The Effectiveness of Problem Based Learning in Building Students' Character

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ABSTRACT

Character building for the young generation nowadays is very urgent. It is because they see the phenomena that occur in the daily life of society and the challenges facing increasingly complex. Education implemented in schools not only provides the knowledge and skills that are academic only but can bring students to the next generation of the nation who not only have the skills of knowledge but also has a dignified character that can be reflected in the daily life of students. Education in schools through the activities of mathematical learning in the classroom should be well designed so that the purpose of shaping the character of students through learning of mathematics in school can be achieved. The purpose of building the character of the student is not easy, therefore a continuous and systematic plan is required. Lesson Design which contains the objectives of forming the character of the student should be seen, not just the impact of the accompanist of a learning plan only. One of the learning models that can build student character is problem-based learning. The character of the student can be built in each of the stages of problem-based learning include persistent, creative, tenacious, and curiosity.

INTRODUCTION

The realization of a quality society is the responsibility of education. Recognizing this, the government has made efforts to improve the education system, among others, has stuck the application of character education. Character education became the focus of the Ministry of National Education at all levels of education. This is in accordance with Law No. 20 of 2003 on the national education system in article. which states that
national education functions to develop the ability and form the character and
civilization of a dignified nation in order to educate the nation's life.

The character of a nation depends on the character of every citizen. The character of
a nation can be defined as a characteristic of a nation and the advantages of these
nations. It means that a nation should be able to maintain the original character of his
country in many ways. The loss of the character of a nation will be a great loss of the
nation. Without the original character, a nation will only be a “follower” of another
nation because too many characters of other nationalities who come in and become the
character of the nation's citizens. “Bangsapengekor” more potential to absorb negative
charges and are always busy and spends all his time with various efforts to overcome a
variety of problems, instead of building a nation.

At this moment in Indonesia happen many irregularities norms that adorn the life of
the nation. Of course this is the world of education into the spotlight, because education
is considered as the leading contributor to the formation of personality, intelligence, and
religious. Ironically many violations marred the nation's character performed by
teenagers/school age. Brawl between students, immoral, illegal drugs, dishonesty, and
lack of discipline often the news highlights. Along with the proliferation of these
violations, the character of the Indonesian nation being eroded and replaced with a
culture of a foreign nation. The world of education was considered a failure in its efforts
to establish and develop the human character.

The formation of character is one of the national education goals. Article 1 of Law
2003 National Education System declared that one of the goals of national education is
to develop the potential of learners to have the intelligence, personality and noble
character. Act 2003 National Education System intended that education is not only
establish Indonesia intelligent beings, but also personality or character, so that will be
born generation of people who grow up with a character that breathes noble values of
the nation and religion. The Haridiknas theme of "Civilization Character Education for
Nation Building was popularizing in 010. In 2011 the theme Haridiknas is "Character
Education as a Pillar of the National Awakening (Achieve High Performance uphold
Budi Character)". Since 2010, the government has tried to focus on the formation of
national character through school education. Even in 2013 the character education
curriculum had been included in each subject, one of which is mathematics

Mathematics is one branch of science learned since elementary school. Math learned
from elementary school because one branch of which is a significant contribution to
shaping the mindset of the individual. According Soejadi (1999), mathematics education
as a vehicle not only can be used to achieve one goal, for example to educate students,
but also to shape the personality (character) students. Mulyono (2003) suggested that
mathematics is a way to find answers to the problems facing humans; a way to use the
information, using the knowledge of shapes and sizes, using knowledge of the count,
and the most important thing is to think of a human being itself in seeing and using the
connections.

Responding to the necessity of the need for a mathematics learning process that
encourages the widest opportunity for students to be involved in building knowledge,
developing reasoning skills, understanding and applying knowledge to solve problems
in daily life, some researchers have tried models, approaches, strategies, and Or
methods that are allegedly able to support the achievement of those objectives.
One of the models popularized in the implementation of Curriculum 2013 is the model of Problem Based Learning. PBM is one of the innovative learning approaches that based on its characteristics encourage students to build knowledge based on what they already have. This is because in PBM, learning is always preceded and triggered by cognitive conflict in the form of problems the teacher presents, and the students study it individually for some time by discussing it in groups and collaboratively to then solve it. The teacher acts as a facilitator to help students call and relate their knowledge and experience to the problem at hand. Through intriguing questions, teachers also play a role to stimulate students to use understanding and diverse forms of reasoning to see the possibilities students can use as a way to resolve between the final and final settlement of the problem.

Based on the previous description, the author attempts to discuss more about The Effectiveness of Problem Based Learning in Building Students' Character. The main focus will be studied is how the problem based learning models in learning mathematics be built character on students in mathematics.

### Understanding Character

Characters can be seen as the typical way of thinking and behaving of every individual to life, mingle, and collaboration in the family, society, nation and state (Samani&Hariyanto, 2011). Good character is indicated by morality, character, and behavior that is commendable and an example in the midst of family, community, and nation. Samani&Hariyanto (2011) defines character as the basic value that builds a person, is formed either because of the influence of heredity and the influence of the environment that distinguishes others and is manifested in attitudes and behavior in everyday life. This conclusion emphasizes that character is a fundamental value that is found in the individual.

Arthur (2003) distinguished the sense of character in some ways. First, character is seen as a braid of personality values that leads to something normal. The character is about who we are and what we become, good and bad things. Second, the character is not something fixed and easily measured or modified the third character is the choices about the direction of action and thought is right or wrong. Arthur believes that one can be active in shaping the character of himself and others. Character education is seen as a special approach of moral education. Character education is not a simplification of achievementSocial skills but about how one student will grow. Thus the character developed through education is not only related to social skills but integrative directed to the development of students.

Berkowitz (2002) explains that character can be viewed as a measure or means of measuring the good or eccentricity of an individual related to morality. In addition, it can also be related to non-morality (such as cognitive functions). Berkowitz defines character as "an individual's set of physiological characteristics that affects the person's ability and inclination to function morally". This means that character is a collection of individual psychological characteristics that give impact to one's ability and improvement of morality functions. Thus the meaning of the character can be interpreted as character, character, or other psychological aspects inherent in an individual. Character guides and directs a person to judge something done good or bad. The moral functions of Berkowitz (2002) are called moral anatomy which includes (1) moral behavior, (2) moral values, (3) moral personality, (4) Moral emotion, moral reasoning, (6) moral identity, and (7) foundational characteristics. These
functions illustrate that character is a complex psychological concept. Characters include the ability to think differently from the good and the right, to experience moral emotions (guilt, empathy, self-consciousness), to engage in actions (sharing, charity, honesty), believing in civilized and dignified morality, and showing honesty, kindness, and responsibility.

Samani & Hariyanto (2011) formulated the notion that character education is a process of giving guidance to learners to become fully human characterized in the dimensions of heart, mind, body, and taste and intention. Character education can be interpreted as value education, character education, moral education, character education that aims to develop students' ability to think, make good decisions, maintain and maintain good, and realize the goodness in daily life. Character education in the scope of learning in the classroom can be interpreted as an effort to design and implement a strategy or learning models aimed at developing academic ability and character building. The purpose of character building must be deliberately designed (by design) not as a side effect (companion impact). The characters should be drawn explicitly in the designed learning steps. The characters are values, abilities, beliefs, morality, emotional control, and behaviors that are directly or indirectly related to the nature and nature of the subject. While learning Indonesian may be emphasized the values and ethics of good language, while learning mathematics taught values related to reasoning. Thus, a teacher needs to know the characteristics of science.

**Learning Mathematics**

As we know that the purpose of learning mathematics by Permendiknas 22 of 2006 include: 1) understand the mathematical concept, explain the link between concepts and apply concepts or algorithms in a flexible, accurate, efficient, and precise in problem solving, 2) using the reasoning in the patterns and nature, perform mathematical manipulation in making generalizations, compile evidence, or explain mathematics ideas and statements, 3) to solve the problem; 4) communicate ideas with symbols, tables, diagrams, or other media to clarify the situation or problem, and 5) have an attitude appreciate the usefulness of mathematics in life, an attitude of curiosity, attention, and interest in studying mathematics, as well as a tenacious attitude and confidence in problem solving. Briefly, the learning of mathematics include cognitive, psychomotor, and affective.

In the process, mathematics is no longer considered only as an inexact science, but also in the social sciences clumps. This is because mathematics was instrumental in forming the human mind. A mathematical concept is also capable of being used in all aspects of life such as: language, culture, games, etc. Herman (2009: 96) explains that the essence of mathematics in respect of ideas, structures, and relationships are governed by a logical sequence. The scope of mathematical work is described by Herman (2009: 96-97) that the mathematical work consists of observation, guess and test hypotheses, look for analogies, and finally formulate theorems starting from assumptions and elements that are not defined.

The properties of mathematics is abstract, making mathematics requires meaningful learning to be easily understood by students. Learning will be meaningful if it is able to connect with the culture and norms that are around, integrating mathematics with other sciences. According to Bishop (in Nyimas Aisha, 2011), there are three categories of grades in mathematics, namely the value of public education, the value of mathematics
and mathematics education values. Learning activities need to use principles: (1) centered on the learner, (2) develop the creativity of learners, (3) create favorable conditions and a challenging, (4) uncharged values, ethics, aesthetics, logic, and kinestetika, and (5) provides a diverse learning experience through the application of various strategies and methods of learning fun, contextual, effective, efficient, and meaningful (Wahyudin, 2013).

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**Problem Based Learning In Mathematics**

Problem-based learning began at McMaster University Medical School over 25 years ago. It has since been implemented in various undergraduate and graduate programs around the world. Additionally, elementary and secondary schools have adopted PBL. The PBL approach is now being used in few community colleges also. Problem-Based Learning (PBL) describes a learning environment where problems drive the learning. That is, learning begins with a problem to be solved, and the problem is posed is such a way that students need to gain new knowledge before they can solve the problem. Rather than seeking a single correct answer, students interpret the problem, gather needed information, identify possible solutions, evaluate options, and present conclusions. Proponents of mathematical problem solving insist that students become good problem solvers by learning mathematical knowledge heuristically. Students' successful experiences in managing their own knowledge also help them solve mathematical problems well (Shoenfeld, 1985). Problem-based learning is a classroom strategy that organizes mathematics instruction around problem solving activities and affords students more opportunities to think critically, present their own creative ideas, and communicate with peers mathematically (Krulik&Rudnick, 1999; Lewellen&Mikusa, 1999). The steps of problem based learning, are: Explain unknown wording statements and concepts, Define the problems, Brainstorm – analyze/try to explain the problems, Formulate Learning Issues and Define action to be taken/self directed Learning, Subsequent group meetings: Report and evaluate on self-directed learning, Refine learning issues and define further action, Report Phase. Resolution of problem. Evaluation of process. Problem-based curricula provide students with guided experience in learning through solving complex, real-world problems. PBL was designed with several important goals (Barrows and Kelson, 1995). It is designed to help students to construct an extensive and flexible knowledge base, develop effective problem-solving skills, develop self-directed, lifelong learning skills, become effective collaborators; and become intrinsically motivated to learn. (Hmelo-Silver, 2004).
METHODS

This research uses qualitative approach. Qualitative approach is the approach expressed in verbal form and analyzed without using statistics. Research activities depart from the real problems faced by researchers in their main tasks and functions, then reflected alternative solutions to the problem and followed up with planned and measurable real actions. The study was conducted in junior high school with a total of 36 students. Data collection includes: (a) observation, collecting data with observations of ongoing learning; (B) a test, a series of questions (questions) to measure the skills, knowledge, intelligence, abilities, or talents possessed by individuals or groups; (C) documentation, data collection through documents, (d) field notes, which record important events and experiences occurring during the lesson. Data analysis technique used in this research is descriptive qualitative data analysis which include data reduction, data presentation, data review and conclusion (verification). The validity of the data by using triangulation technique is the technique of checking the validity of data for checking and as a comparison against the data.

To know the success in each process of the observation sheet filled by the observer can be seen from the percentage of average value by the formula:

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\text{Average percentage value (NR)} = \frac{\text{total score}}{\text{maximum score}} \times 100%
\]

The level of success is determined as follows:
- 75% <NR ≤ 100%: very good
- 25% <NR ≤ 50%: moderate
- 50% <NR ≤ 75%: good
- 0% <NR ≤ 25%: less good

RESULTS AND DISCUSSION

The results of research on cycles I include: (a) researcher activity as teaching staff on learning from both observer obtained the number of scores obtained from observer I that is 54 from the score maximum 80, the percentage of mean value is 67.5% means in good category, Scores obtained from observer II is 51 from a maximum score of 80, the percentage of average value is 63.75% with good category; (B) student activity on learning from second observer obtained the number of score from observer I that is 44 from score max 70 with percentage of mean value that is 62.86% including good category, while total score obtained from observer II that is 45 from score maximum 70 Average percentage value is 64.29% including good category; (C) the development of student character with the achievement of 53.08% category started to entrust, (d) result of student's academic ability got data that student get score more than 60 reach 63.33% (19 students from 30 students).

In general, the results of research appear to be an increase in character development in learning mathematics problem based learning in the face of globalization era. Implementation of learning problem based learning has given the students motivation to have character in solving the problems of mathematics, which is seen from the observation result of the researcher of 65.625% (good), while the observation of student learning is 63.572% (good). For student academic ability of 63.33% (good). This is in line with the opinion that learning is an active and constructive process in which students try to solve problems by actively participating in exercises solving mathematical problems during the learning process. Mathematics learning, not only provide enough theoretical concepts but also provide examples of solutions in reality by utilizing learning strategies that support maximum learning achievement. Learning focuses on core concepts and principles that involve students in problem-solving
investigations and other meaningful task activities, giving students the opportunity to work autonomously constructing their own knowledge, and solving problems related to everyday life.

CONCLUSION

Need a real effort to build national character through character building. Character education can be started from the family education, community, and school. Character education can be implanted through the learning of mathematics. Characters that can be built from mathematics learning among other things:persistent, creative, tenacious, and curiosity. The hopes to be enable teachers to convey the values of life when learning mathematics so that students have a strong character.

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