Design of Mathematics Learning Framework Based on the Perspective of the Qur'an

Rancangan Kerangka Pembelajaran Matematika Berdasarkan Perspektif Al-Qur'an

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Article History:
Received: 30-08-2022; Received in Revised: 07-09-2023; Accepted: 16-10-2023

Abstract
The concept of inspiring, communicative, and interesting learning based on verses of the Qur'an is expected to be able to foster children’s joy in learning mathematics. This is literature research that analyzes and describes the design of a mathematical learning framework based on the perspective of the Qur'an. Research data sources consist of references or literature related to mathematics learning from the perspective of the Qur'an, mainly focused on algebraic concepts such as numbers, various numbers, and number operations. In addition, one expert in the interpretation of the Qur'an was involved as a source of data. Data analysis using content analysis techniques. The results showed that in the Qur'an, various mathematical concepts provide an overview of algebra, namely about numbers, various numbers, and number operations. In addition, there are also various learning activities, including the preparation, implementation, and evaluation stages of learning activities.

Keywords: Al-Qur'an Perspective; Learning Framework Design; Mathematics Learning.

Abstrak

Kata Kunci: Rancangan Kerangka Pembelajaran; Pembelajaran Matematika; Perspektif Al-Qur'an.

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Knowledge is important in the process of life as one of the sources for finding experience because, through knowledge, we can manage the intellect to think about the knowledge gained. The Qur'an is very concerned with the development of science and deals with many subjects of interest to science. Mathematics is one of the knowledge that is part of solving the problems of social life. Through mathematics, a person can manage the thought process to achieve the main goal of problem-solving. According to Abdussakir, some definitions of expert opinions are as follows: 1) mathematics is a science related to numbers; 2) is a quantity; 3) is a relationship; 4) is abstract; 5) is a deductive process; and 6) is a logical structure. The basis of mathematics are contained in some of the great works of mathematical scientists and cannot be separated from the guidance of Muslims in the Qur'an. Several mathematical concepts are found in the Qur'an and have a very close relationship. There many of mathematics in Qur'an such addition, minus, multiplication, division, and ratio.

Some studies that have examined the integration of mathematics with Islam are as follows: (1) integration of number verses in the Qur'an with Islamic values; (2) Learning mathematics from the perspective of the Qur'an; 3) Development of Islamic worksheets (LKS) in mathematics learning; 4) Application of the Qur'anic perspective learning concept in mathematics

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learning⁹; and 5) Analysis of mathematical concepts in the Qur’an¹⁰. It can be known that research on the integration of mathematics with Islam has been very numerous and even diverse. However, if examined more deeply research on how to design a mathematical learning framework based on the perspective of the Qur’an, is still lacking.

Based on the results of initial observations made by researchers through Google Forms distributed throughout Indonesia filled by mathematics teachers regarding the design of a mathematics learning framework based on the perspective of the Qur’an, it is known that 51 respondents who answered the survey came from various regions of Indonesia, as shown in Figure 1.

![Figure 1. Origin of Respondents](image)

The most respondents from North Sumatra was 31.4% (16 people) and Aceh 29.4% (15 people). Their place of duty, as many as 78.4% (41 people) served in SMA/MA, 13.7% (6 people) in SMP/MTs and 7.8% (4 people) served in SD/MI. For more details, see Figure 2.

![Figure 2. Respondent’s Place of Duty and Responses](image)


Based on Figure 2, it is known that 72.5% (38 people) have never done or designed a mathematics learning framework based on the perspective of the Qur’an, and 27.5% (11 people) have already designed the learning framework.

Mahdalena stated that there is a concept of numbers, the concept of shape (geometry), the concept of connection, and the concept of number operations in the Qur’an, and she commented on the application of mathematics in human life. Mulim Nu’man explained mathematics learning based on the perspective of the Qur’an, which contains activities as contained in the verses of the Qur’an, namely learning through activities 1) observing, reading, and thinking. 2) Question and answer. 3) Experiment. 4) Discussion. 5) Assignment. 6) Troubleshooting. 7) Reflection. Furthermore, Iis Nilam Cahaya, entitled The Integration of the Concept of Mathematical Number Operations in the Qur’an, states that several verses of the Qur’an imply number counting operations, which include addition, subtraction, multiplication, and division, as well as the concepts of fractional numbers, unit numbers, tens, hundreds, and even up to thousands. In contrast to these three studies, this study, in addition to classifying Qur’anic verses related to mathematics learning, also compiles and describes the design of a mathematical learning framework based on the perspective of the Qur’an, which will later become a reference guide for readers to conduct mathematics learning based on the perspective of the Qur’an.

Therefore, by developing inspirational, easy, communicative, and interesting learning concepts based on the verses of the Qur’an, it is hoped that the joy of children and the next generation will grow to be more enthusiastic about learning mathematics. Mathematics learning does not have to be displayed with a complicated impression, but there needs to be simple, interesting, and contextual displays of mathematics learning.

Method

This research uses qualitative research with library research methods. The source of research data consists of references to libraries available in the campus environment and also literature or journal journals related to mathematics learning from the perspective of the Qur’an, mainly focused on algebraic concepts such as numbers, various numbers, and number

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12 Nu’man, “Pembelajaran Matematika Dalam Perspektif Alquran.”

operations. The analysis of research is carried out by content analysis, which is to analyze information that has been documented in the form of recordings, images, and writing. The results of the study were obtained through stages of data analysis techniques:

a) **Data reduction.** In this process, researchers chose the main things that are the focus of research by collecting data by searching and selecting Qur’anic verses that contain algebra and interviewing one exegete. The process of searching for this data involves references from libraries, Qur’anic exegesis, and journal journals related to mathematics learning and Qur’anic perspectives. While interviewing, interpreters aim to check the results that have been found so as not to misunderstand the context.

b) **Data display.** Data display is the presentation of data that has been collected in the form of a brief description. The description carried out is to classify the parts that have been found in data reduction and then group them in the "Numbers", "various numbers," and "number operations" sections.

c) **Conclusion drawing.** Concluding according to the theme and pattern of this study.

**Results and Discussion**

Algebra in the Al-Qur’an Algebra is the parent of mathematics, whose subject matter is almost entirely covered by branches of mathematics. After conducting a series of analyses of the verses of the Qur’an (attached to tables 1, 2, 3, and 4 below), which became the focus of the study, it was found that from the perspective of the Qur’an, there is an explanation of the concept of algebra, and from the results of an interview with one of the experts in the science of the Qur’an and Tafsir, namely Mr. Irwanto, Lc. M. Th, who is a lecturer in the Department of Qur’an and Tafsir at the State Islamic Institute of Lhokseumawe, argues that the Qur’an is a guide for humans, but in these instructions, there are hints to aspects of science, and one of them is mathematics about the concept of calculation, which is mentioned in the Qur’an. But it cannot be said that the Qur’an is a book of mathematics.

The Qur’an has mentioned numbers in it, such as numbers 1 to 10, as in Surah An-Nisa Verse 3, where it is mentioned that there are numbers 1, 2, 3, and 4. Furthermore, in Surah Al-Kahf verse 22, the numbers 5, 6, 7, and 8 are mentioned. Then the number 9 is found in the Qur’an, Surah An-Namlu, verse 48. The number 10 is found in Surah Al-Fajr, verse 2. Moreover, the number 11 is found in the Qur’an, Surah Yusuf, verse 4. Then the numbers 20 and 200 are found in Surah Al-Anfal, verse 65. And in Surah Al-Hajj, verse 47, there is the number 1000. The numbers mentioned above are not just born from scientists but have been stated in the Qur’an. See Table 1.
Table 1. Numbers in the Qur'an

<table>
<thead>
<tr>
<th>No</th>
<th>Reference Sentences</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>QS. An-Nisa ayat 4</td>
<td>1, 2, 3 and 4</td>
</tr>
<tr>
<td>2</td>
<td>QS. Al-Kahfi ayat 22</td>
<td>5, 6, 7 and 8</td>
</tr>
<tr>
<td>3</td>
<td>QS. An-Namlu ayat 48</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>QS. An-Fajr ayat 2</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>QS. Yusuf ayat 4</td>
<td>11</td>
</tr>
<tr>
<td>6</td>
<td>QS. Al-Anfal ayat 65</td>
<td>20 and 200</td>
</tr>
<tr>
<td>7</td>
<td>QS. Al-Hajj ayat 47</td>
<td>1000</td>
</tr>
</tbody>
</table>

The Qur'an covers many numbers both directly and indirectly. See Table 2 for details.

Table 2. Various Numbers in the Qur'an

<table>
<thead>
<tr>
<th>No</th>
<th>Reference Sentences</th>
<th>Number Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>QS. An-Nisa ayat 4</td>
<td>Natural Numbers and Rational Numbers</td>
</tr>
<tr>
<td></td>
<td>QS. Al-Kahfi ayat 22</td>
<td></td>
</tr>
<tr>
<td></td>
<td>QS. An-Namlu ayat 48</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>QS. Al-Isra ayat 12</td>
<td>Integers</td>
</tr>
<tr>
<td>3</td>
<td>QS. Al-Baqarah ayat 261</td>
<td>Irrational number</td>
</tr>
<tr>
<td>4</td>
<td>QS Al-Muzammil ayat 3</td>
<td>Number of fractions</td>
</tr>
</tbody>
</table>

The operations of calculating mathematical numbers which include addition, subtraction, multiplication, and division are already contained in the Qur'an including in Table 3.

Table 3. Number Operations in the Qur'an

<table>
<thead>
<tr>
<th>No</th>
<th>Reference Sentences</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>QS. Al-Kahfi ayat 25</td>
<td>Addition</td>
</tr>
<tr>
<td>2</td>
<td>QS. Al-Ankabut ayat 14</td>
<td>Reduction</td>
</tr>
<tr>
<td>3</td>
<td>QS. Al-Hadid ayat 18 dan QS. Al-Baqarah ayat 261</td>
<td>Multiplication</td>
</tr>
<tr>
<td>4</td>
<td>QS. An-Nisa ayat 11 dan QS Al-Muzammil ayat 20</td>
<td>Division</td>
</tr>
</tbody>
</table>

From Table 3, it can be seen that in point 1, Surah Al-Kahf verse 25 means, "And they lived in a cave for three hundred years and added nine years". It can be seen that there is a summation process listed in QS. Al-Kahf verse 25 Next QS. Al-Ankabut verse 14 which means "and indeed, we sent Noah to his people, so he lived with them for a thousand years less fifty years. Then
they were hit by a great flood, while they were tyrannical people. Those are some explanations related to the table above to some operations on numbers listed in the Qur'an.

The results of research conducted by Mulin Nu’man, it is stated that the process of learning mathematics is an interpretation of several verses of the Qur’an that are associated with the concept of learning mathematics that is developing at this time. In addition, the study also explained there are various principles in the learning process in the Qur’an, namely 1) learning activities cannot be represented by others, must be experienced by students themselves, 2) teaching is an effort to make others learn, 3) the main role of the teacher is to create a situation of conditions for learning activities to occur in students, 4) student-centered learning approach, 5) interact with each other, 6) share material asking/answering each other. The six principles must be integrated into every learning process including mathematics learning. The various principles are integrated in the stages of learning activities as seen in Table 4.

<table>
<thead>
<tr>
<th>No</th>
<th>Reference Sentences</th>
<th>Activity Reflection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>QS. Al-Alaq ayat 1</td>
<td>Reading, Observing and Thinking</td>
</tr>
<tr>
<td>2</td>
<td>QS. Al-Maun ayat 1</td>
<td>Question and Answer</td>
</tr>
<tr>
<td>3</td>
<td>QS. Al-Alaq ayat 2</td>
<td>Test</td>
</tr>
<tr>
<td>4</td>
<td>QS. An-Nahl ayat 125</td>
<td>Discussion</td>
</tr>
<tr>
<td>5</td>
<td>QS. Al-Maidah ayat 90</td>
<td>Task Assignment/Habituation</td>
</tr>
<tr>
<td>6</td>
<td>QS. Al-Insyirah ayat 5</td>
<td>Problem Solving</td>
</tr>
<tr>
<td>7</td>
<td>QS. Al-Baqarah ayat 31</td>
<td>Reflection</td>
</tr>
</tbody>
</table>

From Table 4, the author will explain several points related to the meaning of reflection on mathematical activities formed through verses of the Qur’an, one of which is QS. Al-Alaq verse 1 which we know Together means “Read by (calling) the name of your Lord who created”. From this meaning, we can note that reading activities become an important element in learning mathematics because after the reading process is carried out, we will be able to easily observe and then think clearly to solve special problems in mathematics learning.

The design of the Mathematics Learning Framework based on the perspective of the Qur’an contained in this study is to describe how mathematics learning can be presented in a relaxed manner based on the development of the interpretation of Qur’anic verses. It is expected that students can see the scientific angle through the perspective of the Qur’an, so

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14 Nu’man, “Pembelajaran Matematika Dalam Perspektif Alquran.”
as not to think that knowledge will be separate from the Qur'an. Furthermore, this study focuses on the concept of algebraic learning about numbers, various kinds of numbers, and simple operations on numbers. The learning framework that will be designed is contained in the following activities:

1. Preparatory Stage

The preparation stage is the initial stage of planning for teachers to design all aspects of learning to provide smoothness during the learning process. The Qur'an itself illustrates the importance of preparation in learning planning as the word of Allah SWT in Surah Al-Alaq verse 2 which means "He has created man from a lump of blood". The verse describes the beginning of the process of human life starting from its creation, so this verse explains to man that Allah planned in such a way the process of creating his creatures, how and why Allah Almighty created them, as we know that all creatures. He created especially humans are to serve Him. Similarly, in preparing learning activities, as a teacher must know how its role in the learning process and how the direction and objectives of the learning. Moreover, what things support learning activities that must be prepared.

In the preparation stage itself, as in general, teachers prepare a series of lesson plans, namely preparing lesson plans, learning materials, and LKS. At this stage, an analysis stage is carried out on competencies, material to be contained in learning, and teaching materials to be used. The difference between this activity and ordinary learning is that all the tools that researchers prepare are based on the perspective and interpretation of the interpretation of the Quran that researchers have written before.

2. Execution Levels

a) Introduction

In the preliminary stage, the teacher conditions students in a conducive atmosphere before learning takes place. Then it begins with opening the lesson with greetings by the teacher and continues with the reading of prayers before learning begins. Furthermore, it motivates students to associate mathematics learning material with the Qur'an and its use in everyday life. The teacher also conveys the learning objectives to be achieved and informs students about the learning process that will be carried out, namely about the aspects assessed during learning.

b) Core Activities

1) Reading, Observing, and Thinking

Allah says in surah Al-Alaq verse 1 which means "Read by calling your Lord the One who created". From this verse, it is explained that with the activities of reading, observing, and thinking. It is known, that long ago when
the Prophet received this revelation, it was already Allah's command through the verse that as humans and intelligent beings it is expected that we will sharpen our minds and minds through the process of reading so that humans continue to learn how to observe to the thought process to solve problems.

2) Problem-Solving

In the Qur'an, it is taught that humans must be able to be critical in solving problems in life as the word of Allah SWT in surah Al-Insyirah verse 5 which means "For after difficulties there is ease". The relationship of this verse with mathematics learning is to see from the side of mathematics learning where students are given a problem or problem, if students learn and are patient, they will lead them to independently solve the problem systematically according to the right solution or answer. This is also inseparable from human life, Allah gives all trials and calamities under the ability of His servants, therefore each of us in living this life must be captive and patient in facing the tests given.

3) Discussion

At the discussion stage, the teacher directs students to study and analyze more deeply the mathematics learning material to be studied as material for discussion, besides that the application of Islamic values associated with Mathematics is a strong foundation in thinking and does not pass through religious norms. As Allah Almighty says in surah An-Nahl verse 125 it means "Call (people) to the way of your Lord with wisdom and good lessons and refute them in a good way. Verily it is your Lord who knows better who strays from His way, and He knows better those who are instructed." This verse provides an overview of discussion, where in terms of expressing opinions people are required to learn as well as possible in giving strong opinions to break weak or doubtful opinions. Similarly, discussion activities can provide benefits in the process of learning mathematics.

4) Question and Answer

In the learning process, the name of the activity that includes questions and answers is never spared. In this case, the Qur'an gives a clear picture in surah Al-Maun verse 1 which means "Do you know those who deny religion". This verse is a picture that is God's direct question to his people. Therefore, teachers can also create and stimulate student curiosity by presenting mathematics learning that can involve students directly in questions and discussions.

c) Closing Activities

The teacher facilitates students to conclude findings based on the learning that has been done and this includes the learning materials that the teacher has given to students. Closing learning activities and this activity is directly carried out by a teacher by giving an interesting final impression for
students who can give injections to their students so that they are willing and even can’t wait to meet again to be able to follow the next learning in the future.

3. Evaluation Phase

   Learning evaluation is an assessment of student learning activities and progress carried out periodically in the form of exams, practicums, assignments, and learning observations. The purpose of evaluation activities in this learning is essentially feedback for students, and teachers, information for parents, and appreciation and motivation for students.

   As the results of the study, the stages of learning evaluation based on the perspective of the Qur’an are as follows:

   a) Task Assignment/Habituation

      The next mathematics learning activity is assignment. The assignment is done for habituation for students to think mathematically in solving problems. This habituation will later affect the meaningfulness of learning or the strength of knowledge embedded in the memory of students and their behavior. Allah Almighty explains how habituation greatly impacts the strength of knowledge stuck in the brain. For example, in surah Al-Maidah verse 90 which means "O believers! Indeed, drinking, gambling, (sacrificing for) idols, and casting lots with arrows, are heinous deeds and belong to the devil. So stay away from them so that you may be lucky".

      The above verse is an illustration that if drinking intoxicating liquor is habituated, it will have a bad effect. This can be made a contraposition, if you want to get a good impact, then students must be accustomed to doing good. If students want to be better able to understand and remember well about mathematical concepts about algebra, then make it a habit for students to always do math assignments related to the material.

   b) Reflection

      Reflection on learning activities is an activity that greatly affects the assessment of learning outcomes. Reflection is an activity to ask students about how understanding of mathematical concepts is learned today. The results of reflection can be used as reference material for teachers as material for evaluating the learning process carried out. From the results of research as in the Qur’anic verse, namely surah Al-Baqarah verse 31 Allah gives an overview of reflection activities which means "And He taught Adam the names (things) of all, then He showed them to the angels, saying, "Name me the names of all these (things), if you are the righteous ones."

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In the above verse, there are several important aspects, namely a) teaching from Allah SWT to the prophet Adam As, Allah as an educator, and the prophet Adam as a learner, b) aspects of teaching materials, namely the names of all objects in this universe, c) the form of feedback (reflection), which is Allah’s command to the prophet Adam to inform again the knowledge that had been taught to him before the Angels, this is akin to a test plus assistance, and d) the aspect of feedback results in the form of the prophet Adam’s mastery of the knowledge God has taught him. Referring to this, reflection activities can also be applied in algebra learning which involves interaction between teachers and students with teaching materials are algebra materials based on the perspective of the Qur’an, in the feedback process the teacher provides an exam that can stimulate students to restate the learning results that have been given by the teacher as an answer to the exam.

**Conclusion**

Based on the results of literature studies and further searches that researchers have conducted related to the design of the framework for learning mathematics in the perspective of the Qur’an, it can be concluded that the design of the framework in learning mathematics based on the perspective of the Qur’an is not only limited to algebraic material but also provides an overview of how it is applied in everyday life as a solution in solving a problem. And also how it is applied during the learning process. Learning mathematics based on the perspective of the Qur’an is learning that is entirely related to the material, strategies, and learning steps based on the perspective of the Qur’an.

The design of a mathematics learning framework based on the perspective of the Qur’an will foster students’ interest and interest in learning mathematics, students can analyze a problem more critically, and increase students’ insight into mathematics learning based on the perspective of the Qur’an sourced from the Qur’an itself, activities also become more communicative and meaningful. In addition, teachers can also help and facilitate educators in planning the learning process, namely preparing inspirational teaching materials related to the design of a mathematics learning framework based on the perspective of the Qur’an.

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