

## Mathematic Narrative Problem for Elementary School Students in Rural Area: A Character Value Analysis

Atikah Anindyarini<sup>1</sup>, Muhammad Rizqi Romadlon<sup>2</sup>

<sup>1,2</sup>Indonesian Language Education of Teacher Training and Education Faculty of Sebelas Maret University

Corresponding email: [atikahanindyarini@gmail.com](mailto:atikahanindyarini@gmail.com)

### ABSTRACT

There are some problems in mathematic narrative problem learning in rural Elementary Schools. The problems derive from students and teachers. Many students still find difficulty in working on mathematic narrative problem. It is due to the language used in the narrative problem is considered as less familiar and less contextual to students. The problem the teachers encounter is that they are less accustomed to develop their own mathematic narrative problem. Meanwhile, through developing their own mathematic narrative problem, teachers get much benefit. The benefit includes more varying, newer and contextual material and more joyful learning process. A mathematic narrative problem written in understandable language and attractive story will make the students interested in reading, understanding its meaning, and then working in more easily. Mathematic narrative problem should be developed by integrating character education into it, so that the students can make the good characters of the figure told the role model. The good mathematic narrative problem is developed consistent with the norms of mathematic narrative problem development. However, there are still many teacher-made mathematic narrative problem developed regardless the norms. Particularly, there are still mathematic narrative problems not integrating yet the character education value into it.

**Keywords:** mathematic narrative problem, teacher-made, familiar, contextual, character education value

### 1. Introduction

Mathematics is a science playing an important role in life. Through a good Mathematic ability, human being will be trained more to think logically, systematically, and critically. However, in reality, teachers and students still face many problems in Mathematic learning, particularly in Mathematic narrative problem.

Khasanah's (2015) study found that the difficulty the Junior High School students face in solving Mathematic narrative problem lies on language aspect. Some students show the error in reading the problem leading to interpretation error, the difficulties in understanding the less familiar language, in identifying the intention of problem and in retelling the problem with their own language.

In line with this, Sepeng and Sigola (2013: 331) in Khasanah (2015) described that the students find difficulty in reading and understanding the problem with mathematic language. Mathematics, according to Aningsih (2012:

121), is categorized as language, because an individual should be able to communicate abstract idea to logic symbolic concepts integrated into mathematical model.

The factors contributing to the students' incapability of telling story that the students do not understand the meaning of problem, the students cannot connect the language understanding to the known situation, and the students are not skilled in communicating ideal orally.

Meanwhile, Raharjo, Ekawati, & Rudianto (2009: 2) explained that narrative problem in mathematic problem is related to real life and included into narrative (verbal) problems so that narrative problem is the one presented in the form of short story. In line with this, Chriswijaya (2011: 9) stated that narrative problem is the one presented in the form of short story consisting of some sentences. The story presented can be daily life problem or other problems. The length of sentence used to create narrative problem can usually affect the certain problem level.

To clarify this, the example of non-narrative problem changed into narrative problem for the 4<sup>th</sup> graders is presented below.

Non-narrative problem:  $16,754 + 15,459 = \dots$

If it is presented in narrative problem, it becomes

*Mr. Harjo and Mr. Diman are palm oil farmers. Mr. Harjo has planted 16,754 palm oil trees. Mr. Diman plants 15,459 palm oil trees. How many palm oil trees do Mr. Harjo and Mr. Diman plant?*

Considering some definition of narrative problem above, it can be concluded that mathematic narrative problem is the mathematic problem expressed in language and short story media. The textual structure of narrative problem contains characterization, description of setting, and problem building. For more details, in the following section, the textual structure of mathematic narrative problem will be explained.

Regarding Mathematic narrative problem, from the result of interview with the Chairperson of Parang Kusumo Cluster, Mojolaban Sub District of Sukoharjo, Mr. Drs. Suroto, it can be found that the problems the teachers encounter in his built cluster is the ones concerning mathematic narrative problem lesson. It is particularly encountered by the high-grade teacher (grades 4, 5, and 6). The problems included teachers' less insight into how to create a good Mathematic narrative problem so that they rely more on the problems existing in Mathematic textbook, particularly in procuring narrative problem. Meanwhile, the problem the students found regarding Mathematic narrative problem is that the students find difficulty in reading and understanding the problem with mathematic language. For that reason, teachers should practice to with Mathematic narrative problem corresponding to the rules of creating a good Mathematic narrative problem. By creating good and interesting Mathematic narrative problem, the students are expected will learn mathematic more joyfully and will work on Mathematic narrative problem more easily.

Considering the problems above, this article will describe the Mathematic narrative problems made by elementary school teachers in Parang Kusumo Cluster of Mojolaban Sub District of Sukoharjo Regency. Some teacher-made Mathematic narrative problems are the result of a service activity to society (*Pengabdian Masyarakat*) in 2016 by Teacher Training and Education Faculty Team of UNS. A Study on teacher-made Mathematic narrative problem will be focused on Mathematic narrative problems that have integrated character education value into it.

### Textual Structure of Narrative Problem

Despite its more concise form, narrative problem is a type of discourse not different from other. There are three elements in narrative story:

1. **Opening**, the element of narrative problems containing characterization, description of setting, and problem building. As it serves to introduce the context of story, commonly this element of problem should actually contain the narrative elements and be positioned in the beginning of problem. This element should contain the first number, or may not contain number.
2. **Event (occurrence)**, the element of problem culmination containing the event resulting in the change of early situation in opening element. It is put after the opening element and contains the first, second number, and so on.
3. **Question**, the element questioning the effect of event element. This element is put after the event element.

The position of narrative problem can be seen in the following examples.

**Narrative Story:**

*Mrs. Ema cooks a large enough cake. The cake is cut into 16 equal-sized slices. When they have come back from school, Ema and her sister eat 4 slices. How many slices are left?*

In textual structure of narrative problem, there is opening, the element of narrative story containing characterization, description of setting, and problem building. In line with its function, this part introduces the context of story, so that this element should actually contain narrative element and be put in the beginning of problem.

Regarding narrative, teachers often integrating story into their learning will of course make learning more joyful. Because basically children like story, in Mathematic learning, students will be more interested in Mathematic narrative problems containing the story that will stimulate their curiosity. The advantage of it is that the students will understand the meaning of Mathematic narrative problem's content more easily, so that the students will work on it more easily.

As mentioned earlier, in the opening element of textual structure of Mathematic narrative problem, there are characterization, setting and problem building. It is just like the intrinsic elements contained in short story. Tarigan (1086) stated that short story is a complete, concise, and dense story work, presenting an emotion and interesting impression. Despite its conciseness, short story contains complete elements composing story including theme, setting, plot, characterization, coherence, and storytelling style. It is replete with story, but the plot is single, the number of character is limited, containing one theme, the setting does not need special details, everything told serves to support the theme pertaining to a little part of life experience.

The good short story, of course, contains the good moral message the writer wants to convey to his/her reader. The good writer will always think of how his/her work can inspire, motivate, and give positive energy to its readers. Just like short story, not only Mathematic narrative problem is expected to contain the mathematic questions but also character education value should be integrated into it. Relevant to this statement, this article will elaborate the character education values contained in teacher-made

mathematic narrative problem.

### The Integration of Character Education Value into Mathematic Narrative Story

The term character is the one often used in the last five years. This term is often connected to the terms noble character, ethics, moral, or value” (Lickona, 1991). Good character, according to Lickona, includes moral knowing, moral feeling and moral behavior. In other words, the character refers to a series of knowledge (cognitive), attitude, motivation, and behaviors.

Indonesian government has formulated policy in the attempt of nation character development. In the National Policy for Nation Character Development in 2010-2025, it is confirmed that character is the product of the integration of four elements: Spiritual and emotional development, intellectual development, Physical and kinesthetic development, and Affective and Creativity development. Spiritual and emotional development is related to feeling, attitude, and belief/faith; intellectual development pertains to the reasoning process in order to look for and to use knowledge critically, creatively, and innovative; Physical and kinesthetic development is related to the process of perceiving, preparing, imitating, manipulating, and creating the new activity following sportiveness; and Affective and Creativity development is related to willingness and creativity reflected on care, imaging, and novelty creation.

There are 18 values in cultural education and nation character development developed by National Education Service. Since 2011, all education levels in Indonesia should insert character education in its education process. Character education values include: 1. **Religiosity**, obedient attitude and behavior in implementing the religion tenet held on, tolerance to the implementation of other religions’ worship, and living in concord with other religions’ adherents; 2. **Honesty**, the behavior based on the attempt of making an individual the always reliable one in saying, action and working; 3. **Tolerance**, attitude and action respecting others’ different religion, race, ethnic, opinion, attitude and action; 4. **Discipline**, the action showing orderly and obedient behavior to various provision and rules; 5. **Work hard**, the action showing orderly and obedient behavior to various provision and rules. 6. **Creativity**, thinking and doing something to provide a new way or product of something possessed 7. **Independent**, attitude and behavior not easily dependent on others in completing assignments (duties). 8. **Democratic**, the way of thinking, treating and acting that assess that an individual has equal right and obligation to others; 9. **Curiosity**, attitude and action always attempting to find out more in-depth and broadly something he/she learns, sees, and heard; 10. **Spirit of Nationality**, the way of thinking, acting, and having insight putting the state and nation’s interest above individual and group’s interest; 11. **Love motherland**, the way of thinking, acting and having insight putting the state and nation’s interest above individual and group’s interest; 12. **Appreciating achievement**, attitude and action helping an individual to result in something useful to society, and recognizing, and respecting others’ success. 13. **Friendliness/communicativeness**, attitude and action helping an individual to result in something useful to society, and recognizing, and respecting others’ success; 14. **Love Peace**, attitude and action helping an individual to result in something useful to society, and recognizing, and respecting others’ success; 15. **Reading preference**, the habit of allocating time to read various reading sources giving him/her merit; 16. **Care about Environment**, attitude and action

always preventing the damage of living environment from occurring surrounding and developing the attempt of improving the occurring natural damage; **17. Social Care**, attitude and action always want to help others and those needy; and **18. Responsibility**, an individual's attitude and behavior to undertake his/her duty and obligation that he should do to himself or herself. Society, (natural, social, and cultural) environment, state and Almighty God. Teacher of course has an obligation to develop those character education values to the students.

Character education should be a national movement making the school (education institution) an agent to build the students character through learning and modeling. In character education, not only teacher introduces and teaches the wrong and the right to children, but also the children should be trained to accustom themselves to do goodness anywhere. The most effective way to implant good habits to children at school is through teachers' role modeling.

The application of character education can be done in learning process at school. The integration of character education into all of subject learning processes at school now becomes one of widely applied models. This model is accomplished with a paradigm that all teachers are character educators. All subjects are assumed to have mission in building good character of the students (Mulyasa, 2011: 59).

Equally important, to support the character education program, teacher should prepare teaching material to be used in the learning process. Teaching material usually taken from textbook should be prepared by revising or adding character values into the discussion of material contained in it. The books existing so far have met the criteria of teaching book feasibility, but the material contained has inadequately integrated character education. Thus, teaching material to be used in learning process to support character education program can be done by means of adding, adapting or revising its material substance (Marzukui, 2016). In line with this, Mathematic teachers should create their own Mathematic narrative problem by integrating character education into it.

Raharjo et al. (2009) stated that there are some advantages obtained from teachers creating their own mathematic narrative problem:

1. Textbook no longer become the central point of learning, so that the learning materials are more varying.
2. The teacher-made narrative problems can be the more interesting material compared with those contained in textbook. It is because the teacher-made narrative problems are new.
3. The creation of narrative problem by teacher can result in joyful circumstance when teacher can accommodate the students' interest and competency.
4. With their self-made problem, teachers will deliver the problem more creatively and innovatively to the students to support the achievement of learning objective.

### Teacher-Made Mathematic Narrative Problems

Here are the examples of teacher-made mathematic narrative problems into which the character education values have been integrated.

1. *Mrs. Ana pays electricity account routinely every month. The payments of Mrs. Ana's electricity account in the last 6 months (in rupiahs) are 95,000, 80,000, 100,000, 100,000, 90,000, 80,000. On average, how much the electricity account*

- should Mrs. Ana pay every month? (**disciplined/ responsible character**)
2. Mr. Harto, Mr. Budi, and Mr. Adi have different patrol schedules. Mr. Harto patrols once in 4 days, Mr. Budi patrols once in 6 days, and Mr. Adi patrols once in 8 days. When they patrol together on Saturday, What day will they patrol together again? (**disciplined/ responsible character**)
  3. In the activity “Gerakan Sejuta Pohon (A Million-Trees Action)” The students of SD Tunas Jaya plant rambutan and mango trees. The ratio of rambutan-to- mango trees is 3:5. The number of rambutan trees is 160. How many mango trees do the students of SD Tunas Jaya plant?
  4. Ani waters rose flower once in 2 days. Adi waters jasmine flower once in 3 days. Fadma waters cananga (kenanga) flower once in 5 days. When they water the flowers together on Sunday, when will they water the flowers together again? (**care-about-environment character**).
  5. Mr. Budiman contributes 100 books to Mobile Library. Out of the books contributed, 60% are Indonesian Language textbook, 25% are History book, and the rests are story books. How many story books are contributed to mobile library? (**social care character**).
  6. Mr. Muslim gives aid to the orphans including 60 writing-book packages, 120 pencils, and 75 bags. Every child receives equal aid. What is the most number of orphan children receiving the contribution? (**social care character**)
  7. Teacher will give prize to his high-performing students. The prizes distributed includes: 72 writing book, 16 pencils, and 20 ballpoints. Every student get equal number of prize. How many is the content of respective prize given to the high-performing students? (**character of appreciating achievement/ performance**).
  8. Adi is touring to Pulau Seribu (Seribu Island). He practices diving. Originally he is at -57 m beneath sea surface. Then he goes down about 15 m farther. How many meters is Adi’s distance from sea surface now? (**curiosity character**)
  9. Bayu visits library 4 (four) times a week. Tia visits library 6 times a week. If on February 17, 2016 they visit the library together, when will they visit the library together for the second time? (**reading preference character**)
  10. Mr. Joko is a hard-worker egg seller. Every day Mr. Joko sells 7 egg boxes. Every box contains 40 eggs. How many eggs does Mr. Joko sell for 8 days? (**hard work character**)

The teacher-made mathematics problems above have integrated character value education. There are **discipline or responsibility, care about environment, social care, appreciating achievement, curiosity, reading preference, and hard work characters**.

Before creating mathematic narrative problem, teacher should consider the rules (norms) of creating good Mathematic narrative problem and attempt to create the one integrating character education into it. Through integrating character education values into it, the children will indirectly learn the moral message contained in Mathematic narrative problems. Moreover, the children are expected to imitate the good character from the character told in the narrative problem. As Licona suggests, children not only find out goodness but also love goodness and love to do good deed in their daily life.

## 2. Conclusion

Character education program is not only the government's duty. But it is also the duty of all of us including teachers as the agent of change. In realizing character education, it is well established that we really expects the role of school, particularly teacher. It is because teachers have much time to interact with students and many opportunities to implant and to teach character education values to the students.

The implantation of character education values can be integrated into all lesson materials including Mathematics, particularly mathematic narrative problems. The good narrative problem, in addition to be made by considering the norms (rule) of creating good Mathematic narrative problem, is also created by integrating character education values into it. In this way, the children can indirectly learn good characters from the character told in the narrative problem and they can apply it in their daily life.

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