Integration of Values Mathematics Characters through Contextual Learning (Literatur Study)

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Abstract. The literature review is focusing on the integration of values mathematics characters through contextual learning. There is evidence that the values of mathematics characters can be enhanced through contextual learning. The values mathematics characters such as honesty, democracy, responsibility, self-discipline, hard work, creativity, and curiosity. Theorizing from these findings, the study described the integration of values mathematics through contextual learning, how the values of mathematics characters can be enhanced through contextual learning, and how plan of learning can be applied to enhanced values mathematics characters through contextual learning. Findings suggest that more research is needed to gain new insight in categorizing values character mathematics can be enhanced through contextual learning.

INTRODUCTION

The character is the main foundation for building a great nation. To become a great nation needed a process that involves many parties. Education has a strategic role in shaping the character of the nation. Due to the quality education of human resources as the driving wheel of nation-building can be enhanced. Without quality education is highly unlikely that national development objectives of a country can be achieved with good. Education first and foremost stems from the family, as a child begins to recognize their first neighborhood is a family. So the family is the custom in the input in the formation of personality. This one's personality will gradually form a character. Education is very closely related to the formation of character, if the character is built by each family to do well, then the character of this nation will wake up too well. Therefore the role of the family in character education is important and makes the child's education as the focus of attention. Thus the character is the nature of a person in response to a state or everyday problems with good behavior. This is in line with Aristotle, that the character is closely related to “habit” or habits that continue to be done.

The school environment is a very important educational institution role in realizing the development goals of the nation. In the Law of the Republic of Indonesia [1] Chapter II, Article 3: "National education serves to develop the ability and character development and civilization of the nation's dignity in the context of the intellectual life of the nation, aimed at development potential learners in order to become a man of faith and fear of God Almighty, noble, healthy, knowledgeable, skilled, creative, independent, and become citizens of a democratic and responsible ". In realizing the objectives of the national education school institutions have a role that is not only limited to the transfer of knowledge alone but rather to habituation good character and coaching learners as the next generation of this nation's continuing life. It is as expressed by [2] that the learning process does not stop with the delivery of curriculum materials, but the development of cultural reproduction and new habits that are superior to any should be done. The education process is not only developing the intellectual intelligence alone but must develop emotional intelligence, social, and spiritual that would eventually form the character of learners who have intelligence that the plenary. So in the future of this nation be led by people who have high integrity and loyalty to the nation.

At this time the Indonesian nation is experiencing a moral degradation that can be seen from the behavior of all the community the more advanced aspects of personal emotions without regard to social aspects that can provide benefits to people's lives more. Indonesia today is marked by crises multi-dimensional as reflected in the
behavior of society become more corrupt, ordinary people are more brittle and become disoriented, easily shaken and without orientation, demonstrating anti-social, anti-establishment, violent, and loss of balance between the ratio and emotions [3]. The characters are inherited by the ancestors of this nation who are notoriously averse mutual cooperation, tepa selira (tolerance), and silih asah silih asih silih asuh (loving and nurturing) have gradually been turned into irritability, lack of care for others, violent, and put forward the personal interests rather than the interests of the nation.

Other indicators that appear in everyday life as the symptoms of damage to the nation's character that can be seen from the courtesy learners faded in social life. Their behavior either to teachers, parents or with friends often does not show as an educated person. This concurs with Isnaini [4] which states that the destruction of the character of future generation as well how to talk among themselves as well as to teachers or parents, both within the school and community that they should not speak often ejected. Besides what is disclosed by Zubaidi [5] The crisis of students (as well as the political elite) indicates that the religious and moral education acquired in school, had no impact on human behavior change Indonesia. Even the look is so much human Indonesia incoherent between words and actions. Such conditions allegedly originated from what is produced by the world of education.

By looking at the above phenomenon, character education is one of several solutions to overcome the problem of moral degradation was happening to this nation. Educational Development of culture and character are integrated in the learning process in the form of the introduction of values through the facilities acquired are aware of the importance of values in life, and internalisation values into the behavior of students daily through a learning process either takes place in inside and outside the classroom in all subjects. It is stated in the Educational guide at Junior High School, PPPPK [6] Mathematics is a subject that must be followed by all students from elementary school through high school, in the learning process should be able to give birth to the character of mathematics that are beneficial to the formation of character of the nation. The aim of this study to review literature that values of mathematics characters can be enhanced through contextual learning. The evidences are looked specially contextual leaning is used to enhance values mathematics characters.

VALUES OF CHARACTER IN THE SUBJECT OF MATHEMATICS

Values mathematics characters that can be developed in mathematics are positive values which can not be separated from nature mathematics itself. Mathematics is a deductive science because in the process of searching for the truth must be proved by generalizing nature, theorem or postulate after proven deductively. Mathematics is a science that is obtained by reasoned that using the terms defined carefully, clear, and accurate, representation of symbols or symbols and meaning and can be used in solving the problems associated with numbers. The essence of mathematical namely a) Mathematics lesson on a pattern/structure and relationships, b) Mathematics is a way of thinking, c) Mathematics is the language, d) Mathematics is a tool, e) Mathematics is an art.

The learning process is basically a series of activities undertaken by teachers as educators and students as the students in the teaching activities by using facilities and educational facilities exist to achieve the goals set in the curriculum. [7] Permendiknas number 22 of 2006 on the Mathematics Subjects Content Standards, declared that the mathematics courses intended that learners have the following capabilities. 1) Understand the concepts of mathematics, describes the relationship between concepts or algorithms in a flexible, accurate, efficient, and precise in troubleshooting. 2) Using the reasoning in the patterns and nature, perform mathematical manipulation in making generalizations, compile evidence, or explain mathematical ideas and statements. 3) Solve problems that include the ability to understand the problem, devised a mathematical model, solve the model and interpret the obtained solution. 4) Communicate ideas with symbols, tables, diagrams, or other media to clarify the situation or problem. 5) Have respect for the usefulness of mathematics in life, which is curious, attention, and interest in studying mathematics, as well as a tenacious attitude and confidence in solving problems. Meanwhile, according to Sriyanto [8] states that in general, the purpose given math in school is to help students prepare themselves to be able to face changing circumstances in life and in the world is always evolving, through the practice of acting on the basis of thinking logically, rationally and critically, and prepare students to use mathematics and mindset of mathematics in everyday life and in studying various sciences. The purpose of mathematics education in schools more emphasis on the structuring of reason, the base and the formation of attitudes, and skills in the application of mathematics.

There are Characters values that can be improved through the study of mathematics: 1) The character of discipline in learning mathematics is someone expected to work regularly and orderly in using rules and concepts. 2) Character honestly can constitute the soul of a person, that person will not easily believe in the
issues that are not clear before any evidence. 3) Characters can form an attitude of hard work no quitter continue to strive to produce the correct answer, using rules and concepts. In mathematics, concepts should not be violated because it can lead to wrong meaning. 4) The characters creative in solving problems will be used to bring up creative ideas that can help him live a life more effectively and efficiently. 5) Raising curiosity in mathematics will continue while continuing to learn in a continuous, continuously interlinked information surrounding the environment, thus making it rich in insights and knowledge. Curiosity allows one to examine the interrelationships, differences and analogies, so it is hoped to be a good problem solver (able to solve problems well), 6) independent character in the face of challenges, issues that require us to find a solution or solutions. For that learner should be able to have an attitude that does not easily rely on others, but cope independently to complete the tasks faced by both, 7) Communicative because of the mathematics is a language, so that one should be able to communicate both orally and in writing, so that the information submitted can be known and understood by others. 8) The habit of discipline in thinking that formed in learning mathematics spawned an attitude of responsibility for the implementation of the obligations that should be done, whether the responsibility of self, community, country and God Almighty.

CONTEXTUAL LEARNING

Contextual learning has grown in developed countries with different names. In Netherland evolved with the name Realistic Mathematics Education (RME), which explains that the study of mathematics should be linked with the real life of students. In the United States developed the name Contextual Teaching and Learning (CTL) which essentially helps teachers to relate the subject matter to real life and motivate students to relate the knowledge they have acquired with their lives. Meanwhile in Michigan also developed the Connected Mathematics Project (CMP), which aims to integrate the mathematical idea into a real-life context in the hope that students can understand what they learn and easy. Definition of learning written by Johnson [9] formulating knowledge CTL as follows:

"The CTL is an educational process that aims to helps students see meaning in the academic material they are studying by connecting academic subjects with the context of Reviews their daily lives, that is, in the context of, social open, and cultural circumstances. To achieve this aim, the system encompasses the following eight components: making meaningful connections, doing significant work, self-regulated learning, collaborating, critical and creative thinking, nurturing the individual, reaching high standards, using authentic assessment ".

The quote above implies that the CTL system is an educational process that aims to help students see meaning in the lesson material they are learning by plugging in everyday contexts, namely the environmental context of personal, social and cultural. To achieve these objectives, the CTL system will guide students through the eight main principles CTL namely: conduct a meaningful relationship, doing meaningful work, set up a way to learn themselves, cooperate, think critically and creatively, nurturing/caring for students' personal, achieve high standards and using authentic assessment.

Educational integration of cultural values and national character in the learning process begins with selecting, developing, and practice learning activities that students practice their character values that are targeted. Subjects in the Mathematics Content Standards SMP stated that the principles of principle in Contextual Teaching and Learning (CTL) are recommended for application at all stages of learning in mathematics. If the observed charge a learning process that is managed CTL, namely the following activities: (1) constructivism, (2) inquiry, (3) questioning, (4) a learning society, (5) modeling, (6) reflection, (7) authentic assessment, then CTL has great potential to facilitate the integration of character values in students.

Learners in contextual learning as social being need others to support the success of their lives, so they need to cooperate with others. Eliasa [10] states that cooperation is a situation when a group of people working together to achieve a particular goal. Cooperation (collaboration) is different from working together (work together) in which several people working together in the same place but with a different job and work a person does not affect other jobs. Similarly, occurred in the nation's history, every achievement of a nation can only be achieved through cooperation. In addition to learning contextual inquiry also give priority to activities that encourage students to understand mathematical concepts which correspond to conceptual learning. This concurs with Simon [11] which states the conceptual learning of mathematics to describe the emerging approach to instruction aimed at encouraging understanding of specific mathematical re-creation of mathematical concepts without depending on the success of the students to solve new problems.

Thus the concept of contextual learning is learning that help teachers link between what is taught to the real situation of students. Besides contextual help students find meaning in their lessons by connecting the material in the context of daily life. They make the important relationships that produce meaning by implementing self-regulated learning, working, creative and critical thinking, respect for others, achieve high standards, and
participate in authentic assessment tasks.

**INTEGRATION OF VALUES THROUGH MATHEMATICS CHARACTER LEARNING CONTEXTUAL**

Integrating character values in each subject began to inculcate values among students about the importance of character education, so expect every student is able to internalize those values into the day-to-day behavior day through a learning process, which takes place both inside and outside the classroom. Basically, learning activities, in addition to making learners master the competencies (matter) is targeted, it is also designed to make the students know, realize, and value and make the behavior of character values developed in mathematics learning should still be based on universal values. Through these learning activities, teachers can develop character values such as honesty, democracy, responsibility, self-discipline, hard work, creativity, curiosity to know and so on. Integrating the values of character education can be reached by following steps: 1) Assess Competency Standards (SK) and the Basic Competency (KD) on the Content Standards (SI) to determine whether the values of the culture and character of the people listed were already covered therein; 2) Using cultural values and characters that show the link between SK and KD with a value and an indicator to determine the value of which will be developed; 3) To embody the cultural values and character it into the syllabus; 4) To embody values that are already listed in the syllabus into the RPP; 5) Develop a learning process learners are active that allows learners have the opportunity to internalize the values and show it inappropriate behavior; 6) Provide assistance to learners, whether it difficult to internalize the values and to show it in behavior.

Various efforts can be made by math teachers to develop the character values. Teachers should be able to create a learning environment that supports the implementation of character education, one is to study CTL. Through this study are expected the development of character values such as discipline, responsibility, curiosity, creativity and others. Planting of these characters is done continuously so that is expected to become a habit. Development values and indicators of character education in the subjects of Mathematics can be specified as in the following table:

**TABLE 1. Values and Indicators Application of Character Education in the Process of Learning Mathematics Through CTL**

<table>
<thead>
<tr>
<th>Values Character</th>
<th>Process and Attitudes Teachers in Developing Character Students</th>
<th>Components applied in CTL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Honesty</td>
<td>1. Warns his students cheating while working on an assignment or during replication/exam.  2. Provide opportunities for students to express opinions about a subject of discussion  3. Prohibition carries communication facilities at the time of repeat exams or during the learning.  4. Transparency grade ratings.</td>
<td>1. Learning Community  2. Authentic Assessment  3. Reflection</td>
</tr>
<tr>
<td>Democratic</td>
<td>1. Invite all students to work in groups regardless of race, religion, race, class, social status, and economic status.  2. Giving equal attention to all students.  3. Provide opportunities for students to dissent  4. Appreciate what students without differentiates ethnicity, religion, race, class, social status, and economic status.</td>
<td>1. Learning Community  2. Modeling  3. Reflection</td>
</tr>
<tr>
<td>Discipline</td>
<td>1. Teachers go to class on time.  2. Reprimand of students who violate the rules in the classroom (such as eating in class, talking, bullying, and wandering, and so on).  3. Check for the presence of students.  4. Using the appropriate teacher uniform rules.</td>
<td>1. Modeling  2. Reflection</td>
</tr>
<tr>
<td>Thorough</td>
<td>1. When you start a lesson, the teacher writes the purpose of learning / KD and the title of the material to be studied.  2. Ask the students are not in a hurry to work on</td>
<td>1. Modeling  2. Inquiry  3. Reflection</td>
</tr>
</tbody>
</table>
1. Ask students recheck the answer sheets before being collected.
2. Knowing the level of students' understanding of the material.

Hard Work
1. Familiarize all the hard work the students do all the tasks assigned completed well on time set.
2. Encourage students to study harder
3. Provide opportunities for students to search for information about the subject matter to a friend, teacher or other parties.
4. Allowing students to express their opinions during class discussions.

Creative
1. Asking questions with respect to a subject to provoke the idea of students.
2. Providing a challenging task emergence of thinking creative.
3. Apply a variety of learning methods.
4. Using a variety of assessment tools.
5. Using a variety of instructional media.

Independent
1. Creating a classroom atmosphere that provides the opportunity for students to work alone
2. Ask students to do their own tasks individual given
3. Monitor the students work independently
4. Provide opportunities for students to determine their own discussion groups.
5. Ask students do the problems on the board.

Curiosity
1. Provide an opportunity for students to ask the teacher or friend about math material.
2. Asking questions regarding the material
3. Creating a classroom atmosphere that invites curiosity.
4. Encourage students to seek information from various sources.

Responsibilities
1. Familiarize students to do the exercises given.
2. Allowing students to dare to account for his opinion.

The cultivation of character education by teachers can be demonstrated by giving exemplary that reflects the values of characters that want to be implanted to the students in the learning process. Characters values that can be indicated by the teacher, for example, arrive on time (time discipline), hard working, polite, honest, and so forth. While the character values of students can be seen from a variety of student activities for example when the teacher ordered the students do the problems, students were working hard to solve these problems. When there is a homework assignment, if the student forgot to do or have difficulty then would tell the truth to the teachers. Character education is not only limited to the provision of material or without their knowledge figure or role model as an example, as described Prabowo and Sidi [12] The character education should pay attention to three important things that are exemplary, habituation, and correction.

INTEGRATION OF VALUES OF CHARACTERS DEVELOPMENT PLAN OF MATHEMATICS IN LEARNING (RPP)

In mathematics learning should be teachers, educational researchers, and instructional designers to share their knowledge and understanding to improve the teaching and learning of mathematics. Teachers work to help students learn; Researchers studying how people learn and teach mathematics, and designers develop teaching
materials to support teachers and students. Each community (teachers, researchers, and designers) develop methods and expertise. So that it can contribute a lot to the world of education. As revealed by Magidson [13] in his research:

"Within mathematics education, classroom teachers, educational researchers, and instructional designers share the common goals of understanding and improving the teaching and learning of mathematics. Teachers work to help students learn; Researchers study how people learn and teach mathematics, and designers develop instructional materials to support teachers and students. Each community (of teachers, of researchers, and of designers) develops its own perspectives, methods, and expertise ".

From these expressions indicate the importance of cooperation to design an instructional design so that teachers will be able application effective learning model. Effective learning models by taking into account the learning plan that starts from the syllabus of learning which followed the principles of the formulation as described in the lesson plan in accordance with the principles of composition. Further, in Processing Standards stated that the implementation of learning is the implementation of the RPP. Learning implementation includes the introduction, core activities, and closing activities. Based Processing Standards, content, and manner of learning activities that should appear in each stage as well as the alternative value of characters that can be implanted and developed in students.

Learning Implementation Plan (RPP) prepared based syllabus developed by the school. RPP, in general, is a translation of the syllabus that describes the procedures and organizing learning plan to achieve the basic competencies specified in the Content Standards. RPP is used to guide teachers in implementing the learning, whether in the classroom, laboratory and/or field. As has been commentary in Processing Standards, every teacher in the educational unit obliged to prepare lesson plans for each Basic Competency (KD) completely and systematically with the aid of learning takes place in an interactive, inspiring, fun, challenging, motivating students to actively participate and provide space sufficient for innovation, creativity, and independence in accordance with their talents, interests, and physical and psychological development of students.

Here internalisation mathematical character values in the development of the RPP on the material grade circle VIII Junior High School (SMP) through contextual learning (CTL):

**PLAN OF LEARNING (RPP)**

| Schools          : ............ |
| Subject          : Mathematics |
| Class/Semester   : VIII / Even |

Competency Standards: 4. Determine the elements, part of the circle and size.

Basic Competence : 4.1. Determine elements and parts of the circle

Indicators : 1. Mention the elements and parts of the center circle circles, radius, diameter, arc, chord, segment and segment

allocation of time : 2 x 40 minutes (1 meeting)

**A Learning Objectives**

Students can mention the elements and parts of the circle: the circle's center, radius, diameter, arc, chord, segment, and segment

**B. Teaching Materials**

elements and parts of the circle center of the circle, radius, diameter, arc, chord, segment and segment

**C. Learning method**

Learning Model: Contextual Learning Methods: FAQs, demonstrations, assignments

**D. Learning Steps**
TABLE 2. Description Learning Activities with Contextual Component and Characters Mathematics

<table>
<thead>
<tr>
<th>Description Learning Activities</th>
<th>Contextual Components</th>
<th>Characters Mathematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning Steps:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Orientation students on the issue.</td>
<td>a) Inquiry</td>
<td>a) Democratic</td>
</tr>
<tr>
<td>a) Motivate students (focus student attention) by asking responsibilities pertaining to the circle problem in everyday life.</td>
<td>b) Constructivism</td>
<td>b) Thorough</td>
</tr>
<tr>
<td>b) Communicating the learning objectives and logistics are used.</td>
<td>c) Learning Community</td>
<td>c) Responsibilities</td>
</tr>
<tr>
<td>c) Delivering a few things to the students, for example, students are expected to do the work in groups, to investigate a problem that has no absolutely correct answer, express their own opinion, and presented the results of which are equipped with the group’s work.</td>
<td></td>
<td>d) Curiosity</td>
</tr>
<tr>
<td>2. Organize students to learn</td>
<td>a) Inquiry</td>
<td>e) Independent</td>
</tr>
<tr>
<td>a) Teacher divides the students into groups of 4-5 people.</td>
<td>b) Constructivism</td>
<td></td>
</tr>
<tr>
<td>b) Teacher gives Student Worksheet containing the problem created by the students in groups.</td>
<td>c) Learning Community</td>
<td></td>
</tr>
<tr>
<td>c) Students work in groups LKS 4.1.1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) The teacher facilitates students express logistics used in solving problems.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) Teachers help students to share the task of solving problems.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Guiding the investigation group</td>
<td>a) Inquiry</td>
<td>a) Creative</td>
</tr>
<tr>
<td>a) Teachers encourage students in the investigation group.</td>
<td>b) Questioning</td>
<td>b) Responsibilities</td>
</tr>
<tr>
<td>b) Teachers always ask questions that make students think about the feasibility of solving the problem or to explore what students think.</td>
<td>c) Creative</td>
<td>c) Honesty</td>
</tr>
<tr>
<td>4. Develop and present work</td>
<td>a) Modeling</td>
<td>d) Discipline</td>
</tr>
<tr>
<td>a) Teachers help students plan and prepare this presentation to the class.</td>
<td>b) Inquiry</td>
<td>e) HardWork</td>
</tr>
<tr>
<td>b) The teacher asks the groups to present the results.</td>
<td>c) Questioning</td>
<td></td>
</tr>
<tr>
<td>5. Students and teachers to reflect</td>
<td>a) Reflection</td>
<td></td>
</tr>
<tr>
<td>a) Through teacher questioning guide students to make a summary of the activity;</td>
<td></td>
<td>a) Honesty</td>
</tr>
<tr>
<td>b) The teacher gives the task (PR)</td>
<td></td>
<td>b) Responsibilities</td>
</tr>
<tr>
<td>Assessment:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Assessment:                    | a) Creative        | b) Responsibilities |
|                                | a) Honesty         | c) Thorough         |
|                                | a) Democaratic     | d) Creative         |
|                                |                       |                        |
assessment tools that can be used are as follows:
1. Sheet
2. Portfolio lab, lab results can be added to the portfolio, as well as the completion of the group members can be included in the portfolio.
3. Informal assessment is always done when students conduct an investigation and the teacher asked a number of questions.

<table>
<thead>
<tr>
<th>a) Authentic Assessment</th>
<th>a) Honesty</th>
<th>b) Discipline</th>
<th>c) Responsibilities</th>
</tr>
</thead>
</table>

Assessment technique that can be used to determine the character development is observation or observation, peer assessment, and self-assessment. (Ministry of Education) Preparation instrument also preceded by arranging the first grating. Values are expressed qualitatively, eg:

**BT**: Not Seen (if the student has not demonstrated early signs of behavior/character expressed in the indicator).

**MT**: From Visible (when students were beginning to show early signs of behavior/character expressed in the indicator but not consistently).

**MB**: Start Developing (when students are already showing various signs of behavior/character expressed in indicators and began to consistently).

**MK**: entrenched (if the student continuously exhibits behavior/character expressed in the consistent indicator).

These values are described in the indicators. As an example of an indicator for the character values curiosity and independence as follows:

1. Character curiosity has indicators: ask the teacher or friend about their subject matter, trying to find sources to learn about the concept / studied problem / found, trying to find a more challenging problem, and is active in seeking information.
2. Characteristics of independence have indicators: do yourself a task which it is responsible, had her conviction can resolve problems, and have confidence in her abilities. These indicators are used to develop instruments of observation of the expected value character.

**Values Characters Mathematics and Contextual Learning**

The integration of mathematical values in the process of learning mathematics through contextual learning makes the students not only master the competencies that are targeted, but also make the students familiar with, be aware, caring, and the values and makes the behavior consciously or not do it with sincerity and sincerity in public life. Applications of mathematical values with contextual learning is not only developing kognitive intelligence but pressing to awareness to maintain spiritual moral values integrated in mathematical lesson materials.

Research conducted by Fadillah [14] states that Along with the development Mathematics, then a necessary Deliberate learning Incorporating learning values Character into planning Learning so the goal for Shaping the character of students through Learning mathematics can Achieved. This kind of learning called learning by design. Math learning with Open ended approach along with learning stages are expected Can shape student character between other: responsible, Discipline, hard work, creative, independent, Curiosity, respect and Democrats.

Moreover, there are many resources (books and journal) discussed about values characters mathematics and contextual learning that conducted separately to each skill such as [2], [6], [12], [15], [16], and [17]. In the study, the character values examined were the general character values contained in the general learning as well as the values of the mathematical characters. The values of mathematical characters will be successfully applied by students if teachers as educators can provide exemplary, maximizing the development of professionalism in the field of science which leads to the formation of attitudes based on values Religious, and grow the cultivation of spiritual moral awareness equally in learning materials. Further research needs to be done to determine the effectiveness of contextual learning in developing the values of math characters at other school levels.
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