adaptive to changes and

development of the times (https://evisapinatulbahriah.wordpress.com/2012/06/05/literasi-sains/).

International comparative data shows that the quality of education in Indonesia is still far from expectations. Human Development Index (HDI) Indonesia was ranked 102 out of 105 countries surveyed, which is one level below Vietnam, the results of the study The International Mathematics and Science Study-Repeat (TIMSS-R) (1999) reported that the JSS Indonesia ranks 32 for IPA and 34 for Mathematics of the 38 countries surveyed in Asia, Australia and Africa (Depdiknas, 2006). This assessment is taken by the Human Development Index (HDI) based on a mixture of three criteria: 1) Knowledge (knowledge); 2) Eligibility Standard of living (a decent standard of living); and 3) A long and heatly life. On the decade globalization must be passed by anyone who lives in this XX1 century, loaded with competition therein is continuously and increasingly complex, the winner is determined by the quality of human resources. For the Indonesian nation was ready or not ready to be entered into it. To answer these challenges so as the key is education that will deliver case human able to face the problems of life. The national education system in 2003 explained that the pen-education is an effort that is done consciously and planned to create an atmosphere of learning, so that learners can be active in order to develop all the potential that all its potential, with the goal of having spiritual power of religion, personality , intelligence, morality and skills benefit for the students, the community, the nation and the state.

Science teacher education is a critical component to developing "science literacy" for the country. The main benefit of the education of science teachers is to prepare teachers to understand the science and technology significantly to the local community, students' personal lives and social issues that develop. Science is a basic force that can be done to improve human life with a scientific approach. The role of scientists in developing the improvement of environmental hygiene, health-related technologies, build the defense system of the country, build a model of a computer network system, all have an impact on human behavior and attitudes towards lingkungannnya this as a keyword formation of human character.

The description above suggests that the power of science learning is crucial to the achievement of the quality of human character. In response to the above, this paper aims to examine written about the concept of scientific literacy and the nature of science and its relation to the formation of an attitude or character.

**Science Literacy**

National Science Teacher Association suggests someone who has the scientific literacy is a person who uses science concepts, have the science process skills to be able to assess in making daily decisions that he relates to other people, the environment, and to understand the interaction between science, technology and society, including social and economic development. Similarly scientific literacy is defined as the capacity to use scientific knowledge, to identify questions and draw conclusions based on facts and data to understand the universe and make a decision on the changes that occur due to human activity (NRC, 1996). Scientific literacy (science literacy, LS) is derived from the combination of two words atin, namely literatus, meaning marked by abjad, literate or educated and scientia, which means to have knowledge of. According C.E de Boer (1991), the first to use the term scientific literacy is Paul de Hart Hurt from Stanford University.

According to Hurt, science literacy means understanding the action of science and apply it to people's lives. PISA (2013) argued that literacy is a set series of cultivation knowledge and skills as a fundamental requirement in the base teaching and learning, communication, use of language and social interaction. Literacy includes the basic ability to read, write, listen, to understand, to process higher skills where learners capable for decide, interpret, monitor, and elaborates on what she had learned.

PISA defines scientific literacy as the capacity to use knowledge and scientific capabilities, to identify questions and draw conclusions based on the evidence and the existing data in order to understand and help researchers to make decisions about the natural world and human interaction with nature (Rustaman, et. al, 2003). According Poedjiadi (2005), a person who has the literacy skills of science and technology is the one who has the ability to solve the problem using scientific concepts acquired in education in accordance with hierarchically, know-tech products that are nearby and their impact, being able to use technology products and maintain, creative in making the results of a simplified technology so that learners are able to take decisions based on the values and culture of the local community. Development of scientific literacy is very important because it can contribute to social and economic life, as well as to improve decision making at community level and personal (Laugksch, 1999). Scientific literacy is important to be mastered by learners in relation to how learners can understand the environmental, health, economic, and other problems faced by modern society that relies heavily on technology and progress, as well as the development of science. The purpose of science education is to improve the competencies required learners to be able to meet their needs in a variety of situations. With the competence, learners will be able to establish itself for further study and live in communities that are affected by the development of science and technology so that learners can also be useful to themselves and the surrounding community. In short, scientific literacy includes two major competence. First, the competence of lifelong learning, including equip learners to learn at school more. Second, competence in using their knowledge to meet the necessities of life is heavily influenced by the development of science and technology.

**Nature Science**

By the very nature of science consists of a collection of scientific products and a series of scientific process. Science products includes facts, concepts, principles and theories. While the process is conducted by scientists to study the nature of this is empirical and analytical procedures (Rutherford, 1990). The interaction between the two components of the science very closely and can not be separated. The resulting scientific products of scientific process will in turn traffic system is the basis for subsequent scientific process to produce new scientific. A continuity that never dropped out, so it makes science as a discipline that is very dynamic. Science is a basic force that can be done to improve human life with a scientific approach. The role of scientists in developing the improvement of environmental hygiene, health-related technologies, build the defense system of the country, build a model of a computer network system, all have an impact on human attitudes toward environment.

Science is science or set of concepts, principles, laws, and theories formed through the creative process that through systematic inquiry followed by the observation process (empirical) continuously; is a human effort that includes mental operation, skill, and

strategy to manipulate and compute, which can be tested again the truth that is based on the attitude of curiosity, courage, perseverance were carried out by individuals to reveal the secrets of the universe (Rutherford, 1990). Scientific efforts of science can be done by a variety of dimensions, by individuals, civil society, as well as institutional and it is able to create and foster a scientific attitude. The point is: (a) Science Is a Complex Social Activity. All people need science and its applications, ranging from engineers, doctors, technicians, librarians and others. Therefore, science should be disseminated. (B) Science Is Organized Into Content Disciplines and Is Conducted in Various Institutions (Science organized into content in various disciplines and institutions). Disciplines that one can enter or be used for other disciplines, thus enabling science advances. Examples of sociobiology, astrophysics and others. (C) There Are Generally Accepted Ethical Principles in the Conduct of Science. Scientist made to have norms and ethics in science, which (among others): be honest and open. (D) Scientists Participate in Public Affairs Both as Specialists and as Citizens. Scientist made must provide information, insight and analysis capabilities are concentrated in the problems of public concern.

The above explanation is the role of science as the development of a scientific attitude and instill / shape the character of a scientist. Science learn about natural phenomena through observation, experimentation, and rational analysis. Scientists develop a scientific attitude so that the products of science can be true. Scientific attitude (scientific attitude) among others, are objective and honest in collecting, collating and analyzing data, not hasty in making conclusions or decisions, humble and open to criticism and feedback. Always wanted to know is the scientific attitude must be developed (Rutherford, 1990). By always curious about the what, why and how of a problem or symptoms that were found to make Science is always evolving. A scientist must also be diligent and patient in solving the problem and willing to communicate the findings to be investigated, critiqued and refined. With characters that are characterized from such attitude made the finding was the product of science that shape the character of the whole man in accordance with the purpose of science education, namely Improving confidence in the greatness of the Almighty God by the presence, beauty and order of creation, Developing an understanding of a wide range of natural phenomena , concepts and principles of science that are useful and can be applied in everyday life, develop a curiosity, a positive attitude, and awareness of the existence of a relationship of mutual influence between science, environment, technology, and society, Doing inquiry scientifically to cultivate the ability to think, behave and act scientifically and communicate, raise awareness to participate in preserving, maintaining, and preserving the environment and natural resources, increase awareness to appreciate nature and all its regularity as one of God's creation, improve knowledge, concepts and skills of science as a basis for the continuing education to the next level.

## Character building

Self-discipline is essential in any effort to build and shape the character of a person, an organization, and a community of nations. Because in conjunction with someone-character implies (1) a positive quality of a person, so that makes it interesting and attractive; (2) a person's reputation; and (3) a person who has a personality that is unusual or eccentric. In this sense it can be said that building character (character building) is the process of carving or sculpting the soul in a way that "shaped" unique, interesting, and

different or distinguishable with others. Like a letter in the alphabet were never the same between one another, so the character can be distinguished from one another (including those who did not / have not been characterized or "character" reprehensible). Law number 20 of 2003 on National Education System (Education Law) to formulate the functions and objectives of national education should be used in developing education efforts in Indonesia. Article 3 of the Education Law states "national education serves to develop and form the character and civilization of the nation's dignity in the context of the intellectual life of the nation, is aimed at developing students' potentials in order to become a man of faith and fear of God Almighty, noble, healthy, knowledgeable, capable, creative, independent, and become citizens of a democratic and responsible. The national education goals is the formulation of Indonesian human qualities that should be developed by every education units (Kemendiknas, 2010). Therefore the formulation of national education goals should be the basis for the development of culture and national character education.

## Conclusion

Education is considered as an alternative preventative education to build a new generation of better nation. As an alternative preventative, education is expected to improve the quality of the nation's youth in various aspects that can minimize and mitigate the causes of the problems of culture and national character were busy discussed. To obtain the quality of literacy's role is crucial. Lietrasi is key to the success and progress of a nation. Admittedly, the results of a new educational visible impact in the not immediate but more resilient and strong impact on society.

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