DEVELOPING PAIKEMI BASED-TEXTBOOK ON THE TOPIC OF FRACTION FOR FIFTH GRADE STUDENTS AT *MADRASAH IBTIDAIYAH NAHDLATUS SYUBBAN* GONDANGLEGI, MALANG

THESIS

To Compose A Thesis On Strata One Program (S-1) Departement Of Teacher Education Of Islamic Elementary School Faculty Of Tarbiyah And Teacher Education State Islamic University Of Maulana Malik Ibrahim Malang

Proposed by:

Laili Alfa Hasanah

NIM 10140023

DEPARTMENT OF ISLAMIC ELEMENTARY SCHOOL TEACHERS' EDUCATION (PGMI)

FACULTY OF EDUCATION AND TEACHING SCIENCES

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APPROVAL SHEET

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DEVELOPING PAIKEMI BASED-TEXTBOOK ON THE TOPIC OF FRACTION FOR FIFTH GRADE STUDENTS AT *MADRASAH IBTIDAIYAH NAHDLATUS SYUBBAN* GONDANGLEGI, MALANG

THESIS

Prepared and Compiled by

Laili Alfa Hasanah (10140023)

Has been defended in front of the board of examiner on July 2014 and has been stated PASSED

Has been approved by the board of examiners as the requirement to earn an undergraduate Bachelor of Primary School Teacher Education (S.PdI)

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Secretary of the hearing Dr. Muhammad Walid, M.A: NIP.197308232000031002	_____
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Legitimate,

The Dean of Education and teacher Science Faculty

State Islamic University of Maulana Malik Ibrahim Malang

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DEDICATION

I dedicate my thesis for a pair of pearl hearts which gives infinite love, educate and take care of me until reach the expectation. Affection and immolation that irreplaceable my beloved mother Lutfiyah and my beloved father Muhammad Fauzi. And to my beloved husband that always give me motivation to finishing my thesis Holik Edi Iswanto. To my brother Anggun Firmansyah who always give prayer, motivation and inspiration. And to all my friends in PGMI that always accompany my adventure to finishing my thesis.

MOTTO

فَإِنَّ مَعَ الْعُسْرِ يُسْرًا (٥) إِنَّ مَعَ الْعُسْرِ يُسْرًا(٦)

5. Karena sesungguhnya sesudah kesulitan itu ada kemudahan,

6. Sesungguhnya sesudah kesulitan itu ada kemudahan. [1]

Q.S Al- Insyirah (94 : 5-6)

[1] Departemen Agama Republik Indonesia. 2005. Al-quran dan Terjemahan. Bandung: Jumanatul ‘Ali ART.

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NOTA DINAS PEMBIMBING

Matter : Laili Alfa Hasanah Thesis Malang, 10 June 2014

Appendixs : 4 (four) Exemplar

Honorable,

Dean of Tarbiyah and Teacher Sciences Faculty

Maulana Malik Ibrahim State Islamic University of Malang

Malang

Assalamualaikum W,W.

After carrying out several times for guidance, both in terms of content, language and writing technique, and after reading the following thesis:

Name : Laili Alfa Hasanah

NIM : 10140023

Program : Teacher Education Islamic Elementary School

Title of Thesis : Developing PAIKEMI Based-Textbook on the Topic of Fraction For Fifth Grade Students At MI Nahdlatus Syubban Gondanglegi, Malang

As the advisor, we argue that this thesis has been proposed and tested decent. So, please tolerate presence.

Wassalamualaikum W. W.

Advisor,

H. Mokhammad Yahya, M.A, P.hD

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CERTIFICATE OF THESIS AUTHORSHIP

Name : Laili Alfa Hasanah

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Hereby, I certify that the thesis I wrote to fulfill the requirement for S.Pd.I a title" Developing PAIKEMI Based-Textbook on the Topic of Fraction For Fifth Grade Students At MI Nahdlatus Syubban Gondanglegi, Malang" is truly my original work. It does not incorporate any materials previously written or published by another person, except those indicated in quotations and bibliography. Due to the fact, I am the only person responsible for the thesis if there is any objection or claim from others.

Malang, 02 July 2014

Laili Alfa Hasanah

PREFACE

بسم الله الرحمن الرحيم

The author extend this thanksgiving to the presence of the God almighty who has given taufik, hidayah, and inayah, so writing this thesis can be resolved properly. Sholawat and salam hopefully bless the king remained the Prophet Muhammad who had become a role model as Education World father, which has been guiding people from the darkness to the lightness of his light of science.

The writing of the thesis is made in order to meet the final assignment to get a bachelor degree (S1) Education of Islamic Elementary School Teacher Department, Tarbiyah and Teacher Sciences Faculty Maulana Malik Ibrahim Islamic State University of Malang.

Furthermore, there is a complete sense of gratitude when the author has yet to say thanks to all those who have helped. Therefore, with all the humility of the author convey a thank you to:

1. My mother Lutfiyah and my Father Muhammad Fauizi who had given the outpouring of compassion, moral or material support, prayers and instructions to always learn, seriously, be thankful, be patient, and always remember to Allah
2. Prof. Mudjia Rahardja, M.Si as Rector of UIN Maulana Malik Ibrahim Malang
3. Dr. H. Nur Ali,M. Pd as the Dean of the Faculty of Tarbiyah and Teaching Science Islamic State University (UIN) Maulana Malik Ibrahim
4. Dr. Mohammad Walid, M.A Principle of PGMI Department
5. H. Mokhammad Yahya, M.A, P.hD as thesis supervisor as a lecturer who has been guiding and directing
6. All of spiritual teachers in Luhur High Boarding School Institution that always gives their blessing and prayer support, especially to Prof. KH. Achmad Mudlor SH. (Rip)

7. Mr. Suyadi, S.Pd as the principle of MI Nahdlatus Syubban of Malang which has received and gives a chance to me to carry out research
8. All of the teachers and students at fifth grade who are willing to become the resources for the finishing this thesis may achieve the quality and be able to getting the hope and ideals
9. All Peers of ICP PGMI2010 that was once a small family which is always compact and vibrant in the beloved campus in science
10. All our colleagues in Malang (Indah, Neny, Latifah, Ika Zuni, Riska,) who always give spirit, prayer and a place to guide and counseling
11. The last for all those who always support me and motivating to always be active in learning and optimistic pursuit of ideals

Best wishes for all the assistance provided to us will be rewarded with plenty of grace and goodness by God almighty and made a lot of useful charity FiddunyaWal Akhirah.Amin.

Furthermore we are aware in the writing of this report many mistakes which have been corrected, therefore any suggestions and criticisms that builds very needed for us to getting the good future.

Malang, 02 July 2014

Author

TRANSLATION OF ARABIC AND LATIN

Writing translation of Arab-Latin in this thesis is using the transtalion orientation based on the decisions of Religion Ministry Indonesia Republic and Education and Culture Ministry Indonesia Republic no. 158 year 1987 and no. 0543 b/U/1987 that underlines as following:

A. Letters

ا = **a**	ز = **z**	ق = **q**
ب = **b**	س = **s**	ك = **k**
ت = **t**	ش = **sy**	ل = **l**
ث = **ts**	ص = **sh**	م = **m**
ج = **j**	ض = **dl**	ن = **n**
ح = **h**	ط = **th**	و = **w**
خ = **kh**	ظ = **zh**	ه = **h**
د = **d**	ع = ‘	ء = ‘
ذ = **dz**	غ = **gh**	ي = **y**
ر = **r**	ف = **f**	

B. Long Vokal

Long Vokal (a) = **â**

Long Vokal (i) = **î**

Long Vokal (u) = **û**

C. Vokal Diftong

أو = **aw**

أي = **ay**

أوْ = **û**

أيْ = **ĩ**

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ABSTRACT

Hasanah, Laili Alfa. 2014. Developing PAIKEMI based-text book on the topic of fraction for fifth grade students at MI Nahdlatussubban Gondanglegi Malang. Thesis. Departement Of Teacher Education Of Islamic Elementary School Faculty Of Tarbiyah And Teacher Education State Islamic University Of Maulana Malik Ibrahim Malang

Advisor: H. Mokhammad Yahya, M.A, P.hD

Keywords: Subjects, fractions, PAIKEMI Learning, Learning Achievement

In mathematics teaching and learning the causes of the less of the result of mathematic's learning are influenced by some factors, such as the solid curriculum, the materials of a lesson book deemed too much and difficult to be followed, the less effective of learning media, the traditional learning methods and not interactive and the poor of the evaluation system. Of the following factors, appears that the in accuracy of organizing and presenting the material is often become the cause of less of learning achievement.

In fact, there are many students who have not been able to understand well, practice, and apply the subject matter of mathematics in everyday life, especially on material of fraction including students at MI Nahdlatus Syubban Gondanglegi. This is due to lack of time given to practice what is taught directly. Students can not understand very well if only imagined it. In addition, the textbooks used by teachers is very limited, as it is in the textbook without any development.

Based on the above explanation, there is a problem to be solved. The means used to solve such problems is by doing mathematics textbook development of fraction using PAIKEMI approach. This study aims to "develop a mathematical textbook material fraction using PAIKEMI approach is valid, practical, and efficient for fifth grade students at MI Nahdlatus Syubban Gondanglegi".

This study use research and development (R & D). the steps are done in this development of learning materials are determine the purpose of the product that would developed, learning analysis, learners and context analysis, describing the specific and general objectives, developing the instruments, developing the strategies of choosing the learning material, designing and conducting formative evaluation and revision.

To determine the level of practicality, efficiency, and validity, researchers conducted assessments of products consisting of two stages, namely stage of expert validation and field testing. Validation of the product by material The learning materials that developed has good characteristics such as the learning materials started by contextual problem, emphasizes the understanding in problem

solving. With the good validity 83,80% that has been tested on 3 lecturers and 1 mathematics teachers. While development in learning has significant difference that is 50,58% from the value that should be obtained, with pretest value average 40,00 and posttest 90,58.

CHAPTER I

A. Background

Progress of a nation depends on the quality of human resources, while the quality of human resources depends on the quality of education. The role of education is very important to create a community of intelligent, peaceful, open, and democratic. Therefore, education reform must always be done to improve the quality of education of a nation. Indonesian nation progress can be achieved through compliance with good education, with a variety of efforts to improve the quality of education is expected to raise the dignity of the Indonesian people. To achieve this, education reform in Indonesia needs to be done to create the world of education adaptive to the changing times.

According to Gavin Reid in his book entitled "Memotivasi Siswa Di Dalam Kelas" revealed that the pattern of children's learning is the result of the way they were taught / learned and the learning style of the school environment. Some of the factors that affect the use of learning styles is culture, school climate, teacher and parent expectations, teaching styles and norms and practices in the classroom.[1]

The general aim of Mathematics in Elementary school so that learners have the following capabilities (1) Understanding mathematical concepts, explains the relationship between concepts and apply concepts flexibly, accurately, efficiently, and accurately in solving problems. (2) Using the pattern and nature of

[1] Gavin Reid, *Memotivasi Siswa Di Dalam Kelas,* (Jakarta: PT Macanan Jaya Cemerlang, 2009), page. 24

reasoning, 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 learning math, and a tenacious attitude and confidence in solving math.

Factors of Students achievementh is about teacher method of teaching, and texty-book. Firts, students at MI Nahdlatus Syubban always felt that mathematics is a difficult subject, boring, and tend to fear before study and direct experience. This is because teachers tend to monotony in teaching, it means teacher hasn't interesting method to teaching. Second, about text-book. According to my interview to some students, they are not interesting to read and solve the problem in their book because their book nothing colour, game, etc. And I was ask to teacher about text-book, and teacher just teach the material in textbook, it means teacher just teaching depend on text-book nothing innovation method and strategy else. So the student's achievement in fifth grade students at MI Nahdlatus Syubban is low. Because of that reason, researcher will research and developing math text-book to help students and teacher problem and to fulfill those needs.. Which the title "**Developing PAIKEMI Based-Textbook on the Topic of Fraction For Fifth Grade Students at *Madrasah Ibtidaiyah Nahdlatus Syubban* Gondanglegi, Malang"**

B. Statement of the Problem

Based on the background of the study as posed, problems that can be formulated as follows:

1. What is the process in developing of PAIKEMI based-textbook on the topic of fraction for fifth grade students?
2. How reliable is of PAIKEMI based-textbook on the topic of fraction for fifth grade students to be developed?
3. What is the impact PAIKEMI based-textbook on the topic of fraction for fifth grade students in the students' achievement?

C. Objective Of The Study

Based statement of the problem, the study aims to:

1. To produce the product in the form of PAIKEMI based-textbook on the topic of fraction for fifth grade students.
2. To know the reliability of PAIKEMI based-textbook on the topic of fraction for fifth grade students.
3. To know the students' achievement after they utilized PAIKEMI based-textbook on the topic of fraction ation for fifth grade students**.**

D. Significance of the Study

Development of research significance is expected to be useful: Theoretically, for the development of the science of Mathematics SD / MI in general, and in particular provide references and examples of practical steps for the systematic and systematic development of teaching materials or products in the form of guide books and modules for further research.

For researchers, to add insight and knowledge about the development of instructional materials and media.

For school organizations studied, for consideration in determining what books that support the learning of mathematics, thus forming an intelligent student character and critical thinking mathematically. In addition, increasing the motivation of teachers to develop support in teaching books, such as PAIKEMI based-textbook that facilitate teachers in teaching.

E. Previous Research and Literature

Resercher find the thesis abaout developing text book and learning of fraction that related with this research, there are :

Resercher	Title	Similarity	Difference
Fathul Arifin[2]	Meningkatkan Aktivitas Siswa dalam Pembelajaran Matematika pada Pokok	• Using PAIKEM Approach	• Action Research

[2] *Fathul Arifin. Meningkatkan Aktivitas Siswa dalam Pembelajaran Matematika pada Pokok Bahasan Pecahan Melalui Pendekatan PAIKEM pada Siswa SD. Skripsi (Jakarta : Program Sarjana UIN Syarif Hidayatullah, 2011)*

	Bahasan Pecahan Melalui Pendekatan PAIKEM pada Siswa SD	• In The Topic of Fraction • For Islamic Elementary School • To measure the student achivement	
Atik Anjarwati[3]	Pengembangan Bahan Ajar Pecahan melalui Pembelajaran Matematika Realistik dalam Meningkatkan Prestasi Belajar (*Studi Kasus pada Siswa Kelas V MIN Sumberjati Blitar*)	• To measure the student achivement • In The Topic of Fraction • For fifth grade student of islamic elemantary school	• Using Realistic Mathematics Education Approach • Developing Text book • Using Research And Development (R&D)
Laili Alfa Hasanah	Developing PAIKEMI Based- Text Book on The Topic of Fraction for Fifth Grade Student at Madrasah Ibtidaiyah Nahdlatus Syubban Gondanglegi Malang	• Using PAIKEMI Approach • To measure the student achivement • In The Topic of Fraction • For fifth grade student of islamic elemantary school	• Using Research And Development (R&D) • Developing Text Book based on Islamic Characteristic

[3] *Atik Anjarwati. Pengembangan Bahan Ajar Pecahan melalui Pembelajaran Matematika Realistik dalam Meningkatkan Prestasi Belajar (Studi Kasus pada Siswa Kelas V MIN Sumberjati Blitar). Skripsi (Malang: Program Sarjana UIN Maulana Malik Ibrahim, 2012)*

F. Expected Specified-Product

The products produced in the form of Paikemi based-Textbook consisting of the steps in the implementation of learning mathematics for fifth grade students on the topic of fraction and the media that can be used by students with the guidance of the teacher with the following specifications:

1. Physical manifestation of the products produced in this development is in the form of print media in the form of textbooks.
2. This textbook contains material, concepts, example problems and questions are concrete and easy for students, as well as learning media that support the learning material. Additionally, accompanied step-by-step learning activities are fun on any subject. This book is intended to support the students in learning mathematics
3. At each end of the matter there are several questions that must be answered by the students, so that students can understand any material provided by the teacher. It is useful to be one assessment for mathematics teachers.
4. This textbook designs use variations of the layout for the front cover and back cover, which is designed as attractive as possible so that students prefer to learn math, using a variation of the corresponding letter for the basic needs of students so comfortable to read and interesting to learn.
5. Description of the contents of the book using A4 size paper, using Comic Sans MS font size 10, 12, 14, layout drawings and created a

variety of motives, preferably in accordance with the subject matter. The language used is communicative language so that students do not get bored in reading.

6. The resulting media is media that support on any matter. Media is made of a material that is easy on the environment, is economical and practical.

G. The Importance of Product

The importance of the development of mathematics textbooks help teachers in learning mathematics. In outline is fill the shortage or lack of textbooks that use learning strategies based on PAIKEMI and math media on the topic of fraction for fifth grade in the *Madrasah Ibtidaiyah Nahdlatus Syubban Gondanglegi Malang*. In addition, the math textbooks will assist math teachers in the learning process. With the help of mathematics textbooks and media, students will more easily understand mathematical concepts especially in the matter of fraction. Thus it can reduce boredom in learning mathematics. Therefore, Paikemi based-textbook is very important to be developed.

H. Assumptions and Limitation.

1. Assumptions

Some of the assumptions underlying the study are as follows:

a. With textbook-based on PAIKEMI students will be more find out of fraction concepts with fun learning, so that students will be more interested and easy to understand the material.

b. With the preparation of textbooks based PAIKEMI designed interactive as possible, students are more than happy to read it and learn what is in the book, students are assumed to be motivated, guided, and more controlled way of learning to use a textbook that was developed as a textbook in mathematics learning.

c. Students' understanding of test results done in earnest so that truly reflects the level of understanding material of fraction.

2. Limitations of Development

a. Discussion material

1) Development of mathematics textbooks is limited to mathematics 5th Grade Semester 2 chapter 4, which consists of the following subjects: fraction number are consist of fraction change, fraction operation, comparasion and scale.
2) Change of intervention fraction to the percent and the other way.
3) Change of decimal fraction to the percent and the other way.
4) Calculate of fraction number.
5) Resolving issues related to fraction change, fraction operation, comparasion and scale.

b. The research subject

The Subjects research is fifth grade students in the Madrasah Ibtidaiyah Nahdlatus Syubban Gondanglegi Malang.

c. Place of Research

The place of research at Madrasah Ibtidaiyah Nahdlatus Syubban Gondanglegi Malang.

I. Definition of Terms

To avoid misunderstanding in understanding this study, the definition of terms related to the study will be presented as follows:

1. Development

Development is the process of translating or translating the design specifications into physical form. [4]Development is a systematic process in order to develop a textbook to produce a paikemi cased-textbook for fifth grade student on the topic of calculating integer numbers.

2. Textbook

Teaching material is any material used to assist teachers in implementing the teaching and learning activities. Teaching materials can be either written material or material not written. Written teaching materials including books, worksheets (worksheet), and the accompanying sheets of props or instructional media used in teaching and learning activities. [5]So the textbook is written instructional materials are used to assist teachers in the learning process.

[4] Punaji Setyosari, *Metode Penelitian Pendidikan dan Pengembangan,* (Jakarta: Kencana, 2010), hal. 197

[5] Departemen Pendidikan Nasional, *Model Bahan Ajar Matematika Sekolah Dasar, (Jakarta,2009),* page. 2

3. Learning Mathematics

Learning math is a conscious effort made to examine and understand the concepts and structures are abstract in mathematics and look for relationships between concepts and mathematical structures. Each math concept can be understood better if first presented concretely.

4. Fraction

Three distinct meanings of fractions—part-whole, quotient,and ratio — are found in most elementary mathematics programs. Part-whole The part-whole interpretation of a fraction such as $\frac{2}{3}$ indicates that a whole has been partitioned into threeequal parts and two of those parts are being considered.Quotient $\frac{2}{3}$ The fraction may also be considered as a quotient, 2 ÷ 3. This interpretation also arises from a partitioningsituation. Suppose you have some big cookies to give to threepeople. You could give each person one cookie, then another,and so on until you had distributed the same amount to each.If you have six cookies, then you could represent this processmathematically by 6 ÷ 3, and each person would get two cookies. But if you only have two cookies, one way to solve theproblem is todivide each cookie into three equal parts and giveeach person $\frac{1}{3}$of each cookie so that at the end, each person gets 3 + 3 or 3 cookies. So 2 ÷ 3 = 3 .

J. The Structure of the Study

The structure of the study that will be structured in the chapter 1 is introduction consist of background, statement of the problems, objective of the

study, significace of the study, previous research and literature, expected specified-product, the important of product, assumption and limitation, definition of terms, and the stucture of the study.

In the chapter 2 is review of literature will be consist of learning mathemetic, definition of paikemi, textbook, development, and fraction numbers.

In the chapter 3 is research method will be consist of types of research, development model, product validation, product trial, data collection instrument, and data analysis techniques.

In the chapter 4 is result will be consist of presentation and analize of data, data interpretation, and revised development result. And in the chapter 5 is conclution will be consist of conclution of development and suggestion. And in the last part is references, appendix, and living history.

CHAPTER II

REVIEW OF THE LITERATURE

A. Learning Mathematics

Classification of Mathematics Learning Materials According to Gagn , the learning of mathematics there are two objects that can be obtained by students, which is the direct object and indirect object. [5]Direct object in the form of facts, concepts, principles and skills. The fact is that mathematical objects live take, as a symbol of numbers, angle, and other mathematical notations. The concept is an abstract idea that allows us to classify objects into the sample and not the sample. For example, the concept of square, prime numbers, the set, and vectors. Skills such as the ability to answer correctly and quickly, for example, to divide a large enough number with the brackets, add fractions, paint a line segment axis. Indirect object in mathematics, among others, the ability to investigate and solve problems, learn to be independent , positive attitudes towards mathematics , and know how to properly learn. For all levels of education, learning materials mathematics include : 1. Facts (facts): information, name, the term, and the Convention on the emblems. 2. Understanding (concepts): understanding the structure, the role of understanding the structure, a variety of patterns, sequences, mathematical model, operations and algorithms. 3. Reasoning skills: understand the meaning, logical thinking, understand the negative examples,thinking deduction, thought induction, think systematically and consistently,draw conclusions, determines the method and make excuses, and determining strategy.

[5] Muhibbin Syah, Bahan Pelatihan "Pembelajaran Aktif, Inovatif, Kreatif, Efektif Dan Menyenangkan (Paikem). (Bandung :(PLPG) Rayon Fakultas Tarbiyah Dan Keguruan Uin Sunan Gunung Djati, 2009), page.60-62

4. Algorithmic skills: the skills to understand and follow the steps made by others, to design and make a step, using steps, define and explain the steps in order to understand other people, compare and choose measures are effective and efficient, and improve the measures.

b. Characteristics of Students

1) Development of Cognitive Aspects

So that potential students can thrive and be able to learn math in an optimal, impikasi characteristics of learners and the learning of mathematics is given as follows:[6]

a) Students will learn math if they have the motivation

The implications of this view on learning mathematics is teachers need to: provide a fun activity, attention to the students, building understanding through what is known by the students, creating classroom atmosphere that supports learning activities, provide activities that correspond to the learning objectives, provide challenging activities, provide activities that give hope of success, respect each student achievement.

b) Learners studying mathematics in its own way

The statement implies : students learn in a way that is unique and different possibilities with another friend, any student requires special experience that connected with his experience in the past, every student has the background of

[6] Ibid, page. 63-64

socio - economic - different cultures. Therefore, the implications for teachers' mathematics learning is necessary: determine the advantages and disadvantages of their students, planning activities according to students' ability levels, build the knowledge and skills he gained a good student in school and in home, using the records of student progress (assessment).

c) Learners learn maths either independently or in collaboration with his friend

The implications of this view for mathematics learning is the teacher needs to: provide an opportunity to learn in a group to train co-operation, provide an opportunity to learn classical to provide an opportunity to exchange ideas, provide an opportunity for students to undertake its activities independently, involve students in decisions about activities that will be done, and teach you how to learners need context and different situations in the learning of mathematics.

The implications of this view for mathematics learning is the teacher needs to: provide and use a variety of props, provide an opportunity to learn mathematics in a variety of places and circumstances, provide an opportunity to use math for a variety of purposes, develop an attitude of use mathematics as a tool to solve problems both in school and at home, value the contributions of traditions, culture and the arts in the development of mathematics, and help students assess their own mathematical activity .

B. **PAIKEMI**

a. Definition PAIKEMI

PAIKEMI which stands Active, Innovative, Creative, Fun, and Islamic. Furthermore, PAIKEMI can be defined as: teaching approach (approach to teaching) that is used with a particular method of teaching and the various media with environmental regulation so that the learning process becomes active, innovative, creative, effective, fun, and Islamic.[7]

Thus, the students feel interested and easy to absorb knowledge and skills are taught. In addition, it also allows siwa PAIKEMI perform a variety of activities to develop the attitudes, understanding, and skill alone, meaning not simply " fed " teacher. Among the teaching methods are most likely to be used to implement the PAIKEMI, are : plus the lecture method, the method of discussion, methods of demonstration, methods of role- play, and simulation method. PAIKEMI developed based on a change / transition :[8]

1) The transition from individual learning to learn together (cooperative learning)

2) The transition from learning by rote to learn to understand

3) The transition from the theory of transfer of knowledge (knowledge - transmitted) into interactive forms, processes and problem-solving skills;

4) Shift the paradigm from teaching teachers to student learning;

[7] Ibid, page. 1
[8] Ibid, page. 3

5) shift of traditional evaluation form to the authentic form of assessment such as portfolios , projects , reports student , or student performance .

The basis of the above transition in accordance with the PP. 19 Year 2005 on National Education Standards, Article 19, paragraph (1) which reads: " The process of learning to implement an interactive, inspiring, fun, challenging, and motivating learners to cumulated active, and provide enough space for innovation, creativity and independence according to their talents, interests and physical and psychological development of students'.

b. Characteristics PAIKEMI

1) Focusing on the students (student-centered)

- Teacher as facilitator, not a lecturer;
- Focus on student learning rather than on teachers;
- Students learn actively;
- Students control the learning process and produces his own work, not just quoting from the teacher.

2) Learning is fun (joyful learning);

3) Learning is oriented to the achievement of specific skills (competency-based learning);

4) Learn to be completed (mastery learning);

5) Learning is continuous (continuous learning);

6) Learning in accordance with all current-to's and here's (contextual learning).

c. Significance PAIKEMI

There are two reasons for PAIKEMI approach applied in schools / madrasah us , namely :[9]

1) Allow participants PAIKEMI more students and teachers alike actively engaged in learning. So far, we are much more familiar with conventional learning approaches. Only teachers who are active (monologues), while the students passively, so learning drab, unattractive, unpleasant, sometimes even frightening students .
2) More PAIKEMI allows teachers and students to act creatively together. Every teacher seeking creative ways to engage all students in the learning process. Meanwhile, the students are also encouraged to be creative in interacting with peers, teachers , subject matter , and any study aids, so that learning outcomes can be improved. PAIKEMI guided by the philosophy of constructivism which emphasizesthat learners are able to integrate new ideas with ideas or who have had prior knowledge, so that they are able to construct meaning for different phenomena. Philosophy of pragmatism-oriented achievement goals easily and instantly also become PAIKEM basis, so that the students in learning the subject is always active while the teacher becomes a facilitator and guide their learning.

[9] Ibid. Page. 17

d . Important Things In Implementation PAIKEMI Approaches

In implementing PAIKEMI , teachers need to consider some of the following :

1) Understand the nature of the students

Basically the child has imagination and inquisitive nature. All children are born with the potential to bring the two. Both are authorized capital for the development of an attitude / thinking critically and creatively. Therefore, the learning activities that we need to be if the land to be a fertile ground for the development of both the potential for God 's grace. Learning atmosphere that accompanied the teacher praises the students 'work, which is accompanied by questions that challenge teachers and encouragement for students to experiment with, for example, is a good learning to develop students' potential.

2) Understand the intellectual development of students

According to Jean Piaget's intellectual development sense/human cognitive development takes place in four stages, namely: [10]Sensory-motor (Sensori-motor/0-2 years) Pre-operational (Pre - operational/ 2-7 years) Concrete-operational (Concrete - operational/ 7- 11tahun) Formal -operational (Formal-operational / 11 years and over). During the period of primary and secondary education, students experienced Concrete-operational stage and formal-operational .

[10] Robert E. Slavin, *Cooperative Learning,* (Bandung : Nusa Media, 2009), page.24

3) Getting to know students as individuals

The students come from family environments that are varied and have different capabilities. In PAIKEMI individual differences need to be considered and should be reflected in the learning activities. All students in the class are not always doing the same activity, but differ according to the speed of learning. Students who have more capabilities can be used to help a friend who is weak in a " peer tutors ". With the ability to know the students, when he got into trouble so that we can help the students learn to be optimal.

4) Utilize student behavior in the organization of learning

As social beings, since small children naturally play in pairs or in groups in play. This behavior can be exploited in a learning organization. In doing chores or discuss something, students can work in pairs or in groups. Based on experience, students will complete the task well when they sit down. Sitting as it allows them to interact and exchange ideas . However, students must also complete an individual task order develops individual talents.

5) Develop the ability to think critically, creatively, and problem-solving skills

Basically good study is to solve the problem because in our real learning exposes students to the problem. This requires the ability to think critically and creatively. To analyze issues critically and creatively to deliver alternative solutions to problems. Critical and creative thinking comes from curiosity and imagination are both present in children from birth. Therefore, the task of the teacher is to develop, among others, with often give assignments or asking open-

ended questions and allow students to think for the reasons and make a critical analysis. Question with the words "Why?", "What if ... " and "What if ..." questions better than with words that just says " What?", "Where?".

6) Develop a classroom become interesting environment

Classrooms is a very attractive suggested in PAIKEMI. Students' work should be displayed to meet the classroom. In addition, the results of the work on display is expected to motivate students to do better work and inspiration for other students. The material displayed could be the work of individuals, couples, or groups. Displays may include images, maps, diagrams, models, original objects, poetry, essays, and so on. The classrooms are filled with displays of student work, and well laid out, can assist teachers in learning activities because it can be used as a reference when discussing a problem.

7) Using the environment as a learning resource

Environment (physical,social, and cultural) is a source of learning materials are loaded with students . Environment can act as a medium of learning and the object of study (learning resources). Use of the environment as a source of learning often makes students feel happy in learning. Learn to use the environment does not always have to be outside the classroom. Materials from the environment can be brought into the classroom in order to save costs and time. Using environment can develop a number of skills such as observing (by the senses), notes, formulate questions, hypothesize, classify, create posts, and make drawings / diagrams.

8) Provide good feedback to improve learning

Quality of learning outcomes is increased when there is interaction in learning. Providing feedback from the teacher to students is one form of interaction between teachers and students . Feedback should reveal strengths more than weaknesses of students. In addition, by providing feedback must be polite. It aims to make students more confident in dealing with subsequent learning tasks. Teachers should consistently check the students' work and provide comments and notes. Records relating to the work of student teachers more meaningful for the development of the student rather than just numbers.

9) Distinguish between physically active with active mental

Many teachers are quick to feel satisfied while watching the students busy working and moving, especially when stools arranged in groups and the students sitting opposite. Which reflects the situation of physical activity such as this is not characteristic of actual duration PAIKEM, because mentally active (Mentally active) means more than physically active (phisically active). Often asked, questioning the ideas of others, and express ideas is a sign of mentally active. Terms mentally active development is the growing feeling of fear, such as fear of ridicule, fear trivialized, and being scolded if any. Therefore, teachers should eliminate the causes of fear, whether that comes from her and from the teachers themselves. The growing fear is contrary to the principle PAIKEMI

e . Translation of PAIKEMI

1) Active Learning

Active literally means: " in the habit of doing things, energetic " (Hornby, 1994:12), that used to do all things by using all the power. Active learning means that learning requires students and teachers all the liveliness of physical, mental, emotional, moral and even spiritual. Teachers should create an atmosphere so that students actively ask questions, generate ideas, and engage in activities that can provide direct experience, so that learning is an active process of students in building their own knowledge. Thus, students are encouraged to be responsible to their own learning process. In Islamic Education lessons (PAI) of the universe sunnatullah example, students can make observations about natural phenomena. Students observe the sun shines during the day and running on its axis, rising in the east and sets in the west, the moon shines at night and outstanding on its axis. Students observe the stars twinkling in the night with a great distance from the earth. Students observed a male and female, the day and night, and the hot and cold. All of this is sunnatullah. With the sunnatullah, humans will be able to encourage him to do research on the objects of God's creation. So physically active all the senses involved, think, analyze, and concluded that all of the objects and phenomena that occur due to the will of Allah SWT.

According Taslimuharrom an active learning process is said (active learning) if it contains:[11]

1) Commitment

In this case, the materials, methods, and strategies useful for students learning should be (meaningful), in accordance with the needs of students (relevant), and are/ have linkages with private interests (personal);

2) Responsibility

In this case, the learning process needs to give authority to the students to think critically in a responsible manner, while teachers more listening and respect for students' ideas, as well as provide options and opportunities for students to make their own decisions.

3) Motivation

The learning process should further develop students' intrinsic motivation. Intrinsic motivation is the case and the circumstances that come from within the students themselves who can encourage action learning. In the perspective of cognitive psychology, the more significant motivation for students is intrinsic motivation (rather than extrinsic) because it is more pure and lasting, and does not depend on impulse or influence others. Encouragement achieve and have the knowledge and skills for the future, for example, an impact more powerful and relatively more lang gang banned pared to boost reward or encouragement from

[11] Taslimuharrom. *Metodologi PAKEM*. Artikel Pendidikan [On-line] 2008.

parents and teachers must. Students' motivation is increased when supported by a more student-centered (student centered learning). Teachers encourage students to actively seek, find and solve their own problems. He not only fed student, also does not like the person who pours the water into the bucket.

As a result, on the one hand the teacher is active:

- provide feedback;
- ask challenging questions, and
- students discuss ideas.

On the other hand, active students, among others, in terms of:

- asked / requested an explanation;
- express ideas, and
- discuss the ideas of others and their own ideas.

2) Innovative Learning

McLeod defines innovation as: "something Newly Introduced such as method or device". Based on this takrif, all aspects (methods, materials, devices, etc.) are considered new or innovative methods and forth when it differently or not implemented by a teacher even though all of it is not new for other teachers. Innovative learning can balance left and right brain functions when it is done in a way to integrate media/tools, especially new technology-based/advanced into the learning process. Thus, a process of mental renovations, including building a sense of self pecaya students. The use of teaching materials, multimedia software,

and Microsoft power point is one alternative. English lessons in schools and madrassas for example, do not need to use the original material which tend to be secular. English for MTs could be developed, for example by using the discourses of Islam 's all about prayers, fasting, zakat/charity, and the hajj. Use of this distinctive discourses do not mean to ignore public discourses prevalent example of interpersonal interaction, about daily life and about hospitality. However, public discourse was presented in an innovative way in the sense of using methods and materials as well as different vocabulary and can be considered Islamic. When explaining the sentence structure simple present tense that tells activities for example , an English teacher could use the example of a sentence : " I do the Jumah prayer in the grand mosque every Friday " or " Laila always helps her mother in the kitchen after praying the maghrib " (After the evening prayers, Laila has always helped her mother in the kitchen), and so on. Sentences like this are not only un-Islamic, but also to be innovative and more useful than the sentence which reads simply " Birds fly in the sky " (The birds fly in the sky), let alone a sentence that reads " John goes to the beach every Sunday with Jane " (every Sunday John went to the beach with Jane). You try to think , what is the significance of the two sentences ? No, because everyone already knows every bird that flew in space for sure, and habits of John to the beach alone with Jane was not Islamic even Indonesiani .

Build an innovative learning can be done in ways that accommodate each of these characteristics and measure student ability / absorption of each student. Most students there are capable of absorbing knowledge and skills in using the

power of visual (sight) and auditory (hearing), while others absorb knowledge and skills kinesthetically (stimulation / muscle movements and body). In this case, the use of tools / equipment (tools) and the relevant methods and tools directly in the learning process is the need to build up an innovative learning process.

As a result, on the one hand in terms of innovative acting teacher:

- use of materials / useful new material and dignified;
- implement various learning approaches with new style;
- modify conventional learning approaches to innovative approaches appropriate to the circumstances of students, schools and the environment;
- involves learning technology devices.

On the other hand, students also innovative in the sense of acting:

- inoavtif learning with applicable rules;
- seeking substance / material themselves from relevant sources;
- use the advanced technologies in the learning process.

Moreover, in applying innovative learning necessary to diverse learning strategies that can be applied in various fields of study.

3) Creative Learning

Creative (creative) means using inventions / creations new or different. Creative learning implies not merely carry out and implement the curriculum. Curriculum is a plan document and raw, but still need to be scrutinized and developed creatively. Thus, there is creativity and creativity in the development of competence in classroom teaching practices including the use of material resources and the environment as a means to learn. Creative learning also meant

that teachers create learning activities that meet a diverse range of student ability levels and the types and learning styles of students.

As a result , on one side of the creative act in terms of the teacher :

- Develop a variety of learning activities ;
- Make a useful learning tool though simple ;

On the other hand , students were creative in terms of :

- design / make something ;
- writing / composing .

4) Effective Learning

Learning can be said to be effective (effective / successful order) if it achieves the goal or at least attain basic competence has been determined. In addition, it is also important the many experiences and things that are " acquired " student. Teachers were expected to obtain " new experience " as a result of two-way interaction with the students. To determine the effectiveness of a learning process, then at the end of each lesson needs to be evaluated. Evaluation is meant here is not just a test for students, but a kind of reflection, contemplation is carried out by teachers and students , and teachers are supported by the data records . This is in line with the valuation policy -based class or a more authentic assessment stresses the process in addition to the assessment of learning outcomes assessment (MBS News UNICEF : 2006)

As a result , on the one hand teachers become effective teachers , because :

- master the material taught ;
- teach and lead by example ;

- appreciate the students and motivate students ;
- understand the learning objectives ;
- teaches problem-solving skills ;
- using a variety of methods ;
- develop personal knowledge with lots of reading ;
- teach you how to learn something ;
- carry out the judging of the proper and correct .

On the other hand , students become effective learners in the sense :

- master the knowledge and skills or competencies are required ;
- gain valuable new experiences .

5) Learning Fun

Learning is fun (joyful) need to be understood broadly, not just the means always interspersed with jokes, lots of singing or wild applause. Learning is fun of teaching that can be enjoyed by the students. Students feel comfortable, safe and fun. Contain elements that exciting feeling of inner motivation, the encouragement of curiosity that accompanied the effort to find out something. Besides learning needs to provide a challenge to the students to think, to try and learn more, full of self- confidence and self-potential to develop optimally. Thus, students are expected to someday be a man of character full of confidence, be himself and have the competitive capabilities (competitive) .

The principal characteristics of joyful learning, are :

- a relaxed environmen, please, do not make a tension (stress), safe, attractive, and not make students hesitant to do something wrong to achieve success despite its high ;
- ensuring the availability of learning materials and methods that are relevant ;
- involvement of all the senses and the brain activity of the left and right ;
- a challenging learning situations (challenging) for learners to think ahead and explore the material being studied ;
- existence of a positive emotional learning situations when students learn together , and when there is humor , encouragement , rest time , and support the enthusiast .

As a result , in a fun learning the teacher does not make the student :

• fear of being wrong and punished ;

• fear of ridicule of friends ;

• afraid considered trivial by the teacher or a friend .

On the other hand , learning the fun can make students :

• dared to ask ;

• dare try / do ;

• dared to express opinions / ideas ;

• dared to question the ideas of others .

6) Islamic learning

a. The nature of Islamic Education

Muhammad S.A. Ibrahim considers that the essence of Islamic education is an education system that allows a person to direct his life according to the ideals of Islam so he could easily shaped his life according to the teachings of Islam . The nature of Islamic Education includes five key principles, namely :[12] First, the process of transformation and internalization of the implementation of Islamic education should be done gradually, in stages with continuous efforts and removal, planting, directing, teaching, and coaching are conducted in a planned, systematic, and structured by using certain patterns and systems. Second, science and values the efforts being geared towards giving and appreciation of science as well as experience and values. Third, the self- education of the students that it is given to students who have spiritual potential.Fourth, through the growth and development potential of the human nature of Islamic education tasks grow , develop, nurture and maintain the latent potential of humans to grow and develop in accordance with the level of ability, interest, and his talent . Fifth , in order to achieve harmony and perfection of life in all its aspects , the end goal of the process is

theformation of Islamic education Insan Kamil .

b . Islamic Educational Objectives

According to Abdurahman Abdullah Saleh, The purpose of Islamic education is classified into four types, namely: First, the purpose of physical

[12] Taqwim islamy. Artikel online. http://taqwimislamy.com/index.php/en/57-kurikulum/345-nilai-nilai-islami-dalam-pembelajaran. Di akses pada 30 september 2013.

education. Second, the purpose of spiritual education. Third, the purpose of education of the mind. Fourth, the purpose of social education. Meanwhile, according to Ali Asraf educational purposes made the following classifications :First, develop a deeper spiritual insights and develop a rational understanding of Islam in the context of modern life. Second, to equip students with various abilities of knowledge and virtue, both practical knowledge, welfare, social environmenT, and national development. Third, develop the ability to self-learners to appreciate and justify the comparative superiority of Islamic culture and civilization upon all other cultures. Fourth, improve emotional impulses through imaginative experience, that creative ability can flourish and serve knowing Islamic norms of right and wrong . Fifth, helping a growing child to learn to think logically and to guide the thought process based on the hypothesis and the concepts of knowledge required . Sixth , develop , refine, and deepen communication skills in written and discussed Latin (foreign) .

c . Education task

Islamic education task always continued and uninterrupted by time. This is the essence of Islamic education is an endless process in line with the Islamic concept of Life Long Education (al - Hijr [15] : 99) . Islamic education task can be viewed from three approaches: First, education as development potential . Secondly , cultural inheritance . Third , the interaction between the potential and culture .Based on the above it is understood that the task of Islamic education is to assist students in the development of piety and morals karimah coaching competencies outlined in the faith , Islam , and keihsanan .

C . Textbook

Teaching materials (teaching material) is part of the learning resources. Teaching material is any material used to assist teachers in implementing the teaching and learning activities. Teaching materials can be either written material or material not written. Written teaching materials including books, worksheets (worksheet), and the accompanying sheets of props or instructional media used in teaching and learning activities. So the textbook is part of the teaching materials . Function of the textbook :

- Guidelines for directing all activities of teachers in the learning of mathematics , mathematical competencies as well as a substance that will be developed in students
- Guidelines for students who will direct all the activities in the learning process of mathematics , as well as a substance competency to be mastered
- Tool evaluation skills of students who have achieved the standard of competence specified mathematics
- Records of work that students can be useful for further evaluation and to support the implementation of port folio .

D. Development

Development is the process of translating the design specifications into a particular physical form. Process of translating the design specifications include problem identification, formulation of learning objectives, developing strategies

or methods of teaching and evaluation of effectiveness, efficient, and attractiveness of learning[13]

Development of a product of textbook learning, especially math required in order membelajarkan students with easy, fast, interesting and not boring so as to achieve optimal learning outcomes. In the development of the principles that there should be sequentially as below:[14]

a. Ranging from easy to difficult to understand, from the concrete to the abstract understanding

b. Repetition will reinforce understanding

c. Positive feedback will provide reinforcement to the students understanding

d. High motivation to learn is one of the critical success factors of learning

e. Achieve goals like climbing stairs, step by step, will eventually reach a certain height.

f. Knowing the results that have been achieved will encourage students to continue to achieve the goal.

[13] Fitrotul Uyun, 2010, *Pengembangan Bahan Ajar Pembelajaran Al-Quran Hadis dengan Pendekatan Hermeneutik Bagi Kelas 5 Madrasah Ibtidaiyah Negeri (MIN) 1 Malang.* Tesis Program Study Pendidikan Guru Madrasah Ibtidaiyah (PGMI), UIN Maulana Malik Ibrahim Malang.

[14] Sofan Amri dan Lif Khoiru Ahmadi, *Konstruksi Pengembangan Pembelajaran.* (Jakarta : PT Prestasi Pustakaraya, 2010), page.160

E. Fraction

Three distinct meanings of fractions—part-whole, quotient,and ratio — are found in most elementary mathematics programs. Part-whole The part-whole interpretation of a fraction such as $\frac{2}{3}$ indicates that a whole has been partitioned into threeequal parts and two of those parts are being considered.Quotient $\frac{2}{3}$ The fraction may also be considered as a quotient, 2 ÷ 3. This interpretation also arises from a partitioningsituation. Suppose you have some big cookies to give to threepeople. You could give each person one cookie, then another,and so on until you had distributed the same amount to each.If you have six cookies, then you could represent this processmathematically by 6 ÷ 3, and each person would get two cookies. But if you only have two cookies, one way to solve theproblem is todivide each cookie into three equal parts and giveeach person $\frac{1}{3}$ of each cookie so that at the end, each person gets 3 + 3 or 3 cookies. So 2 ÷ 3 = 3 .

Before giving the general definition of a fraction, let us first consider the special case of all fractions of the form $\frac{0}{3}\ \frac{1}{3}\ \frac{2}{3}\ \frac{3}{3}\ \frac{4}{3}$ and try to see whatthey mean. We have to begin with the concept of two line segments on the number line being of equal length: it means that if we slide one of them alongthe number line until the left endpoints of the segments coincide, then theirright endpoints also coincide. Now divide each of the line segments [0, 1],[1, 2], [2, 3], [3, 4], [4, 5], . . . into three segments of equal length so that each of these segments now acquires two additional division points in addition toits left and right endpoints. The

number line now has a new sequence ofequally spaced markers superimposed on the original markers corresponding to whole numbers.[15]

[15] http://math.berkeley.edu/~wu/EMI2a.pdf

CHAPTER III

RESEARCH METHODS

A. Types of Research

This type of research is the development of research-oriented products in the field of education. According to Nana Syaodih Sukmadinata in his book that the Educational Research Methods Development Research or Research and Development (R & D), is a research strategy or method is quite powerful in improving practice.[16]

Meanwhile, according to Borg & Gall development research is a process used to develop and validate educational products.[17]Accordingly, the development is a form of research related to improving the quality of education, both in terms of process and outcomes of education. This is consistent with research that will aim to develop a product which done research on textbook devoted to mathematics courses at the Elementary School fifth grade students.

This product is expected to be a path that seeks to bridge the information gap between compliance and the provision of learning materials according to the needs of students in learning mathematics. Therefore, one simple way is adopted by researchers through "development-oriented" product development in the form of textbook-based learning PAIKEMI matematka for fifth grade elementary school that is focused on materials integer operations.

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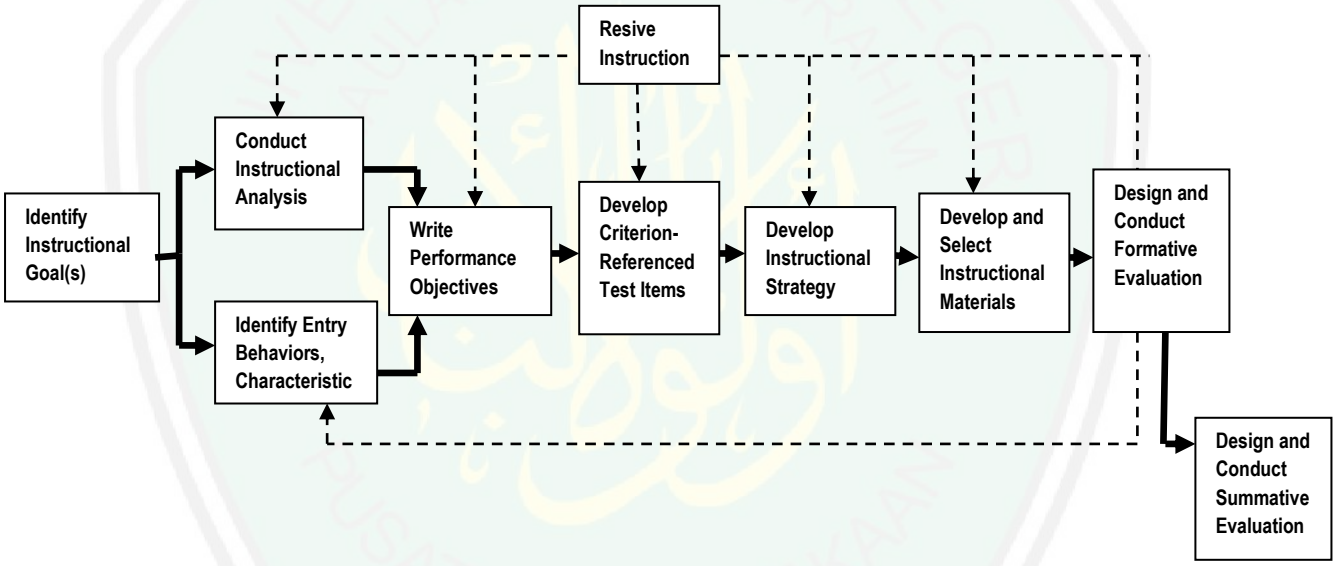
[16] Nana Syaodih Sukmadinata, *Metode Penelitian Pendidikan,* (Bandung: PT. Remaja Rosdakarya, 2007), page. 164

[17] Punaji Setyosari. *Metode Penelitian dan Pengembangan.* (Jakarta : Kencana, 2010), page. 194

B. Model of Development

The model is defined as a conceptual framework that is used as a reference in conducting activities, according to Briggs model is a set of procedures aimed at establishing a process.In this study using a model of the development of the conceptual development of the Dick and Carey instructional design follows the basic pattern ADDIE (analysis, design, development, implementation, and evaluation).



Based on the chart above there are steps of the systems approach model according Dick and Carey :

1. Identify An Instructional Goal.

The first step in the model is to determine what it is that you want students to be able to do when they have completed your instruction. The definition of the instructional goal may be derived from a list og goals, from a need assessment with regard to a particular curriculum, from practical experience whit learning

difficulties of students in the classroom, from the analysis of someone who is already doing a job, or from some other requarement for new instruction.[18]

Instruction is then solution to a problem. The instrutional process begin with the identification of one or more . The problem indetification process is typically referred to as needs assessment. Kaufman and English (1979) describe a very complete process for incorporating the viewpoints of the students, parents, and community members as well as educators in the identification of problems that should be resolved.[19]

In summary, instructional goals are ideally derived through a process of needs assessment that establishes rather broad indications of the problem that must be solved. Then an analysis of that goal is undertaken, either in the context of a curriculum proposal or a job analysis. As a result, more refined specific statements emerge and focus on what learners will be able to do when they complete their instruction.[20]

2. Conduct Instructional Analysis .

Determine what type of learning is required of the student. The goal will be analyzed to identify the subordinate skills that must be learned and any subordinate procedural steps that must be followed to learn a particular process. This analysis will result in a chart or diagram that depicts these skill and shows the relationship among them.[21] The objetives of conduct instructional analysis are a) To classify instructional goals in the following domains: intellectual skill,

[18] Dick, walter and Lou Carey. 1990. *The Systematic Design of Instruction.* America. United States of America. Page 5
[19].ibid. Page 13
[20] Ibid. Page 15
[21] Ibid. Page 5

verbal information, psychomotor skill, and attitude. b) To analyze an instructional goal in order to identify the major steps required to accomplish it.[22]

3. Identify Entry Behaviors and Characteristics.

In addition to identifying the subordinate skills and procedural steps that must be included in the instruction, it will be necessary to identify the specific skills that students must have prior to beginning instruction. This is not a listing of all that things learners can do, but the identification of the specific skills they must be able to do in order to begin. It also important to identify any specific characteristics of the learners that may be important to consider in the design of the instructional activities. [23] The objectif of identifying entry behaviors and characteristics are: a) describe how entry behaviors are derived for students in a target population. b) derive entry behavior when given an instructional analysis and a specific taget population. c) describe the general characteristics of a target population which would be important to consider when developing instruction.[24]

4. Write Performance Objectives

Based on the instructional analysis and the statement of entry behaviors, we willwrite specific statements of what it is the learners will be able to do when they complete our instruction. These statements, which are derived from the skills identified in the instructional analysis, will identify the skills to be learned the conditions under which the skills must be performed, and the criteria for

[22] Dick, walter and Lou Carey. 1990. *The Systematic Design of Instruction.* America. United States of America. Page 30
[23] Ibid. Page 5
[24] Ibid. Page 83

successful performance.[25] The objectives in this step are : a) identify and describe the components of a properly written performance objective. b) write performance objectives for skills that have been identified in an instructional analysis. These objectives should include the conditions under which the skill will be performed, the skill to be performed, and the criteria for assessing the performance.[26]

5 . Develop Criterion-Referenced Test Items

Based on the objetives we develop assessment items that are parallel to and measure the learner's ability to achieve what you described in the objectives. Major emphasis is placed on relating the kind of behavior described in the objectives to what the items require. The objectives in this step are: a) identify the characteristics of criterion-refernced test. b) describe the characteristics of pretests, embedded tests, and posttests. c) given a variety of objectives, write appropriate criterion-refernced test items that reflect the behaviors required of learners as stated in the objectives.[27]

6. Develop an Instructional Strategy

An instructional strategy describes the general components of a set of instructional materials and the procedures that will be used with those materials to elicit particular learning outcomes from students. There are five major components to an instructional strategy:

a. Preinstructional activities

b. Information presentation

[25] Dick, walter and Lou Carey. 1990. *The Systematic Design of Instruction.* America. United States of America. Page 6
[26] Ibid. Page 102
[27] Ibid. Page 122

c. Student participation

d. Testing

e. Follow-through

7 . Develop and Select Instructional Materials

When we use the term instructional materials we have included all forms of Instructional such as teacher guides, modules, overhead transparencies, videotapes, computer -based multimedia, and web pages for Instructional distance materials intention connotation .

8 . Design and Conduct Formative Evaluation

There are three types of formative evaluation is an assessment - one, small group assessment, and assessment of field tests . Each type of assessment provides different information for designers to use in improving Instructional. Similar techniques can be applied with formative assessment or instructional materials in the classroom .

9 . Revise Instructional

The objectives of this step are a) to describe various method for summarizing data obtained from formativ evaluation studies. b) to summarize data obtained from formative evaluation studies. c) to given summrized formative evaluation data, identify weaknesses in instructional materials and instructor-delivered instruction. d) and to given formative evaluation data for a set of instructional materials, identify problems in the materials, and suggest and carry out revision of the materials.

10 . Design And Conduct Summative Evaluation

Summative evaluation is defined as the design of evaluation studies and the collection of data to verify the effectiveness of instructional materials with target learners. Its main purpose is to make go-no go decisions about maintaining currently used instructional materials or about adopting materials that have the potential for meeting an organization's defined instructional needs.

C. Procedures Research

Based on the model of the development of Walter Dick and Lou Carey as mentioned above, the development of procedures in this development of research following the steps as instructed in the design model as follows:

1. Identifying Intructional Goal

The first step identifies the general purpose of learning mathematics by doing a needs analysis to determine the destination. This step means determining what you want learners to be able to do after participating in learning activities math. The general objective is a statement that describes what capabilities should be owned by the student after completion follow a lesson. The general objectives identified by the results of the needs analysis, curriculum subject areas, input from experts fields of study.

The first stage of the researchers describe the expected capabilities and owned by learners after attending fraction of material with PAIKEMI approach to learning mathematics at fifth grade. This is done by reviewing the mathematics

curriculum that refers to Decree No.. 22 of 2006 on the Competence Standard and Basic Competence.

a. Mathematics subjects in primary school / MI intended that learners havethefollowing capabilities:
    1) Understand the concepts of mathematics, explains the relationship between concepts and apply concepts or algorithms, flexibly, accurately, efficiently, and appropriately, in solving the problem
    2) Using the pattern and nature of reasoning, 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, have a curiosity, attention, and interest in studying mathematics, as well asa tenacious attitude and confidence in solving the problem.
b. Identify the general purpose grade math learning fractions V materials, the obtained map competencies to be achieved by the students.
    1) Developing PAIKEMI based text-book on the topic of fraction for fifth grade student at MI Nahdlatus Syubban
    2) SK: Numbers: Uses fractions in problem solving

3) KD: Changing the fractions to percentages and decimals and conversely

The general purpose of learning mathematics in the first half of the second semester is to use fractions in problem solving.

c. Analysis of competency standards, and the translation of basic competencies indicators

Under Decree No. SK and KD. 22 2006 on content standards, identified the formulation of standards and basic competencies are further developed as an indicator of learning mathematics courses for the second semester in fifth grade students.

Competency Standard: Uses fractions in problem solving

Basic competency: Changing the fractions to percentages anddecimals and conversely indicators:

- Expressing fractions in terms of percent
- Changing the fractions to percentages and conversely
- Changing the fractions to decimal form and conversely
- Solving everyday problems associated with fractional

2. Conducting Intructional Analysis

After identifying the learning objectives, the next step is to conduct an analysis to identify the innate skills that students must learn in order to achieve specific learning objectives.

3. Identifying Entry Behaviors, Characteristics

In identifying the content of the material to be included in the study, this requires identification of the specific skills and knowledge that must be possessed by the early learners to be ready to enter the learning and use of textbooks. Similarly, the general characteristics of learners very important to know in design learning. Users of this textbook is a fifth grade elementary school students.

When doing a content analysis of lessons learned from SK and KD subjects of mathematics known that early and prerequisite knowledge possessed by students in the form of knowledge and understanding of mathematical concepts are useful and can be applied in everyday life that they have to get completel

Fifth grade students with an average age of 11-12 years. According to Piaget's intellectual development level of formal operational level, where children use concrete operations to form a more complex operation.[28]

Peaget of understanding at this stage the child still requires a concrete stage to the stage for the abstract. Related to the students' characteristics, life skills education at the elementary level includes the general thinking skills need to be developed by each student that solve problems that include the ability to understand the problem, devised a mathematical model, solve the model and interpret the obtained solution each 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. So to say that the

[28] Ratna Wilis Dahar, Teori-Teori Belajar (Bandung: Erlangga, 1989), hlm. 155.

material fractions in grade 5 to the knowledge and understanding of mathematical concepts useful material fractions and can be applied in everyday life.

4. Writing Performance Objectives

Describe the general objectives into more specific objectives in the form of performance formulated objectives, or operational, which is a special purpose program or product, the procedure developed. Specific learning objectives is a statement about the ability or behavior that is expected to be held by the students after participating in a particular learning program. Ability or behavior must be specifically formulated and operations that can be observed and measured. Thus, the level of achievement of students in existing behavior in specific learning objectives can be measured by a test or other measuring instruments.

Writing specific learning objectives is used as a basis for developing learning strategies and develop learning test grating. Based on the analysis of learning formulation of general purpose learning and early identification of the characteristics and capabilities of fifth grade students, determined the formulation of specific learning objectives namely:

a. Stating fractions in percent

b. Changing the fractions to percentages and conversely

c. Changing the fractions to decimal form and conversely

d. Determining a simple percentage of the quantity or many objects

e. Solve everyday problems involving fractions

5. Developing Criterian-Referenced Test

Instrument assessment tests can be formulated based on the formulation of specific learning objectives that had been set. Is directly related to the specific purpose. Before the students received material about fractions given tests related to fractions to measure students' knowledge before using textbooks written by the author. After following learning objectives, students can work on the problems that have been available in the textbook as a competency test to see any change from before use and after use books written author

In this case the pre-test and post-test consisted of five multiple choice questions and five essays. In the assessment can be done with the following description:

Tabel 3.1 The Pretest Value of fifth grade students

No	Name	amount correct PG	Weight per item	Scores (amount correct x Weight per item)	Essay Scores	Komulatif Scores
1						
2						
3						
4						
5						

6. Developing Intructional Strategy

The move is an effort to select, organize, and develop common learning components and procedures that will be used to membelajarkan learners so that the learners can learn easily fit characteristics in achieving the learning objectives that have been set.

The main components of learning strategies include the following activities: (1) the pre learning, ie strategy that seeks conditioning and readiness when students will attend classes. (2) the presentation of information, namely the contents of the presentation of the strategy for developing instructional materials should be provided to learners to achieve the learning objectives of mathematics material fractions, (3) the role of the learners, ie learners seek mental engagement (4), closing the learning, with way of testing the strategy to see the level of mastery and achievement of learners.

7. Developing and Selecting Intruction

Basic steps of system activities math learning design is a step instructional materials development and selection. The results of product development in the form of printed materials such as books teaching for fifth grade students in math lesson on fractions using the PAIKEMI approach.

8. Designing and Conducting Formative Evaluation

After learning materials produced, formative evaluation. Formative evaluation was conducted to obtain data to revise the learning material produced to make it more effective. Formative evaluations conducted on two groups, namely the evaluation by experts and the evaluation of the use of teaching

materials for learners. Evaluation experts include content expert test subjects to see the truth of the content presented, to acquire the suitability of design experts who developed the design. While the evaluation for learners shown in field trials (filed evaluations).

9. Revising Intruction

This step is a step of revision, not only learning materials but include a general description of learning, analytical learning, early behavioral performance, the grain problem, learning strategies. Data obtained from the formative evaluation were collected and interpreted to solve the difficulties faced by the students in achieving the learning objectives as well as to revise the learning to be more effective. Over the last two stages will be presented in the results of the development which includes the presentation of teaching materials test data, test data analysis, and revision of product development.

Step - a procedural step in the research and development that are classified by Walter Dick and Lou Carey is in line with the description of the procedure Nana Syaodih development research, the method of descriptive, evaluative, and experimental. Descriptive research method used in the initial study to collect data on existing conditions. Existing conditions include: (1) the condition of the existing products for comparison or base material (embryos) for products to be developed, (2) the condition of the users such as schools, teachers, students and other users, (3) the condition factor - factors supporting and inhibiting the development and use of the products to be produced, including the human element, facilities and infrastructure, penegelolaan. Evaluative methods used to

evaluate the trial process and any activities conducted an evaluation trial. Experimental method used to test the efficacy of the resulting product.[29]

D. Product Validation

Product trials are intended to gather data that can be used as a basis to determine the level of effectiveness, efficiency, and / or appeal of the product. Some of the activities carried out to test the development of this research include:

1. Trial Design

   The test is done in order to determine the level of product effectiveness, validity and attractiveness. Products such as the textbook for the student as a result of this development tested the effectiveness of products, validity.The level of product effectiveness, validity and attractiveness of the textbook can be determined through analysis of the results of pilot activities are carried out through several stages, namely:

   a. Review by expert content subjects

   b. Review by expert instructional design

   c. Field trials involving all subjects in the classroom

An **expert** is someone widely recognized as a reliable source of technique or skill whose faculty for judging or deciding rightly, justly, or wisely is accorded authority and status by peers or the public in a specific well-distinguished domain. An expert, more generally, is a person with extensive knowledge or ability based on research, experience, or occupation and in a particular area of study. Experts are called in for advice on their respective subject, but they do not always agree

[29] Nana Sukmadinata, Metode Penelitian Pendidikan (Bandung: PT. Remaja Rosdakarya, 2007), hal. 167.

on the particulars of a field of study. An expert can be believed, by virtue of credential, training, education, profession, publication or experience, to have special knowledge of a subject beyond that of the average person, sufficient that others may officially (and legally) rely upon the individual's opinion. Historically, an expert was referred to as a sage (Sophos). The individual was usually a profound thinker distinguished for wisdom and sound judgment.[30]

Experts have a prolonged or intense experience through practice and education in a particular field. In specific fields, the definition of expert is well established by consensus and therefore it is not always necessary for individuals to have a professional or academic qualification for them to be accepted as an expert. In this respect, a shepherd with 50 years of experience tending flocks would be widely recognized as having complete expertise in the use and training of sheep dogs and the care of sheep. Another example from computer science is that an expert system may be taught by a human and thereafter considered an expert, often outperforming human beings at particular tasks. In law, an expert witness must be recognized by argument and authority.

The fundamental research endeavor is to describe what it is that experts know and how they use their knowledge to achieve performance that most people assume requires extreme or extraordinary ability. Studies have investigated the factors that enable experts to be fast and accurate.

Characteristics of Expert: They should perform at the level of a human expert. They should have the ability to respond in a reasonable amount of time.

[30] Ericsson & Stasewski 1989

Time is crucial especially for real time systems. They must be reliable and should not crash. They should not be a black box instead it should be able explain the steps of the reasoning process. It should justify its conclusions in the same way a human expert explains why he arrived at particular conclusion.

2. Trial Subjects

Test subjects in the study of this development will be carried out in the 5th grade students who are or have been given about the material fractions, agarmereka know which part is not understood. And will do paa an expert who understands the contents of a product development which would especially be true in the field of mathematics, mathematics teachers, and instructional design experts.

a. Mathematics content expert on fractional

Content expert in the subjects of this research is a development that has the educational background of at least Masters level mathematics, mastering mathematics material characteristics in MI, especially about fractions. In addition it is also a content expert who is willing to become a product tester development of teaching materials using the V-class fractions PAIKEMI approach. The steps are performed in the stage expert review the contents of this field of study are:

1) Going to the content expert mathematics

2) Explain the process of development that has been done

3) Provide the results of the product that has beendeveloped

4) Through the questionnaire and interview instrument, ask for opinions and comments about the quality of the textbooks were developed in terms of the content or materials

b. Instructional design experts

Instructional design experts set as design testers math textbook material fractions PAIKEMI approach with the following considerations:

1) Have a minimum educational background S2

2) As an author of books, papers, and so forth as well as an observer of education

3) Available as a product design development testing of materials teaching mathematics learning with PAIKEMI approach.

c. Teachers and students of class V MI Nahdlatus Syubban Following criteria:

1) The math teacher and math teacher really graduate mathematics education or if the teacher has not taught math at least five years, the agency gave permission for product testing activities math textbook developers are being developed, the willingness of teachers of mathematics as a product developer for assessors sourcing data from developers.

2) Students MI Nahdlatus Syubban fifth grade with good ability, medium and low. This test is intended to get the students' comments about the attractiveness of the content of the textbook. The steps are performed in the test developers are developers deliver learning teaching materials have been developed and the assessment instrument, the student representative to encourage developers to comment freely and provide input on the product textbook through the instrument that has been provided. With step determines the sample, preparing the environment and infrastructure, conducting preliminary tests, implementing learning activities, conducting final tests and collect data using a questionnaire instrument.

E. Data Types

Data are expressed in this study are:

1. Coincidentally, validity or content validity textbooks obtained from the expert content of mathematics courses.

2. Precision of the design lessons learned from an expert instructional design and graphic design assistance dengam.

3. Suitability or fitness or attractiveness of the use of mathematics textbooks obtained from teachers of math and fifth grade students Nahdlatus Syubban MI.

4. Effectiveness of the use of the textbook in order to achieve the learning objectives derived from the target student trials.

Based on the type of data described above, to simplify the analysis, then grouped by their nature into two, namely in the form of qualitative data and quantitative data.

1. Qualitative data gathered from the assessment results, input, feedback, critiques and suggestions for improvement through an open question questionnaire.

2. Quantitative data collected using a questionnaire covered questions that form the points that contains structured questions assessment products in terms of both content and design after using mathematics textbook material fractions.

F. Data Collection Instrument

The instrument used to obtain the amount of data expected to be used as a data collection instrument in the form of questionnaires and tests acquisition of learning outcomes.

1. Questionnaire

Questionnaires are a number of written questions used to obtain information from respondents are used to gather data on the accuracy of lab manual components, precision design or instructional design, accuracy of lab manual, the attractiveness and effectiveness of the use of guide book to be further analyzed and used as a revision. The nature of the questions in the questionnaire includes two kinds, namely the question open and closed questions. Open-ended questions are used to obtain qualitative data. While closed questions aimed to obtain quantitative data. The questionnaire required is as follows:

a. Questionnaire responses appraisal or expert content andinstructional design experts mathematics textbook material fractions
b. Questionnaire responses student assessment or field trials
c. Response assessment questionnaires or fifth grade math teacher Nahdlatus MI Syubban

2. Learning achievement test

Acquisition of learning outcomes tests are achievement tests used to measure achievement of someone having learned something. The test is used to collect data on the post-test results that demonstrate the ability of the students after the use of mathematics textbooks.

G. Data analysis techniques

Analysis techniques are used to process the data from the test results the product is content analysis, descriptive analysis and test analysis of uji T. These three techniques are used in accordance with the characteristics of the data obtained from the data collection process as described above desired.

1. Analysis of learning content

This analysis is done by analyzing the grouping to formulate learningobjectives based on standard mathematical material fractions and basic competencies as well as organizing the learning content developed using PAIKEMI approach.

The results of this analysis is then used as the basis for developinginstructional materials mathematics learning material fractions with PAIKEMI approach

2. Descriptive Analysis

At this stage the data collected using a questionnaire assessment questionnaire enclosed and open assessment to give criticism, suggestions and feedback improvements. The results of this analysis are used to determine the level of accuracy, effectiveness, and attractiveness of the product or the results of the development of a mathematics textbook material fractions by using a realistic mathematical approach. The data collected can be grouped according to the type of data and grouped into two, namely

Quantitative data obtained from the questionnaire response assessment and development of products aimed at the content expert, the instructional design expert mathematics, graphic design experts, teachers, students and groups of students research subjects, using techniques described by descriptive percentages. While the test results are interpreted next product, then explained qualitatively by the scale of the line as follows:

- Point 4 means excellent / very appropriate / very precise
- Point 3 means good / appropriate / right
- Point 2 means less good / not appropriate / not appropriate
- Point 1 means no good / not appropriate / not appropriate

In order to give meaning and decision making at the level of accuracy, effectiveness, and attractiveness scale conversion use the following levels of achievement[31]

Tabel 3.2 Achievement Scale Conversion Rate

Achievement level	Qualification	Information
90 -100%	Very good	No revision
75 – 89 %	Good	No revision
65 – 74 %	Enough	Revised
55 – 64 %	Less	Revised
0 – 54 %	Very less	Revised

With the formula:

$$\boldsymbol{P = \frac{\sum_{i}^{4}=1 xi}{\sum_{j}^{4}=1\ xj}}$$

Description:

P = percentage level of validity

$\sum_{i}^{4} = 1xi$ = number of answer assessment

$\sum_{j}^{4} = 1\ xj$= The highest number of answers

Qualitative data in the form of input, feedback and suggestions for improvement of the content expert, the instructional design expert mathematics, education practitioners obtained from the open

[31] Arikunto. Dasar-Dasar Evaluasi Pendidikan (Jakarta: Bumi Aksara, 2008) hal 2006.

questionnaire, then identified and classified based on the characteristics of the data, and then analyzed by content analysis techniques.

The results of the analysis of data on mathematics learning information that has been done in cfifth grade students of MI Nahdlatus syubban used as a basis for developing a mathematical textbook material fractions in fifth grade Meanwhile, the results of data analysis in the form of assessment, feedback from the experts is used as an ingredient to revise product development.

3. Analysis Uji T

In field trials, the data collected using questionnaires and achievement tests or achievement tests (test achievement of learning outcomes). The data collected by field trials using the initial test and final test in order to know the results of trials group learning the target fifth grade students before and after using the product development of teaching materials. Analysis using one-group pretest-posttest experimental design is given a sample of the initial test and final test in addition to treatment. Criteria test is the t test for repeated observations, is used to determine whether there is a treatment effect that is imposed on a group of objects. The formula that is used with a significance level of 0.05 was:[32]

$$t = \frac{\overline{D}}{\sqrt{\frac{d^2}{N\,(N-1)}}}$$

[32] Turmudi. Metode Statistika (Malang: UIN Press, 2008), hlm. 214.

Ket:

t = uji t

D = Different ($X_2 - X_1$)

d2= Variansi

N = Number of Samples

CHAPTER IV

RESULTS AND DISCUSSION

This chapter will explain about the description of the development of teaching materials, presentation of data validation, and data analysis and revision of teaching materials.

A. Description of Research Teaching Material

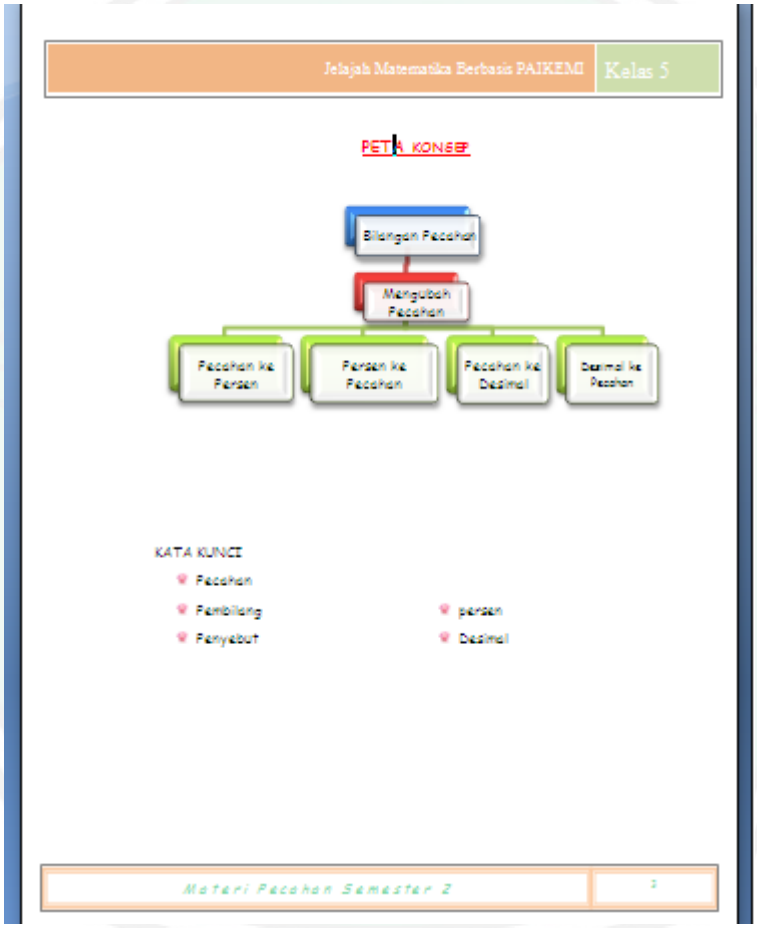
Teaching materials development has been made by the developer consists of a student book with PAIKEMI approaches in the subject of fractions for fifth grade students.

Student-generated book is divided into eight learning activities, information materials and examples of fractions. Learning activity is structured to facilitate the students build the material to be studied. The following activities are concept maps, student activities, let's keep in mind, let's play, individual task, game group, and evaluation.

This is an explanation about eight learning activities :

a. Concept maps

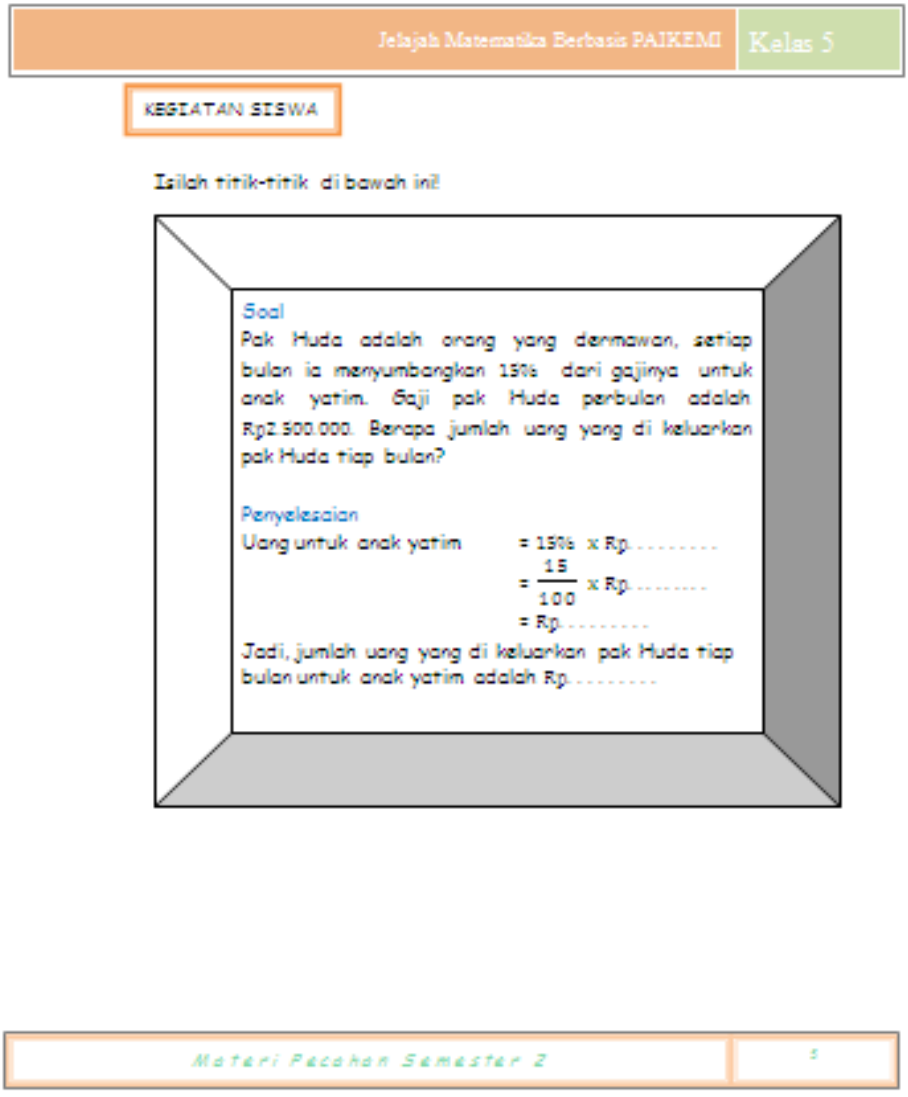
Concept maps explain about content that will be learned and explained in this book.



Picture 4.1 Concept map

b. Student activities

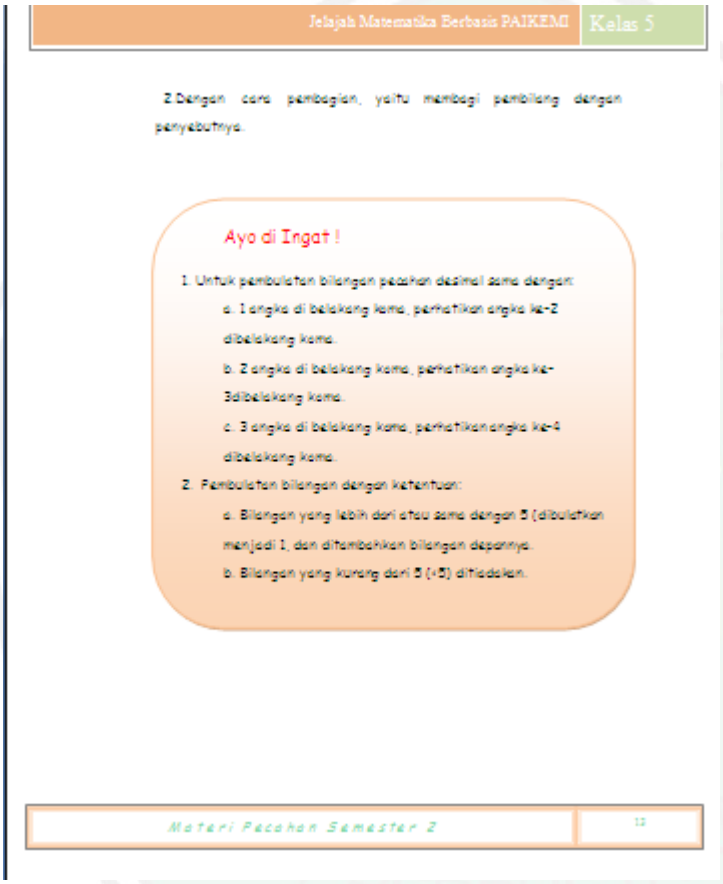
In students activities explain about activities of students to solved the mah problems.



Picture 4.2 Students Activities

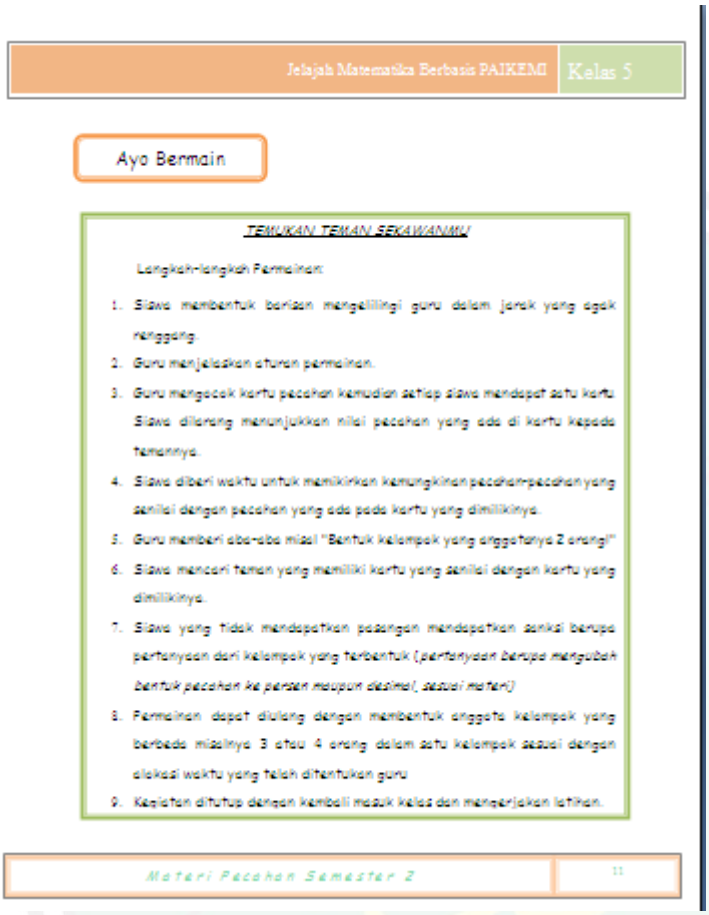
c. Let's keep in mind

In this section explain about some material that have to remember to learning process.



Picture 4.3. Let's keep in mind

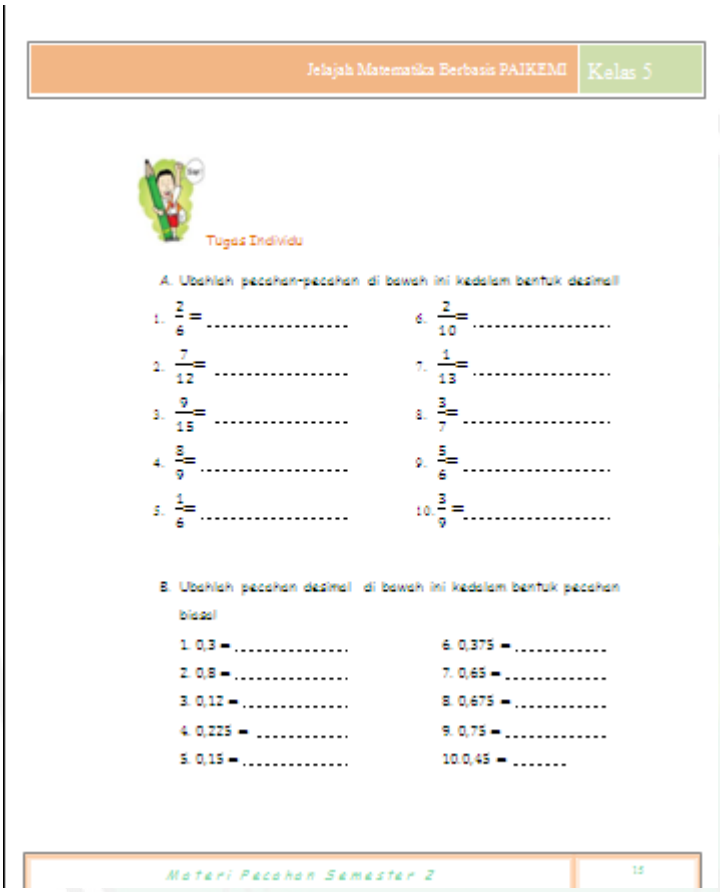
d. Let's play



Picture 4.4. Let's Play

e. Individual task

About question and task individual, students must doing with themselves.



Jelajah Matematika Berbasis PAIKEM Kelas 5

Tugas Individu

A. Ubahlah pecahan-pecahan di bawah ini kedalam bentuk desimal!

1. $\frac{2}{6}$ = ...
2. $\frac{7}{12}$ = ...
3. $\frac{9}{15}$ = ...
4. $\frac{8}{9}$ = ...
5. $\frac{1}{6}$ = ...
6. $\frac{2}{10}$ = ...
7. $\frac{1}{13}$ = ...
8. $\frac{3}{7}$ = ...
9. $\frac{5}{6}$ = ...
10. $\frac{3}{9}$ = ...

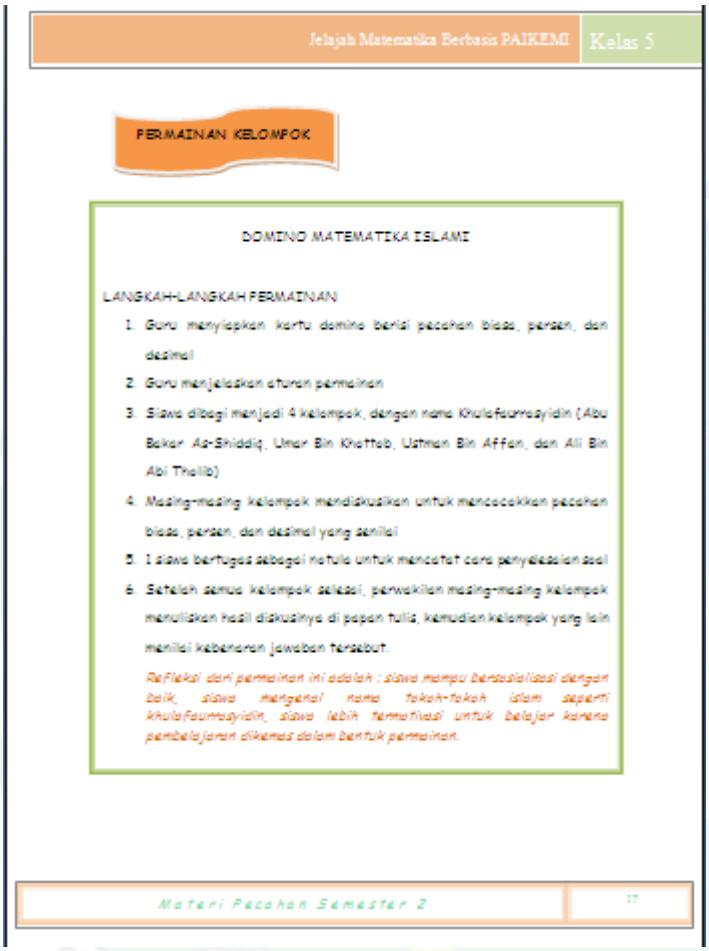
B. Ubahlah pecahan desimal di bawah ini kedalam bentuk pecahan biasa!

1. 0,3 = ...
2. 0,8 = ...
3. 0,12 = ...
4. 0,225 = ...
5. 0,15 = ...
6. 0,375 = ...
7. 0,65 = ...
8. 0,675 = ...
9. 0,75 = ...
10. 0,45 = ...

Materi Pecahan Semester 2

Picture 4.5. Individual Task

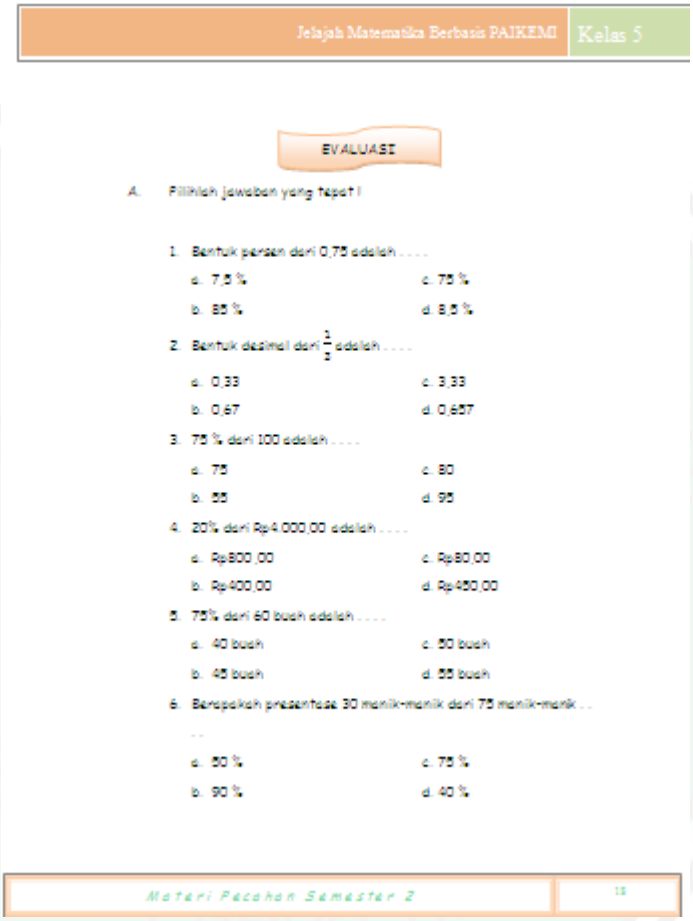
f. Game group



Picture 4.6. Game Group

g. Evaluation

In evaluation explain about question that must doing by students in this mater.



Picture 4.7. Evaluation

B. Data Validation and Data Analysis

a. Results of Trial Subjects First Stage

Validation of the data obtained from the evaluation of teaching materials made by three subjects first try which consists of two faculty and one mathematics teacher MI. The identity of the subject on the first try trials instructional materials of this first stage can be seen in Appendix 3. Data can be seen in Table 4.1. whereas for Table 4.3 Data on the evaluation of 10 students are taken from class V

Ket:

X_1 = the first validator is Dini Sulistiowati. M.Si as a education mathematic learning lecture in STAI Al-Qolam

X_2 = The second validator is Nurul Yaqin as a lecturer Resource Development and Learning Media UIN Malang

X_3 = the third, validator is Hidayatul Maulida Spd. I as a teacher of Mathematics in MI Nahdlatus Syubban

$\sum_{t=1}^{3} x_i$ = number of answer assessment

$\sum_{j=1}^{3} x_j$ = The highest number of answers

P =Percentage level of validity

Table 4.2 Suggestions and Feedback on PAIKEMI based-textbook on the topic of fraction for fifth grade students

No	Name	Suggestions and Feedback
1	Dini Sulistiowati, M. Si	• Adanya kesalahan ketik • Ada penataan lagi untuk tata cetak • Ada beberapa kalimat yang perlu diperbaiki • Perlu mencamtumkan sumber foto • Penggunaan warna perlu diatur lagi
2	Nurul Yaqin M.Pd	• Header dan footer agak mengganggu buatlah yang sesuai dengan kontennya • Desaian layout perlu dihaluskan
3	Hidayatul Maulida, S.Pd.I	• Perlunya penambahan soal pada latihan

Based on Table 4.1 and 4.2 can be analyzed that the textbook for students seen from the questionnaire responses were filled by professors and teachers of mathematics can be seen that students who have developed the book as a whole can be said to be good with a percentage of 83.8%. Based on these results, the student book does not need to be revised.

Table 4.1 Data Penilaian Buku Siswa Materi Pecahan Melalui Pendekatan PAIKEMI Untuk Siswa SD/MI Kelas V

No	Pertanyaan	X_1	X_2	X_3	$\sum_{t=1}^{3} x_i$	$\sum_{j=1}^{3} x_j$	P (%)	Kriteria Validitas	Ket.
1	Buku siswa didesain dari masalah-masalah sederhana yang ada di sekitar siswa	4	4	4	12	12	100	Sangat Valid	Tidak perlu revisi
2	Buku siswa memuat kegiatan menarik yang menimbulkan rasa keingintahuan yang tinggi pada siswa	3	4	3	10	12	83,3	Valid	Tidak perlu revisi
3	Pertanyaan-pertanyaan yang ada dapat menggiring siswa untuk melakukan proses penelusuran dalam belajar	3	3	3	9	12	75	Valid	Tidak perlu revisi

4	Buku siswa memberi kesempatan kepada siswa untuk mengidentifikasi, merumuskan, dan memvisualisasikan masalah dengan cara yang berbeda, serta mampu mentransformasikan masalah dunia real ke masalah matematika	3	3	3	9	12	75	Valid	Tidak perlu revisi
5	Buku siswa memberi kesempatan kepada siswa untuk mempresentasikan hubunganhubungan dalam rumus, menggunakan simbol-simbol	3	3	3	9	12	75	Valid	Tidak perlu revisi
6	Buku siswa menekankan penalaran dan pemahaman dalam pemecahan masalah bukan rumus dan strategi khusus yang dihafalkan	4	4	4	12	12	100	Valid	Tidak perlu revisi
7	Buku siswa mengkonstruksi konsep	3	3	3	9	12	75	Valid	Tidak perlu revisi
8	Buku siswa memiliki keterkaitan dengan pokok bahasan lain baik yang sudah dipelajari maupun yang belum dipelajari	3	3	4	10	12	83,3	Valid	Tidak perlu revisi

	siswa								
9	Buku siswa memuat permasalahan yang menuntut siswa untuk mencari alternative penyelesaian yang lain atau open ended	3	4	3	10	12	83,3	Valid	Tidak perlu revisi
10	Persoalan yang diberikan pada buku siswa bersifat problem solving	3	4	4	11	12	91,6	Sangat Valid	Tidak perlu revisi
11	Buku siswa menuntut siswa untuk melakukan refleksi terhadap setiap langkah yang ditempuh atau terhadap hasil pelajaran (secara islami)	3	3	3	9	12	75	Valid	Tidak perlu revisi
12	Buku siswa memuat soal latihan untuk menerapkan konsep yang dikonstruksi siswa	4	3	4	11	12	91,6	Sangat Valid	Tidak perlu revisi
13	Materi yang disajikan dalam buku siswa sudah sesuai dengan standar kompetensi	4	4	4	12	12	100	Sangat Valid	Tidak perlu revisi
14	Kesesuaian materi dengan tujuan	3	3	4	10	12	83,3	Valid	Tidak perlu revisi

	Pembelajaran								
15	Kebenaran materi meliputi konsep, simbol, contoh, dan ilustrasi	3	3	3	9	12	75	Valid	Tidak perlu revisi
16	Bahasa yang digunakan dalam buku siswa mudah dipahami	4	3	3	10	12	83,3	Valid	Tidak perlu revisi
17	Materi yang disajikan dalam buku siswa disusun secara sistematis	3	3	3	9	12	75	Valid	Tidak perlu revisi
Total		56	57	58	171		83,8		

Table 4.2 Suggestions and Feedback on PAIKEMI based-textbook on the topic of fraction for fifth grade students

No	Name	Suggestions and Feedback
1	Dini Sulistiowati, M. Si	• Adanya kesalahan ketik • Ada penataan lagi untuk tata cetak • Ada beberapa kalimat yang perlu diperbaiki • Perlu mencamtumkan sumber foto • Penggunaan warna perlu diatur lagi
2	Nurul Yaqin M.Pd	• Header dan footer agak mengganggu buatlah yang sesuai dengan kontennya • Desaian layout perlu dihaluskan
3	Hidayatul Maulida, S.Pd.I	• Perlunya penambahan soal pada latihan

Based on Table 4.1 and 4.2 can be analyzed that the textbook for students seen from the questionnaire responses were filled by professors and teachers of mathematics can be seen that students who have developed the book as a whole can be said to be good with a percentage of 83.8%. Based on these results, the student book does not need to be revised.

Tabel 4.3 Data Hasil Evaluasi dari 10 Siswa yang Diambil dari Kelas V

No	Pertanyaan	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	$\sum_{t=1}^{10} x_i$	$\sum_{j=1}^{10} x_j$	***P(%)***	Kriteria Validitas	Ket.
1	Saya mudah memahami petunjuk belajar yang ada pada buku siswa	3	3	4	3	3	3	4	4	3	3	33	40	82,5	Valid	Tidak perlu revisi
2	Buku siswa memuat kegiatan belajar yang menarik yang menimbulkan rasa keingintahuan saya	4	4	3	4	4	4	4	3	3	4	37	40	92,5	Sangat valid	Tidak perlu revisi
3	Kegiatan belajar pada buku siswa menuntut saya untuk bekerjasama dengan teman atau berinteraksi dengan lingkungan	3	4	3	3	4	3	3	4	3	4	34	40	85	Sangat valid	Tidak perlu revisi
4	Saya senang mempelajari buku siswa karena tampilannya menarik	4	4	3	3	3	4	3	3	4	3	34	40	85	Sangat valid	Tidak perlu revisi
5	Soal-soal yang ada pada buku siswa	4	3	4	4	3	3	4	3	3	3	34	40	85	Sangat	Tidak perlu

	sesuai dengan materi yang saya pelajari														valid	revisi
6	Petunjuk untuk mengerjakan latihan soalmudah saya pahami	3	3	3	3	3	3	4	4	3	3	32	40	80	Valid	Tidak perlu revisi
7	Saya bisa membuat ringkasan materi	2	3	3	3	3	4	4	3	3	3	31	40	77,5	Valid	Tidak perlu revisi
8	Saya bisa memahami materi dengan diberikan gambar sehari-hari	4	3	3	3	4	3	3	4	4	3	34	40	85	Sangat valid	Tidak perlu revisi
9	Bagian penulisan sangat jelas	3	4	3	3	4	3	3	4	3	3	33	40	82,5	Sangat valid	Tidak perlu revisi
10	Saya dapat dengan mudah memahami bahasa yang ada pada buku siswa	3	4	4	4	4	3	4	3	3	4	36	40	90	Sangat valid	Tidak perlu revisi

b. Results of Trial Subjects Stage Two with pretest-Post Test

Pretest-posttest data obtained from the test before taking the book and afterusing the book to the students to the material fractions. Such data will described as follows.

Tabel 4.4 Pretest ofFifth Grade Students

No	Nama	Jumlah benar PG	Bobot per item	skor perolehan (jumlah benar x bobot/item)	Nilai Essay	Nilai komulatif
1	Agam Senatama	3	5	15	25	40
2	Ahmad Khaidar	7	5	35	25	70
3	Dimas Afandi	3	5	15	25	40
4	Fina Zahrotul U	2	5	10	25	35
5	Hiyati Muktafia	1	5	5	25	30
6	Hilmi Afadil	3	5	15	25	40
7	M. Fiki Fathur R	2	5	10	25	35
8	M. Dwi Aditya	3	5	15	25	40
9	M. Riski Yanuar	3	5	15	25	40
11	Niko Wahyudi	2	5	10	25	35

12	Putri Khusniawati	2	5	10	25	35
13	Rendi Febrian	3	5	15	25	40
14	Rifada Sagna F	4	5	20	25	45
15	Risqon Muktafa	3	5	15	25	40
16	Uswatun Hasanah	2	5	10	25	35
17	Andrean Eka P	2	5	10	25	35
18	Riski Amaliyah	4	5	20	25	45

In this pre-test many students get a scrore under KKM 75, only one student that get good score. Based on thet pre test researcher doing this research.

Tabel 4.5 Post-Test Of Fifth Grade Students

No	Nama	Jumlah benar PG	Bobot per item	skor perolehan (jumlah benar x bobot/item)	Nilai Essay	Nilai komulatif
1	Agam Senatama	4	5	20	60	80
2	Ahmad Khaidar	5	5	25	75	100
3	Dimas Afandi	5	5	25	70	95
4	Fina Zahrotul U	4	5	20	65	85

5	Hiyati Muktafia	4	5	20	65	85
6	Hilmi Afadil	5	5	25	65	90
7	M. Fiki Fathur R	4	5	20	60	80
8	M. Dwi Aditya	5	5	25	65	90
9	M. Riski Yanuar	4	5	20	70	90
10	Niko Wahyudi	4	5	20	65	85
11	Putri Khusniawati	4	5	20	60	80
12	Rendi Febrian	5	5	25	75	100
13	Rifada Sagna F	5	5	25	75	100
14	Risqon Muktafa	5	5	25	75	100
15	Uswatun Hasanah	4	5	20	70	90
16	Andrean Eka P	5	5	25	65	90
17	Riski Amaliyah	5	5	25	75	100

From the result of post test all students get score up to KKM 75, and five students get a perfect score that is 100.

The Step of Uji T

Step 1. Creating Ha and Ho made in the form of a sentence.

Ha = there is a difference in value before and after the students use math textbook material fractions with PAIKEMI approach.

Ho = no difference in value before and after the students use math textbook material fractions with PAIKEMI approach.

Step 2. Seeking tcount with formula

$t = \frac{\bar{D}}{\sqrt{\frac{d^2}{N(N-1)}}}$ dan db= N-1 = 23-1 = 22

Step 3. determine the criteria

Ho accepted if $t_{hitung}^2 < t^2_{tabel}$

Ho rejected if $t_{hitung}^2 > t^2_{tabel}$

Step 4. Accounting

Tabel 4.6 Accounting of Uji t

Kasus	X_1	X_2	$D = (X_2 - X_1)$	D^2
1	40	80	40	1600
2	70	100	30	900
3	40	95	55	3025
4	35	85	50	2500
5	30	85	55	3025
6	40	90	50	2500
7	35	80	45	2025
8	40	90	50	2500
9	40	90	50	2500
10	35	85	50	2500
11	35	80	45	2025
12	40	100	60	3600
13	45	100	55	3025

14	40	100	60	3600
15	35	90	55	3025
16	35	90	55	3025
17	45	100	55	3025
Total	680	1540	860	44400

$$d^2 = \sum D^2 - \frac{(\sum D)^2}{N}$$

$$= 44400 - \frac{860^2}{23}$$

$$= 44400 - \frac{739600}{23}$$

$$= 44400 - 32188{,}65$$

$$= 12211{,}35$$

$$t = \frac{\bar{D}}{\sqrt{\frac{d^2}{N\,(N-1)}}}$$

$$= \frac{50{,}58}{\sqrt{\frac{12211{,}35}{17\,(17-1)}}} = \frac{50{,}58}{\sqrt{\frac{12211{,}35}{272}}} = \frac{50{,}58}{\sqrt{44{,}89}} = 7,\ 54925$$

Step 5 compare the t_{hitung} dan t_{tabel}

t_{hitung} = 7, 54925

t_{tabel} = 1,749 (α untuk uji satu pihak dengan signifikasi 0,05)

Step 6 conclusion

Because of t greater than t table then Ho is rejected and Ha accepted, so there are significant differences between the values before and after the students use math textbook material fractions with PAIKEMI approach. Furthermore, the average price is known X2 over X1 (90.58> 40.00) also shows that the post-test better than the pretest. So giving the student textbook is quite effective to boost student learning outcomes..

CHAPTER V

CONCLUSION

A. Conclusion

Material fragments produced teaching material is expected to make learning more interesting for students because the material presented refers to a realistic approach to learning mathematics. These lessons are designed so that students can be required to be more active and the teacher acts as a facilitator only. Produced teaching materials have been validated by a mathematics professor, a professor of mathematics teacher development and the MI. Characteristics of instructional materials mathematics learning material fractions with realistic approach to learning mathematics fifth grade students developed are as follows.

a. Material submitted relating to the environment involving students with concrete or artificial objects.
b. Teaching materials emphasize the reasoning and understanding in solving problems
c. Teaching materials contain activities that encourage students to become active, innovative, creative, effective, fun, and Islamic.
d. Instructional materials containing problems that have more than one alternative answer or open-ended,
e. Teaching material includes issues related to problem solving.

Results validate the feasibility of the development of teaching materials known to both the overall percentage of 83.80% of the value of expert trial results first. This suggests that the teaching materials developed decent used as teaching materials that can help students in the learning process.

Developed teaching materials that can improve student achievement, it can be seen from the significant value of the average value of the pretest and posttest. Pretest and posttest 40.00% 90.58%. Seen value increased by 50.58%.

B. Advice

Based on the above conclusions, some suggestions that could be addressed are: Development of teaching materials is only limited to the fraction of material, therefore there is expected to follow up the development of teaching materials for other materials. Advised on other developers to trial to students with a large group at once compared between schools so as to know its effectiveness.

APPENDIX 1

Lembar validasi pada bahan ajar

A. Pengantar

Buku siswa ini didesain untuk siswa MI kelas V pada bidang studi Matematika pokok bahasan pecahan dengan pendekatan pembelajaran matematika berbasis PAIKEMI. Berkaitan dengan pengembangan buku siswa tersebut, Penulis bermaksud mengadakan validasi terhadap produk yang dihasilkan. Oleh karena itu, Penulis memohon kepada Bapak/Ibu untuk kesediaannya memberikan penilaian terhadap kualitas produk yang telah dikembangkan melalui angket. Hasil dari pengisian angket ini akan digunakan untuk menyempurnakan produk pengembangan yang telah dihasilkan, agar dapat bermanfaat bagi semua pihak dimasa yang akan datang. Sebelumnya, Penulis menyampaikan terima kasih sebesar-besarnya atas kesediaan Bapak/Ibu untuk berpartisipasi dalam pengisian angket ini.

B. Identitas Responden

Nama : .....

NIP : .....

Instansi : .....

Alamat Instansi : .....

Pendidikan : .....

C. Petunjuk Pengisian Angket

Adapun petunjuk untuk pengisian angket adalah sebagai berikut:

1. Sebelum mengisi angket yang telah tersedia, dimohon Bapak/Ibu terlebih dahulu membaca buku siswa.
2. Berilah tanda cek (√) pada kolom skor penilaian:

- Point 4 berarti sangat baik/sangat sesuai/sangat tepat
- Point 3 berarti baik/sesuai/tepat
- Point 2 berarti kurang baik/kurang sesuai/kurang tepat
- Point 1 berarti sangat kurang baik/sangat kurang sesuai/sangat kurang tepat

3. Komentar/saran mohon ditulis pada lembar yang telah disediakan.
4. Pengisian angket ini bertujuan untuk mengukur kevalidan produk yang telah dikembangkan sehingga kecermatan dalam penilaian produk sangat diharapkan.

LEMBAR VALIDASI

No	Pertanyaan	Skor penilaian			
		4	3	2	1
1	Buku siswa didesain dari masalah-masalah sederhana yang ada di sekitar siswa				
2	Buku siswa memuat kegiatan menarik yang menimbulkan rasa keingintahuan yang tinggi pada siswa				
3	Pertanyaan-pertanyaan yang ada dapat menggiring siswa untuk melakukan proses penelusuran dalam belajar				
4	Buku siswa memberi kesempatan kepada siswa untuk mengidentifikasi, merumuskan, dan memvisualisasikan masalah dengan cara yang berbeda, serta mampu mentransformasikan masalah dunia real ke masalah matematika				
5	Buku siswa memberi kesempatan kepada siswa untuk mempresentasikan hubunganhubungan dalam rumus, menggunakan simbol-simbol				
6	Buku siswa menekankan penalaran dan pemahaman dalam pemecahan masalah bukan rumus dan strategi khusus yang dihafalkan				
7	Buku siswa mengkonstruksi konsep				
8	Buku siswa memiliki keterkaitan dengan pokok bahasan lain baik yang sudah dipelajari maupun yang belum dipelajari				

	siswa				
9	Buku siswa memuat permasalahan yang menuntut siswa untuk mencari alternative penyelesaian yang lain atau open ended				
10	Persoalan yang diberikan pada buku siswa bersifat problem solving				
11	Buku siswa menuntut siswa untuk melakukan refleksi terhadap setiap langkah yang ditempuh atau terhadap hasil pelajaran (secara islami)				
12	Buku siswa memuat soal latihan untuk menerapkan konsep yang dikonstruksi siswa				
13	Materi yang disajikan dalam buku siswa sudah sesuai dengan standar kompetensi				
14	Kesesuaian materi dengan tujuan Pembelajaran				
15	Kebenaran materi meliputi konsep, simbol, contoh, dan ilustrasi				
16	Bahasa yang digunakan dalam buku siswa mudah dipahami				
17	Materi yang disajikan dalam buku siswa disusun secara sistematis				
Total					

- **Lembar komentar/saran untuk buku siswa**

Malang, ... 2014

.....

NIP.

APPENDIX 2

ANGKET SISWA

A. Identitas Responden

Nama : ……..

Sekolah : ……..

Kelas : ……..

B. Petunjuk Pengisian Angket

1. Berilah tanda cek (√) pada kolom skor penilaian yang sesuai dengan pilihan kalian:

- Point 4 berarti sangat baik/sangat sesuai/sangat tepat
- Point 3 berarti baik/sesuai/tepat
- Point 2 berarti kurang baik/kurang sesuai/kurang tepat
- Point 1 berarti tidak baik/tidak sesuai/tidak tepat

2. Komentar/saran mohon ditulis pada lembar yang telah disediakan.

No	Pertanyaan	Skor Penilaian			
		4	3	2	1
1	Saya mudah memahami petunjuk belajar yang ada pada buku siswa				
2	Buku siswa memuat kegiatan belajar yang menarik yang menimbulkan rasa keingintahuan saya				
3	Kegiatan belajar pada buku siswa menuntut saya untuk bekerjasama dengan teman atau berinteraksi dengan lingkungan				
4	Saya senang mempelajari buku siswa karena tampilannya menarik				
5	Soal-soal yang ada pada buku siswa sesuai dengan materi yang saya pelajari				

6	Petunjuk untuk mengerjakan latihan soal mudah saya pahami				
7	Saya bisa membuat ringkasan materi				
8	Saya bisa memahami materi dengan diberikan gambar sehari-hari				
9	Bagian penulisan sangat jelas				
10	Saya dapat dengan mudah memahami bahasa yang ada pada buku siswa				

- **Lembar komentar/saran untuk buku siswa**

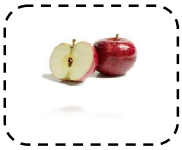
Malang, ... 2014

.....

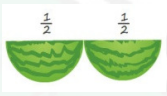
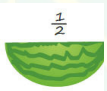
Pre-Test

Nama: Kelas: Hari,tanggal:

A. Pilihlah jawaban yang paling benar!

1. Berapa jumlah apel Adi pada gambar berikut  ditambah  ?

   a. 5 b. $4\frac{1}{2}$ c. 6 d. $5\frac{1}{2}$

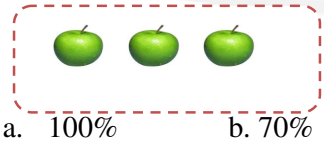
2. Ibu membeli semangka untuk arisan sebanyak  . Kemudian karena kurang ibu membeli lagi  . Ayah tiba-tiba datang dan memakan  . Berapa sisa semangka yang dimiliki ibu sekarang?

   a. 6 b. $4\frac{1}{2}$ c. 5 d. $5\frac{1}{2}$

3.  Anjar pergi ke toko untuk membeli baju. Sesampainya di sana Anjar mendapatkan baju yang disukainya. Dibaju tersebut ada tanda diskon 20%. Jika baju tersebut harganya Rp 80.000 berapa uang yang harus di bayar Anjar untuk membeli baju tersebut?

   a. Rp 74.000 b. Rp 64.000 c. Rp 16.000 d. Rp 26.000

4. Dedi mempunyai 3 apel hijau dan 7 apel merah. Persentase apel hijau Dedi adalah ….

   a. 100% b. 70% c. 30% d. 40%

5. Halaman rumah Divi berbentuk segiempat. Setiap sisinya memiliki panjang 1,25 m. Berapa keliling halaman rumah Divi  ?

a. 6 b. $4\frac{1}{2}$ c. 5 d. $5\frac{1}{2}$

B. Jawab pertanyaan di bawah ini dengan benar!

1.  Pak Fajar mewariskan sawah berbentuk persegi panjang yang kepada adiknya yang bernama pak Arif. Panjang dan lebar sawah tersebut adalah $6\frac{3}{4}$ m dan $5\frac{4}{6}$ m. Berapa luas sawahnya?

2. Andri memiliki coklat  yang setiap batangnya ada 8 bagian. Dia hanya memiliki $1\frac{1}{2}$ batang coklat yang akan dibagi pada 3 temanya. Berapa bagian masing-masing yang didapat teman andri?

3. Jarak antara kota Blitar dan Malang adalah 7 cm di peta. jika skala yang digunakan 1:1000.000 jarak sebenarnya ke dua kota itu adalah …..

4. Jumlah penduduk desa Malangka 800 orang. Sebanyak 560 orang penduduk desa itu tamat MI. Sisanya tidak lulus MI. Tentukan perbandingan penduduk yang lulus dan tidak lulus MI di desa tersebut!

5.  Dean pergi ke toko untuk membeli buku. Ternyata di toko buku ada diskon 25% setiap membeli buku khusus hari ini. Dean membeli buku dengan total belanja Rp 300.000 berapa potongan harga yang diterima Dean?

KERJAKAN DENGAN MENULIS CARANYA DIBALIK LEMBAR KERJA, UNTUK PILIHAN GANDA DAN ESSAY WAJIB MENGGUNAKAN CARA!

APPENDIX 4

Nama :

Kelas :

A. Pilihlah jawaban yang tepat !

1. Bentuk persen dari 0,75 adalah . . . .
   a. 7,5 %
   b. 85 %
   c. 75 %
   d. 8,5 %
2. Bentuk desimal dari $\frac{1}{3}$ adalah . . . .
   a. 0,33
   b. 0,67
   c. 3,33
   d. 0,657
3. 75 % dari 100 adalah . . . .
   a. 75
   b. 55
   c. 80
   d. 95
4. 20% dari Rp4.000,00 adalah . . . .
   a. Rp800,00
   b. Rp400,00
   c. Rp80,00
   d. Rp450,00
5. 75% dari 60 buah adalah . . . .
   a. 40 buah
   b. 45 buah
   c. 50 buah
   d. 55 buah
6. Berapakah presentase 30 manik-manik dari 75 manik-manik . . . .
   a. 50 %
   b. 90 %
   c. 75 %
   d. 40 %

7. Bentuk desimal dari 75 % adalah . . . .

   a. 0,75 c. 7,5

   b. 0.775 d. 77,5

8. Bentuk persen dari 0,89 adalah . . . .

   b. 89 % c. 79 %

   c. 8,9 % d. 7,9 %

9. 35 % dari Rp80.000,00 adalah . . . .

   a. Rp28.000,00 c. Rp35.000,00

   b. Rp2800,00 d. Rp3500,00

10. Bentuk desimal dari 90 % adalah. . . . .

   a. 0,09 c. 9,00

   b. 0,90 d. 9,99

B.Kerjakan soal-soal di bawah ini.

1. Ibu membeli 2 kg rambutan. Semuanya sebanyak 60 buah. Ternyata yang busuk 15%. Coba kamu hitung,berapa buah rambutan yang busuk?
2. Kemarin ayah memetik pisang setandan yang semuanya masih mentah. Pisangnya sebanyak 150 buah. Setelah dua hari ternyata sudah menguning 51 buah. Berapa persen pisang yang sudah menguning?
3. Penjual buah anggur membawa 24 kg buah anggur merah dan 36 kg buah anggur hijau. Berapa persen berat tiap-tiap anggur terhadap berat buah anggur seluruhnya?
4. Harga celana panjang yang tertera pada label Rp40.000,00. Riko membeli celana panjang tersebut dan mendapat potongan harga Rp12.000,00. Berapakah persentase potongan harga tersebut?

5. Sebuah toko buku memberikan diskon 10% setiap pembelian sebuah buku. Rita membeli buku yang harganya tertera pada label. Berapa rupiah diskon yang didapat Rita?

GOOD LUCK !

Identitas Subjek Uji Coba

1. Nama : Dini Sulistiowati, M.Si

   NIP :1972031422007021013

   Instansi : STAI Al-Qolam

   Alamat Instansi: Jl. Raya Putat Lor Gondanglegi Malang

   Pendidikan : S2

2. Nama : Nurul Yaqien, M.Pd

   NIP :197811192006041001

   Instansi : Universitas Islam Negeri Maulana Malik Ibrahim Malang

   Alamat Instansi: Jl. Gajayana No 50 Malang

   Pendidikan : S2

3. Nama : Hidayatul Maulida, S.Pd

   NIP :197512392011061014

   Instansi : MI Nahdlatus Syubban

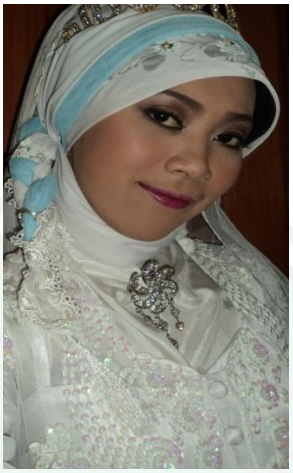
   Alamat Instansi: Dsn Baran Rt: 06/ Rw: 02 Ds Urek-urek Gondanglegi, Malang

   Pendidikan : S1

Identitas Subjek Uji Coba ke Dua

No	Nama	Sekolah
1	Agam Senatama	MI Nahdlatus Syubban
2	Ahmad Khaidar	MI Nahdlatus Syubban
3	Dimas Afandi	MI Nahdlatus Syubban
4	Fina Zahrotul U	MI Nahdlatus Syubban
5	Hiyati Muktafia	MI Nahdlatus Syubban
6	Hilmi Afadil	MI Nahdlatus Syubban
7	M. Fiki Fathur R	MI Nahdlatus Syubban
8	M. Dwi Aditya	MI Nahdlatus Syubban
9	M. Riski Yanuar	MI Nahdlatus Syubban
11	Niko Wahyudi	MI Nahdlatus Syubban
12	Putri Khusniawati	MI Nahdlatus Syubban
13	Rendi Febrian	MI Nahdlatus Syubban
14	Rifada Sagna F	MI Nahdlatus Syubban
15	Risqon Muktafa	MI Nahdlatus Syubban
16	Uswatun Hasanah	MI Nahdlatus Syubban
17	Andrean Eka P	MI Nahdlatus Syubban
18	Riski Amaliyah	MI Nahdlatus Syubban

DAFTAR RIWAYAT HIDUP



Nama : **Laili Alfa Hasanah**

NIM : **10140023**

TTL : **Malang, 13 Agustus 1992**

Fak/Jurusan : **Ilmu Tarbiyah dan Keguruan /PGMI**

Anak ke : **Ke 1 Dari 2 Bersaudara**

Alamat : **Dsn Baran Rt:06/ Rw:02 Ds Urek-urek Gondanglegi Malang**

Pendidikan :

1. TK : **RA Nahdlatus Syubban Gondanglegi Lulus Tahun 1998**

2. MI : **MI Nahdlatus Syubban Gondanglegi Lulus Tahun 2004**

3. MTs : **MTsN Malang III Sepanjang Gondanglegi Lulus Tahun 2007**

4. MAN : **MAN Gondanglegi Lulus Tahun 2010**

5. UIN : **UIN Maulana Malik Ibrahim Malang Lulus Tahun 2014**

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