

Developing Cultural And Character Nations Values Through Mathematics Learning

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Abstract

Education is an attempt to improve the quality of youth in various aspects for the sustainability of society and the nation's live better in the future. Education is a process of inheritance or the development of cultural values and national character, such as: religious, honest, creative, courageous act, trustworthy, and respectful to others. The process of developing the values that form the basis of character was done in a sustainable manner through a variety of subjects at school. Mathematics is one of the lessons that teach patterns of thinking carefully, creative, decisive, accurate, effective, and efficient. Such mathematics characteristics are believed to help in solving problems that arise in everyday life, such as declining of cultural and character nation values. Therefore, learning mathematics should be done through good planning, suitable approaches, methods and effective learning.

Keywords: Education, Value, Nations Character, Mathematics

I. INTRODUCTION

Problems of culture and character of the nation on various aspects of life today is the public's spotlight. It can be known in interviews, printed writings, and his speech in electronic media. In addition to the mass media, public figures, experts and observers of education, and social observers talked about the issues of culture and national character in a variety of seminars, both at the local, national, or international. Generally, they talk about issues cultural and character nations' values. Current issues that often arise in society such as corruption, violence, sexual crimes, vandalism, fights mass, consumptive economic life, unproductive political life, and the like become hot topic of discussion in the mass and electronic media, seminars, and on various occasions. Various alternatives have been proposed such as the completion of the issuance of regulations and laws as well as increased efforts to the implementation and application of the law.

Other alternatives that put forward to overcome or reduce the impact of cultural issues and national character in every aspect of life is education. In this case, education is still regarded as one of the alternatives, preventive education to build a new generation for a better nation. As an alternative to preventive education it is expected to

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develop the quality of the nation's youth in various aspects so it is hoped to minimize and reduce the causes of various problems of cultural and national character. Although education is one good alternative, but it must be admitted by the results of the impact of education that it will be looked not immediately, but it has power and a strong impact on society.

Law of the Republic of Indonesia Number 20 Year 2003 on National Education System (National Education Law) defines the function and purpose of national education which should be used in developing educational efforts in Indonesia. In this regard, Article 3 of the National Education Law states, "National Education functions to develop and establish the character as well as the civilization of the nation's dignity in the framework of the intellectual life of the nation, aimed at developing the potential of learners in order to become a man of faith and fear of the Almighty God, has good morality, healthy, knowledgeable, capable, creative, independent, and become citizens of a democratic and accountable ". The National education goal formulates about the quality of Indonesia's human to be developed by each educational unit. Therefore, the formulation of national education goals are the basis for the development of culture and national character education.

Culture is defined as the whole system of thinking, values, morals, norms, and beliefs that produced by human society. Those Systems of thinking are the result of human interaction with each other and the natural environment and they are used in human life also have the result in systems of social, economic, belief, knowledge, technology, art, and so on. Humans as social beings creates systems of thinking, values, morals, norms, and beliefs; but also in interaction with fellow human beings and nature, man is governed by systems of thinking, values, morals, norms, and beliefs that have been produced. When human life is continually evolving, it is true that they develop social system, economic system, belief system, science, technology, and art. Education is a deliberate effort in developing the potential of learners, so they have a system of thought, values, morals, and beliefs of society and develop a legacy bequeathed to the direction corresponding to the life of the present and future.

Character is character, morals, or personality which is formed from the internalization of various virtues (virtues) which is believed and used as a basis for perspective, think, attitude, and act. Virtue consists of a number of values, morals, and

norms, such as honest, courageous act, trustworthy, and respectful to others. Interaction with others results on one's community character and national character. Therefore, the development of national character can only be done through the development of one's individual character. However, for human lives in social and cultural environment particularly, the development of individual character of a person can only be done in the related social and cultural environment. That is, the development of culture and national character can only be done in an educational process which does not release students from the social environment, culture, and national culture. Social and cultural environment is a Five Principles of nation (Pancasila). So the culture and national character education should be based on the values of Pancasila. In other words, educating the nation's culture and character is to develop the values of Pancasila in self-education students through the heart, brain, and physic.

Education is a conscious and systematic effort in developing the potential of learners. Education is also societies' effort and the nation goal in preparing young people for the continuity of community life to a better future. Sustainability is characterized by the inheritance of culture and character that has been owned by the community and nation. Therefore, education is the process of inheritance of culture and national character for the younger generation and also the process of developing the culture and character of the nation to increase the quality of life of communities and nations in the future. In the process of cultural and national character education, active learners develop their own potentials, the process of internalization, and appreciation of values into their personalities in getting along with the community, develop a more prosperous society, and to develop a dignified life of the nation.

Based on the understanding of culture, national character, and education that have been raised above the nation's culture and character education understood as education which their own cultural values and national character in self learners so that they have value and character as the characters, applying the values in their life, as community members, and citizens who are religious, nationalist, productive and creative.

On the basis of thought, cultural education and character development is very strategic for the nation's sustainability and excellence in the future. The development must be done through good planning, appropriate approaches, and methods of effective learning and teaching. In accordance with the nature of the values, culture and national

character education is a joint venture schools. Therefore, it should be done jointly by all the teachers and school leaders, through all subjects, and became an integral part of school culture.

II. DISCUSSION

1. Mathematics is beauty in Nature and Art

Mathematics has elements of arrangement order, and consistency (Karso, 2009:1.35). In everyday life, elements of arrangement order, and consistency is part of the beauty and art. Therefore, mathematics is a science dealing with beauty and art. With regard to beauty and art, in the 13th century Thomas Aquinas expresses a basic truth of aesthetics is "Indra was pleased with the proportions of right things". On the other hand, St. Thomas states that there is a direct relationship between beauty and mathematics, both concerning the beauty of nature and human works of art pieces. (David Bergamini, 1981:88). Apparently in nature nothing is so small or seemingly insignificant, so inappropriate shows a beautiful symmetry, such as sweet potato flower buds. Other examples, such as the hexagon with decorative snowflakes are endless, circular microscopic marine plants with beautiful mosaic glass windows like colorful, displaying gems mined triangle prism structure as a series of triangles arranged in neat, regular table salt consists of crystals cubes.

Humans are creatures of Allah SWT with remarkable symmetry. Robert Galvin (Sentanu Erbe: 28) states that humans are the most sophisticated high-tech product. In this regard, humans seem to react instinctively and positive impact on the forms that adhere to strict rules of geometry, both seen in the vicinity as well as the actions themselves are creative in art and architecture. The beauty of human beings is in physical form as well as a very decent action coloring culture conditions and values of people of good character.

2. Calculus Exploring a Changing World

Mathematics has developed since the beginning until today along with the times. When famous mathematician of the 17th century, Isaac Newton and Gottfried Wilhelm von Leibniz developed calculus as a way of measuring motion, they said the principles include pictures of life into the math. This is because the transformation still images into

moving images or vice versa. The film consists of images in motion over and over again. Similarly, the concept of calculus is chopping motion into images that can be studied one by one.

Found after calculus, mathematicians are able to impose a moving object as a single point in space and trajectory to trace with "stop motion", to calculate the speed or acceleration of the object at any given moment. Mathematics of motion has become a fundamental scientific tools. Earth moving and so are the molecules of the air we breathe. With calculus, a similar motion may be determined though unseen. Even some of the abstraction is very difficult in the field of mathematics, calculus is based on some simple ideas such as functions, estimates, rate of change, convergence, and integration (David Bergamini; 1981:114 - 124). Thus the development of mathematics, particularly calculus in analyzing and explaining the concept of motion of objects and it turns out may affect the concept of thought, culture, and human characteristics.

3. Improving Cultural and Character Nations Values through the Learning of Mathematics

Mathematics is a science that organized the elements that are not defined, definitions, axioms, propositions in which after unsubstantiated generally applicable. Therefore, mathematics is often called a deductive science (Ruseffendi; 1991:23). In addition, the math is beautiful and has elements of art. In another sense, Johnson and Rising (Karso, *et al.*: 1:39) states that the mathematical patterns of thinking and organizing the logical proof. Therefore, mathematics can certainly affect the pattern of human thinking.

Thinking is an activity that must be done by everyone in everyday life. This activity is a dynamic process that involves mental operations such as reasoning, connections, communication, problem solving, and others. Ibrahim and Nur (2000: 8) states that thinking is the ability to analyze, criticize, and it can reach conclusions based on inference or careful consideration. Thus, thinking is a complex process and non-algorithmic to solve various problems.

Someone's way of thinking can also be determined by the environment in which he lived. The definition of the environment here can mean the geographical environment, social environment, and cultural environment. For example, the way of

people thinking who live in rural areas is different from the way people think living in the city. If people in the village do not have money, they are not so nervous because the demand for rice can be cultivated directly from the rice fields and vegetable gardens can still be obtained from. People in the village used to look at the fields, something green, soft, and cool, while the ordinary people see the clutter in the city traffic and high buildings. Conditions and environmental situation in rural and urban areas like that that can affect human thinking and will ultimately affect the culture and the human character.

The smallest social environment that has great significance in influencing patterns of thinking someone is family. In the family, someone trained to communicate, acquire information continuously and repeatedly, to obtain counsel, reprimand, fine greeting-greeting, and so forth so that information recorded in his mind (Marpaung: 254). In other words, that the results will be represented family upbringing, structured, and form a network of interconnected information. Represented of information internally in the mind is strongly connected to each other, lost from memory difficult or very difficult to eliminate, or even may disappear altogether. Thus, something that is deemed to have meaning because they were given considerable attention will be bound stronger in structure and would be difficult to forget. Furthermore, if one day there is an evocative stimulus information is stored, then all other information connected with it in a network can reappear in the sense recalled.

In fact, the influence of education on every family or children has certain items which give different psychological conditions. Each has a lack of freedom or the degree of attachment that is not the same. Circumstances that are often brought children to school, where teachers in the learning often do not correspond with the psychological condition of children. Thus the frequent conflicts between teachers and learners viewed from the aspect of the habit of thinking. For example, a teacher at school told the students not to lie, that should be telling the truth. In certain respects, something should be said with truth, sometimes in education in the family it is said to be less polite.

Mathematics teacher at the school in general talk about the value of goodness and truth or validity of the reasoning. In learning in elementary school, teachers often ask students to say something true is true, and something is wrong is wrong. If the child says that $5 + 3 = 8$ (right) is true then he obtained a high score, but otherwise if it says

one then the score low. But when teachers say "Have you understood?", Then some of them have answered "yes", some "no", and others do not answer or "silent". The attitude of "silence" of the students might be due to already understand, shame, or other. Similarly, if there is something different either concepts or understanding between teachers and students, generally the students did not want to clarify with the teacher because it is considered impolite and "oppose" the opinion of teachers. In improving the condition, not a mathematical truth that must be sacrificed to be suited to the culture, but trying to change the culture toward supporting thinking mathematically.

4. Forming Educated and Civilized Indonesian Humans

According to educations science, an educated man synonymous with dignified human. This formula is true because the birth of the education notion is the aspect of culture. Thus, someone who has progressed in accordance with their culture is a person who has obtained the same educational goals persons in cultures where education took place. On the other hand, Tilaar (1999:32) states that the educated man is defined as a man who has developed intellectually as education (schools). Understanding is caused by the presence of an intellectualist education culture.

A person who is cultured is they who control and behave in accordance with the culture of values, especially ethical values and moral life in that culture. Maybe it can happen that a highly educated person but his behavior is less immoral. In this case the person is said to be well educated but not cultured. Therefore, in order to obtain an educated and cultured man of learning in the process of education must give messages of moral and ethics.

Learning mathematics produces some cognitive aspects that can affect the mindset, values and culture of human character. Judging from the nature of mathematics, some cognitive aspects of learning mathematics produced include: thorough, honest, diligent, hard working, creative, never give up, obey the principle, orderly, and discipline.

III. CONCLUSION AND SUGGESTION

Based on the above discussion, it can be summarized in the followings:

1. Education is another alternative that put forward to overcome or reduce the impact of cultural issues and national character in all aspects of life.
2. Cultural education and character development is very strategic for the nation's sustainability and excellence in the future. Therefore, it should be done through good planning, appropriate approaches, and methods of effective learning and teaching.
3. Learning mathematics produces some cognitive aspects that can affect the mindset, cultural values and human character, such as: thorough, honest, diligent, hard working, creative, never give up, obey the principle, orderly, and discipline.

Based on the conclusion above, then the learning of mathematics need to be designed and laid out either by inserting the moral messages to developing cultural and character nations values.

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