

Solving Problems In Mathematics Using The Personality Types As A Means Of Developing The Nation's Character

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Abstract

HARDIKNAS'(The National Education Day) 2011 is ' Indonesia resurgent and having the special character'. By developing the nation character, we hope it can create the superior Indonesian people.

Problem solving is the most important part that must be taught to the students. The six values of nation character can be given to the student through learning.mathematics problem solving.

We have to consider the difference character of each students before we give the six values for solving the mathematics problem. In this study the writer will use the classification personality type by David Keirse.

Hopefully the result of this study enable the students to solve the problem in the daily life based on the value that can support their building character. Therefore the development of the nation character will be shown.

Key Words: nation character, mathematics problem solving, personality type

I. INTRODUCTION

1. Background

a. Background of The Study

The theme of National Education Day 2011 is Character Education. The Minister of education Muhammad Nuh in commemorate National Education stated that the objective of education in general is humanizing the human being beside having the ability to solve any problems now and forever. We are as Indonesian people have to realize and to understand internal problems and global changes. We have to strengthen our personality, identity and Nation Character. Those are the reason why education based on character with all its dimension and variety is a must and important. Indonesia is going to create dignity character as a nation, and intellectual character which mean as a modal to create innovation and creativity.

Since the importance of Nation Character education, the government asks the national educational Ministry, all the education institution and PAUD (Pendidikan Anak Usia Dini) to announce character education

The instruction of national education Ministry has to be responded positively by all the people who are in charge in education field. In Mathematic school, this

instruction can be responded through one of Mathematic problem solving. Problem solving is one of important materials because the curriculum 2006 for elementary school and high school states that one of the objectives learning mathematics is problem solving that consists of understanding problem skill, designing mathematic model finishing the model and estimating the solution. They are needed by the students in order to gain the former and material goal. Therefore Nation Character education can be taught to the student trough the two goals.

In order to plan the two goals well, Dewiyani (2010) in her previous study stated that learning can be developed trough understanding of the student differences with psychologists named the difference of personality type. In this literature will discuss the difference of personality type based on David Keirsey .

In brief, the purpose of the study is building the Nation Character through mathematic problem solving skill based on classification of personality type

b. The Statement of the Problem

The problem that will be discussed in this study is how to develop Nation Character trough Mathematics problem solving based on the classification of personality type.

c. The Objective of the Study

The objective of the study is developing the Nation Character through Mathematics problem solving skill based on classification of personality type

d. Advantages

The objective of the study is to take part of Nation Building Character through learning problem solving for the students. By giving an example of the test, finishing strategy, problem solving challenge periodically, so the students are supposed to have trained character like the nation hope.

II. DISCUSSION

a. Nation Character

Education in Indonesia has enabled students has advanced knowledge and follow the modern era, so they are able to increase their ability equally with other students in the world. Unfortunately increasing their knowledge and their character are not hand in hand. For example, we often see the students who are impolite involved juvenile delinquency, drug abuse, burn the road, lack of struggle, etc. Moreover they are lying,

playing truant, robbery, having abortion, gambling, and many other negative attitude.

People criticize that education is only able to create Mathematics experts, physics experts, and chemistry experts without having character. Without strong character, Indonesia will not have Nation Character and moreover it will create a lot of negative attitude such as, robbery, impoliteness, corruption, that we often find in government.

For solving that problems, character education is considered as the most important strategy for our nation rising from destruction. If we ignore education and Nation Character Building, there will not be spirit of struggle and impulse from young generation that can unify the government and the society. President Yudhoyono in National Education Day 2011 said ‘according Aristoteles, there are two human excellences: excellent of taught and excellent of character. It means that the objective of education is not only cognitive but it should have moral and characteristic, value and strong people and sublime personality. At the end of Yudhoyono’s speech, he stated there are five most important things that should be implemented namely (1) Religious Society, (2) Intelligence and Rational Society who has knowledge vision, idea for developing good future, (3) Innovative Society who always gains development and works hard, (4) Spirit Society who never gives up easily and, (5) Patriotic Society who loves his country, his Nation, and his fatherland.

Character Education that will be implemented at schools, it is not taught in a special lesson but it will be done in daily learning. Fazil Jalal (2011) states that Character Education won’t be a burden for teachers and students since Character education has been stated in curriculum, but so far it hasn’t been taught literally. Muhammad Nuh (2011) in National Education said that there are three characters that should be developed in order to create a powerful Indonesian people namely: the first is that we are as God creature, so we mustn’t be proud. It can make Indonesian people who appreciate and love each other, be polite and be honest. The second is that developing and increasing knowledge character which makes Indonesian people to be curious for innovation in order to compete with other Nation. The third is that increasing to love our fatherland Indonesia. Love is not enough but we have to be proud as Indonesian people. Indonesia must be developed its quality continuously and it is more easily to access. Character Education is very important because education is not only for intelligence, smart but it is also for personality, character and good moral.

The winner of article essay about Education, Paul Suparno in commemorate National Education Day said that Character Education aspects that should be developed so we are able to be a strong Nation. Every school has authority to choose a value that can be taught. However, the schools must have the same value which is taught in all schools in Indonesia. There are six most important values for supporting the development of Indonesia.

First, it is the culture variety. Indonesia has a lot of tribes, religious and cultures. We have to realize and accept the truth. Culture variety and religion will encourage all Indonesian people to accept other people as a part of Indonesian. This is the spirit of *Bhinneka Tunggal Ika*, Unity in Diversity.

Second, it is about honesty value. One of the reason why corruption in Indonesia is difficult to be eliminated because we don't have honesty. The spirit of honesty must be taught to the students. They must be honest in doing the test and doing the National Examination.

Third, it is about trying to obey the rule. Indonesia has a lot of problems because a lot of people don't obey the rule. We have rules and laws but we often ignore them. We know the laws but we sometimes disobey them. Moreover we often avoid them. Young generation should be taught how to act based on the rules. Every school has a rule the students have to learn to obey the rule. Doing something based on the rule is very important especially when there is nobody who has moral value anymore.

Fourth, it is about justice. Our Nation will be a strong country if there is a justice for all people. It means that there is no discrimination between state officials and government in making a decision and development planning for the poor. For learning justice the students should be trained justice.

Fifth, it is about empathy. This is for the poor or marginal people. This era has made some people to be individual. The only thing about their family life and they don't care about other people especially the poor. This Nation will be strong if all Indonesian people care each other as a family. Empathy spirit and caring should be introduced to young generation. Hopefully they care more and have attention for other people life.

Sixth, it is about the spirit of survival. We will face a lot of challenges the future. We have to fight if we want to have a better life. The spirit must be taught to the students. The school should help them to be creative and discipline in their life. All the

values must be taught holistically. It means that all schools, learning in environment, the rule, teachers, staffs, and students share and take for grant them. The most important thing is that the students will have opportunity to try and to have these values in real situation.

In this study, the six values by Suparno will be implemented in learning Mathematics problem solving. It happened, because the six values is universal, like mathematics material.

b. Mathematics Problem Solving

According to Anderson (Suharman, 2005), a problem happened because there is a gap between recently situation and the next situation or between recently condition and desire goal. A gap will be a problem if only somebody doesn't have a specific rule for solving that gap. The conclusion is that in general a problem is depended on defined person and defined time.

Mathematics problem is an unusual Mathematics test which is not included the same Mathematics application procedure or it is like the thing which has been learned in class. The definition of Mathematics problem solving in this study is an effort to be able to finish the Math problem without algorithm / a routine procedure that can be used directly in finishing it.

Polya (1973) explicitly clarify the steps of problem solving to be understanding problem, making problem solving plan, doing the plan and checking the answer. By using the steps by Polya, hopefully the students are able to solve the Math problem more constantly and structurally.

Problem solving is believed as a good method for learning and doing Math. Students who have a skill in solving problem will have some advantages such as: the ability of thinking critically, strengthen Math skill and conceptual understanding, communicate logic clearly, develop self confidence for solving a new problem and have Mathematics experience as a science that supports high discipline more than procedural routine. Beside that problem solving teaches students solve problem in their daily life well such as: able to use their thought critically, able to arrange their thought, not surrender easily, and able to use honesty for solving it.

c. Personality Type

As a teacher, we often face a situation where some students have been ready to

solve the Mathematics test but some of them didn't do at all. Sometimes some students solve the problem enthusiastically, but others only keep silent. Moreover they don't have self confidence to try it.

There are a lot of causes why it happened. A good teacher should not judge his students as a stupid one and other negative judgment when he or she has a difficulty in studying. A good teacher has to be able to understand it why it is happen.

Understanding about disability of the students causes the teacher realizes that they are different. Arends (2008) in his book gave an example about a teacher named Ms. Caleindo. She could increase his students' reputation in science in the fifth year. She got her success because she understood and appreciated every student. She spent much time to follow any kinds of culture occasion and met her students 'parents. She was very surprised because there were a lot of differences in her class. She had a good understanding about any kinds of culture and any kinds of languages. Therefore, she tried to make a curriculum and pedagogy that were really relevant with their culture. She succeeded in creating a student community and had a deep relationship with her students.

That explanation about is an example why every students is different. In education, behavior and character difference are obviously seen in class. A teacher has some differences with other teacher such as: the way to teach, the way to thing, and the way to judge; however, in that situation teaching learning must go on. Because of the differences between teachers, they should unify them in order to create a conducive situation for teaching learning process. Therefore, the students are able to get knowledge well and the teachers are able to teach them well. It can be concluded that teaching learning process can be success if the teachers are able to understand the differences of each individual well.

The difference of behavior is often called as a personality. Personality is considered as behavior description without giving judgment. David Keirse (1984) classified the personality into four types: Guardian Artisan, Rational, and Idealist. This classification is based on how a person getting his energy (Extrovert and Introvert), how a person taking an information (Sensing or Intuitive), how a person making a decision (thinking or feeling) and how a person lifestyle (judging or perceiving) each of them will have a different character in solving the Math's problem.

Dewiyani(2010) in her study found profile thinking process of each personality type in solving the problem can be describe :

c.1. Rational Type

Thinking process of rational student type in solving the Math's problem based on Polya's steps can be concluded as follow: Understanding Problem for this type is started by catching the situation of the test in the form of meaning of the sentence orderly and completely, and by using symbol. therefore he is able to find what he has known based on the question correctly. The relation between what he has known and the question are based on the measurement and the information that are considered an important is on the question. Other information will be useless if it doesn't support the question. He keeps the main problem as information and he expresses in written which is from an outline, so it can be retold completely.

In Planning Problem Solving, He uses steps procedurally which is set by himself based on the test that he has found before by: the selling sum, profit, and average profit. By doing this he feels sure that information of the test is enough for answering the problem because his analyzing based on measurement.

Solving the Problem, he uses his plan that he has arranged.

Rechecking his Answer, he changes the order of his work.

c.2. Idealist Type

Thinking process of Idealist student type in solving the Math problem based on Polya's steps can be concluded as follow: Understanding Problem for this type is started by catching the situation of the test in the form of main sentence orderly and completely, so he is able to find what he has known based on the question correctly. What he has known and the question based on the equal (the same) meaning. The information that is considered as important is selling increasing every period because this information will answer the question. He keeps the main sentence as information in written and he can retell it completely.

In Planning Problem Solving, he uses row concept with the order: the selling sum, profit, and average profit. By doing this, he feels sure that information is enough to answer the problem based on the usage of every information.

Solving the Problem, he uses his plan that he has arranged.

Rechecking his answer, he changes the counting when he decides the sum of

the selling in a year.

c.3. Artisan Type

Thinking process of Artisan student type in solving the Math problem based on Polya's steps can be concluded as follow:

Understanding Problem for this type is started by catching the situation of the test orderly but not completely in main sentence but he focuses on question. What he has known and asked based on the test in general that is a figure that can identify what he knows. While what he asks based on kind of sentences. The relation between What he has known and what he asks based on the synonym of the words. It is about profit. There is no an important information because all information can support for answering the questions. He keeps the problem as information by using the variable but not keeping in written, so he can retell it completely.

In Planning Problem Solving, he doesn't use a certain concept with the order: the selling sum, profit, and the average profit. By having this plan, he feels sure that the information of the test is enough to answer based on the usage of each information.

Solving the Problem, he doesn't use the plan that he has arranged.

Rechecking his answer, he rechecks divided operation that he has done.

c.4. Guardian Type

Thinking process of Guardian student type in solving the Math's problem based on Polya's steps can be concluded as follow: Understanding Problem for this type is started by catching the situation of the test orderly by giving a sign that supporting the problem solving plan so he can understand information deeply. What he has known based on main sentence while what he asks based on kind of sentences. What he has known and what he asks based on the synonym of the price. There is no important information because all the information can support to answer the questions. He doesn't keep the main problem in written but he can retell it orderly and completely.

In Planning Problem Solving, he doesn't use a certain concept with the order: the selling sum, profit, and the average profit. By having this plan, he feels sure that the information of the test is enough to answer based on the usage of each information.

Solving the Problem, he doesn't use the plan that he has arranged but he expresses in written.

Rechecking his answer, he rechecks what he has counted.

d. Mathematics Problem Solving Based on Personality Type Classification as A Mean of Educating Nation Character

By using the six values by Paul Suparno that are: Variety Culture, Honesty, Trying to Obey the Rule, justice, Empathy, and the spirit of survival and it is combined with Profile Thinking Process in Math problem solving by Dewiyani. The writer will design the beginning concept of learning nation character education for every personality type.

d.1. Rational Type

According to Dewiyani (2010), Rational Type always solves his problem completely and orderly. This type has the third value that is obey the rule which has a norm for solving the problem. It is impossible for this type to solve the problem without obeying the rule of math and he has the sixth value that is high spirit of survival.

The fourth value should be taught to this type. Starting from variety culture that he has to understand about the differences each other and by understanding the differences, it will create a new strengthen. Tasks are given to this type in order to make him working together although the thinking process is different. If he understood the differences, he would find a lot of ways to solve the problem and he is able to think divergently. The second and the fourth value should be taught to the students seriously. Those values are honesty and justice on the top order. Hopefully the student will be success truly in his learning. Moreover our country only has a few prominent people who have honesty and justice, so by giving a concrete task about honesty and justice, it can support nation character education.

Beside this type has less empathy to other people because he always uses his logic. Therefore the fifth value should be taught to this type. He should be taught to understand his friend's condition and he only think about himself when they do the test (problem).

d.2. Idealist Type

According to Dewiyani (2010) this type enables to get a different way for checking his answer on the test. It means that this type has a high survival in

solving the problem and he wants to be the best in finishing it. It can be proved by rechecking what he has done. Beside this type has a high creativity in solving the problem. It means that he has had the third and the sixth values because he has a different way and to obey the Math's rule. It can be gained if he has a high survival. The first value can be gained because he likes the differences. It can be seen from the different answer that he has given.

The second, the fourth, and the fifth values should be taught to this type because the writer worried that he doesn't give his empathy. It can be seen because he always wants to be the best in solving the problem. The teacher has to give the tasks in group in order to make him care with other students.

d.3. Artisan Type

According to Dewiyani (2010) this type has an ability to make the situation lively and happily. He can work together well and he is able to persuade other type to work better. All the tasks are filed well because he can memorize them in written. It means that the first, the fifth, and the sixth have been taught well.

The second, the third, and the fourth values should be taught to him. The third value can be given step by step because doing Math cannot be done without obeying the rule. Therefore, the exercise should be given continuously in order to make him obey the rule without ignore the other ability.

d.4. Guardian Type

According to Dewiyani (2010) this type has a responsibility to the task that is given to him. He does the tasks on time and detail in clarifying it. This type is able to be a leader who can guide and protect his team. He has a strong memory so he always does the tasks perfectly although the way how he does his tasks are not varied. He has four values that are the first, the third, the fourth, and the fifth. Others value that should be given to this type are honesty and the spirit of survival. His responsibility should be based on honesty for protecting friends and never gives up because it is no essay to do all of them.

III. CONCLUSION AND SUGGESTION

a. Conclusion

Based on the result of the study, the writer gives some conclusions:

1. Nation Character Education can be developed through introducing every personality type to thinking process profile in solving the Mathematics problem.
2. Rational Student Type has a lot of imagination. He works based on his logic. He will be challenged if he is given more abstract problem. He has the third and the sixth values. While the first, the second, the fourth, and the fifth values will be got through supporting exercises in order to be the next characterized Nation.
3. Idealist Student Type is able to see a problem with a wide point of view and not only see a problem that is faced. The teacher can make a lot of variety tests because he will be interested about them. He has the first, the third, and the sixth values. While the second, the fourth, and the fifth will be got through supporting exercises in order to be the next characterized nation.
4. Artisan Student Type never gives up easily and he can be asked to do more difficult tests, but the teacher should start everything in concrete and factual. He needs a clearer step to solve the problem. He has the first, the fifth, and the sixth values. While the second, the thirrh, the fourth will be got trough supporting exercises in order to be the next characterized nation.
5. Guardian Student Type always wants to know the usage of the material and the problem. The teacher should explain clearly the objective in order to make him interested. If he were interested, the teacher could give other problems that are presented clearly. He has the first, the third, the fourth, and the fifth values. While the second, the sixth values will be got trough supporting exercises in order to be the next characterized nation.
6. The teacher should realize about the difference of thinking process and the value that have been owned and that has to be sharpened by every student. One of the ways is classify the students based on the personality type, so in teaching learning process, the students will fill to be more appreciated individually where there are a lot of personalities to be one.

b. Suggestion

Since this study in an early research and it will be used for supporting the next research that is profile thinking process and Nation Character values for every type. This study can be continued by making learning modal and learning tools based on profile thinking process and Nation Character value that they have been owned and

should be developed.

c. Recommendation

This study is recommended for continuing the research in Mathematics Education field. The rule of Math problem solving can be shown up for developing the Nation Character value based on the Personality Students Type.

IV. BIBLIOGRAPHY

Arends, 2008, **Learning to teach**, Mc Graw Hill Companies, New York

Dewiyani , 2010, **Profil Proses Berpikir Mahasiswa dalam Memecahkan Masalah Matematika berdasar Penggolongan Tipe Kepribadian dan Gender**, dissertation of Doctoral Program, Mathematics Education, Surabaya State University.

Keirsey, David & Bates, Marilyn, 1984, **Please Understand Me**, Prometheus Nemesis Book Company, California

Keirsey Temperament Sorter, <http://www.answers.com/topic/keirsey-temperament-sorter>, diakses 2 April 2008.

Polya G, 2009, **How To Solve It**, Princeton University Press, Princeton, New Jersey.

Suharnan, 2005, **Psikologi Kognitif**, Penerbit Srikandi, Surabaya.

Suparno, Paul,(23 Oktober 2010). **Character Development and Nation Building**, Jakarta Post.

Yudhoyono, Susilo Bambang, (9 Juni 2011), **Lima Tujuan Gerakan Pendidikan Karakter**, Kompas,.