

Actualization Islamic Values in Learning About Addition, Subtraction, and Multiplication of Integers with Approach of Realistic Mathematics Education to Develop Students Character

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Abstract: Mathematics learning must undergo renewal to corrective and improve the comprehension ability of math material optimally. A mathematics teacher is always required to try to innovate in the teaching of mathematics in the classroom, including the effort of studying addition, subtraction, and multiplication of integers with the approach of Realistic Mathematics Education which actualize the value of Islam religion. Such learning can be expected to strengthen the character of the student. In this learning, examples of the application of learning steps of addition, reduction and multiplication with PMR approach that actualize Islamic values.

1 INTRODUCTION

Moral Indonesian society is currently very concerned, even though the government has promoted character education in schools. The crisis that struck the Indonesian people from students to political elites occurred due to religious and moral education that teaches at school or college (college) has nothing to do with them. That are many humans who are incoherent between speech and action. Such conditions, freedom originated from what is produced by the world of education (Zubaedi, 2015).

Of the various cases that occurred in Indonesia is either published by print or electronic media, one of the problems is character education that has not been implemented optimally, the planting of religious values (in this case Islam) that has not touched the hearts of students due to the delivery that is still focused on just knowledge and skills, and the concept of child development that has not been fully understood, and has not been used as a basis in education.

The education system in Indonesia is always changing, and until now it still concerns both the quality and the character it produces. Educational system which is not aqidah-oriented will produce imbalanced and less harmonious societies (Asy-Saymaa' Hussain et al., 2017).

Character education has been the concern of many countries to prepare quality generations, not only for the individual interests of the citizens but also for the citizens as a whole (Wakhida, 2015).

The potential human character has been owned before birth, but this potential should continue to be developed through socialization and education. Education is one of the containers in supporting the formation of individual characters.

The issue of character is becoming a hot topic in the world of education in Indonesia, up to the government to take part in it. Still warm in ears for teachers about Curriculum 2013 which until now still ongoing revision. The curriculum is touted as the ultimate weapon to improve the character of students in Indonesia.

Establishing a good character is a great job that is the primary task of a teacher as an educator. Teachers as educators have often neglected, there tends teacher as the teacher is busy with how students should get good grades without regard to the learning process of their students know and understand. If the teacher realizes himself and understands how that should be a teacher as well as an educator, then the teacher in his lesson will emphasize the process rather than the outcome.

Teachers who teach with emphasis the process, will give students the opportunity to learn by starting from what is often experienced by students in their daily situations (contextual), here the teacher can

enter the context of Islamic values or local culture in which school students are generally there embedded culture of the good and right character. Furthermore, the teacher guides students to connect the real world with the core of the new material will be discussed, with the aim that students learn meaningfully, the next students are given the freedom to use strategies, language, symbols, and appreciate their work in solving real problems given by teachers, must be interactive, and should be taught as much as possible connected with other disciplines. In mathematics learning, this step is better known by the characteristic approach of Realistic Mathematics Education (Dalmeri, 2013). Questions arise how to actualize the values of Islam in the learning about addition, reduction, and multiplication with the approach of realistic mathematics education to develop the character of students.

2 ISLAMIC VALUES STRENGTHEN THE CHARACTER OF THE STUDENT

In the Islamic context, character education or commonly referred to as "moral" or morality in Islam has existed since Islam was there because of the coming of Prophet Muhammad to this earth that is to enhance a noble character, which at that time the Arab nation is still a nation "barbaric ", the "ignorant "nation, and the" uncultured "nation. Along with the Prophet's message. Little by little has changed well until now. It proves the success of the Prophet in educating the ignorant to become a good people, being a "cultured", and a "civilized" (Muhsinin, 2013).

Aqidah or Faith as a belief system that is manifested through a form of worship as servitude to Allah by way of control of Shari'a as a medium to be mastered was the creed, sharia and worship that are part of the system of worship must be evidenced by behavior (actions) are excellent.

Based on the relationship between the aspect of aqidah, worship, shariah and morals in the flow of religion then in moral education value, fourth aspects above should be explored and developed so that it becomes a character that remains in the student self.

3 MATHEMATICAL CHARACTERISTICS

Soedjadi (2000), Sumardiyono (2004), and Abdussakir (2017) explain the characteristics of mathematics that are not shared by other science. The characteristics are as follows:

1. Mathematics has an abstract object of study, though not every abstract object is mathematical.
2. Relying on agreement, symbols and terms in mathematics is a significant agreement or convention. With the symbols and terms agreed upon in mathematics then the next discussion will be easy to do and communicate.
3. Adhering to the deductive mindset, in mathematics only accepted a deductive mindset. A deductive mindset is a mindset based on truths that are generally proven to be true.
4. Consistent in the system, in mathematics, there are various systems formed from several axioms and contains several theorems. Within each system, consistency applies. It means that in every system there can be no contradiction. A theorem or definition must use predetermined terms or concepts.
5. Having an empty symbol of meaning, the actual mathematical symbols empty of meaning. It will mean something when it is associated with a particular context. In general, it also distinguishes mathematical symbols with symbols instead of math. The clear meaning of mathematical models is a "force" of mathematics, which by that nature can enter in various spheres of life.
6. Taking into account the universe of speech, concerning the precise meaning of mathematical symbols, then its use should take into consideration the sphere of its speech or the universe of speech. It is this fifth and sixth characteristic that later in some studies, especially the study of math and religion, gives the possibility that mathematical symbols can be given a specific meaning. Especially when the universe of conversation or the context of the conversation into the realm of religion. Related to the four objects of learning mathematics, namely facts, concepts, skills, and principles, some experts began to add one more object that is not less important is the value (value). Bell

(1978) referred to it as positive attitudes and included it as an indirect object in mathematics.

4 CHARACTER EDUCATION IN MATHEMATICS LEARNING

The character has a substantive meaning and a fundamental psychological process. Lickona (1992) refers to the concept of good nature proposed by Aristoteles as "... the life of the right conduct -right conduct about other persons and oneself". The character can be interpreted as a life of good behavior / full of virtue, that is to behave well toward another party (God Almighty, human, and universe) and to self.

Good character consists of psychological process knowing the good, desiring the good, and doing the good-habit of the mind, the habit of the heart, and habit of action. These three substances and psychological processes lead to moral life and personal moral maturity. In other words, the character is interpreted as own excellent quality, in the sense of knowing better, willing to do good, and manifestly behave well, which coherently radiates as a result of learning that needs to encroach on the cognitive, affective, psychomotor, and social aspects in proportion to careful planning.

To form a student who to be "akhlakul karimah", then that must be worked is empowering the power of faith, worship, sharia, and morals. Students who have a special "karimah" or character can also be formed from the learning of mathematics. According to Abdussakir (2017), the positive impacts of mathematics learning relating to commendable attitudes or morals are as follows:

4.1 Attitude Honest, Accurate, and Simple

The math that many people call it arithmetic is the science that is related to the process of counting. In the calculation process to determine the outcome of the answers using theorem or deficiency requires an attitude of thoroughness, precision, and accuracy. Having obtained the results, of course, requires a checking process of the steps that have been done. Whether the levels based on the theorem or do not. Don't let the step deviate from the theory so that of course the answer will be wrong. Therefore, it needs accuracy and precision.

In mathematics, there is also a principle of honesty. When doing the process in math and not by the principles or theorems that exist of course the work will be wrong, and one can't dodge it or argue on a mathematical basis to justify the illegal

practice. On the contrary, one can't blame a definition or a proven theorem to achieve the objective of a calculation desired by a person.

As an example:

If in mathematics it has been agreed that $-3 \times 5 = -15$, certainly should not justify $-3 \times 5 = 15$. On whatever pretext one can't argue it because the goal is to produce 15.

Besides, mathematics also teaches the principle of simplicity which means it is as effective as possible to use the steps to lead to the right outcome. We often have quick calculations. Indeed, the quick calculations do not ignore the steps or principles according to the theorem. But of course, when someone who has understood can go further than every level that is important not to violate the rules that exist in mathematics.

In the $25 \times 25 = \text{op. . . ?}$ Some people respond with the steps:

$$\begin{array}{r} 25 \\ \underline{25} \times \\ 125 \\ \underline{50} + \\ 625 \end{array}$$

However, for someone who already knows the properties of multiplication of number 5 directly answers it: $25 \times 25 = (20 + 5) 25 = 625$. The second answer is more precise and more time-efficient but needs to know the nature and principles of mathematics.

4.2 Consistent and Systematic Attitude to the Rules

Mathematics is a science based on systematic agreements and from that agreement someone who works with mathematics must obey it. For example, if in mathematics the number of angles in triangle = 180 in Euclid geometry. Surely, we must abide by it to prove the truth further. We should not hit the deal if we do not want to be wrong.

The rules in mathematics are neatly arranged systematically ranging from the definition or truth of the base that does not need proof because it is proven to be true. Then the existence of a theorem that refers to an explanation must be verified. The hypothesis will give rise to a result called Lemma or Corollary.

Not only that in the parts of mathematics have also been arranged systematically neatly as an example on the concept of numbers: complex numbers in it there are real and imaginary numbers. In the real numbers, there are rational and irrational numbers. In rational numbers, there are say round and fractional. From that example, mathematics is very systematic and must be adhered to in the

process. Similarly, to be a leader must hold on to the truth of the systematic and consistent rules of running it. The trust given by the people must be carried out by what is needed by the people. Consistency must always exist in any condition.

4.3 Fair Attitude

In mathematics there is a principle of fairness in terms of an equation. As an example: $2x + 5 = 15$, specify the value of x ! (the solution of the equation). To find a solution of the equation is required steps as follows:

$$\begin{aligned}2x + 5 &= 15 \\2x + 5 - 5 &= 15 - 5 \\2x &= 10 \\2x &= 10 \\x &= 5\end{aligned}$$

If we see the operation on the left side must be equal to the right side. So, in the process, there is a principle of justice in mathematics.

4.4 Responsibility

In mathematics, there is a process called proof either inductively or deductively. In the process of proof, there are steps to be taken, and they are based on sound truth and reason. As an example: to prove the Area of Triangle = $\frac{1}{2} * \text{base} * \text{height}$, we need related steps, e.g. one of them by using Pythagoras theorem that has been proved to be true. Thus, to prove the area of the triangle in its the step, we choose to use the Pythagoras theorem for a definite reason that is already proven right and related to the principles of the triangle.

4.5. Confidence and Not Surrender

Students very much need confidence. A student will accomplish his tasks well if he has confidence in his ability. In mathematics itself, to solve a mathematical problem is required to be confident in doing it. Usually in learning mathematics is not uncommon for students who like to equate the answer with the answer of his friend on the grounds whether the answer is correct. However, sometimes because of a lack of confidence in the student when the answer is different from his friend is not even motivated to find the right answer but on the contrary that arise the sense of surrender. The student feels the answer is wrong and that arises cheating his friend's answer that is not necessarily true.

That needs to be developed in the learning of mathematics related to the attitude of self-confidence is to let the students be creative with the answer according to his ability. If there is a failure in finding out the result answers, the teacher assists in motivating students to find the correct answer. If the activity is done continuously of course attitude will not give up on the student will wake up. Students will continue to search for and seek answers to problems, so they get results. The feeling of not giving up will result in confidence in students.

Thus, learning mathematics is very important to form a qualified person. If the teacher can determine the characteristics of any mathematical concepts, of course, the teacher will be more accessible to develop it in every learning process. Teachers can strive to create design learning by combining Islamic values and values contained in every mathematical concept. Thus, character education is not only written as an administrative requirement, but it is true that the student's character traits can also be well established.

5 LEARNING STEPS WITH INDONESIAN REFORMA- TIONS MATHEMATICS EDU- CATION APPROACH (PMRI)

In designing classroom learning activities for a particular topic, the teacher must have guesses or hypotheses and be able to consider student reactions to each stage of the learning path towards the learning objectives that are implemented.

Based on the above opinion, the principles, characteristics of Realistic Approach as well as taking into account the value of Islam as a source of strengthening the character of students and characteristic of mathematics itself, the authors compiled a step of learning integer operations (addition, subtraction and multiplication) with Realistic Approach, as follows:

1. The first step, understanding contextual problem, namely the teachers provide the contextual issues (Islamic Values) in everyday life and ask students to understand the problem.
2. The second step, explaining the contextual problem, that is, if in understanding the problem of students experiencing difficulties, the teacher explains the situation and condition of the problem by giving instructions or suggestions as necessary, limited to certain parts of the problem that has not been understanding.

3. The third step, solving the contextual problem, i.e. student individually solves the contextual problems in their own way. How to solve and answer different issues is preferred. By using the analogy strategy. Teachers motivate students to complete problems in their own way.
4. The fourth step, compare and discuss answers, i.e. the teacher provides time and opportunity for the students to compare and discuss the problem answers in groups. Students are trained to bring out ideas they have about student interactions in the learning process to optimize learning.
5. The fifth step, concluding, that the teacher gives the opportunity to the students as group representatives (enough to be appointed two groups) to present the results of the group discussion, there will be conclusions about a concept or procedure of problem-solving in the learning process above.

The five steps above, according to Putri et al. (2015), still need to pay attention to three important aspects of the learning process in social constructivist views, namely (1) social norms, (2) sociomatic norms, and (3) classroom practices mathematics.

6 EXAMPLE OF ACTUALIZING ISLAMIC VALUES IN THE LEARNING OF ADDITION, REDUCTION, AND MULTIPLICATION

6.1 Operation of Sum Total

This learning step, specifically for core activities (learning scenarios), before the start of learning steps with the approach of Indonesian Realistic Mathematics Education, teachers in question and answer to understand students that the sum operation is discussed in the Qur'an with the following Word of Allah SWT :

"Notice the word of Allah in the letter of Al Kahf verse 25, which means" And (it is said) they tarried in their Cave three hundred years and add nine". These shows that God caught (300 + 9) years, why not directly call 309 years. Furthermore, the teacher asked the students to follow the learning with the following activities actively.

- a. The first step present through contextual Islamic values.

Look again at the word of Allah in the Quran letter of Huud verse 114 as follows.

- 1) "....., Indeed the good deeds were abolished (sin) bad deeds. That is a warning to those who remember." (Q.S. Huud, 114).
- 2) Furthermore, it is worth it if the ummah is advised to always do good after having done evil to remove it, as the following hadith. From Abu Dzar, Jundub bin Junadah and Abu "Abdurrahman, Mu" adz bin Jabal radhiyallahu'anhuma, from the Prophet Sallallahu" Alayhi Wa Sallam, he said: "obey (Taqwa) to Allah wherever you are and follow something sinful with kindness, will certainly remove it and mingle with fellow human beings with good morals". [Hadist history from Tirmidzi, he has said: This Hadith is hasan, on another lafazh its degree hasan shahih].

- b. The second step, directing the contextual problem, in the form of directives and suggestions to understand with the contextual problem.

For example:

- 1) Goodness for the good that someone does will increase the value of the right that more than the good first.
- 2) Goodness followed by badness will reduce the amount of kindness someone has done.
- 3) The ugliness that is supported by virtue will reduce the value of the bad that someone has done.
- 4) The badness for the sake of conducted person's evil will increase the amount of wickedness more than the previous disrepute.

- c. The third step, solving the contextual problem, is that students work individually on an individual basis to solve contextual problems in their way. Different ways of solving and solving problems take precedence, of course with effort and how to use their strategies. Teachers motivate students to solve the problem in their way. Possible student answers as follows.

- 1) $(+5) + (+3) = + 8$, or anyone wrote, 2) $5 + 3 = 8$.
- 2) $(+5) + (-3) = + 2$, or anyone wrote, 2) $5 + (-3) = 2$.
- 3) $(-5) + (+3) = - 2$, or anyone wrote, 2) $-5 + (3) = -2$

- 4) $(-5) + (-3) = -8$, or anyone wrote, $2) -5 + (-3) = -8$.
- d. The fourth step, comparing and discussing answers, is that teachers provide time and opportunity for students to compare and discuss problem responses from step number three in groups. Students are trained to bring out ideas they have about student interactions in the studying process to optimize learning. These means that the fourth step results are discussing in groups under the guidance of teachers.
- e. The fifth step, concluding, is that the teacher gives the students an opportunity to conclude a concept of integer summing according to the context of the solution of problems that have been gaining from the learning process.
- 2) Kindness by ignoring badness will add to the reward of goodness.
- 3) Ugliness by ignoring goodness will be adding/stacking ugliness.
- 4) Ugliness by ignoring the next badness can reduce ugliness.
- c. The third step, solving the contextual problem, is that students work individually on an individual basis to solve contextual problems in their way. Different ways of solving and solving problems take precedence, of course with effort and how to use their strategies. Teachers motivate students to solve the problem in their way. Possible student answers by choosing any two different numbers as follows:
- 1) $5 - 3 = 2$
 - 2) $5 - (-3) = 8$
 - 3) $(-5) - 3 = -8$
 - 4) $(-5) - (-3) = -2$

6.2 Reduction Operations

This learning step, especially for core activities (learning scenarios), before the start of the learning step with the approach of Indonesian Realistic Mathematics Education, the teacher in question and answer to the students understand that the reduction operation is discussed in the Qur'an with the following Word of Allah SWT.

“And verily we sent Noah (as Our messenger) unto his folk, and he continued with them for a thousand years save fifty years; and the flood engulfed them, for they were wrong-doers.” (Q.S. Al-Ankabut, 14).

In Q.S. Al-Ankabut, 14. To refer to 950, Allah denotes a reduction operation of $1000 - 50$. Furthermore, the teacher asks the active students to follow the learning as the following.

- a. The first step, present the contextual value of Islam,
- “obey (Taqwa) to Allah wherever you are and follow something sinful with kindness, will certainly remove it and mingle with fellow human beings with good morals”. [Hadist history from Tirmidzi].
- b. The second step, directing the contextual problem, in the form of directives and suggestions to understand with both contextual issues.
- From (Hadist History Tirmidzi), directed to be understood that doing good by trying to ignore (operation reduction) ugliness, so the possibility of students thinking as follows:
- 1) Goodness by ignoring the next great can reduce the reward of goodness.

- d. The fourth step, comparing and discussing answers, is that teachers provide time and opportunity for students to compare and discuss problem responses from step number three in groups. Students are trained to bring out ideas they have about student interactions in the studying process to optimize learning. These means that the fourth step results are discussing in groups under the guidance of teachers and resulted in the conclusion of each group.
- e. The fifth step, appointing two groups to take turns to present the conclusions of the results of the group discussion, as a teacher's attempt to give students an opportunity to conclude a concept of integer reduction by the context of the solution of problems that have been obtaining from the learning process.

The next teacher's job is to consolidate the concept of reduction to the nature of the integer-reduction operation as follows:

- 1) $(+) - (+) =$ Goodness by ignoring the next great can reduce the reward of goodness.
- 2) $(+) - (-) =$ Kindness by ignoring badness will add to the reward of goodness.
- 3) $(-) - (+) =$ ugliness by ignoring goodness will be adding/stacking ugliness.
- 4) $(-) - (-) =$ ugliness by ignoring the next badness can reduce ugliness.

6.3 Multiplication Operations

This learning step, specifically for core activities (learning scenarios), before starting with the learning

steps and approach of Indonesian Realistic Mathematics Education, the teacher in question asked students to understand that multiplication operations are discussed in the following Qur'an.

a. The first step, present through contextual Islamic values,

1. "Whoso bringeth a good deed will receive tenfold the like thereof, while whoso bringeth an ill-deed will be awarded but the like thereof; and they will not be wronged". (Qs. Al-An'am. 160)

2. The likeness of those who spend their wealth in Allah's way is as the likeness of a grain which growth seven stems, in every stem a hundred grains. Allah multiplies (reply) to whom it pleases. Allah is All-Embracing, All-Knowing." Since the sum operation has been mentioned in the Qur'an, then to determine the whole seed, one can perform by counting.

b. The second step, directing the contextual problem, in the form of directives and suggestions to understand with the contextual problem.

For example, directing to understand the intended content (Q.S. Al-'Anam: 160), and Q.S. Al-Baqarah: 261), then remember the multiplication operation.

c. The third step, solving the contextual problem, is that students work individually on an individual basis to solve contextual problems in their way. Different ways of solving and solving problems take precedence, of course with effort and how to use their strategies. Teachers motivate students to solve the problem in their way. Possible student answers as follows.

- 1). a) every 1 good = 10 times good deeds
- b) every 1 evil deed = 1 reward ugliness
- 2). $100 + 100 + 100 + 100 + 100 + 100 + 100 = 700,$

or

$$100 + 100 + 100 + 100 + 100 + 100 + 100 = 7 \times 100.$$

d. The fourth step, comparing and discussing answers, is that teachers provide time and opportunity for students to compare and discuss problem responses from step number three in groups. Students are trained to bring out ideas they have about student interactions in the studying process to optimize learning. These means that the fourth step results are discussing in groups under the guidance of teachers and resulted in the conclusion of each group.

e. The fifth step, concluding, is that teachers give students the opportunity to conclude a concept of integer multiplication by the context of the solution of problems that have been gaining from the learning process. In this step, the student is expected to conclude that "Added 100 repeats seven times so that obtains 700". The concept of repeated addition is the concept of multiplication number operations.

The next task of the teacher is to establish the concept of multiplication to the nature of the operation of integers as follows:

- 1) positive \times positive = positive,
 - 2) positive \times negative = negative,
 - 3) negative \times positive = negative,
 - 4) negative \times negative = positive,
- developed by Hudojo (2005) as an honesty analogue.

1) **true** if it is said to be **true**, then the behavior is **true**,

2) **true** if it is said **wrong**, then the behavior is **wrong**,

3) **wrong** to say **true**, then the behavior is **wrong**,

4) **wrong** to say **wrong**, then the behavior is **true**.

7 CONCLUSIONS

Islamic values are reflected on the interrelationship between the aspect of aqidah (faith), worship, sharia and morals, then in moral education, the values of the four aspects above must be explored and developed so that it becomes a character that remains in the student self. The four aspects are the values of Islam that come from the Qur'an and hadith that must be applied in everyday life by humans to survive the world and the hereafter.

While the learning of mathematics should be made useful also to students cognitively, effectively, and psychomotor, and give positive impact to the character of students. To be more optimal in developing/attaching the character to the students themselves and every teacher is required to be active, creative, innovative, and develop and create the design of learning by actualizing Islamic values and values contained in every mathematical concept. Thus, character education is not just a slogan only, but the value of the students' character is awareness well. Also, it should also be remembered that Mathematics is an activity that is never separated

from real life every day. To build optimal activity, one of them is by doing mathematics learning through "Realistic mathematics education" approach.

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