DEVELOPING MATHEMATIC LEARNING BOOK (WITH FLANNEL BOARD) TO IMPROVE THE SECOND GRADE STUDENTS' UNDERSTANDING ON MULTIPLICATION CONCEPT AT SDN 2 NGLANDEYAN, BLORA

THESIS

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JULY, 2017

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THESIS

Presented to Faculty of Education and Teacher Training
Maulana Malik Ibrahim State Islamic University of Malang
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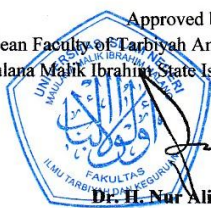Dr. Alfiana Yuli Efiyanti, MA : _____
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DEDICATION

By reciting Bismillah and Alhamdulillah, I dedicate this my little work to:

Beloved father and mother who always gives me guidance, compassion, and motivation to keep going and never give up in living my days. As well as thank you for the prayers that have always devoted to me every day that I should be a good and dutiful son. Love you so much.

Dear all my family that always delivers the most beautiful smile as my spirit through my days so that I could complete the thesis until finished.

Abah Kyai, all my teachers from kindegarten until senior high school and lecturers are always tirelessly devote their knowledge.

All my friends of PGMI especially my friends of ICP, friends of Islamic Boarding School Al Mubarok who always gave me support so I can finish this thesis well. For people who are always in my heart, my life and my days, you are an important round colorful in my episode for reach a bachelor's degree, thanks. May our friendship awake until Yaumil qiyamah. Aamiin

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MOTTO

مَّثَلُ ٱلَّذِينَ يُنفِقُونَ أَمْوَٰلَهُمْ فِى سَبِيلِ ٱللَّهِ كَمَثَلِ حَبَّةٍ أَنْبَتَتْ سَبْعَ سَنَابِلَ فِى كُلِّ سُنْبُلَةٍ مِّائَةُ حَبَّةٍ ۗ وَٱللَّهُ يُضَٰعِفُ لِمَن يَشَآءُ ۗ وَٱللَّهُ وَٰسِعٌ عَلِيمٌ ﴿٢٦١﴾

The example of those who spend their wealth in the way of Allah is like a seed which grows seven stems; in each stems is a hundred seeds. And Allah multiplies [reward] for whom Allah wills. And Allah is all-Encompassing and Knowing.[1]

(QS Al-Baqarah verse 261)

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[1] *Al-Qur'an dan Terjemahnya (*Bandung: CV Diponegoro, 2000), p. 34.

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in
    Malang

Assalamualaikum, wr wb

      This office memo declares that thesis originally owned by:

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      is considered **acceptable** to be defended after being intensively read and regulary consulted in the area of research content, language, and writing composition.

Wassalamualaikum, wr wb

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CERTIFICATE OF THESIS AUTHORSHIP

I hereby declare that this thesis is originally written by Dita Safitri, student of Islamic Primary Teacher Education Program (PGMI) as the requirement for degree of Sarjana Pendidikan (S.Pd), Faculty of Education and Teacher Training at Maulana Malik Ibrahim State Islamic University, Malang. This research writing does not incorporate any material previously written or published by other parties to achieve the other *Sarjana* status of other Higher Tertiary Education, except those which are indicated in the notes, quotation, and bibliography. Therefore, I am the only person who is responsible for the thesis if there is any objection or claim for others.

Malang, July 12th, 2017

Dita Safitri
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PREFACE

Alhamdulillah Praise to Allah SWT who has give mercy, taufiq and guidance, so that the writer can finish this thesis with the title "*Developing Mathematic Learning Book (With Flannel Board)to Improve the Second Grade Students' Understanding on Multiplication Concept at SDN 2 Nglandeyan, Blora*".

Blessings and greetings always praised to the Prophet Muhammad, the family, friends and his followers who have brought the truth to whole human that al-Deen Islam that we expect his syafa'ah in the world and in the hereafter.

The writing and preparation of this thesis is intended to complement the overall activity of students that have been declared by Maulana Malik Ibrahim State Islamic University, Malang as a form of accountability author became Students in Maulana Malik Ibrahim State Islamic University, Malang and to meet one of the requirements to obtain a Bachelor Degree of Education of Islamic Primary Teacher Training in Maulana Malik Ibrahim State Islamic University, Malang.

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The writer are fully aware that the limited capacity and lack of experience, many obstacles and difficulties encountered in the preparation of this thesis. By finishing this thesis, the writer do not forget to say gratitude to all those who provide direction and guidance in the preparation of this scientific work, with all humility, the writer say thank you to:

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Hopefully all the help and motivation given to writer will be rewarded with an abundance of grace and goodness by Allah and serve of charity pious useful.

The writer hope what the writer report can provide benefits, especially for writers and generally for readers to improve the quality of learning. Aamiin.

Malang, May 24th, 2017

Dita Safitri

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TRANSLITERATION GUIDELINES OF ARABIC-LATIN

Arab-Latin transliteration writing in this thesis uses the transliteration guidelines based on a joint decision of the Minister of Religious Affairs and the Minister of Education and Culture number. 158 year 1987 and number. 0543 b/U/1987 can be broadly described as follows:

A. Letter

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. Vocal

Vocal (a) length = â

Vocal (i) length = î

Vocal (u) length = û

C. Vocal Diphthong

أوْ	= Aw
أيْ	= Ay
أوْ	= û
إيْ	= î

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ABSTRACT

Mathematic is the language of symbols, so that students in mathematic learning must be able to understand the message which carried by the symbol, but in fact mathematic teaching still tend to memorize and meaningless. So the second grade students of SDN 2 Nglandeyan Blora did not understand with the concept of multiplication. That learning still not oriented yet students centered and their motivation to learn mathematic is still low. This research conducted based on the existence of the problems in mathematic learning especially multiplication material. The mathematic learning book (with flannel board) becomes one of alternative in increasing students' understanding the concepts of multiplication.

The aim of this research to create products the form of book with flannel board to improve students' understanding on multiplication concept at grade II of SDN 2 Nglandeyan Blora, to analyze the level of validity, attractiveness and effectiveness of the product.

The method used Research and Development (R&D), with adapting research model R&D Borg and Gall was used as the method which have ten steps in the procedure development. This research was conducted until steps ten, but limited implementation of the school which became the research object and not yet done dissemination. Techniques of collecting data using questionnaires and tests and using analytical t-test.

The results of this development in the form of book consist various concept of multiplication for grade II SD/MI and its application in daily life helped by pictures and completed flannel board. This book reach the validity criteria from expert of content reached 80%, experts of mathematic learning reached 92%, expert of design reached 85%, and practitioner /teacher reached 100%. While the students' response to the products to know of attractiveness level of product reached 97% based on the preliminary filed testing, 97 % based on main filed testing and 91% based on operational filed testing. While results of students' test known that post test value experiment group is higher than control group (84,67 > 69,47) and the calculation using t test with equal significance 0.05 obtained the result t count > t table 4.75 > 2,048 the means Ho was rejected and Ha was accepted. So there is difference in student's understanding between the experiment group that use the book and flannel board with the control group that are not.

ملخص البحث

سفطري، ديتا. 2017. *تطوير كتاب ولوحة فلانيل لتنمية فهم الطلاب في فكرة الضرب في الفصل الثاني من المدرسة الإبتدائية الحكومية الثاني علانديان، بلورا*. البحث العلمي، قسم تربية معلم المدرسة الابتدائية، كلية علوم التربية والتعليم، الجامعة مولانا مالك إبراهيم الإسلامية الحكومية مالانج. المشرفة: ييني تري أسماينجتياس الماجستير.

الكلمات الرئيسة : ضرب، كتاب , لوحة فلانيل ,فهم الفكرة

الرياضيات هي لغة الرمز، حتى في تدريس الرياضيات يجب الطلاب أن يكون قادرا على فهم الرسائل التي يحملها الرمز، ولكن في الحقيقة فإنها تميل إلى التعلم عن ظهر قلب وما كان المعنى فيه. فلذلك، لا تفهم الطلاب في الفصل الثاني من المدرسة الإبتدائية الحكومية الثاني علانديان بلورا مفهوم الضرب. لم يتوجّه تدريس الرياضيات إلى الطلاب وانخفاض الدافعية لتعلم الرياضيات. ويقام هذا البحث بالمشاكل في تعلم الرياضيات في مادة الضرب. تطوير كتاب مصور من فلانيل أحد من البدائل لتنمية فهم الطلاب في فكرة الضرب.

يهدف هذا البحث إلى حاصل الضرب، على شكل كتاب مصور من فلانيل لتنمية فهم الطلاب في فكرة الضرب في الفصل الثاني من المدرسة الإبتدائية الحكومية الثاني علانديان بلورا، تحليل درجة الصحة والجذابية وفعالية كتب مصورة من فلانيل.

والمنهج الذي استخدمته الباحثة هو منهج البحث والتطوير (R & D)، بتوفيق منهج R& D لبورغ و جال الذي لديه 10 خطوات في عملية تطويره. يقام هذا البحث إلى الخطوات العشرة، ولكن لا تقتصر على تنفيذ المدرسة وهو مصدر البيانات في هذا البحث ولم تفعل النشر. وطريقة جمع البيانات باستخدام الاستبيانات والاختبارات. ثم تحليله باستخدام اختبار ت.

نتائج هذا بحث التطوير هي كتاب مصور من فلانيل تحتوي على أنواع المفاهيم من الضرب في الفصل الثاني من المدرسة الإبتدائية/ المدرسة الإبتدائية الإسلامية وتطبيقها في الحياة اليومية. هذا الكتاب توفرت شروط الصحة بنتائج من خبير المواد وصلت الى مستوى 80٪ من صحة، ومن خبير الرياضيات 92٪، ويصل إلى 85٪ من خبير التخطيط، ومن المدرس بنسبة 100٪. وأمّا استجابة الطلاب لتعريف جاذبيتها إلى97٪ كتب مصورة من فلانيل تصل إلى 97٪ استنادا إلى التجربة الأولى، و 91٪ على أساس التجربة الميدانية. ونتائج تجربة الطلاب لقياس فعالية من الكتاب منظور من متوسط المجموعة التجريبية بعد الاختبار أعلى من متوسط المجموعة الضابطة بعد الاختبار (84.67 < 69.47) وحساب باستخدام اختبار ت مع مستوى الدلالة 0.05 النتائج التي تم التوصل ت العد> ت الجدول 4.75 ≤ 2.048 يعني هو(Ho) مرفوض وها(Ha) مقبول. فلذلك،كان الاختلاف في فهم الطلاب باستخدام كتاب و فلانيلا أم لا. فنتائج التطوير التي تقام في التدريس هو كتاب و فلانيل بصلاحية عالية وجاذبية وقادرة على تنمية فهم الطلاب.

ABSTRAK

Safitri, Dita, 2017. *Pengembangan Buku Ajar Matematika dengan Papan Flanel untuk Meningkatkan Pemahaman Konsep Perkalian pada Siswa Kelas II SDN 2 Nglandeyan, Blora.* Skripsi, Jurusan Pendidikan Guru Madrasah Ibtidaiyah, Fakultas Ilmu Tarbiyah dan Keguruan, Universitas Islam Negeri Maulana Malik Ibrahim Malang. Pembimbing: Yeni Tri Asmaningtias, M.Pd.

Kata Kunci : Perkalian, Buku Ajar, Papan Flanel, Pemahaman Konsep

Matematika adalah bahasa simbol, sehingga dalam pembelajaran matematika siswa harus dapat memahami pesan yang dibawa oleh simbol, namun pada kenyataannya pembelajaran matematika masih cenderung hafalan dan belum bermakna. Akibatnya siswa kelas II di SDN 2 Nglandeyan Kabupaten Blora tidak paham dengan konsep perkalian. Pembelajaran matematika belum berorientasi pada siswa dan rendahnya motivasi untuk belajar matematika. Penelitian ini diadakan berdasarkan adanya permasalahan dalam pembelajaran matematika materi perkalian. Pengembangan buku ajar matematika dengan papan flanel ini menjadi salah satu alternatif untuk meningkatkan pemahaman siswa terhadap konsep perkalian.

Penelitian ini bertujuan untuk membuat produk, berbentuk buku ajar dengan papan flanel untuk meningkatkan pemahaman konsep perkalian pada siswa kelas II SDN 2 Nglandeyan Kabupaten Blora, menganalisis tingkat kevalidan, kemenarikan dan keefektifan produk tersebut.

Metode yang digunakan adalah Research and Development (R & D), dengan mengadaptasi model penelitian R&D Borg and Gall yang memiliki 10 langkah dalam prosedur pengembangannya. Penelitian ini dilaksanakan sampai langkah ke sepuluh, namun sebatas implementasi ke sekolah yang menjadi objek penelitian dan belum sampai dilakukan diseminasi. Teknik pengumpulan data menggunakan angket dan tes. Analisisnya menggunakan uji t.

Hasil dari penelitian pengembangan ini berbentuk buku yang berisi berbagai konsep perkalian kelas II SD/MI dan penerapannya dalam kehidupan sehari-hari dengan bantuan gambar dan dilengkapi media papan flanel. Buku dan media ini memenuhi kriteria valid dengan hasil uji ahli materi mencapai tingkat kevalidan 80%, ahli pembelajaran matematika mencapai 92%, ahli desain mencapai 85%, dan praktisi/guru mencapai 100%. Sedangkan respon siswa terhadap produk untuk mengetahaui tingkat kemenarikan buku bergambar flanel ini mencapai 97% berdasarkan uji coba awal, 97% berdasarkan uji coba lapangan dan 91% berdasarkan uji lapangan. Sedangkan hasil tes siswa untuk mengukur keefektifan buku yang dikembangkan dilihat dari rata-rata post tes kelompok eksperimen lebih tinggi dari rata-rata post tes kelompok kontrol (84,67 > 69,47) serta dengan perhitungan menggunakan uji t dengan taraf signifikansi 0,05 diperoleh hasil $t_{hitung} > t_{tabel}$ yaitu 4,75 $\geq$ 2,048 artinya Ho ditolak dan Ha diterima. Sehingga terdapat perbedaan pemahaman siswa yang menggunakan buku dan papan flanel dengan yang tidak.

CHAPTER I

INTRODUCTION

A. Background

Mathematic is one of the most important lessons and most useful knowledge in life. Based on Ministry of Education one the purpose of mathematic is "have on attitude to appreciate the usefulness of mathematic in life, curiosity, attention and interest in learning mathematic and resilient attitudes and confident in troubleshooting".[2] So after learn mathematic students are expected to apply the knowledge of mathematic to solve the problem encountered in their life.

Almost every part of our lives contain mathematic. However, children need the right experience to be able to appreciate the fact that mathematic is the everyday human activities that it is important for the life of the present and future. [3] The experience can be gained in school through a process of learning and teaching.

The process of learning and teaching is the most basic activities in education. This means that the successful achievement of the purpose of education much depends on how the learning and teaching process is designed and run by professional. [4] The learning process need to be planned so that the lesson well and reach the expected results. The planning of learning and teaching estimates about the action that will be done at the time of implementing

[2] Peraturan Menteri Pendidikan Nasional Nomor 22 Tahun 2006 tentang Standar Isi SD/MI (http://sdm.data.kemdikbud.go.id, accessed on 21 October 2016 at 08.00 am), p. 148.

[3] Fatimah, *Matematika Asyik Dengan Metode Pemodelan* (Bandung: PT Mizan Pustaka, 2009), p. 8.

[4] Pupuh Fathurrohman dan Sobry Sutikno, *Strategi Belajar Mengajar* (Bandung: Refika Editama, 2009), p. 8.

the lesson. The content of the planning, namely set and specify the elements of learning, such as the purpose, teaching material or the content of the lesson, method, tool and resource and assessment.[5]

Teaching material or the contents of lessons can deliver the student achieve the purpose of learning or specific competence.[6] Therefore, teaching materials or the content of lessons is one of the important elements involved in the learning process. Teaching materials or the content of lesson that are given to the students, the material presented is not in the form of the end and not told how the solution. This is accordance with the theory of Bruner that "in mathematic learning, student must find their various knowledge that need".[7]

Knowledge will be meaningful when found and built by themselves. Meaningful knowledge when the student learn to understand what has been acquired and is connected with other condition so that, what they learn will be better understood.[8] While the knowledge is obtained from the result of a giving other people will be meaningless knowledge.[9] That knowledge will be easily forgotten. Therefore in the mathematic learning teacher must act more as a facilitator than as giver. This is accordance with the theory of learning "constructivism" by Piaget that knowledge construction is conducted by

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[5] Hamdani, *Strategi Belajar Mengajar* (Bandung: Pustaka Setia, 2011), p. 56.

[6] Ibid., p. 118..

[7] Heruman, *Model Pembelajaran Matematika Di Sekolah Dasar* (Bandung: PT Remaja rosdakarya, 2007), p. 4.

[8] Ibid., hlm. 5.

[9] Wina Sanjaya, Kurikulum dan Pembelajaran Teori dan Praktik Pengembangan KTSP (Jakarta: Kencana Prenada Media Group, 2011), p. 248.

themselves, while the role of teacher as a facilitator and create a conducive climate.[10]

Besides the explanation above, media also has an important role in the learning process. Mathematic is the language of symbols, while the age of the student SD/MI according to Piaget on concrete operational phase. In abstract mathematic learning, students need the tool in the form of media that can clarify what will be delivered by teacher so that more quickly understood by the students.[11]

Based on the hope that has been presented above, researcher is conducted observation mathematics learning in the second grade SDN 2 Nglandeyan, Blora and interview with teacher on 8 October 2016. Based on the result of observation and interview have found the gap between hope and reality, there are 3 main problems.

The first problem is during mathematic learning still tend to memorize and meaningless. It is proven by the students did not understand with the concept of the multiplication, the following is the result of the work one of the students.
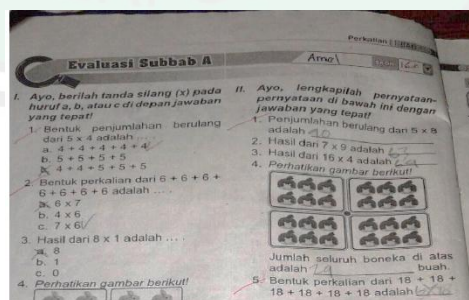
Picture 1.1
The result of work one of the students

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[10] Heruman, *Model Pembelajaran Matematika Di Sekolah Dasar* (Bandung: PT Remaja rosdakarya, 2007), p. 5.
[11] Ibid., p. 1-2.

Based on the picture above showed that the student can answer the 8x1=8, but student still did not understand with multiplication concept as repeated addition, whether integer 1 is add as much as 8 times or just the opposite. Most of the students answered correctly because they tend to memorize. While for the question of understanding concept, the students answered that $6 + 6 + 6 + 6 + 6 + 6 + 6 = 6$ x 7. The correct answer is 7x6, because 6x7 different concept with 7x6. Although the result of 6x7=7x6 (commutative), because on multiplication applies the commutative nature, a x b = b x a. But in the application of daily life such as a doctor provide drinking medication 3x1 different meaning with 1x3. Therefore, understand of multiplication concept is very important in life, so that the student should be able to understand multiplication concept correctly.

The second problem is the mathematic learning in the second grade SDN 2 Nglandeyan, Blora still not oriented on student centered yet. The lesson concept of the lesson that is served to students only through the acceptance. In the learning process teacher and students used teaching materials that conventional, in the form of student worksheet with lecture method and without using the media. The material on the student worksheet is not complete and less exercise which give an opportunity to the students actively in learning.

The third problem is low motivation of students to learn mathematic in the second grade SDN 2 Nglandeyan, Blora. Based on the result of the interview with the second grade teacher said that,

"Not all students in the second grade like mathematic, most of them difficulties in the matter of the multiplication and division. This is because the students are lazy to attention the explanation of teacher.[12]

That problem can be influenced by several factors, among other factors of student, teacher and teaching material. Based on the result of these observation can be known that some student have slowly thinking and teacher teach only by lectures method, which is explained in the blackboard. While teaching material that is used limited student worksheet without any other accompanying book. That student worksheet is monotonous, less interesting and the picture is presented still little and no color. So that less motivate and make the students easily bored.

Referring to the fact in the field, so researcher has initiative to develop teaching materials, in the form mathematic learning book. Mathematic learning book is development by researcher has been adapted from the development of drawing book and flannel board media. So the book that developed is equipped with flannel board media.

Mathematic learning book is book that has many pictures and the pictures on the book taken from the result photo of objects are made from flannel fabric. Mathematic learning book is printed full color, so that the students will focus their attention. While flannel board is an effective media to present certain messages to the certain objective. Objects that will be presented on the flannel board can be installed and removed easily so that it can be used many times.[13]

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[12] Interview with teacher of the second grade in SDN 2 Nglandeyan Blora on 8 october 2016 at 09.00 am.

[13] Arif S. Sadiman, dkk. *Media Pendidikan Pengertian, Pengembangan dan Pemanfaatannya* (Jakara: PT Raja Grafindo Persada, 2003), p. 49.

According to the previous research conducted by Riska Dianing Saputri, in her thesis by the title "*Pengembangan Media Buku Bergambar dalam Pembelajaran Satuan Pengukuran Berat Siswa Kelas II SDN di Karangsari 02 Bantur-Malang*". The result of the research showed that drawing books can provide real idea, increase the interest of student learning and can achieve the goal of competency that is expected.[14]

Based on the explanation above, then the researcher will conduct research and development by the title **"Developing Mathematic Learning Book (With Flannel Board) to Improve the Second Grade Students' Understanding on Multiplication Concept at SDN 2 Nglandeyan, Blora".**

B. Problems of The Research

Based on the explanation of background above, problems of the research can be formulate as follow:

1. How is the form of mathematic learning book (with flannel board) that is developed in improving the second grade students' understanding on multiplication concept at SDN 2 Nglandeyan, Blora?

2. How is the validity of mathematic learning book (with flannel board) that is developed in improving the second grade students' understanding on multiplication concept at SDN 2 Nglandeyan, Blora?

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[14] Riska Dianing Saputri, *Pengembangan Media Buku Bergambar dalam Pembelajaran Satuan pengukuran Berat Siswa Kelas II SDN Karangsari 02 Bantur-Malang*, Skripsi Program Sarjana I, Fakultas Ilmu Pendidikan, UM, 2011.

3. How is the attractiveness and effectiveness of mathematic learning book (with flannel board) that is developed in improving the second grade students' understanding on multiplication concept at SDN 2 Nglandeyan, Blora?

C. Objectives of Development

Based on the problems of the research, then this research and development has objectives as follow:

1. To describe the form of mathematic learning book (with flannel board) that is developed in improving the second grade students' understanding on multiplication concept at SDN 2 Nglandeyan, Blora.

2. To explain the validity of mathematic learning book (with flannel board) that is developed in improving the second grade students' understanding on multiplication concept at SDN 2 Nglandeyan, Blora.

3. To explain the attractiveness and effectiveness of mathematic learning book (with flannel board) that is developed in improving the second grade students' understanding on multiplication concept at SDN 2 Nglandeyan, Blora.

D. Significances of Development

1. For Student

    a. Can improve the students' ability to understand the concept of multiplication.

b. Make students active, and more interested in mathematic learning, so that the learning enjoyable.

2. For Teacher

a. Can help teacher to find alternative in providing teaching material that fun for children.

b. Can be inputs or suggestion to improve teacher creativity in developing its potential as educator.

3. For Headmaster

a. To provide information to the headmaster to develop the innovation and creativity of teacher and students learning results.

b. As consideration by the headmaster to achieve optimal results in the implementation of education program.

4. For Other Researcher

a. The result of this research can be made as additional experience and knowledge for other researcher.

b. As input or suggestion to develop further research that is similar.

E. Assumptions of Development

This research and development has several assumptions as follow:

1. The existence of mathematic learning book (with flannel board) the condition and the attention of the students can be controlled and focused by the teacher easily.

2. The existence of mathematic learning book (with flannel board), so that the students can learn fun.

F. Scope of Development

This research and development is not removed from scope of development. Scope of this development as follow:

1. This research and development is only applied on mathematic lesson for multiplication material that integer less than 10.

2. Measure of students' understanding on multiplication concept is seen from the test results (posttest). Because the higher understanding level increasing higher test result, just the opposite.

G. Product Specifications

Mathematic learning book (with flannel board) that is developed has product specification, as follow:

1. This book has A4 size, type of font is tahoma and it's printed full color.

2. This book use Indonesian language.

3. This book presented are various concept and the implementation of multiplication in daily life based on SK/KD of the second grade SD/MI.

4. This book has many pictures that relevance with multiplication and near with student's life.

5. The picture on the book is taken from the result photo of objects that are made from flannel fabric.

5. The picture on the book is taken from the result photo of objects that are made from flannel fabric.

6. This book is equipped with flannel board media.

7. Flannel board media consist of the board and its object, the board as the place to stick its object. While its object consist of symbols, numbers and pictures that are related with the multiplication.

8. Flannel board media is made from wood, zinc, and it's covered by flannel fabric. While the objects are made of flannel fabric and given magnet on the back of object, in order it can stick to the board.

H. Previous Research

Research on the development of mathematic learning book and about the multiplication has been done by a lot of researcher. Some previous research that researcher found as follow:

The first research is written by Riska Dianing Saputri students of the State University of Malang (UM) in her thesis by the title "*Pengembangan Media Buku Bergambar dalam Pembelajaran Satuan Pengukuran Berat Siswa Kelas II SDN Karangsari 02 Bantur-Malang*". The result of this research and development showed that drawing book media can provide real idea, increase the interest of student learning and can achieve the purpose of the competencies that are expected. Same developing the form of learning book of mathematic in the second grade SD. While the different that research is used measurement of weight material.

"*Pengembangan Media Pembelajaran Papan Stik Pada Materi Operasi Hitung Perkalian Siswa Kelas II MI Al-Ikhsan Turen Kabupaten Malang*". The result of research and development showed that the results of the test media development sticks board have validity level is high and there is a significant difference between the value of the experiment class with using media is higher than control class that does not use the media. Same developing on multiplication material for the second grade student SD/MI. While the different is developing product in the form of sticks board.

The third journal is written by Nur hidayati dkk by the title "*Media Papan Flanel Jumlah Kurang Bilangan Bulat (Jurang Bilbul) untuk Meningkatkan Kemampuan Menjumlahkan dan Mengurangkan Bilangan Bulat*". The result of this research showed that the use of flannel board media can improve the ability of addition and subtraction integer the students of IVB class at SDN Palur 02 Mojolaban Sukoharjo on 2015/2016. It's proven by increasing the value of the test on each cycle. Same develop is about flannel board. While the different on addition and subtraction material.

While that will be conduct by the researcher is develop mathematic learning book (with flannel board) on multiplication concept for the second grade student SD/MI, so that students can understand multiplication concept well. This research and development will be designed to attract and tested to the second grade students at SDN 2 Nglandeyan Blora. The researcher presented the discussion in the form of table previous research, as follow:

grade students at SDN 2 Nglandeyan Blora. The researcher presented the

discussion in the form of table previous research, as follow:

Table 1.1 Previous Research

No	The title, Researcher, Year	Similarities	The Difference	Previous Research
1.	Pengembangan Media Buku Bergambar dalam Pembelajaran Satuan Pengukuran Berat Siswa Kelas II SDN Karangsari 02 Bantur-Malang; Riska Dianing Saputri; 2011	Developing learning book of mathematic for the second grade SD	On the material of measuring and weight	Researcher develop mathematic learning book (with flannel board) on multiplication material for the second grade student SD/MI, so that the student can understand well
2.	Pengembangan Media Pembelajaran Papan Stik Pada Materi Operasi Hitung Perkalian Siswa Kelas II MI Al-Ikhsan Turen Kabupaten Malang; Ringgana Rizki; 2016	Developing on multiplicati-on material for the second grade SD/MI	Develop product in the form of sticks board media	Researcher develop mathematic learning book (with flannel board) on multiplication material for the second grade student SD/MI, so that the student can understand well
3.	Media Papan Flanel Jumlah Kurang Bilangan Bulat (Jurang Bilbul) untuk Meningkatkan Kemampuan Menjumlahkan dan Mengurangkan Bilangan Bulat; Nur Hayati dkk; 2015	Developing about flannel board	-On addition and subtraction material -The subject is the fourth grade student	Researcher develop mathematic learning book (with flannel board) on multiplication material for the second grade student SD/MI, so that the student can understand well

I. Operational definition

1. Developing is an activity to develop and produce a valid and effective

   product based on the procedures that have been assigned.

2. Mathematic learning book (with flannel board) is the book of mathematic especially on multiplication material that completed by flannel board media.

3. Understanding is ability to explain again by their words about the message was carried by the symbols.

4. Concept is the definition or meaning, characteristic of an idea.

5. Multiplication is mathematical concept must be learned by students after studying the operation of addition, because the multiplication is repeated addition same integer.

J. Systematic of Discussion

Systematic of writing in this thesis will be arranged in 6 chapter, namely chapter I to chapter VI and references.

Chapter I is introduction which contain: A. Background, B. Problem of the research, C. Objectives of development, D. Significances of development, E. Assumptions of development, F. Scope of development, G. Product specifications, H. Previous Research, I. Operational definition, J. Systematic of discussion.

Chapter II is review literature which contain: A. Foundation theory (1. Definition of development, 2. Teaching material, 3. Students' understanding, 4. Multiplication, 5. The students of SD/MI), B. The framework of thought.

Chapter III is research method which contain: A. Types of research, B. Development model, C. Procedure of development, D. Trial (1. Trial design,

2. Trial subject, 3. Types of data, 4. Instrument of data collecting, 5. Techniques of data analysis).

Chapter IV is the result of development which contain: A. Description the form of mathematic learning book (with flannel board), B. Description the result validation of mathematic learning book (with flannel board), and C. Description the result trial (attractiveness and effectiveness) of mathematic learning book (with flannel board).

Chapter V is discussion which contain: A. The form of mathematic learning book (with flannel board), B. The validity of mathematic learning book (with flannel board), C. Attractiveness and effectiveness of mathematic learning book (with flannel board).

Chapter VI is closing which contain: A. Conclusion, B. Suggestions of utilization, dissemination, and further product development and then next is references.

CHAPTER II
REVIEW LITERATURE

A. The Foundation of Theory

1. Definition of Developing

Definition research and development according to Borg & Gall is a process used to develop and validate product education.[15] Methods of research and development is a research method that is used to produce a particular product, and testing effectively product. To be able to produce certain products used are research and needs analysis to test the effectively of the product so that it can function in society at large, then the necessary research to test the effectiveness of these products.[16]

2. Teaching Material

a. Definition of teaching material

Teaching material is all forms of the ingredients or materials that are organized systematically used to help the teacher or instructor in implementing learning and teaching activities that created the environment or the atmosphere that allows students to learn.

In *Dikmenjur* website, definition of teaching material as a set of material or the substance of learning arranged systematically, displays

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[15] Punaji Setyosari, *Metode Penelitian Pendidikan dan Pengembangan*, (Jakarta: Kencana, 2010), p. 194

[16] Sugiono, *Metode Penelitian Kuantitatif Kualitatif dan R&D*, (Bandung:Alfabeta, 2011), p. 297.

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the loops intact from the competencies that will be ruled by the students in the learning activities. Teaching material allows students can learn a competency or KD by fluently and systematically so that by explicitly able to rule over all the competencies as a whole and integrated.

Teaching materials is information, the appliance and the text that required teachers analyzes and planning for the implementation of learning.[17]

b. **The type of learning material**

Teaching material can be grouped into four, as follow:[18]

1) Printed Teaching Material

Various kinds of printed teaching material among others:

a) Handout

Handout is a written materials prepared by a teacher to enrich the knowledge learners. Handout usually is transferred from some of the literature that have relevance to the material taught/basic competencies and subjects that have to be mastered learners.

b) Book

Book is written material that presents science. By the author of the book contents obtained from a variety of ways for

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[17] Hamdani, *Strategi Belajar Mengajar* (Bandung: Pustaka Setia, 2011), p.120.
[18] Abdul Majid, Perencanaan Pembelajaran (Bandung: PT Rosdakarya, 2009), p. 174-175.

example: observations, autobiography, or the results of the imagination of someone who is called as a fiction.

c) Module

Module is a book written with the purpose to make learners can learn independently without or with the guidance of teachers, so that the module contains at least all the basic components of the teaching materials that have been mentioned previously. A module will mean if learners can easily use. Learning with the module allows one to learners have high speed in learning will be faster to complete one or more basic competencies compared with other learners.

d) Student worksheet

Student worksheet is sheets contains the tasks that must be done by the learners. Activity sheets is usually in the form of guidance, steps to complete a task. A task that commanded in a worksheet students must clear the basic competencies that will achieve.

e) Brochure

Brochure is written information about a problem that arranged in a powered device or mold that only consists of several pages and folded without quality submissions which contains a brief description but about the company or organization.

f) Leaflet

Leaflets are printed materials written in the form of a folded sheet but not turned off. So that looks interesting is usually carefully designed leaflet complemented with illustrations and use simple language, short and easy to understand.

g) Wall chart

Wall chart is printed materials, usually a part of the cycle of the process or a meaningful graph shows a particular position. In order to make it look more interesting for students and teachers, then the wall chart designed as well as using color and a good proportion.

h) Photo/Picture

Photo/picture has the meaning is better than with the writing. Photo/picture as teaching materials of course required a good design in order after doing something that at the end of the control of one or more basic competencies.

i) Model

Model that is designed both will provide the meaning is almost the same with the original objects. Teaching materials such as this cannot stand alone but must be assisted with the written material to make it easier for teachers to teach and students in learning.

2) Audio Teaching Material

   Audio teaching materials as cassettes, radio, black dish, and the compact disc audio.

3) Audio-visual Teaching Material

   Audio-visual teaching materials such as video compact disc, the film.

4) Interactive Teaching Materials

   Interactive teaching materials such as the compact disc interactive.

c. **Function of Teaching Materials**

   The function of teaching materials as follows:[19]

1) Guidelines for teachers who will direct all their activity in the learning process, as the substance of the competencies that should be taught to the students.

2) Guidelines for students who will direct all their activity in the learning process, as the substance of the competencies that should be studied or he mastered.

3) Guidelines of the achievement or mastery of learning outcomes.

d. **The Purpose of Teaching Material**

   The purpose of teaching materials there are four, as follow:[20]

 1) Helping Students learn something.

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[19] Hamdani, *Strategi Belajar Mengajar* (Bandung: Pustaka Setia, 2011), p.121.
[20] Ibid., p. 122.

All the information that is obtained from the source of learning and then arranged in the form of teaching material. This opens the discourse and new sphere for students because of the lesson materials delivered is something new and interesting.

2) Provide various choice of teaching material.

Choice of teaching materials is not only restricted by one source, but from a variety of learning resources that can be used as a reference in the preparation of learning materials.

3) Make it easier for the teacher in the implementation of learning.

The teacher as a facilitator in the learning activities will be easy because teaching materials organized itself and delivered in a way that variation.

4) In order to become more interesting learning activities.

The various types of teaching materials that is expected learning activities not monotonous, and is not restricted by one source books or in the classroom.

e. **Scope of Teaching Materials**

The scope of teaching materials includes: [21]

1) The title, subjects, competency standard, basic competencies, indicator.

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[21] Ibid., p. 122-123.

2) The instructions to learn, contains about the explanation of how to use a teaching materials that will be studied in a learning activities.

3) The competencies that will be achieved. Learning materials should be relevant or no relationship with the achievement of the standard and basic competencies.

4) Supporting information. This information is intended for the students can be more interested or clarify a sub of topic from teaching materials. An example of a photo or illustration.

5) Exercise, located in the end of sub topic, the end of the chapter, the end of the first semester and the second semester.

6) Instructions for the work can be in the form of worksheets students.

7) The end of the exercise evaluation, a learning period or the entire semester, both semester I and semester II.

f. The Nature of Learning Book

Learning book is the book of text that is used as a reference standard in certain subjects. The characteristics of the book as follow: (1) source lesson materials; (2) as reference books for certain subjects; (3) arranged systematically and simple; and (4) includes instructions and learning.[22]

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[22] Sa'dun Akbar, Instrumen Perangkat Pembelajaran (Bandung: Remaja Rosdakarya, 2015), p. 34.

A good learning book as follow:[23]

1. Accurate (Accuracy)

   A good learning book should pay attention to accuracy. The accuracy of among others can be seen from the aspects: accuracy presentation, is presenting the results of research and not one quoting the opinion of experts.

2. Relevance

   A good learning book has relevance between the competencies which must be mastered with the scope of contents, the depth of the discussion and competence of the reader. The relevance should also illustrate the relevance of the matter, tasks, example description, exercises and questions, completeness explanation, and illustration with competencies which must be mastered by the reader according to the level of development of its readers.

3. Communicative

   Communicative means the contents of the book easy to digest readers, systematically, clear and does not contain language error. Communicative assume that you are taught through writing. The language that you use is not very formal, but half orally.

4. Complete and Systematic

   A good learning book list the competencies which must be mastered readers, provide the benefits of the importance of

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[23] Ibid., p. 34-36.

competencies for the life of reader, presents the table of contents and presents references. The description systematically, follow the thought of the simple to complex.

5. Oriented Student Centered

    Education by the curriculum tend to constructivism such as *KTSP* requires a learning book that can encourage curiosity students, the occurrence of the interaction between students and learning resources, stimulates students to build their own knowledge, encourage students to learn in groups and pursued the students practiced reading contents.

6. Sided to the Ideology of Nation and State.

    For the purpose of education in Indonesia, a good learning book is the book must support the submission to God ; supports the growth of the value of the humanitarian; support awareness of the pluralistic society; supports the growing sense of nationalism; and support the logical way of thinking.

7. Language rules correctly

    Learning book is written using the spelling, the term, and the sentence structure that right.

8. Legible

    Learning book which high legible is length of sentence and the sentence structure relevance to the understanding of the reader, paragraph length relevance to the understanding of the reader.

g. Mathematic Learning Book (With Flannel Board)

1) Definition of Mathematic Learning Book (With Flannel Board)

Researcher develop learning book of mathematic is adapted from the research of development of drawing book and flannel board. So this book has many pictures that related with multiplication. But the pictures on this book is taken from the results photo of objects or pictures are made from flannel. Flannel is the soft fabric and has various color, so that interest for students. Besides relevance with the result of Riska's thesis that drawing book can be used to help children know the environment and the situation is different with their environment. This book is usually directed at primary school of low grade. Drawing books more can motivate students to learn.[24]

Mathematic learning book also is completed with flannel board. According to Sadiman flannel board is an effective graphics media once to explain certain messages to the specific objectives. That objects will be presented can be installed and removed easily so that it can be used many times. Besides that media usually is used in the lower classes of primary schools or kindergartens. Because of its

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[24] Dian Agustin Purnamasari, *Pengembangan Buku Bergambar Mata Pelajaran IPA Kelas 3 Semester 2 Materi Poko Cuaca dan pengaruhnya Bagi Manusia di sDN Kebonagung Pasuruan*, Skripsi Program Sarjana 1, Fakultas Ilmu pendidikan, Jurusan Teknologi Pendidikan, UM, 2011.

rendering result immediately, except attracted the attention of the students, flannel board usage can make the offering more efficient.[25]

Then flannel board that is developed by the researcher is a board that is coated with flannel fabric, the function as agglutinate to the objects such as the symbol, the numbers, letters and pictures that is related to the multiplication material. This flannel board is used to instil the concept of multiplication to the second grade students of SD/MI. This flannel board media involving activeness and the active participation of the students, to develop student motivation and oriented on the process of fun learning.

The steps to make flannel board media as follows: 1) Prepare the board or plywood; 2) Stick flannel fabric on board and hast coated zinc under flannel fabric; 3) Create objects of flannel fabric, the object in the form of a pictures or numbers are relevance with the material to be taught; 4) On the back of objects that will be used stick with a magnet that can be attached to the board that has been coated flannel zinc.

2) The Reason of Using Pictures on The Book

The reasons used pictures in the creation of teaching materials is (1) Picture can become the decoration make teaching materials interesting; (2) Picture capable to motivate; (3) Picture as those

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[25] Arief S. Sadiman, dkk. *Media Pendidikan Pengertian, Pengembangan dan Pemanfaatannya* (Jakarta: PT Raja Grafindo Persada, 2003), p. 49.

conveying feelings; (4) Picture can influence those who see; (5) Pictures can help to imagine the message that you want to delivered; (6) By picture the information that you want to delivered can be more clearly be understood; (7) One picture can explain some words or sentences; (8) By picture, we can do the simplification of the ways of delivering the concept without reducing means; (9) By picture, can facilitate people receive a message delivered easily.[26]

3. **Students' Understanding**

   1) **Definition of Understanding**

      In the Indonesia Language Dictionary definition of understanding differentiated into various kinds of understanding among others:

      1) Received the meaning, absorb the idea, understand.

      2) Know correctly, understand characters or nature.

      3) Know the meaning of the words in the language.

      In taxonomy's Bloom, there are 3 domain of education: cognitive domain, affective domain and psychomotor domain.[27]

      Understanding or comprehension is one of the aspects that are included in the cognitive domain. Understanding is the ability to explain in their words, translate, interpret, estimate, understand the content, defines the table, and others. The operational work that is used to

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[26] Andi Prastowo, Panduan Kreatif Membuat Bahan Ajar Inovatif (Jogjakarta: Diva Press, 2015), p. 99-100

[27] Suharsimi Arikunto, Dasar-dasar Evaluasi Pendidikan (Jakarta: PT. Bumi Aksara, 2013), p. 129-130.

measure the understanding based on taxonomy's Bloom: distinguish, explains, concluded, summarize estimates.[28]

While definition the concept is all things that exist in the new definitions that can arise as a result of thought, include the definition, particular characteristic, the nature, contents, etc.[29]

So understanding the concept is the ability of students in the form of the mastery of a subjects, but able to explain or expressed back in other forms that are easy to understand, and able to apply the concepts in accordance with cognitive structure that possesses.

In mathematics learning, understanding the concept that is students must be able to interpret the model into daily life and create a model of its symbols. On the level of understanding the concept must be stressed on the relationship of the real world by model, on the level of understanding of the basic facts emphasis mainly on the model relationship with its symbols, while on the level of understanding count the emphasis must be done in the connect the real world with its symbols.[30]

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[28] Sa'dun Akbar, Instrumen Perangkat Pembelajaran (Bandung: Remaja Rosdakarya, 2015), p.11-12.

[29] Andi Prastowo, Panduan Kreatif Membuat Bahan Ajar Inovatif (Jogjakarta: Diva Press, 2015), p. 44.

[30] Ruseffendi, *Pengajaran Matematika* (Bandung: Tarsito, 1979), hlm. 2-3.

2) **Indicator of Understanding**

Indicators of understanding concept include:[31]

a) Able to explain verbally about what has been achieved

Able to explain verbally, that's mean student able to explain by their word about the message that is carried by the symbol. As we know, that mathematic is language of symbol so in mathematic learning student should have a correct understanding.

b) Able to present mathematical situation into a variety of ways and knowing the difference

Mathematic learning should begin from daily life (usually using the question of the story), and then carried to semi-concrete, semi-abstract and abstract.

Student can understand if they can be done a variety of ways, there are: in mathematic learning should begin from the concrete situation (the exercise by representative of picture, usually the questions of the story), and then carried to (the exercise without representative of picture) from the simple to the complex. For example: a) 3x5 = … + … + … to b) 4x6 = ?

c) Able to apply the relationship between concepts and procedures

Student can understand if they can apply and conclude about the relationship between concepts and procedure. The concept can be

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[31] Seminar Nasional FKIP Universitas Sriwija (Pemahaman Konsep).pdf (http://doyan-matematika.blogspot.com/2013/05/indikator-pemahaman-konsep-matematika.html, access on 18 December 2016 at 08.20 WIB).

obtained by the procedure (count – operate – and then interpret) or procedure can be obtained by the concept.

d) Able to provide examples and contra of concepts that have been learned

To measure the understanding, student can be given the exercise with true answer based on the examples and false answer as contra. If they say false to the question of false answer and then they can correct it. So that the student can understand well. For example:

Choose the true answer!

$4 + 4 + 4 = \ldots$

a) $3 + 4$ c) 3×4

b) $4 + 3$ d) 4×3

e) Able to apply the concept in algorithms

Student's understanding can be measured by student able to apply the concept in algorithms. Algorithms consist of variable/symbol, so student must able to make a model from question of story to the algorithms with that's symbol.

f) Able to develop concepts that have been learned

Student should be develop the concept from the simple to the complex. If they can be done the simple question of the basic concept, so they also should be develop their skill to be done the complex question of the implementation of multiplication a form of series story question.

The above indicators accordance with the rules of the Directorate Dikdasmen Number 506/C/Kep/PP/2004, indicator of students' understanding on math concepts are able to:

1) Reissue of a concept

Reissue, that's mean student able to explain by their word about the message that is carried by the symbol. As we know, that mathematic is language of symbol so in mathematic learning student should have a correct understanding. For example 2x7, that's mean 7 as many as 2 times, and can be read 2 times of 7. So that 2x7 = 7+7.

2) Classify a particular object in accordance with the concept

Student should be able to classify the concept, for example they can classify which the concept of multiplication with 0,1,2 and can solve the problems about multiplication of their life.

3) Provide examples and not an example of a concept

To measure the understanding, student can be given the exercise with true answer based on the examples and false answer as not an example/contra. If they say false to the question of false answer and then they can correct it. So that the student can understand well. For example:

Choose the true answer!

2 + 2 + 2 = …

a) 3 + 2   c) 3 x 2

b) 2 + 3   d) 2 x 3

4) Presents the concepts in a variety of forms of representation

Student can understand if they can be done a variety of ways, there are: in mathematic learning should begin from the concrete situation (the exercise by representative of picture, usually the questions of the story), and then carried to (the exercise without representative of picture) from the simple to the complex. For example: a) 3x5 = … + … + … to b) 4x6 = ?

5) Utilize, develop and choose procedures or certain operations

Student can understand if they can determine the procedure of the concept. The concept can be obtained by the procedure (count – operate – and then interpret).

6) Apply concepts or algorithms in problem solving.

Student's understanding can be measured by student able to apply the concept in algorithms in problem solving. Algorithms consist of variable/symbol, so student must able to make a model from question of story (problem solving) to the algorithms with that's symbol.

4. Multiplication

a. The Concept of Multiplication

Multiplication is the main mathematical concept that should be learned by students after they learn addition and subtraction operations. Because in principle, multiplication as repeated addition. So the ability

of the student should have prerequisite before learning the multiplication is the mastery of addition.[32]

The multiplication operation is defined as repeated addition. Because in fact the multiplication is addition of the same integer as much as "n" times. If a and b are integers, then the axb can be defined as b + b + b + ... + b (as much as a times). Therefore definition of multiplication is understood as repeated addition, e.g. 3x4 = 4 + 4 + 4, while 4x3 = 3 + 3 + 3 + 3. So conceptually axb is not same with bxa, but if viewed from the results axb = bxa. Because the prevailing characteristic of commutative and associative.[33]

b. The multiplication in the Qur'an

The Qur'an does not speak explicitly integer multiplication operation. But the Qur'an gives a picture that will bring up the operation of integer multiplication. In surat Al-Baqarah verse 261, Quran explained:

مَّثَلُ ٱلَّذِينَ يُنفِقُونَ أَمْوَٰلَهُمْ فِى سَبِيلِ ٱللَّهِ كَمَثَلِ حَبَّةٍ أَنۢبَتَتْ سَبْعَ سَنَابِلَ فِى كُلِّ سُنۢبُلَةٍ مِّا۟ئَةُ حَبَّةٍ ۗ وَٱللَّهُ يُضَٰعِفُ لِمَن يَشَآءُ ۗ وَٱللَّهُ وَٰسِعٌ عَلِيمٌ ۝

The example of those who spend their wealth in the way of Allah is like a seed which grows seven stems; in each stems is a hundred seeds. And

[32] Heruman, *Model Pembelajaran Matematika Di Sekolah Dasar* (Bandung: PT Remaja rosdakarya, 2007), p. 22.

[33]Selvianus Ayub, "*Peningkatan Hasil Belajar Perkalian Bilangan Cacah Melalui Pendekatan SAVI (Somatis, Auditori, Visual dan Intelektual) Siswa Kelas III SDN Kauman 2 Kota Blitar*", Skripsi, Fakultas. Ilmu Pendidikan UM, 2012, p. 13.

Allah multiplies [reward] for whom Allah wills. And Allah is all-Encompassing and Knowing.[34]

At QS Al-Baqarah verse 261 explained that 1 seed will grow 7 stems, and each stems there are 100 seeds. Because the addition operation is mentioned in the Qur'an, then to determine the overall seed, someone can do by calculating the

$$100+100+100+100+100+100+100 = 700$$

The addition of 100, repeated 7 times so that the result 700. The concept of this repeated addition operating is actually concept of integer multiplication. So the statement

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

Thus, emergence of the multiplication operation proceeds from the operation of addition, namely, repeated addition. [35]

c. **The Principle of Multiplication Teaching**

Learning mathematics is a form of logic thinking rather than good at counting. Counting can be done with the tools, but to resolve the problem needs logic of thinking and analysis. Therefore, students in math learning should have a correct understanding and complete appropriate the stages, through a fun learning by principles of mathematics learning.

Mathematics basically teach logic thinking, based on common mind and logical reasoning. However, it should be remembered that the

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[34] *Al-Qur'an dan Terjemahnya* (Bandung: CV Diponegoro, 2000), p. 34.
[35] Abdussakir, *Matematika dalam Al-Qur'an* (Malang: UIN MALIKI Press, 2014), p. 69-72

characteristic of mathematic is abstract or not real because it consist of symbols. Students, especially Elementary School age are in the stage of concrete operations. So naturally their best way of learning is for real by the look, feel, and do it with their hands. The concept was taught whenever possible with views, held and played, drawn, spoken, and written. The real experience will help students in the form of abstraction that is needed to understand the mathematics.

Learning should begin by lifting situations from daily life (later simplified to the shape of the question of the story). Then the children are asked to model, before finally making a mathematical sentence. This process should be carried out in two directions so that the result will be optimal.[36]
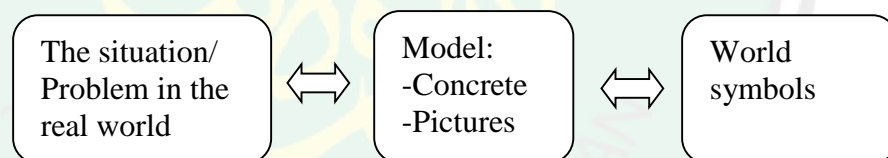
The chart 2.1 principle of multiplication teaching

d. Step of Multiplication Teaching

The concepts in the curriculum of mathematics SD/MI can be divided into three, namely, the cultivation of the concepts, the understanding of the concept, and coaching skills. The aim of mathematic learning in SD/MI, in order students have skill or ability in

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[36] Fatimah, *Matematika Asyik Dengan Metode Pemodelan.* (Bandung: PT Mizan Pustaka, 2009), p. 9.

using a variety of mathematical concepts in daily life. However, to reach the stage of that skill must go through the right steps in accordance with ability and environment students. The following is the explanation of the learning that emphasized on the concept of multiplication.

1) Cultivation Concept

At the beginning of learning, teachers can tell about problems in everyday life that relate to multiplication. To help ability of students' thinking, given the help of objects or images that fit the story. Example: Susi took the book from the box three times, each retrieval of acquired two books. How many books are taken entirely Susi?

The teacher can give the question to students in discovering the concept of multiplication, such as the following.

a) how many time the book is taken by Susi? (Answer expected: 3 times)

b) how many book every retrieval? (Answer expected: 2 books)

c) how many book is taken entirely by Susi? (Answer expected: 2 + 2 + 2 = 6 books). Two or three times (3 time 2), written in multiplication $3x2 = 6$

Give an emphasis on students that $2 + 2 + 2$ if written in multiplication be $3 \times 2 = 6$. Next, create the link between multiplication and addition as follows:

a) $2+2+2+2 = 4 \times \dots$

b) $2 \times 6 = \dots + \dots$

The first stage, the students should work on multiplication by change multiplication into addition, and opposite. Students don't just yet given drill before they understand the true concept of multiplication as repeated addition.

2) Understanding the concept

To know if students understand the topic of this multiplication, we can provide a sample questions with answers that are right and wrong. If the student says "wrong" on the question with the wrong answer, and can correct the wrong answer, it means that the student has understood. Example:

If the true tick √, if wrong correct it!

a) 3+4 = 3x4

b) 2+2+2 = 3x2

3) Coaching Skills

Coaching skills at first can be done by giving it a drill on students about the multiplication of the results until 50. Next, the students have to memorize multiplication up to 100.

The coaching skills of students in multiplication can be done by giving question individually. That activity is often carried out by teachers in the past before go home. The teacher gave multiplication question, then students answer it. Students who answer correctly, may go home first and students who still wrong answer it is not allowed to go home. This activity is effectively in the train the

student to memorized multiplication. Besides, the enrichment teachers can give divergent question.[37]

e. **Theory of Multiplication Learning in Mathematics**

Bruner in research method said that in the mathematics teaching students must find various knowledge by themselves that needed. Therefore, to students the material presented is not in the form of the end and not told how the solution. In this learning, teachers must act more as advisor than as giver.

The purpose of the finding of the method is to obtain the knowledge in such a way that can train various intellectual capabilities of students, stimulates curiosity and motivate their ability. The objectives of teaching can only be described in broad outline and can be achieved in a way that need not be the same for each student.

In mathematics teaching there must be connected between the previous students learning experience with the concept that will be taught. In mathematics, each concept relates to the concept of the other and a concept becomes a requirement for other concepts. Therefore the students should be more given the opportunity to perform the relevance.

Based on the dimension of the relationship between the concept in learning theories Ausubel, "learning" can be classified in two

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[37] Heruman, *Model Pembelajaran Matematika Di Sekolah Dasar* (Bandung: PT Remaja rosdakarya, 2007), p. 22-25.

dimensions. First, related to the way the information or the concept of the lesson presented on students through the acceptance or the discovery. Second, regarding how the students can relate the information on cognitive structure (has owned and remember students).

Students must be able to connect what has been owned in the structure of the think improves in the form of the concept of mathematics with the problems. This is in accordance with the statement Suparno about meaningful learning is "student activities connect or associate the information on the knowledge of the concept that has been possesses". But the students can also only trying to memorize the new information, without connecting the concepts that have been there in the cognitive structure. This happens learn memorizing. Ruseffendi divide between memorizing learning with meaningful learning. Learn to memorize the students can learn to memorize what has been reached. While meaningful learning is learning to understand what has been acquired and is associated with other conditions so that what he learn will be better understood.

Besides the explanation above, on mathematics teaching must occur also learned in "constructivism" by Piaget. In constructivism, construction of knowledge is done by the students themselves, while the teacher acts as a facilitator and create a conducive climate.[38]

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[38] Ibid., p. 4-5.

According to the theory of constructivism learning is not just memorize the will but the process of construct knowledge through experience. Knowledge is not the result of "giving" from other people such as teacher, but the results from the process of construct is done every individual. The knowledge of the results of giving will be knowledge that meaningless.

Piaget argues that every children have cognitive structure called the scheme. The scheme is formed because the experience. The more adult children, then more exhibit scheme which possesses. So during his life children will improve and enhance the schemes that have been formed.[39]

5. **The students of SD/MI**

Primary School students (SD/MI) aged between 6 or 7 years until 12 or 13 years. According to Piaget, they are on the concrete operational phase. The ability to appear in this phase is the ability in the process of thinking to operate of logic, although still connected with the object that is concrete steps.

From the age of cognitive development, students of SD/MI are still with concrete objects that can be arrested by the senses. In abstract mathematics teaching, student need the tool in the form of media that can clarify what will be delivered by teachers so that quickly and more understood by the

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[39] Wina Sanjaya, Kurikulum dan Pembelajaran Teori dan Praktik Pengembangan KTSP (Jakarta: Kencana Prenada Media Group, 2011), p. 246-248.

students. In mathematics, each abstract concept that new understood by students need to be given the reinforcement, so survive long in the memory of the students so that will stick in mindset and pattern of their action.[40]

B. The Framework of Thought
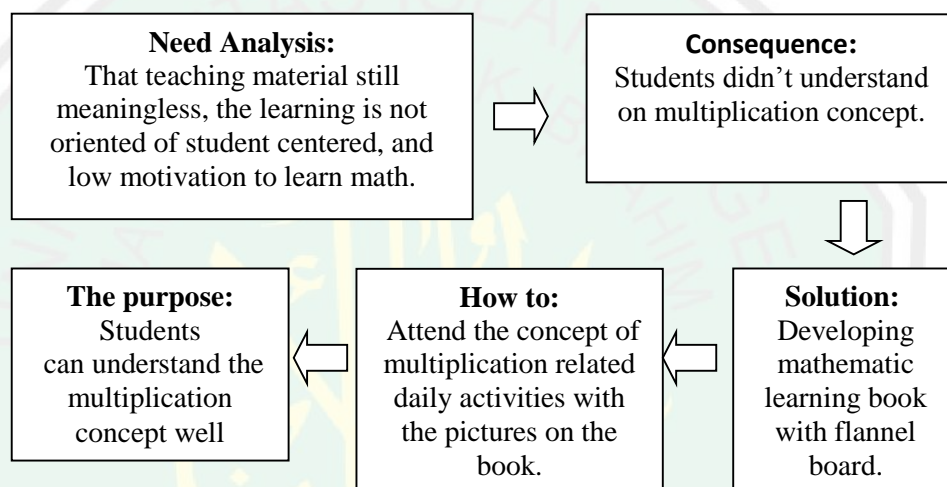
The chart 2.2 Framework of thought

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[40] Heruman, *Model Pembelajaran Matematika Di Sekolah Dasar* (Bandung: PT Remaja rosdakarya, 2007), p. 1-2.

CHAPTER III
RESEARCH METHOD

A. Types of Research

This research aimed to develop and produce products that are used to fulfill the needs and adapted to the existing conditions. This research is oriented on the product of education. So this type of research is the research and development (R&D). According to Borg & Gall said that, "Research and development is a process used to develop and validate product education".[41]

Products produced in this research is mathematic learning book is equipped by flannel board for multiplication material on the second grade SD/MI. Through the research and development of products it is expected students can understand the concept of multiplication well. So this product can be used to fulfill the need of students in the mathematics learning especially multiplication material. So that, this research and development is research that can improve the quality of education.

B. Development Model

Development model is the procedure that is taken should be taken to achieve the objectives within a research development, the objectives are in the form of a product. There are several development models, but the researcher in this research using a development model Borg & Gall. By reason of this model are

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[41] Punaji Setyosari. *Metode Penelitian Pendidikan dan Pengembangan* (Jakarta: Prenada Media Group, 2015), p. 276.

detail developed, accompanied by a complete activity stages, clearly and easy to understand. Borg & Gall to develop the steps of research and development which he arranges to ten steps as follows:

1. Research and information collecting

2. Planning

3. Develop preliminary form of product

4. Preliminary field testing

5. Main product revision

6. Main field testing

7. Operational product revision

8. Operational field testing

9. Final product revision

10. Dissemination and implementation.[42]

Based on the ten steps from the Borg & Gall development researcher have to do modifications on the contents of the stages, what is done is not exactly the same as with the written on the development phase Borg & Gall. Because the research limited only done at two school and because limited of time, energy, and cost by researcher. Following the chart the stages of development model Borg and Gall.

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[42] Punaji Setyosari. *Metode Penelitian Pendidikan dan Pengembangan* (Jakarta: Prenada Media Group, 2015), page. 292.
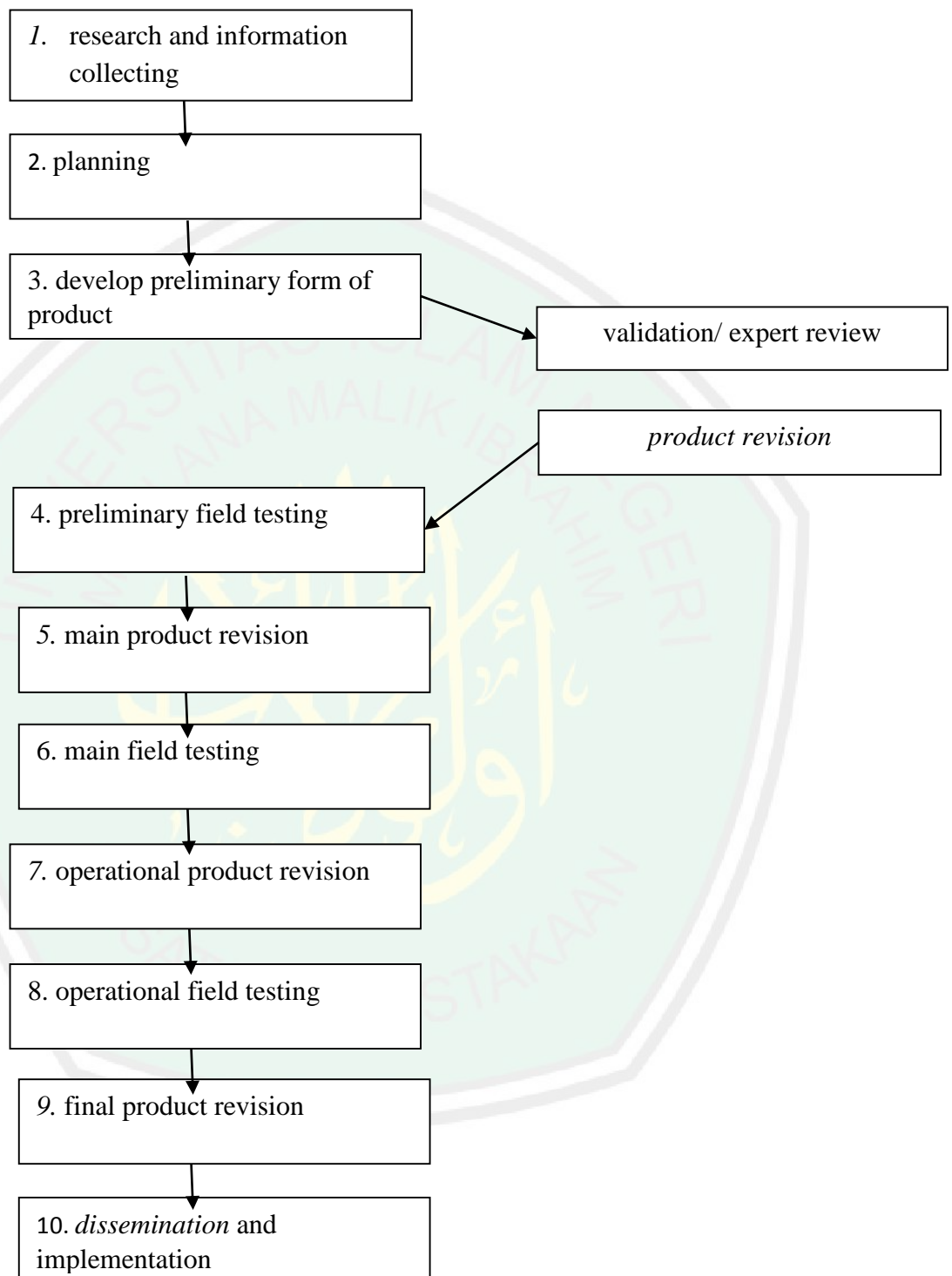
Chart 3.1. Steps of Developing by Borg and Gall

C. Procedure of Development

Based on the development model developed by Borg and Gall, so the procedure development in this research follow these steps as follows:

1. Research and Information Collecting

In the first step that will be done by the researcher is collecting data from the results of observation and interview in school. Researcher conducted observation on the second grade student at SDN 2 Nglandeyan Blora to know the situation in the classroom and the problems when learning, in order to analyze the need and characteristic of the student. Besides researcher also doing interview with the second grade teacher, the teacher said that,

> Some students on the second grade difficulty multiplication material, because the student are lazy to pay attention when teacher explain. Although the teacher explain repeatedly, but there are still some students that low value. Teacher are not using the media, because it takes a long time to prepare media. Teacher only explains in the whiteboard by lectures method. Teaching material is used limited student worksheet. Student worksheets which has been used to help, but still not complete.[43]

The next step is to analyze the characteristic of mathematics and identify the purpose of mathematics teaching materials for the second grade SD/MI. The curriculum is used *KTSP*, so that researchers identify based on Ministry of Education No. 22 of 2006 year about Standard Content SD/MI, obtained competency standard and basic competencies about multiplication for the second grade SD/MI, as follow:

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[43] Interview with Suspiyati, S.Pd (teacher of the second grade in SDN 2 Nglandeyan Blora on October 8, 2016 at 09.00 am)

Table 3.1 SK and KD of multiplication for the second grade SD/MI

Competency Standard	Basic Competencies
3. Do integer multiplication and division up to 2 digits	3.1 Do integer multiplication that the result integer two numbers

Analysis of learning objective used as a basis in developing a product and arrange evaluation (pretest and posttest).

2. Planning

After collecting the data above, it can be known the problems and needs of students in the field. So that this step is conducted by researcher is designing the development a product in the form of mathematic learning book with flannel board as the solutions based on the needs and problems above.

3. Develop Preliminary Form of Product

In this step researcher prepared the ingredients to make of the product as well as and develop instruments that will be used. In this step is make a product designed by the researcher and can be added or subtracted based on the validation result of the experts and field testing.

The instruments are used in the form of questionnaires and test. In this step researcher compiled questionnaires based on Likert scale and will be given to the validators to assess and give suggestion for validity of product. The test is used to collect data (pre-test and post-test) that shows effectiveness products that are produced.

4. Preliminary Field Testing

In this step is preliminary field testing the product that have been developed. But before it, researcher conducted validation first the product to validators. In order the products produced valid and feasible according to the experts.

Preliminary field testing was conducted by researcher at school namely, SDN I Nglandeyan, Blora. The subject of this test is 4 students. After preliminary field testing, researcher discussions with the second grade teacher for the completion of the product developed. Besides students also have been given instrument be questionnaires students' response to the products that have been developed.

5. Main Product Revision

In this step researcher revised to improve the product accordance with suggestion of experts (validators) and revised based on the results of preliminary field testing.

6. Main Field Testing

In this step, the researcher tested the returned product in a larger scale namely, main field testing. The subject of this test is 8 students at the second grade SDN I Nglandeyan, Blora. The students also have been given instrument be questionnaires students' response to the products that have been developed.

7. Operational Product Revision

In this step that researcher will be conducted the second revision to improve its products based on the comments and suggestions the results of main field testing. In order the product that have been produced become more perfect.

8. Operational Field Testing

After the product was revised several times and could to be used, then the next step is operational field testing. The subject of this test is 30 students at the second grade of SDN 2 Nglandeyan, Blora. The data collected based on the results of tests.

9. Revised of Final Product

Based on the analysis the results of operational field testing, the revision of final product is done when there is still lack of product that have been developed.

10. Dissemination and implementation

Dissemination is distributing product for socialized can be through the meeting or written in the journal or the book. But because of limited time, energy and cost by researcher, then on this step cannot be researcher do. So this development product implementation is limited in SDN 1 Nglandeyan and SDN 2 Nglandeyan Blora.

D. Product Trial

Product trial was the activities to be carried out to know the level of validity, attractiveness and effectiveness product that has been produced. This product trial consist of trial design, trial subject, the types of data, instruments of data collecting and techniques of data analysis, each will be explained in the following.

1. **Trial Design**

   Stages of the trial conducted consist of consultation stage, validation experts stage, and the stage of field testing. Each stage is described as follow:

   a. Consultation Stage

      At this stage consist of several activities as follow;

      1) Researcher consulted product that has been developed to a thesis advisor.

      2) A thesis advisor checked the product that developed, then gives advice and suggestion.

      3) Researcher revised of the products based on the advice and suggestions from a thesis advisor.

   b. Validation Experts Stage

      At this stage there are several activities done, as follow:

      1) Researcher met and explained about the product that is developed to the experts of content, experts of mathematic learning, and expert of design.

2) Experts of content, experts of mathematic learning, and expert of design provide assessment to give criticism and suggestions to the product that is developed.

3) Researcher discuss the results assessment from experts to the thesis advisor.

4) Researcher do the revision based on the result of validation and discussion with a thesis advisor.

c. Field Testing Stage

   Field testing is done 3 times, namely preliminary field testing, main field testing, and operational field testing. Each stage is described as follows:

   1) Preliminary Field Testing

      Preliminary field testing is conducted in the second grade students of SDN I Nglandeyan, Blora that consist of several stages, as follow:

      a) Researcher explain the product that is developed to the second grade teacher of SDN I Nglandeyan.

      b) Researcher observed the subject of preliminary field testing when using the product that developed for the learning.

      c) The subjects answered a questionnaires students' response to the product that is developed.

      d) Researcher do discussion and feedback to teacher based on the result of preliminary field testing.

e) Researcher conducted analysis the result of preliminary field testing.

f) Researcher will be revised the product based on the analysis results of preliminary field testing.

2) Main Field Testing

Main field testing carried out against the students of the second grade SDN I Nglandeyan Blora with the same steps with preliminary field testing, but the subject is larger than preliminary field testing.

3) Operational Field Testing

Operational field testing is done for the students of the second grade at SDN 2 Nglandeyan Blora, consists of several stages as follow:

a) Researcher explain the products that is developed and discussions about field technical to the teacher.

b) Researcher gave pretest to all the students on the second grade of SDN 2 Nglandeyan, Blora.

c) Researcher divided into two groups namely the control group and experiment group based on the results of pretest values.

d) Researcher observed students when learning by using the product that has been developed (experiment groups).

e) The students of experiment group do assessment questionnaires for students' response to the products that is developed.

f) Researcher observed students when learning without using the product that is developed (control group).

g) Students from the experiment group and control group answered posttest.

h) The second grade teacher gives the assessment, criticism and suggestions to the product that is developed.

i) Researcher analyzed data results of operational field testing.

j) Researcher do revision when there is still lack based on the results of the data analysis operational field testing.

2. **Trial Subject**

Before conduct field testing the product, should be do validation first to the experts. So that researcher will be explain the subject of validation and the subject of field testing, as follow:

a. **Validation Subject**

1) The expert of content

Expert of content is an expert in mastering multiplication material. For the qualifications expert of content as follow:

a) A lecturer who specializes in mastering multiplication material characteristics.

b) A lecturer who has history education of S-3 mathematics education.

c) A lecturer who has experience as validator of mathematic content experts to the product.

2) The experts of mathematic learning

The experts of mathematic learning is an experts in mastering characteristics of the mathematics learning. For the qualifications expert of mathematic learning as follow:

a) A lecturer specializes in about the characteristic of mathematic learning, especially math of SD/MI.

b) A lecturer who had history of education S-2 mathematic education.

3) The experts of design

Selection of this design experts is concerned with the corresponding that have competency in the design of teaching material. For the qualifications expert of design as follow:

a) A person who experts in the design or development of teaching materials.

b) A person who has experience in making design or teaching material.

4) Practitioner/Teacher

For the qualifications practitioner/teacher as follow:

a) A teacher who has a history of education at least S-1 for education.

b) A teacher who is teaching at primary school minimum 3 years.

c) Teacher who has experience in mathematics teaching of SD/MI.

b. Field Testing Subject

This trial consist of preliminary field testing, main field testing and operational field testing are explained as follow:

1) Subject of preliminary field testing

The subject of preliminary field testing was taken from the second grade students of SDN I Nglandeyan, Blora District. The subjects of preliminary field testing are 4 students, with ratio of 1:2:1. One student with high ability, two students with the average ability and one student with low ability. The ability measured by the researcher based on the value of previous daily test of mathematic.

2) Subject of main field testing

The Subjects of main field testing were also taken from the students of the second grade SDN I Nglandeyan, Blora. The Subjects of main field testing are 8 students, with ratio 2:4:2. Two students with high ability, four students with the average ability and two students with low ability. The ability measured by the researcher based on the value of previous daily test of mathematic.

3) Subject of operational field testing

The Subject of operational field testing are taken from the second grade students of SDN 2 Nglandeyan, Blora District. The Subjects of this field are 30 students, with 15 students as the subject of experiment group and 15 students as the subject of control

group. Decide sampling is using sampling techniques systematically.

3. **Types of Data**

The data is collected in this research and development is the result of the validation data, students response data to the product that is developed and the results of the test data (pre-test and post-test).

Based on the above data then can be classified as the type of data is as follow:

a. Quantitative Data

The quantitative data is obtained through the score calculation results questionnaires from the validator and the test results (pre-test and post-test) that is given to the students.

b. Qualitative Data

The quantitative data obtained through the feedback, criticism and suggestion from the experts and the students response.

4. **Instrument of Data Collecting**

Instrument of data collecting is used to obtain some data to measure the level of validity, attractiveness and effectiveness of the product. The instrument is used to collect data on this development research as follow:

Table 3.2 Instrument of Data Collecting

No	Aspect is considered	The instrument	The observed data	The subject
1.	The validity of product	Questionnaire	The validity of product according experts	The experts (content, mathematic learning, design) and practitioner/teacher
2.	The attractiveness of product	Questionnaire	The students response to the product	Students
3.	The effectiveness of product	The test	Achievements of the objectives of learning	Students

Based on the table above can be known that the data collection instrument that is used in the form of questionnaire and test, explained as follow:

a. Questionnaire

Questionnaire is questions that are used to obtain information from the respondents in the sense of his personal statements, or the things that you want to know.[44] The Purpose of the use of questionnaire is to know the assessment and the response from the validator and student response to the products that has been developed. Rating scale used in the questionnaire is using *Likert* scale.[45] The answer each item instrument that uses a *Likert* scale has from the very positive gradation until very

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[44] Suharsimi Arikunto, Dasar-dasar Evaluasi Pendidikan (Jakarta: Bumi AKsara, 2006), p. 152.
[45] Sugiono, Metode Penelitian Kuantitatif, Kualitatif, dan R&D (Bandung: Alfabeta, 2015), p. 93.

negative, so the answers in the questionnaires consist of 5 levels that can be in the form of words among others:

Very Good	Given a score 5
Good	Given a score 4
Good enough	Given a score 3
Less Good	Given a score 2
Very Less Good	Given a score 1

While the questionnaire to students the answer was formed as multiple choice A,B,C,D and E, but still with depend on levels in the *Likert* scale.

b. Test

The test can be in the form of a series of questions, worksheets or similar substances that can be used to measure the knowledge, skills, talents and the ability of the subject of research. This test of instrument sheet contains questions test consists of test items.[46] Test given to students namely *pre-test* and *post-test* to know the level of students' understanding of the concepts of multiplication by the product that has been developed.

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[46] Trianto, Pengantar Penelitian Pendidikan bagi Pengembangan Profesi Pendidikan dan Tenaga Kependidikan (Jakarta: Kencana, 2010), p. 264.

5. **Techniques of Data Analysis**

The analysis in this research and development using some techniques as follow:

a. Data analysis the level of validity

To analyze the result validation from the validator uses the technique of data analysis percentage. The formula which is used to process the data as follows:[47]

$$P = \frac{\sum x}{\sum x1} \text{ x } 100\%$$

Description

P   = percentage of validity

$\sum x$ = total scores from the validator

$\sum x$ = total of maximum score

100 = constant

Decision-making on the level of validity product using the criteria as follow:[48]

Table 3.3 Criteria of validity level based on the *Likert* scale

Precentage (%)	Criteria	Information
85-100	Very valid	No revision
69-84	Valid	No revision
53-68	Valid enough	Partly revision
37-52	Less valid	Revision
21-36	Very less valid	Revision of the total

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[47] Suharsimi Arikunto, Dasar-dasar Evaluasi Pendidikan (Jakarta: PT. Bumi Aksara, 2013), p. 269-270.

[48] B. Subali, Indayani dan L. Handayani, "Pengembangan CD Pembelajaran Lagu Anak Untuk Menumbuhkn Pemahaman SAINS Siswa Sekolah Dasar", Jurnal, (Semarang: Fakultas Matematika dan Ilmu Pengetahuan Alam Universitas Negeri Semarang, 2012)..

Based on the above criteria, said product is valid if it meet the score more than 69 from all the elements that are obtained in the questionnaires assessment of the experts and teacher. In this development, the product flannel drawing book must meet the criteria of valid. Therefore, be revised until the product meet the criteria of valid.

b. Data Analysis Field Testing

Analysis the result of the tests used to measure the level of comparison students' understanding that using the product with which is not using the product is seen from the results of the pre-test and post-test.

Data analysis techniques using the t test, but there are several steps that must be done on this data analysis, stages are among others:

1) The average (mean)

Mean is the analysis techniques used to know the value of the average of the test results. The average (mean) is obtained by the formula as follows:

$$\mathbf{X} = \frac{\sum Xi}{n}$$

Description:

X   = the average (mean)

∑ Xi   = total value of X_1 until n

N   = total of subject[49]

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[49] Sugiono, Statistik untuk Penelitian (Bandung: Alfabeta, 2012), p. 49.

2) Variance

One of the statistical technique used to explain the homogeneity of the group is using variance. Variance is the total of all of the deviation values of individual to the average group. At this stage, researcher using SPSS 16 to obtain variance data.

3) Test data distribution normality

Normality test is used to determine whether the sample data obtained normal distribution or not. At this stage, researcher using SPSS 16 to obtain data normality.

4) Test of homogeneity two variance

If both groups of normal distribution of data, continued with testing of homogeneity two variance. The formula is as follow:[50]

$$\mathbf{F} = \frac{\textbf{Varians Besar}}{\textbf{\textit{Varians Kecil}}}$$

Both groups said homogeneous when using significant level 5% known that Fcount < Ftable. If Fcount > Ftable it can be concluded the data was not homogeneous.

5) t-test

After test for normality and homogenous of variance, continued with t-test. The t-test is used to test the difference between two treatment or two different groups with the principle of comparing the

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[50] Ibid., p. 171.

average (mean) both groups/treatment. The formula used as follow:[51]

$$t_{count} = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt{\frac{S1^2}{n_1} + \frac{S2^2}{n_2}}}$$

Description:

X_1 = average of the experiment group data

X_2 = average of the control group data

S_1^2 = variance of the experiment group data

S_2^2 = variance of the control group data

n_1 = total subject of the experiment group

n_2 = total subject of the control group

The results of the calculation of t test the (t_{count}) compared with (t_{table}) with significant level 0.05 or 5% with the hypothesis as follow:

H0: There is no difference of students' understanding on multiplication concept between the experiments group using mathematic learning book (with flannel board) with the control group that did not use it.

H1: There is a difference of students' understanding on multiplication concept between the experiments group using mathematic learning book (with flannel board) with the control group that did not use it.

Decision-making:

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[51] Sugiono, Statistik untuk Penelitian (Bandung: Alfabeta, 2012), p. 138..

1) If $t_{count} > t_{table}$ then the result H_1 accepted

2) If $t_{count} < t_{table}$ then the result H_0 accepted

The design between independen variable and dependen variable as follow:

Description:

X = independent variable is teaching materials (mathematic learning book with flannel board)

Y = dependent variable is students' understanding

Independent variable is the variable that give influence to the dependent variable (mathematic learning book with flannel board to experiment group and student worksheet with white board to the control group. And dependent variable is students' understanding. And control variable is made constant variable. Control variable in this research is the condition of learning (the teacher and time for learning is same, and both groups are homogeneous).
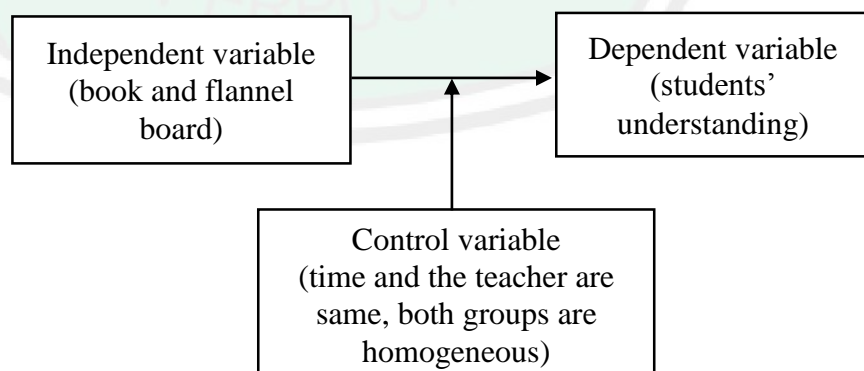
Chart 3.2. Variable design of experiment

CHAPTER IV

RESULT OF DEVELOPMENT

In Chapter IV, will be presented in the three main things that related with the result of development, as follow: A) Description the form of mathematic learning book (with flannel board); B) Description the result validation of mathematic learning book (with flannel board), C) Description the result test (attractiveness and effectiveness) of mathematic learning book (with flannel board). All the result of development is described as follow.

A. Description the Form of Mathematic Learning Book (With Flannel Board)

Mathematic learning book that has been developed in the form of the book that has many pictures from the result photo of flannel, for mathematic teaching multiplication material for the second grade SD/MI. The pictures on the book are the result photo from the pictures or objects which are made from flannel fabric.

Mathematic learning book was arranged with attending multiplication concept into the real world with the help by pictures and contain about the implementation of multiplication in daily life. Pictures that are made close to student's life. This book has the size of A4 and has been printed full color. Besides the book is equipped with flannel board media. So the pictures or objects that made not only functioned in the book but also can be served through this media. The description the form of media is explained in the sub flannel board below.

1. **Mathematic Learning Book**

    Mathematic learning book has been developed that consist of the cover, foreword, list of content, SK-KD and indicators, instruction of using the book, concept map, learning material, summary and evaluation. Each part of the book will be presented as follow:

a. Cover

    Cover on the mathematic learning book consist of two covers, namely: front cover and back cover.

1) Front Cover

    The front cover is designed with interesting of color, picture, and writing. Front cover consist of the name of the developer (*Dita Safitri*), the title of the book (*Buku Ajar Matematika Perkalian*), and it is used in mathematic fot the second grade of SD/MI.

    The background of cover representative with the content of the book with present multiplication concept and the character of *Pak Somat* family.

2) Back Cover
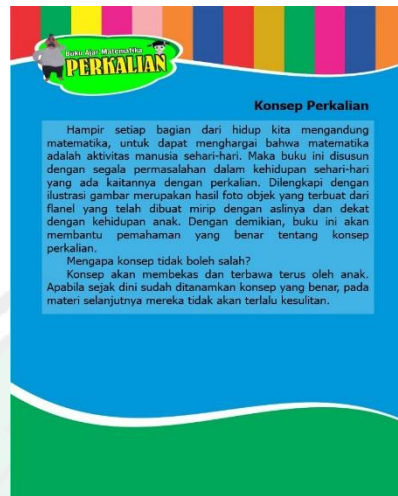
Cover on the back is designed relevance with the background, color and picture of front cover. The title on back cover is designed same with the front cover, but the size is smaller. Back cover contain overview the contents of the book.

b. Preface
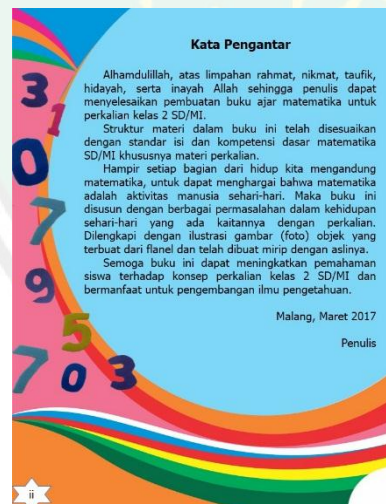
The preface contain thanks to Allah SWT, so that developer can complete the mathematic learning book. The next paragraph presented information overview the content of the book.

c. List of Contents

      List of content consist of a list of all parts of the content in the flannel

drawing book.

d. SK-KD and Indicators

      SK-KD is the competency that will be achieved by students contain

SK-KD curriculum of 2006. In this section the developer add the

appropriate indicator with SK-KD and the basis of development this

book, namely understanding concept.

e. Instructions for Using the Book

The instructions for using this book is explained about how users should learn the material of this book.

f. Concept Map

The map of concept is intended to make it easier for students in understanding the flow of learning in this book.

g. Learning Material
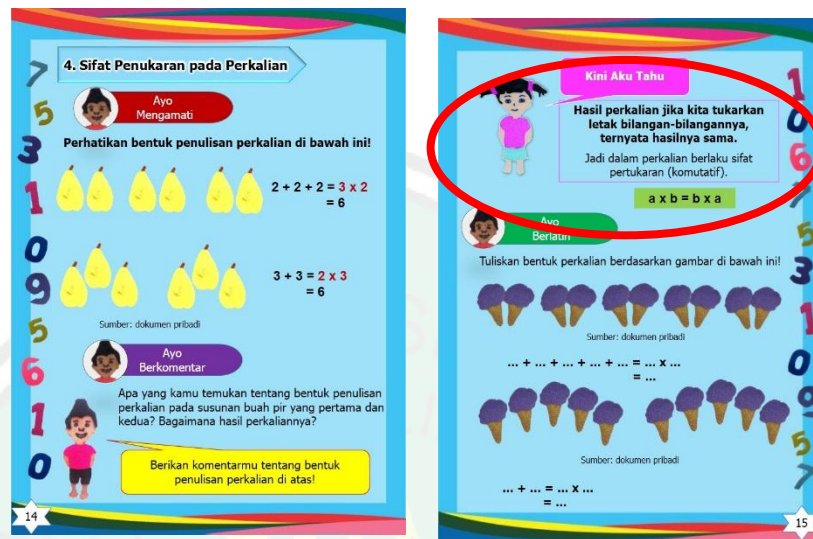
Learning material is presented to encourage students to build their knowledge by themselves. This learning material consist of 3 parts, namely: "*Ayo Mengamati*", "*Ayo Berkomentar*" and "*Kini Aku Tahu*".

So the learning in this book begins with the activities of observation of the picture and the structure of multiplication, then the activities provide comments based on observation and provide information about the concept of multiplication.

h. Exercise
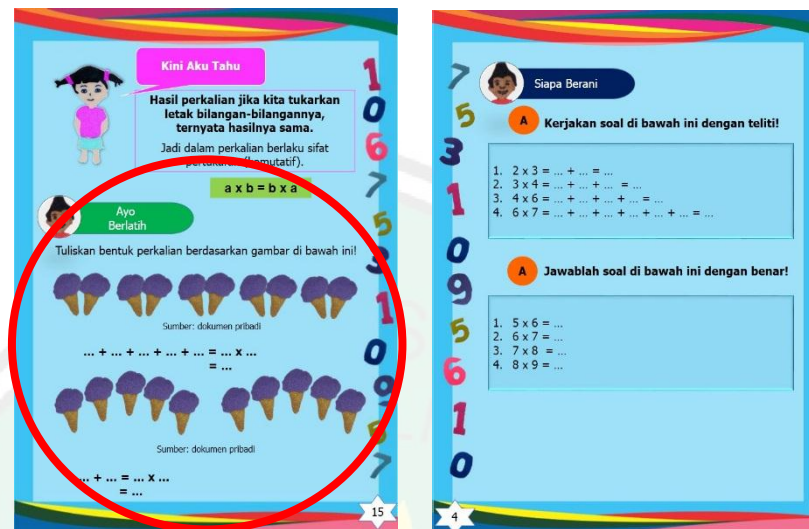
The exercise is the questions that are used to train the ability of students in understanding of multiplication concept. The question of this exercise served every sub topics and consist of two parts, namely; "*Ayo Berlatih*" and "*Siapa Berani*".

"*Ayo Berlatih*" is the question of the exercise that should be done the students with help of picture. While the "*Siapa Berani*" is the question of the exercise that should be done the students without representation of the picture.

i. Summary
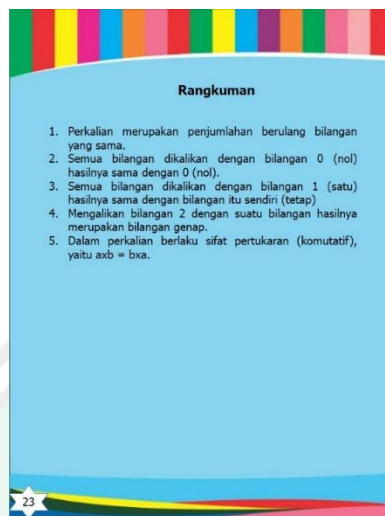
Summary is a component that contain a summary of the material about the concept of multiplication.

j. Evaluation
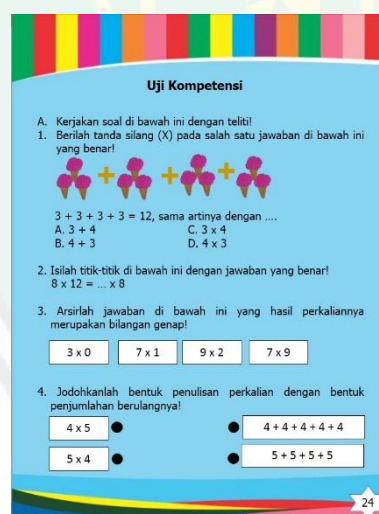
Evaluation in this book consists of "competence test" used to measure how far the students understanding of the competencies that have mastered after attending the learning process.

k. Reference
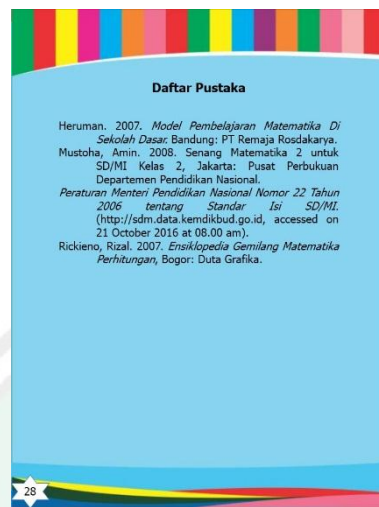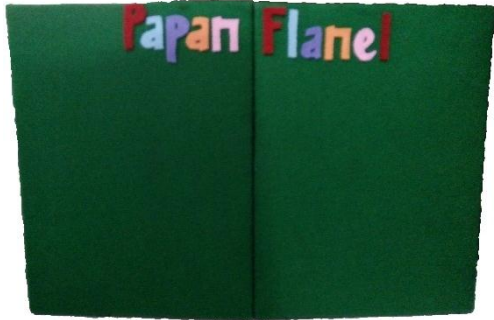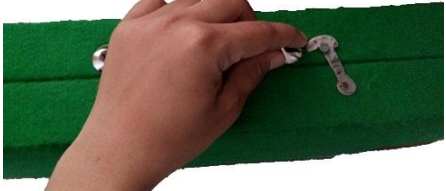
Reference in flannel drawing book consist of a source of references or books to complete this book.

2. Flannel Board

Flannel board is media that consist of a board and its object. The board is made from wood, coated zinc and closed with flannel fabric. While the object was made of flannel fabric and consist of numbers, symbols and pictures that relation with multiplication. Back of the object was placed magnets, so that it can be attached to the board that has been coated zinc.

Table 4.1 Form of Flannel Board Media

Pictures	Description
	The front of the flannel board is used as board was attached of its object.

	Flannel board media with its objects (numbers, symbols and pictures) and flannel drawing book.
	Inside of flannel board contain its object and the book.
	Flannel board media is designed can be folded so that the practical to bring it.
	Placed buttons on the top so that the flannel board can close and save.

	After folded and closed, flannel board media looks like a suitcase, and ready to be brought anywhere.
	An example of the students' work about multiplication on the flannel board.

B. Description the Result Validation of Mathematic Learning Book (With Flannel Board)

Product validation of mathematic learning book (with flannel board) has been carried out by the researcher to the experts (validators) on 20 April 2017 until 3 May 2017. Validation data in the form of qualitative data and quantitative data, obtained from the assessment on the questionnaires that had been given to the experts (validators). Qualitative data in the form of criticism and suggestions from validator. While the quantitative data obtained from the assessment questionnaires with *Likert* scale as follow.

Table 4.2 Assessment criteria of questionnaire

Score	Description
5	Very good
4	Good
3	Good enough
2	Less good
1	Very less good

Based on the result of validation experts, validity level decision and the revision is determined by using the qualification as follow:[52]

Table 4.3 Qualification validity level to the percentage

Percentage (%)	Criteria of validity	Description
84 - 100	Very valid	No revision
68 - 84	Valid	No revision
52 - 68	Valid enough	Partly revision
36 - 52	Less valid	Revision
20 - 36	Very less valid	Total revision

The validators of flannel drawing book consist: expert of content, expert of mathematic learning, expert of design and practitioner or teacher. All the result of the validation is described as follow:

1. Validation Expert of Content

The result validation expert of content consist of: a) Validator profile, b) Presentation of quantitative data, c) Data analysis d), Presentation of

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[52] B. Subali, Indayani dan L. Handayani, "Pengembangan CD Pembelajaran Lagu Anak Untuk Menumbuhkn Pemahaman SAINS Siswa Sekolah Dasar", Jurnal, (Semarang: Fakultas Matematika dan Ilmu Pengetahuan Alam Universitas Negeri Semarang, 2012)..

qualitative data and e) Product revision. The assessment by expert of content in this validation is done two times. Each of the assessment is explained as follow.

The first assessment by expert of content to flannel drawing book is explained as follow:

a. Validator Profile

The expert of content material that provide assessment of this book is H. Wahyu Henky Irawan, M.Pd. A lecturer of mathematic faculty of Science and Technology in UIN MALIKI Malang. The history of his education is S-3 mathematic education at the State University of Malang.

b. Presentation of Quantitative Data

Quantitative data validation results from the expert of content can be seen in the table 4.4 as follow.

Table 4.4 Validation result from expert of content

No	The statement	X	X_1	P (%)	The level of Validity	Description
1.	The relevance of the indicator with SK-KD of *KTSP* 2006.	4	5	80	Valid	No revision
2.	The relevance of the content with the competencies that have to be mastered students.	4	5	80	Valid	No revision
3.	Example explanation relevance with the competencies that have to be mastered by students.	4	5	80	Valid	No revision

4.	Evaluation can measure the ability of students based on competencies that must be mastered.	4	5	80	Valid	No revision
5.	The depth explanation of content relevance with the level of development of the second grade students at SD/MI.	4	5	80	Valid	No revision
6.	Pictures that are used relevance with the content.	4	5	80	Valid	No revision
7.	Systemic explanation of the content in the book.	4	5	80	Valid	No revision
8.	The material presented close to the daily life of the students.	4	5	80	Valid	No revision
9.	The content presented to encourage students to build their knowledge by themselves.	4	5	80	Valid	No revision
10.	The content presented focuses on the understanding of the concept.	4	5	80	Valid	No revision
11.	The accuracy of the use of diction and language.	2	5	40	Less valid	Revision
12.	The sentence structure relevance with the level of understanding the students.	3	5	60	Valid enough	Partly revision
13.	The relevance of flannel board as supporter media to learn the material in the book.	4	5	80	Valid	No revision

14.	The media of flannel board media with the characteristic of the students.	4	5	80	Valid	No revision
	The Total	53	70	76	Valid	No revision

Description:

X   : Assessment score from H. Wahyu Henky Irawan, M.Pd (Expert of

     content)

Xi : The maximum score

P   : Percentage level of validity

c. Data Analysis

Based on the quantitative data on the table 4.4 validation result from

expert of content, the next stage after the data presented is data analysis.

Quantitative data was analyzed using the calculation of the percentage

level of validity as follow.

$$P = \frac{\Sigma x}{\Sigma xi} \text{ x } 100\%$$

$$P = \frac{53}{70} \text{ x } 100\%$$

$$P = 0.76 \text{ x } 100\%$$

$$P = 76\%$$

Description

P   = percentage level of validity

$\sum x$ = total score assessment from expert of content

$\sum xi$ = total of maximum score

Based on the calculation of the above assessment from expert of content the products reached 76%. If matched with table criteria level of validity, it shown that the result validation by experts of content including valid criteria and no revision.

But based on the analysis of each component, there are still two components that need to be revised. So researcher will do the assessment of the second to the expert of content.

d. Presentation of Qualitative Data

Qualitative data collected from the result of the response, criticism and suggestion from expert of content in the form of the statement is served on the table 4.5 as follow:

Table 4.5 Suggestions from Expert of Content

The Name	Criticism and Suggestions
H. Wahyu Henky Irawan, M.Pd	1. Sub "*Ayo Berkomentar*" need to be presented to maintain consistency.
	2. Please check for the diction between "*jumlah*" with "*banyak*".
	3. The color of the clothes must be same, because the unit is important.
	4. The color of the apple in order to equate, just positions are different.

e. Product Revision

Based on the result analysis and suggestion from the expert of content, the product that need to be revised as follow:

Table 4.6 Revised based on Expert of Content

No.	The revised points	Before Revision	After tRevision
1.	Add the writing sub "*Ayo Berkomentar*".		
2.	Change the word "*jumlah*" with "*banyak*".		
3.	Change the color of the clothes to be the same.		

4.	Change the color of the apple to be the same, only the position of apples are different.		
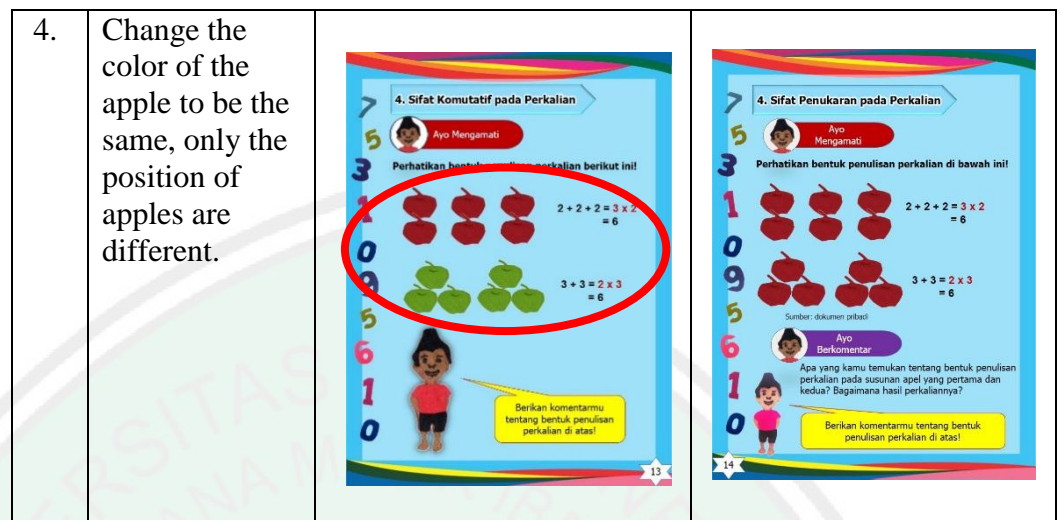
While the second assessment by H. Wahyu Henky Irawan, M.Pd (expert

of content) to the product of the flannel drawing book is explained as follow:

a. Presentation of Quantitative Data

Quantitative data validation result from the expert of content can be

seen in the table 4.7 as follow.

Table 4.7 Validation Result from Expert of Content

No	The statement	X	X_1	P (%)	The level of validity	Description
1.	The relevance of the indicator with SK-KD of *KTSP* 2006.	4	5	80	Valid	No revision
2.	The relevance of the content with the competencies that have to be mastered students.	4	5	80	Valid	No revision
3.	Example explanation relevance with the competencies that have to be mastered by students.	4	5	80	Valid	No revision
4.	Evaluation can measure the ability	4	5	80	Valid	No revision

	of students based on competencies that must be mastered.					
5.	The depth explanation of content relevance with the level of development of the second grade students at SD/MI.	4	5	80	Valid	No revision
6.	Pictures that are used relevance with the content.	4	5	80	Valid	No revision
7.	Systemic explanation of the content in the book.	4	5	80	Valid	No revision
8.	The material presented close to the daily life of the students.	4	5	80	Valid	No revision
9.	The content presented to encourage students to build their knowledge by themselves.	4	5	80	Valid	No revision
10.	The content presented focuses on the understanding of the concept.	4	5	80	Valid	No revision
11.	The accuracy of the use of diction and language.	4	5	80	Valid	No revision
12.	The sentence structure relevance with the level of understanding the students.	4	5	80	Valid	No revision
13.	The relevance of flannel board as supporter media to learn the material in the book.	4	5	80	Valid	No revision
14.	The media of flannel board media	4	5	80	Valid	No revision

		X	Xi	P		
	with the characteristic of the students.					
	The Total	56	70	80	Valid	No revision

Description:

X : Assessment score from H. Wahyu Henky Irawan, M.Pd (Expert of

content)

Xi : The maximum score

P : Percentage level of validity

b. Data Analysis

Based on the quantitative data on the table 4.7 validation result from

expert of content, the next stage after the data presented is the data

analysis. Quantitative data was analyzed using the calculation of the

percentage level of validity as follow.

$P = \frac{\Sigma x}{\Sigma xi}$ x 100%

$P = \frac{56}{70}$ x 100%

P = 0.80 x 100%

P = 80%

Description

P = percentage level of validity

$\sum x$ = total score assessment from expert of content

$\sum xi$ = total of the maximum score

Based on the calculation of the above assessment from expert of content the products reached 80%. If matched with table criteria level of validity, it shown that the result validation by expert of content including valid criteria and no revision.

c. Presentation of Qualitative Data

Qualitative data collected from the result of the response, criticism and suggestion from expert of content in the form of the statement is served on the table 4.8 as follow:

Table 4.8 Suggestions from expert of content

The Name	Criticism and Suggestions
H. Wahyu Henky Irawan, M.Pd	1. Using the picture on the exercise of implementation should be distinguished from the picture on the concept. 2. In general the content already good and could to be used.

d. Product Revision

Based on the result analysis and suggestion from the expert of content, the product that need to be revised as follow:

Table 4.9 Revised based on expert of content

No.	The revised points	Before revision	After t Revision
1.	Distinguish the picture of apple on the concept with the exercise of the implementation. On the concept is replaced with the picture of pear.		

2. Validation Expert of Mathematic Learning

The result validation expert of mathematic learning consist of: a) Validator profile, b) Presentation of quantitative data, c) Data analysis d) Presentation of qualitative data and e) Product revision.

The assessment by expert of mathematic learning in this validation is explained as follow.

a. **Validator Profile**

The expert of mathematic learning that provides an assessment of this book is Drs. Arif Djunaidi, M.Pd. A lecturer of mathematic faculty Education and Teacher Training in UIN MALIKI Malang. The history of his education is S-2 Mathematics Education at the State University of Malang.

b. **Presentation of Quantitative Data**

Quantitative data validation results from expert of mathematic learning can be seen in the table 4.10 as follow.

Table 4.10 Validation Result from Expert of Mathematic Learning

No	The statement	X	X_1	P (%)	The level of Validity	Description
1.	The relevance of learning material that served with SK and KD of *KTSP* 2006.	5	5	100	Very valid	No revision
2.	Systemic explanation learning contents in the book.	4	5	80	Valid	No revision
3.	The learning material is designed in the book focus on students.	4	5	80	Valid	No revision
4.	Learning material presented in the book can improve and build students understanding.	4	5	80	Valid	No revision
5.	Learning material presented in the book can grow interest and	5	5	100	Very valid	No revision

		X	Xi	P		
	motivation to learn the students.					
6.	The evaluation is used relevance with the objectives of lesson.	4	5	80	Valid	No revision
7.	The use of language and the selection of a word can be understood by the students.	5	5	100	Very valid	No revision
8.	The illustration used relevance with the learning material and close of students life.	5	5	100	Very valid	No revision
9.	Flannel board media can help the students in understanding multiplication concept of this book.	5	5	100	Very valid	No revision
10.	Flannel board media can increase interest and motivation to learn the students.	5	5	100	Very valid	No revision
	The Total	46	50	92	Very valid	No revision

Description:

X : Assessment score of Drs. Arif Djunaidi, M.Pd (Expert of

mathematic learning)

Xi : The maximum score

P : Percentage level of validity

c. **Data Analysis**

Based on the quantitative data on the table 4.10 validation result from expert of mathematic learning, the next stage after the data presented is the data analysis. Quantitative data was analyzed using the calculation of the percentage level of validity as follow.

$$P = \frac{\Sigma x}{\Sigma xi} \times 100\%$$

$$P = \frac{46}{50} \times 100\%$$

$$P = 0.92 \times 100\%$$

$$P = 92\%$$

Description

P   = percentage level of validity

$\sum x$ = total score assessment expert of mathematic learning

$\sum xi$ = total of the maximum score

Based on the calculation of the above, assessment from expert of mathematic learning to the products reached 92%. If matched with table criteria level of validity, it shown that the result validation by expert of mathematic learning including the criteria is very valid and no revision.

d. **Presentation of Qualitative Data**

Qualitative data collected from the result of the response, criticism and suggestion from expert of mathematic learning in the form of statement is served on the table 4.11 as follow:

Table of 4.11 Suggestions from expert of mathematic learning

The Name	Criticism and Suggestions
Drs. Arif Djunaidi, M.Pd	1. Present in the real world about the multiplication with integer 0. 2. The exercise is made according to the example.

e. Product Revision

Based on the results of the analysis and suggestion from the expert

of mathematic learning, then product that need to be revised as follow:

Table 4.12 Revised based on expert of mathematic learning

No.	The revised points	Before the revision	After the Revision
1.	Present in the real world on the concept of the multiplication with integer 0.		
7.	Add the exercise with the representation of the picture.		

2. Validation Expert of Design

The validation result expert of design consist of: a) Validator profile, b) Presentation of quantitative data, c) Data analysis d) Presentation of qualitative data and e) product revision. The assessment by expert of design of this validation is done two times. Each of the assessment described below.

The first assessment by experts of design to the flannel drawing book product is explained as follow:

a. Validator Profile

Expert of design who provide the first assessment of this book is Rini Nafsiati Astuti, M.Pd. Rini Nafsiati Astuti, M.Pd is a lecturer of media development and Science in Faculty of Education and Teacher Training at UIN Maliki Malang.

b. Presentation of Quantitative Data

Quantitative data validation result by expert of design can be seen in the table 4.13 as follow.

Table 4.13 Validation Result from Expert of Design

No	The statement	X	X_i	P (%)	The level of validity	Description
1.	The design of the cover relevance with learning materials.	3	5	60	Valid enough	Partly revision
2.	The design of the color that is used on the book is interesting.	4	5	80	Valid	No revision
3.	Font style that is used relevance with the second grade students at SD/MI.	4	5	80	Valid	No revision
4.	Font size that is used relevance with the	3	5	60	Valid enough	Partly revision

		X	Xi	P		
	second grade students at SD/MI.					
5.	Pictures that are used relevance with the learning material.	4	5	80	Valid	No revision
6.	Pictures that are used close to the students life.	4	5	80	Valid	No revision
7.	Pictures that used attracted the attention of the students.	3	5	60	Valid enough	Partly revision
8.	The layout of the picture on the book is interesting.	4	5	80	Valid	No revision
9.	The size of pictures on the book is exact.	3	5	60	Valid enough	Partly revision
10.	The layout on the book is interesting.	4	5	80	Valid	No revision
11.	The design of the flannel board as supporting media is interest.	4	5	40	Valid	No revision
12.	Flannel board media can be used practically.	3	5	60	Valid enough	Partly revision
	The Total	43	60	72	Valid	No revision

Description:

X   : Assessment score from Rini Nafsiati Astuti, M.Pd (Expert of

     Design)

Xi : The maximum score

P   : Percentage level of validity

c. Data Analysis

    Based on the quantitative data on the table 4.13 validation result expert

of design, the next stage after the data presented is the data analysis.

Quantitative data was analyzed using the calculation of the percentage

level of validity as follow.

$$P = \frac{\Sigma x}{\Sigma xi} \text{ x } 100\%$$

$$P = \frac{43}{60} \text{ x } 100\%$$

$$P = 0.72 \text{ x } 100\%$$

$$P = 72\%$$

Description

P   = percentage level of validity

$\sum x$ = total score assessment from expert of design

$\sum xi$ = total of the maximum score

    Based on the calculation of the above assessment from the expert of design to the products reached 72%. If matched with table criteria level of validity, it shown that the validation result by expert of design including valid criteria and no revision.

    But based on the analysis of each component, there are still some components that need to be revised. So researcher will conduct the second assessment to design expert.

d. Presentation of Qualitative Data

    Qualitative data collected from the result of the response, criticism and suggestions from expert of design in the form of statement is served on the table 4.11 as follow:

Table 4.14 Suggestions from expert of design
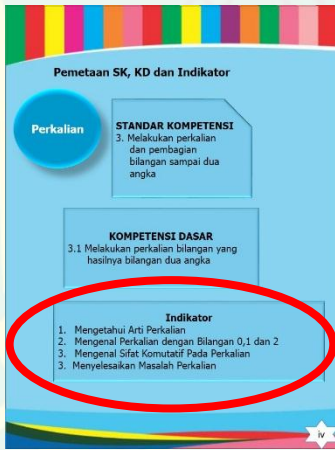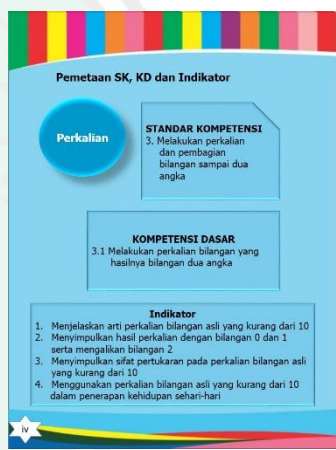
The Name	Criticism and Suggestions
Rini Nafsiati Astuti, M.Pd	1. The picture of cover less contextual (unclear, not concrete yet, less representative). 2. Please to check some letters too small. 3. Please to check already relevance SK,KD, and the indicators? If the understanding concept, so that what is to use the indicator.

e. Product Revision

Based on the result analysis and suggestion from the expert of design

and products that need to be revised as follow:

Table 4.15 Revised based on expert of design

No.	The revised points	Before the revision	After the Revision
1.	Change the front cover become more representative.		

| 2. | Change font size which are too small to be greater. | | |
| 3. | Enhance the indicator relevance with the understanding concept. | | |

While the second assessment by Yuniar Setyo Marandy, S.Sn (design expert) to the product of the flannel drawing book is explained as follow:

a. Validator Profile

Design expert who provide the second assessment to this book is Yuniar Setyo Marandy, S.Sn. Yuniar Setyo Marandy S.Sn is laboratory assistance of multimedia in FITK UIN MALIKI Malang. The history of his education is S1 Visual Communication Design.

b. **Presentation of Quantitative Data**

Quantitative data validation result from the expert of design can be seen in the table 4.16 as follow.

Table 4.16 Validation Result from Expert of Design

No	The statement	X	X_i	P (%)	The level of validity	Description
1.	The design of the cover relevance with learning materials.	5	5	100	Very valid	No revision
2.	The design of the color that is used on the book is interesting.	5	5	100	Very valid	No revision
3.	Font style that is used relevance with the second grade students at SD/MI.	4	5	80	Valid	No revision
4.	Font size that is used relevance with the second grade students at SD/MI.	4	5	80	Valid	No revision
5.	Pictures that are used relevance with the learning material.	4	5	80	Valid	No revision
6.	Pictures that are used close to the students life.	4	5	80	Valid	No revision
7.	Pictures that used attracted the attention of the students.	4	5	80	Valid	No revision
8.	The layout of the picture on the book is interesting.	4	5	80	Valid	No revision
9.	The size of pictures on the book is exact.	4	5	80	Valid	No revision
10.	The layout on the book is interesting.	5	5	100	Very valid	No revision

11.	The design of the flannel board as supporting media is interest.	4	5	40	Valid	No revision
12.	Flannel board media can be used practically.	4	5	80	Valid	No revision
	The Total	51	60	85	Very valid	No revision

Description:

X   : Assessment score from Yuniar Setyo Marandy, S.Sn (Expert of

Design)

Xi   : The maximum score

P   : Percentage level of validity

c. **Data Analysis**

Based on the quantitative data on the table 4.16 validation result expert

of design, the next stage after the data presented is data analysis.

Quantitative data was analyzed using the calculation of the percentage

level of validity as follow.

$$P = \frac{\Sigma x}{\Sigma xi} \times 100\%$$

$$P = \frac{51}{60} \times 100\%$$

$$P = 0.85 \times 100\%$$

$$P = 85\%$$

Description

P   = percentage level of validity

$\sum x$ = total score assessment from expert of design

$\sum xi$ = total of the maximum score

Based on the calculation of the above assessment from expert of design to the products reached 85%. If matched with criteria table level of validity, it shown that the result of validation by expert of design including is very valid criteria and no revision.

d. Presentation of Qualitative Data

Qualitative data collected from the result of the response, criticism and suggestions design expert in the form of statement is served on the table 4.17 as follow:

Table of 4.17 Suggestions from expert of design

The Name	Criticism and Suggestions
Setyo Marandy Yuniar, S.Sn	1. Please check the position of layout and page number before bound the book.

e. Product Revision

Based on the result analysis and suggestion from the expert of design and product that need to be revised as follow:

Table 4.18 Revised from expert of design

No.	The revised points	Before revision	After Revision
1.	Change the layout on the top become curved forms, to appear tidy.		

2.	Change position of page number.		

3. Validation of Practitioner/Teacher

The result of the validation practitioner/teacher consist of: a) Validator profile, b) Presentation of quantitative data, c) Data Analysis d) Presentation of qualitative data and e) product revision.

The assessment by practitioner/teacher in this validation is explained as follow.

a. Validator Profile

Practitioner/teacher who provide assessment of this book is Drs Nor Syamsu. The second grade teacher at SDN 2 Nglandeyan, Blora. The history of his education is S1 Education and have experience teaching more than 3 years.

b. Presentation of Quantitative Data

Quantitative data validation result from practitioner or teacher can be seen in the table 4.19 as follow.

Table 4.19 Validation Result from Practitioner/Teacher

No	The statement	X	X_i	P (%)	The level of Validity	Description
1.	The relevance of learning material that served with SK and KD *KTSP* 2006.	5	5	100	Very valid	No revision

2.	The learning material in the book is designed focus on the students.	5	5	100	Very valid	No revision
3.	Learning material presented in the book can improve and build students' understanding.	5	5	100	Very valid	No revision
4.	Learning material that served can grow interest and motivation the students to learn.	5	5	100	Very valid	No revision
5.	The evaluation is used can measure the students' understanding	5	5	100	Very valid	No revision
6.	The use of language and the selection of a word can be understood by the students.	5	5	100	Very valid	No revision
7.	The font style and font size are used in book relevance with the second grade students at SD/MI.	5	5	100	Very valid	No revision
8.	The illustrations are used relevance with the learning material and close to the students life.	5	5	100	Very valid	No revision
9.	Flannel board media can help the students in understanding multiplication concept of this book.	5	5	100	Very valid	No revision
10.	Flannel board media can increase interest and motivation the students to learn.	5	5	100	Very valid	No revision
	The Total	5	5	100	Very valid	No revision

Description:

X   : Assessment score of Drs. Nor Syamsu (Practitioner/Teacher)

Xi   : The maximum score

P   : Percentage level of validity

c. **Data Analysis**

Based on the quantitative data on the table 4.19 the result of validation practitioner/teacher, the next stage after the data presented is data analysis. Quantitative data was analyzed using the calculation of the percentage level of validity as follow.

$$P = \frac{\Sigma x}{\Sigma xi} \text{ x } 100\%$$

$$P = \frac{50}{50} \text{ x } 100\%$$

$$P = 1 \text{ x } 100\%$$

$$P = 100\%$$

Description

P   = percentage level of validity

$\sum x$ = total score assessment from practitioner/teacher

$\sum xi$ = total the maximum score

Based   on   the   calculation   above,   assessment   from practitioner/teacher to the products reach 100%. If matched with table criteria level of validity, it shown that the result of validation by practitioner/teacher including is very valid criteria and no revision.

d. Presentation of Qualitative Data

Qualitative data collected from the result of the response, criticism and suggestions practitioner/teacher in the form of statement is served on the table 4.20 as follow:
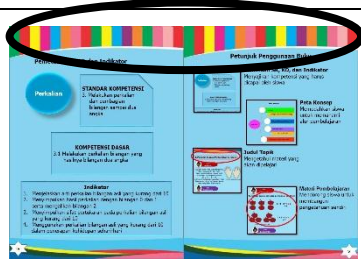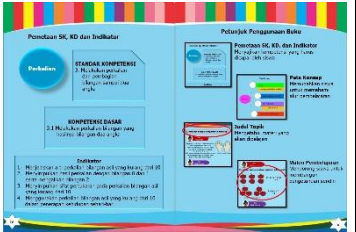
Table 4.20 Suggestions from practitioner/teacher

The Name	Criticism and Suggestions
Drs. Nor Syamsu	1. The book is very good to help the students in understanding the concept of learning, especially the material of the multiplication. We hope this book is developed again to other SK/KD.

e. Product Revision

Based on the result of the analysis and suggestions from practitioner/teacher, then the product does not need to be revised (no revision).

C. Description the Results of Test (attractiveness and effectiveness) Mathematic Learning Book (With Flannel Board)

The test result try to know the level of attractiveness and effectiveness of the product. The test results that is used to know attractiveness or effectiveness is explained as follow:

1. Attractiveness of the Product

To know the level of attractiveness product obtained from the data result of the students response to the product that is given to the subject of trial.

The assessment questionnaires students response to the product in the trial is described as follow:

a. The result of preliminary field testing

Preliminary field testing of flannel drawing book is carried out on 5 May 2017 in the second grade at SDN 1 Nglandeyan, Blora. The subject of this test is 4 students (1 student of high ability, 2 students the average ability and 1 students of low ability). The result of the student response to the product in preliminary field testing is explained as follow:

1) A list of names

A list of name of the subject of preliminary field testing is presented in the table 4.21 as follow.

Table 4.21 a list of names subject of preliminary field testing

No.	The name of Subject	The code
1.	Hafzah Articha Ramadhani	X1
2.	Siti Jamilatun	X2
3.	Sri Mulyani	X3
4.	Miftahul Khusna Fauziah	X4

2) Presentation of Quantitative Data

Quantitative data result of the students response to the product in the preliminary field testing is presented in the table 4.22. The questions on questionnaires in detail can be seen on the appendix.

Table 4.22 Quantitative data of students response in preliminary

field testing

Question No.	Assessment Score X₁, X₂, X₃, X₄	$\sum x$	$\sum xi$	P (%)	Description
1	5, 5, 5, 5	20	20	100	Very interesting
2	5, 5, 5, 5	20	20	100	Very interesting
3	5, 5, 5, 5	20	20	100	Very interesting
4	5, 5, 5, 5	20	20	100	Very interesting
5	5, 4, 5, 5	19	20	95	Very interesting
6	5, 4, 5, 5	19	20	95	Very interesting
7	5, 4, 5, 5	19	20	95	Very interesting
8	5, 4, 5, 5	19	20	95	Very interesting
9	5, 4, 5, 5	19	20	95	Very interesting
10	5, 4, 5, 5	19	20	95	Very interesting
The Total		**194**	**200**	**97**	Very interesting

Description:

X_1 until X_4 : the subject of preliminary field testing

$\sum x$: total score assessment of the subject of

                  preliminary field testing

$\sum xi$: total the maximum score

P   : percentage level of attractiveness

3) Data Analysis

Based on the quantitative data result of the students response to the product on the table 4.22. The next step is to analyze the data using the percentage the level of attractiveness as follow:

$P = \frac{\Sigma x}{\Sigma xi}$ x 100%

$P = \frac{194}{200}$ x 100%

$P = 0.97$ x 100%

$P = 97\%$

Description

P   = Percentage level of attractiveness

$\sum x$ = total score assessment from the subject of preliminary field testing

$\sum xi$ = Total the maximum score

Based on the calculation of the above, assessment questionnaires students response to the product in preliminary field testing reached 97%. If matched with table level criteria of validity, then shown that the students response the products in the preliminary field testing is included in the very valid criteria, the means it is very interesting/ attractiveness.

4) Presentation of Qualitative Data

   Qualitative data collected from the students response (comment or opinion) in the preliminary field testing in the form of statement is served on the table 4.23 as follow.

   Table 4.23 Qualitative data student response in the preliminary

   field testing

Subject to	Comment or opinion
X1	The book (with flannel board) give us spirit to learn, this book is very enjoyable.
X2	Very enjoyable, this book is very good.
X3	The book is good.
X4	This book is very good and this book pictured so that easy to learn this book.

5) Product Revision

   Based on the result of the analysis and qualitative data students response to the products in preliminary field testing, the product does not need to be revised (no revision).

b. The Results of Main Field Testing

Main field testing of mathematic learning book (with flannel board) is carried out on 6 May 2017 in the second grade at SDN 1 Nglandeyan, Blora. The subjects of this test are 8 students (2 students of high ability, 4 students the average ability and 2 students of low ability). The result of student response to the product in the main field testing is described as follow:

1) A list of names

A list of names of the subject main field testing served in the table 4.24 as follow.

Table 4.24 A list of names subject of main field testing

No.	The name of the Subject	The code
1.	Alfalubna Azzahra Miftahul Yulvianti	X1
2.	Jatmiko	X2
3.	Amilatun Nisa Amel	X3
4.	Reza Vony Olivia	X4
5.	Jessy Aishah Sririzky	X5
6.	Siti Keyza Putrianti	X6
7.	Kharizza Muharromah	X7
8.	Kurniawati Lestari Putri	X8

2) Presentation of Quantitative Data

Quantitative data result of the students response to the product in the main field testing served on the table 4.25. The questions on questionnaires in detail can be seen on the appendix.

Table 4.25 Quantitative data students response in main field testing

Question No.	Assessment Score X1, X2, X3, X4, X5, X6, X7, X8	$\sum x$	$\sum xi$	P (%)	Description
1	5, 5, 5, 5, 5, 5, 5, 5	40	40	100	Very interesting
2	5, 5, 5, 5, 5, 5, 5, 5	40	40	100	Very interesting
3	5, 5, 5, 5, 5, 5, 4, 5	39	40	98	Very interesting
4	5, 5, 5, 5, 5, 5, 4, 5	39	40	98	Very interesting
5	5, 5, 4, 5, 4, 5, 5, 5	38	40	95	Very interesting
6	5, 5, 4, 5, 4, 5, 5, 5	38	40	95	Very interesting

7	5, 5, 4, 5, 4, 5, 5, 5	38	40	95	Very interesting
8	5, 5, 4, 5, 4, 5, 5, 5	38	40	95	Very interesting
9	5, 5, 4, 5, 5, 5, 5, 5	39	40	98	Very interesting
10	5, 5, 4, 5, 5, 5, 5, 5	39	40	98	Very interesting
The Total		**388**	**400**	**97**	**Very interesting**

Description:

X1 until X8   :The subject of main field testing

$\sum x$: Total score assessment subject of main field testing

$\sum xi$: Total of the maximum score

P   : Percentage level of attractiveness

3) Data Analysis

Based on the quantitative data the result of the students response

to the products on the table 4.25. The next step is to analyze data

using the percentage of the level of attractiveness as follow:

$P = \frac{\sum x}{\sum xi}$ x 100%

$P = \frac{388}{400}$ x 100%

P = 0.97 x 100%

P = 97%

Description

P   = percentage level of attractiveness

$\sum x$ = total score assessment subject of main field testing

$\sum xi$ = Total the maximum score

Based on the calculation of the above, assessment questionnaire the students response subject main field testing for products reached 97%. If matched with table level criteria of validity, it shown that the students response to the product in the main field testing was included is very valid criteria, the means it is very interesting/attractiveness.

4) Presentation of Qualitative Data

Qualitative data collected from the students response (comment or opinion) in main field testing in the form of statement is served on the table 4.26 as follow.

Table 4.26 Qualitative data students response of main field testing

Subject to	Comment or opinion
X1	The book is easy to learn and the letter in the book is very easy to read.
X2	Very good, very helpful, very giving spirit.
X3	Very enjoyable, the book is complete, its letters already visible.
X4	The book gives the spirit in learning.
X5	Very enjoyable.
X6	The book for we learn.
X7	Very enjoyable.
X8	The book about multiplication make me can.

5) Product Revision

Based on the results of the analysis and qualitative data students response to the product in the main field testing, the product does not need to be revised (no revision).

c. **The Result of Operational Field Testing**

Operational field testing of mathematic learning book (with flannel board) is carried out on 13 May 2017 in the second at SDN 2 Nglandeyan, Blora. The subjects of operational field testing are 15 students (experiment groups). The results of the student response to the product in the operational field testing described as follow:

1) A list of names

A list of names subject of operational field testing (experiments group) presented in the table 4.27 as follow.

Table 4.27A list of names subject operational field testing

No.	The name of the Subject	The code
1	Muhammad Anadif	X1
2	Arya Adi Saputra	X2
3	Arjuna Adi Saputra	X3
4	Lisa Oktaliani	X4
5	Darmono Aji Setiawan	X5
6	Vika Puri Rahayu	X6
7	Kalila Septiyaningtiyas	X7
8	Anita Dewi Nuraini	X8
9	Yara Ayu Nayasari	X9
10	Mamat Davik Eka Pratama	X10
11	Susanto	X11
12	Syalaisa Arinindya Mayan Fa'una	X12
13	Gilang Ardiansah	X13
14	Jovik Ahmad Saputra	X14
15	Rizqi Ayu Mahmud Solehah	X15

2) Presentation of Quantitative Data

Quantitative data result of the student response to the product in the operational field testing are presented in the table 4.28. The questions on questionnaires in detail can be seen on the appendix.

Table 4.28 Quantitative data of students response in operational
field testing

Question To	Assessment Score X1, X2, X3, X4, X5, X6, X7, X8, X9, X10, X11, X12, X13, X14, X15	∑x	∑xi	P (%)	Description
1	4, 4, 5, 3, 5, 5, 5, 5, 5, 4, 3, 4, 5, 5, 5	67	75	89	Very interesting
2	5, 5, 5, 5, 5, 5, 5, 5, 3, 5, 5, 4, 5, 3, 4	69	75	92	Very interesting
3	5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 3, 5, 5, 4, 5	72	75	96	Very interesting
4	5, 5, 4, 3, 5, 5, 5, 4, 5, 5, 3, 5, 5, 3, 5	67	75	89	Very interesting
5	5, 5, 4, 3, 5, 5, 5, 5, 5, 5, 3, 4, 5, 5, 5	69	75	92	Very interesting
6	4, 5, 4, 3, 5, 5, 4, 4, 5, 5, 4, 5, 4, 4, 4	65	75	86	Very interesting
7	5, 4, 5, 4, 5, 5, 4, 5, 5, 4, 5, 5, 5, 5, 5	71	75	95	Very interesting
8	4, 5, 4, 5, 5, 5, 5, 4, 5, 5, 3, 5, 4, 3, 5	67	75	89	Very interesting
9	5, 5, 4, 5, 5, 5, 5, 4, 5, 5, 4, 5, 5, 4, 5	71	75	95	Very interesting
10	5, 4, 4, 4, 5, 5, 5, 5, 5, 4, 4, 5, 5, 3, 5	68	75	91	Very interesting
The Total		685	750	91	Very interesting

Description:

X_1 until X_{15} : the subject of operational field testing

∑x : total score assessment subject of operational field

testing

∑xi : total the maximum score

P : Percentage level of attractiveness

3) Data Analysis

Based on the quantitative data the result of the students response to the products on the table 4.28. The next step is to analyze the data using the percentage of the level of validity as follow:

$$P = \frac{\Sigma x}{\Sigma xi} \text{ x } 100\%$$

$$P = \frac{685}{750} \text{ x } 100\%$$

$$P = 0.91 \text{ x } 100\%$$

$$P = 91\%$$

Description

P = percentage level of attractiveness

$\sum x$ = total score assessment subject of operational field testing

$\sum xi$ = total the maximum score

Based on the calculation of the above, assessment questionnaire the students response subject of operational field testing to the product reached 91%. If matched with table criteria level of validity, it shown that the students response to the product in the operational field testing is included very valid criteria, the means it is very interesting/attractiveness.

4) Presentation of Qualitative Data

Qualitative data collected from the response (comment or opinion) students at operational field testing in the form of statement is served on the table 4.29 as follow.

Table 4.29 Qualitative data students response in operational field testing

Subject to	Comment or opinion
X1	Very easy if using this book.
X2	I already understand.
X3	Earlier is good.
X4	Easy, good.
X5	It is very good.
X6	Oh, this book has been good.
X7	This book is pictured and beautiful.
X8	It is good.
X9	This book is better.
X10	Already.
X11	This book is very good, flanel board is very good.
X12	Oh, this book has been good bu.
X13	This book made me smart.
X14	There are stories in the book earlier.
X15	It is very good.

5) Product Revision

Based on the result of the analysis and qualitative data students response to the product in the operational field testing, so that the product does not need to be revised (no revision).

2. **The effectiveness of the Products**

To know the level of effectiveness of the products obtained from the data of the test results (pre-test and post-test) that given researcher to students when operational field testing. Pre-test conducted on 8 May 2017 to the students of the second grade at SDN 2 Nglandeyan, Blora. While the post-test conducted on 13 May 2017. The result of this test described as follow.

a. A list of names subject of operational field testing

The test is done to the students of second grade at SDN 2 Nglandeyan, Blora and has been divided into 2 groups. The first group is 15 students as a control group and the second is 15 students as experiments group. A list of names subject operational field testing as follow:

Table 4.30 A list of names of control group

No.	The names of the Students	The subject
1	Sela	X1
2	Bambang Andrea TW	X2
3	Vanisa Adila Agustina	X3
4	Reva Yulia Dewi	X4
5	Amelda Agustina	X5
6	Slamet Rumadi	X6
7	Kirana Cynara	X7
8	Rendi Dimas Ardiansah	X8
9	Relina Prihatini	X9
10	Hendy Alfian Aji Saputra	X10
11	Deviona Rahayu	X11
12	Sunedera Neno Efedi	X12
13	A. Hilmi Al Muflihun	X13
14	Mutia	X14
15	Wisnu Norekara Madani	X15

Table 4.31 A list of names of experiment group

No.	The names of the Students	The subject
1	Muhammad Anadif	X1
2	Arya Adi Saputra	X2
3	Arjuna Adi Saputra	X3
4	Lisa Oktaliani	X4
5	Darmono Aji Setiawan	X5
6	Vika Puri Rahayu	X6
7	Kalila Septiyaningtiyas	X7
8	Anita Dewi Nuraini	X8
9	Yara Ayu Nayasari	X9
10	Mamat Davik Eka Pratama	X10
11	Susanto	X11
12	Syalaisa Arinindya Mayan Fa'una	X12

13	Gilang Ardiansah	X13
14	Jovik Ahmad Saputra	X14
15	Rizqi Ayu Mahmud Solehah	X15

b. Presentation of Quantitative Data in Operational Field Testing

The quantitative data obtained from the test results (pre-test and post-test) by experiment group and control group. Researcher conducted test homogeny both groups through the results of the pre-test. While the result of the pre-test and post-test both groups will be served on the table 4.32 and 4.33 as follow.

Table 4.32 Value of pre-test between the control group and the experiment group

| Control Group | | | Experiment Group | | |
No	The subject	The Value	No	The subject	The Value
1	X1	80	1	X1	78
2	X2	73	2	X2	73
3	X3	73	3	X3	70
4	X4	68	4	X4	68
5	X5	65	5	X5	63
6	X6	63	6	X6	60
7	X7	60	7	X7	60
8	X8	58	8	X8	58
9	X9	58	9	X9	58
10	X10	55	10	X10	55
11	X11	55	11	X11	53
12	X12	50	12	X12	50
13	X13	48	13	X13	48
14	X14	43	14	X14	43
15	X15	43	15	X15	40
The Total		892	The Total		877

Table 4.33 Value of post-test between the control group and the
experiment group

Control Group			Experiment Group		
No	**The subject**	**The Value**	**No**	**The subject**	**The Value**
1	X1	90	1	X1	88
2	X2	68	2	X2	85
3	X3	68	3	X3	95
4	X4	83	4	X4	70
5	X5	60	5	X5	90
6	X6	70	6	X6	90
7	X7	78	7	X7	90
8	X8	68	8	X8	85
9	X9	68	9	X9	90
10	X10	65	10	X10	78
11	X11	55	11	X11	75
12	X12	73	12	X12	88
13	X13	63	13	X13	88
14	X14	53	14	X14	85
15	X15	80	15	X15	73
The Total		**1042**	**The Total**		**1270**

c. Data Analysis

Data results pre-test and post-test will be analyzed using the t-test.

The t-test is a statistical test used to test the difference between two

different groups with the principle of comparing the average (mean)

both groups or treatments.

Calculation t-test must begin with a series of tests other, as follow.

1) Formulate the hypothesis

H0 : No difference in students' understanding on multiplication

concept between the experiment group which using

mathematic learning book (with flannel board) with the

control group which did not use it.

H1 : There is difference in students' understanding on multiplication concept between the experiment group which using mathematic learning book (with flannel board) with the control group which did not use it.

2) Determine the amount of subject

The subject of experiment group is 15 students, and 15 students for the control group.

3) Normality Test of Data

The calculation normality test the spread of the data has been done by researcher using SPSS 16. Following the result of the normality test calculation.

Table 4.34 Normality Test of Data

Pretest of Experiment Group	Pretest of Control Group	Posttest of Experiment Group	Posttest of Control Group
0,428	0,347	0,974	0,610

Based on the result of the tests using SPSS 16 stated that the data is normal distribution.

4) Test of Homogeneous

Homogeneous test two groups use the value of the result of the pretest with significance level is 5%. Before calculating the homogeneous test, researcher calculate first the variance of experiment group and control group using SPSS 16. Following the result of the calculation.

Table 4.35 Variance of experiments and control group

Variance of Pretest Experiment Group	Varians Prete Variance of Pretest Control Group
117,552	122,267

The next step is test of two variance homogeneous, follow the calculation.

$$F_{count} \text{ pretest} = \frac{varians\ besar}{varians\ kecil}$$

$$F_{count} \text{ pretest} = \frac{122,267}{117,552}$$

$$F_{count} \text{ pretest} = 1.04$$

F_{table} with the dk pembilang (15-1) and dk penyebut (15-1). Based on dk pembilang = 14 and dk penyebut = 14, with significance of 5%, hence price F_{table} = 2,48.

The next step is to compare F_{count} with F_{table}, if $F_{count} < F_{table}$ so that both groups are homogeneous.

F_{count} with F_{table}

$$1.04 < 2,48$$

So both groups consist of the experiment group and the control group have revealed homogeneous.

5) The t-test

After the data is known normality the spread of data and homogeneous variance, so it can be used the formula t-test as follow.

$$T_{count} = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s1^2}{n_1} + \frac{s2^2}{n_2}}}$$

$$T_{count} = \frac{84,67 - 69,47}{\sqrt{\frac{53,09}{15} + \frac{102,98}{15}}}$$

$$T_{count} = \frac{15,2}{\sqrt{\frac{156,07}{15}}}$$

$$T_{count} = \frac{15,2}{\sqrt{\mathbf{10,40}}}$$

$$T_{count} = \frac{15,2}{3,2}$$

$$T_{count} = 4.75$$

To know t_{table} is used dk $n1 + n2 - 2$. Based on dk $15+15-2 = 28$ with level significance of 5%, so the price t_{table} is 2,048.

The next step is to compare t_{count} with t_{table}, if $t_{count} > t_{table}$ so that H0 is rejected and H1 is received.

t_{count} with t_{table}

$4.75 > 2,048$

So it can be concluded that H0 is rejected and H1 is received, the mean there is difference in students' understanding on multiplication concept between the experiment group which using mathematic learning book (with flannel board) with the control group which did not use it.

CHAPTER V

DISCUSSION

The fifth chapter is explain about 3 discussion there are: 1) The form of mathematic learning book (with flannel board), 2) The validity of mathematic learning book (with flannel board), and 3) The attractiveness and the effectiveness of mathematic learning book (with flannel board). Each of the discussion is explained as follow.

A. The Form of Mathematic Learning Book (With Flannel Board)

Teaching material (book) here is used as a reference standard on certain subjects.[53] As a teaching material, book required teacher to analyzes and planning for the implementation of learning.[54] Therefore book has an important role in the successful of the learning process.

The criteria of a good book for teaching material is oriented the student centered.[55] *KTSP* curriculum requires teaching material as book which tend to constructivism, book must be able to encourage students' curiosity, stimulates students to build their own knowledge and encourage their consciousness to learn. Thus the knowledge acquired by the students will become meaningful.

Developing mathematic learning book (with flannel board) about multiplication for the second grade of SD/MI is intended to solve some of the

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[53] Sa'dun Akbar, Instrumen Perangkat Pembelajaran (Bandung: Remaja Rosdakarya, 2015), p. 34.

[54] Hamdani, *Strategi Belajar Mengajar* (Bandung: Pustaka Setia, 2011), p.120

[55] Sa'dun Akbar, Instrumen Perangkat Pembelajaran (Bandung: Remaja Rosdakarya, 2015), p. 34-36.

gap, there are: *The first*, mathematic learning in grade II of SDN 2 Nglandeyan Blora, still tend to memorize and meaningless, so some students did not understand with the concept of the multiplication. *The second*, mathematics learning in the second grade of SDN 2 Nglandeyan still not oriented yet student centered. *The third*, the motivation of students in grade II of SDN 2 Nglandeyan, Blora to learn mathematic is still low.

Based on the result of research and development by Dian Agustin Purnamasari stated that drawing book could be motivate the students to learn mathematic.[56] Therefore researcher try to develop drawing book, the drawing book that developed in the form of mathematic learning book as a book that has many pictures. The pictures on the book is the result of a photo catch from pictures or objects which is made from flannel fabric. The book is intended for the students of grade II at SD/MI in mathematic and multiplication material, so the book itself could be called "Mathematic Learning Book on Multiplication".

The advantages of this book are the book present various concept of the multiplication attend to the real world. Besides that this book also contains about the implementation of the multiplication in daily life and equipped with the pictures. So that students could be more understand the message carried by the symbols in the multiplication. This is relevance the theory that "*picture*

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[56] Dian Agustin Purnamasari, *Pengembangan Buku Bergambar Mata Pelajaran IPA Kelas 3 Semester 2 Materi Poko Cuaca dan pengaruhnya Bagi Manusia di sDN Kebonagung Pasuruan*, Skripsi Program Sarjana 1, Fakultas Ilmu pendidikan, Jurusan Teknologi Pendidikan, UM, 2011.

could help on imagining the message delivered and the information could be more clearly understood".[57]

Other advantage in developing of this book there are the practices (count, operate and then interpret it), that gave opportunity to the students to find their own knowledge through the activities of the "*Ayo mengamati*", "*Ayo berkomentar*", and "*Ayo berlatih*". This is relevance with the theory that the criteria of the book is oriented on student contered.[58] Supported by the theory of Piaget that "on mathematic teaching must also occurred learning in constructivism".[59]

The development of this book is also equipped with flannel board media, so that the pictures or objects that made not only functioned on the book but also can be served through this media. This is relevance with the theory Piaget, that students of SD/MI located on concrete operational phase, so that in the mathematic teaching abstract, students need the tool in the form of media and teaching aids that can clarify what will be delivered by teachers so that more quickly understood by the students.[60]

While the weakness of the development of mathematic learning book (with flannel board) is the content in this book limited the basic concept of multiplication. Therefore this book is intended only to the students of grade II

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[57] Andi Prastowo, Panduan Kreatif Membuat Bahan Ajar Inovatif (Jogjakarta: Diva Press, 2015), p. 99-100.

[58] Sa'dun Akbar, Instrumen Perangkat Pembelajaran (Bandung: Remaja Rosdakarya, 2015), p. 34-36.

[59] Heruman, *Model Pembelajaran Matematika Di Sekolah Dasar* (Bandung: PT Remaja rosdakarya, 2007), p. 4-5.

[60] Ibid., p. 1-2.

SD/MI and a beginner who wants to learn the multiplication. And the flannel board is smaller for students in the big class.

B. The Validity of Mathematic Learning Book (With Flannel Board)

The result of the validation from some of the experts in the converted on the scale percentage based on the level of the validity and decision-making to revise. The level of the validity to the products based on some experts described as follows:

1. Validation Expert of Content

    Based on the result of the validation data exposure by expert of content, a lecturer of mathematics faculty of SAINTEK namely H. Wahyu Henky Irawan, M.Pd, explained as follows.

    a. The indicator relevance with SK and KD that is used in KTSP 2006.

    b. The content relevance with the competencies that have to be mastered by students.

    c. Example explanation relevance with the competencies that have to be mastered by students.

    d. Evaluation relevance with the competencies that have to be mastered students.

    e. The depth explanation of content relevance with the level of development of the grade 2 students at SD/MI.

    f. Pictures that are used relevance with the material.

    g. Systemic explanation of the material in the book is systematically.

h. The material presented close to the daily life of the students.

i. The material presented to encourage students to build their knowledge by themselves.

j. The material presented focuses on the understanding of the concepts.

k. The use of the language and diction are exact.

l. The sentence structure relevance with the level of understanding the students.

m. Flannel board as media supporter to learn the material on the book.

n. Flannel board media relevance with the characteristics of the students.

The assessment by experts of content and then calculated percentage level of the validity being as follow.

$$P = \frac{\Sigma x}{\Sigma xi} \text{ x } 100\%$$

$$P = \frac{56}{70} \text{ x } 100\%$$

$$P = 0.80 \text{ x } 100\%$$

$$P = 80\%$$

Based on the calculation of the above, the percentage of the level of the validity reach 80%. In accordance with the criteria of the level of achievement, percentage of validity 80% located on the valid criteria. This shows that the material is packed in this book was relevance, systematically, complete and use the language and diction are right. This is relevance with the theory that "book as teaching material

criteria there are appropriate (relevance), complete and systematic and the true of language".[61]

2. Validation Expert of Mathematic Learning

Based on the result of the validation data exposure expert of math learning by mathematics lecturer at FITK namely Drs Arif Djunaidi, M.Pd explained as follows.

a. Learning materials that is served is very appropriate with SK and KD KTSP 2006.

b. Systemic explanation learning contents in the book is systematically.

c. Learning material that is designed in the book focus on students.

d. Learning material presented in the book improve and build students understanding.

e. Learning material presented in the book is very can grow interest and motivation to learn the students.

f. The evaluation is used relevance with the purpose of the lesson.

g. The use of language and the selection of the word is very relevance with the level of understanding the students.

h. The illustration used is very relevance with learning materials and close to the students life.

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[61] Sa'dun Akbar, Instrumen Perangkat Pembelajaran (Bandung: Remaja Rosdakarya, 2015), p. 34-36.

i.   Flannel board media very can help the students in understanding the concept of multiplication of this book.

j.   Flannel board media very can increase interest and motivation to learn the students.

The assessment by expert of mathematic learning and then calculated percentage level of validity being as follow.

$$P = \frac{\Sigma x}{\Sigma xi} \times 100\%$$

$$P = \frac{46}{50} \times 100\%$$

$$P = 0.92 \times 100\%$$

$$P = 92\%$$

Based on the calculation of the above, the percentage of the level of validity reach 92%. In accordance with the criteria of the level of achievement, percentage of validity 92% located on the very valid criteria. This shows that the learning of the multiplication using mathematic learning book (with flannel board) has been focusing on the students, can increase students understanding and very can increase interest and motivation to learn the students. This is relevance with the theory that "book as teaching material have criteria that oriented on student continuous".[62]

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[62] Sa'dun Akbar, Instrumen Perangkat Pembelajaran (Bandung: Remaja Rosdakarya, 2015), p. 34-36.

3. Validation Expert of Design

Based on the result of the validation data exposure by design expert was laborant multimedia FITK namely Yuniar Setyo Marandy, S.Sn explained as follows.

a. The design of the cover is very relevance with learning materials.

b. The design of the color that is used in the book is very interesting.

c. The type of the letter that is used relevance with the second grade students at SD/MI.

d. The size of the letters used relevance with the second grade students at SD/MI.

e. Pictures that are used relevance with the learning material.

f. Pictures that are used close to the life of the students.

g. Pictures that used attracted the attention of the students.

h. The layout of the picture on the book is interesting.

i. The size of the picture on the book is exact.

j. The layout of the book is very interesting.

k. The design of the flannel board as supporting media is interesting.

l. Flannel board media can be used practically.

The assessment by expert of design and then calculated percentage level of validity being as follows.

$$P = \frac{\Sigma x}{\Sigma xi} \text{ x } 100\%$$

$$P = \frac{51}{60} \text{ x } 100\%$$

P = 0.85 x 100%

P = 85%

Based on the calculation of the above, the percentage of the level of validity reach of 85%. In accordance with the criteria of the level of achievement, percentage of validity 85% is located on the very valid criteria. This shown that the design of the cover, layout and color selection is very relevance and very interesting. The selection of the type and font size as well as the use of the images match. This is relevance with the theory that "book as teaching material criteria are read of the reader".[63] Therefore the font style that is used in this book is tahoma with user considerations this book is the students of grade II SD/MI. While the size of the font size is 16pt because considering the ease of the students to read this book.

4. Validation Practitioner/Teacher

Based on the result of the validation data exposure practitioner/teacher by the second teacher at SDN 2 Nglandeyan namely Drs Nor Syamsu explained as follows.

a. Learning materials that is served is very relevance with SK and KD KTSP 2006.

b. Learning material that is designed in the book is very focused on students.

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[63] Sa'dun Akbar, Instrumen Perangkat Pembelajaran (Bandung: Remaja Rosdakarya, 2015), p. 34-36

c. Learning material presented in the books is very able to improve and build the understanding of the students.

d. Learning materials that served very can grow interest and motivation to learn the students.

e. The evaluation used is very able to assess the students' understanding.

f. The use of language and the selection of the word is very can be understood by the students.

g. The type and size of the letters used is very relevance with students in grade II of SD/MI.

h. The illustration used is very relevance with learning materials and close to the life of the son.

i. Flannel board media can very help the students in understanding the concept of the multiplication of this book.

j. Flannel board media can very increase interest and motivation to learn the students.

The assessment by practitioner/teacher, then calculated percentage level of validity being as follows.

$$P = \frac{\Sigma x}{\Sigma xi} \text{ x } 100\%$$

$$P = \frac{50}{50} \text{ x } 100\%$$

$$P = 1 \text{ x } 100\%$$

$$P = 100\%$$

Based on the calculation of the above, the percentage of the level of validity reach 100 %. In accordance with the criteria of the level of achievement, percentage of validity 100% located on the very valid criteria. This shows that the learning of the multiplication with mathematic learning book (with flannel board) are very can improve the understanding of the students and the interest of student learning. Flannel board media were also very helpful in understanding the concept of the multiplication of this book. This is in accordance with the theory that "book as teaching material criteria is oriented on student centered".[64] While regard to the flannel board media so the results of this research relevance with the theory that Piaget,

> The students of SD/MI located on concrete operational phase, so that in the mathematics teaching abstract, students need the tool in the form of media and teaching aids that can clarify what will be delivered by teachers so that more quickly understood by the students.[65]

C. The Attractiveness and The Effectiveness of Mathematic Learning Book (With Flannel Board)

The results of the trial used to know the level of effectiveness and the attractiveness of mathematic learning book (with flannel board) products. The results of the trial are converted on the scale percentage based on the level of the validity or attractiveness. The level of attractiveness and effectiveness is explained as follow:

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[64] Sa'dun Akbar, Instrumen Perangkat Pembelajaran (Bandung: Remaja Rosdakarya, 2015), p. 34-36.
[65] Heruman, *Model Pembelajaran Matematika Di Sekolah Dasar* (Bandung: PT Remaja rosdakarya, 2007), p.1-2.

1. **The level of the attractiveness**

    The result of the assessment questionnaires students response to the products in the preliminary field testing, showed product attractiveness explained as follows.

    a. The preliminary field testing

        Based on data exposure test results by 4 students of the second grade at SDN I Nglandeyan, Blora explained as follow.

        1) Mathematic learning book about multiplication can facilitate the sister/brother in learning, obtained the assessment with the percentage of 100%. This shows that this book is can very make it easier for students in learning.

        2) Mathematic learning book about multiplication gives the spirit of sister/brother in learning, obtained the assessment with the percentage of 100%. This showed that this book is to encourage students in learning.

        3) Mathematic learning book about multiplication can make the sister/brother to enjoy learning, obtained the assessment with the percentage of 100%. This showed that this book is very make students enjoy learning.

        4) The language used in the book is easily understood, obtained the assessment with the percentage of 100%. This showed that this book is very easily understood by the students.

5) The learning activities in the book is easy, obtained the assessment with the percentage of 95%. This showed that the learning activities in this book is easy to use.

6) The letter in the book is easy to read, obtained the assessment with the percentage of 95%. This showed that the letters in this book is very easy to read.

7) The picture in the book gives the spirit of sister in learning, obtained the assessment with the percentage of 95%. This showed that the images in this book is to encourage students in learning.

8) An example of an explanation and the questions in the book is easily understood, obtained the assessment with the percentage of 95%. This showed that the example and explanation of the questions in this book easily understood.

9) The design of mathematic learning book about multiplication, obtained the assessment with the percentage of 95%. This showed that the design of this book is very interesting.

10) Flannel board Media can help the sister/brother in studying the matter of the book, obtained the assessment with the percentage of 95%. This showed that the flannel board media can very help in the learning of this book.

While the assessment questionnaires response students to the products in the preliminary field testing overall, then calculated percentage level of validity or attractiveness as follows.

$$P = \frac{\Sigma x}{\Sigma xi} \text{ x } 100\%$$

$$P = \frac{194}{200} \text{ x } 100\%$$

$$P = 0.97 \text{ x } 100\%$$

$$P = 97\%$$

Based on the above calculations obtained the results of percentage 97%. The percentage is reached on the valid criteria. The results of the assessment questionnaires students response to the products in the preliminary field testing showed attractiveness in the development of the book, so that the book is interesting and could be used for learning.

b. Main Field Testing

Based on the results of data exposure main field testing by 8 students of grade II at SDN I Nglandeyan, Blora explained as follows.

1) Mathematic learning book about multiplication can facilitate the sister/brother in learning, obtained the assessment with the percentage of 100%. This shows that this book is can very make it easier for students in learning

2) Mathematic learning book about multiplication gives the spirit of sister/brother in learning, obtained the assessment with the percentage of 100%. This showed that this book is to encourage students in learning.

3) Mathematic learning book about multiplication can make the sister/brother to enjoy learning, obtained the assessment with the

percentage of 98%. This showed that this book is very make students enjoy learning.

4) The language used in the book is easily understood, obtained the assessment with the percentage of 98%. This showed that this book is very easily understood by the students.

5) The learning activities in the book is easy, obtained the assessment with the percentage of 95%. This showed that the learning activities in this book is easy to use.

6) The letter in the book is easy to read, obtained the assessment with the percentage of 95%. This showed that the letters in this book is very easy to read.

7) The picture in the book gives the spirit of sister in learning, obtained the assessment with the percentage of 95%. This showed that the images in this book is to encourage students in learning.

8) An example of an explanation and the questions in the book is easily understood, obtained the assessment with the percentage of 95%. This showed that the example and explanation of the questions in this book easily understood.

9) The design of mathematic learning book about multiplication, obtained the assessment with the percentage of 98%. This showed that the design of this book is very interesting.

10) Flannel board Media can help the sister/brother in studying the matter of the book, obtained the assessment with the percentage of

98%. This showed that the flannel board media can very help in the learning of this book.

While the assessment questionnaires response to the products of the students in the main field testing overall, then calculated percentage level of validity or attractiveness as follows.

$P = \frac{\Sigma x}{\Sigma xi}$ x 100%

$P = \frac{388}{400}$ x 100%

P = 0.97 x 100%

P = 97%

Based on the above calculations obtained the results of percentage 97%. The percentage is reached on the valid criteria. The results of the assessment questionnaires students response to the products in the main field testing showed the attractiveness in the development of the book, so that the book is interesting and could be used for learning.

c. Operational Field Testing

Based on the results of data exposure operational field testing by 15 students in grade II at SDN 2 Nglandeyan, Blora explained as follows.

1) Mathematic learning book about multiplication can facilitate the sister/brother in learning, obtained the assessment with the percentage of 89%. This shows that this book is can very make it easier for students in learning

2) Mathematic learning book about multiplication gives the spirit of sister/brother in learning, obtained the assessment with the

percentage of 92%. This showed that this book is to encourage students in learning.

3) Mathematic learning book about multiplication can make the sister/brother to enjoy learning, obtained the assessment with the percentage of 96%. This showed that this book is very make students enjoy learning.

4) The language used in the book is easily understood, obtained the assessment with the percentage of 89%. This showed that this book is very easily understood by the students.

5) The learning activities in the book is easy, obtained the assessment with the percentage of 92%. This showed that the learning activities in this book is easy to use.

6) The letter in the book is easy to read, obtained the assessment with the percentage of 86%. This showed that the letters in this book is very easy to read.

7) The picture in the book gives the spirit of sister in learning, obtained the assessment with the percentage of 95%. This showed that the images in this book is to encourage students in learning.

8) An example of an explanation and the questions in the book is easily understood, obtained the assessment with the percentage of 89%. This showed that the example and explanation of the questions in this book easily understood.

9) The design of mathematic learning book about multiplication, obtained the assessment with the percentage of 95%. This showed that the design of this book is very interesting.

10) Flannel board media can help the sister/brother in studying the matter of the book, obtained the assessment with the percentage of 91%. This showed that the flannel board media can very help in the learning of this book

While the assessment questionnaires response to the products of the students in the operational field testing overall, then calculated percentage level of validity or attractiveness as follows.

$$P = \frac{\Sigma x}{\Sigma xi} \text{ x } 100\%$$

$$P = \frac{685}{750} \text{ x } 100\%$$

$$P = 0.91 \text{ x } 100\%$$

$$P = 91\%$$

Based on the above calculations obtained the results of the percentage 91%. The percentage is reached on the valid criteria. The results of the assessment questionnaires students response to the product in the field tests showed attractiveness in the development of the book, so that the book is interesting and could be used for learning.

2. **The level of the effectiveness**

Besides the book as a guide teachers and students in the learning process, also functions as a tool for evaluation of the achievement or mastery of learning objectives. The mastery of learning objectives in the form of the

value of the test is used to measure the effectiveness of the products that developed. The data used is the result of the value of the post test between the control group with the experiment group, while the results of the value of the pre test is used to test the homogeneous between the two groups. The result of the value of the post test both groups as follows:[66]

The table. 5.1 Value of post-test between the control group and the experiment group

Control Group			The group Experiment		
No	The subject	The Value	No	The subject	The Value
1	X1	90	1	X1	88
2	X2	68	2	X2	85
3	X3	68	3	X3	95
4	X4	83	4	X4	70
5	X5	60	5	X5	90
6	X6	70	6	X6	90
7	X7	78	7	X7	90
8	X8	68	8	X8	85
9	X9	68	9	X9	90
10	X10	65	10	X10	78
11	X11	55	11	X11	75
12	X12	73	12	X12	88
13	X13	63	13	X13	88
14	X14	53	14	X14	85
15	X15	80	15	X15	73
The Total		1042	The Total		1270
The average		69,47	The average		84,67

Based on the table above states that value the average post-test experiment group is greater than the value of the average post test control group (84,69 > 69,47). This shows that learning by experiment groups using the mathematic learning book (with flannel board) are effective.

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[66] Hamdani, Strategi Belajar Mengajar (Bandung: Pustaka Setia, 2011), p. 122.

Then analyzed using the t test with equal significance 0.05 is as follows.

$$T_{count} = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s1^2}{n_1} + \frac{s2^2}{n_2}}}$$

$$T_{count} = \frac{84,67 - 69,47}{\sqrt{\frac{53,09}{15} + \frac{102,98}{15}}}$$

$$T_{count} = \frac{15,2}{\sqrt{\frac{156,07}{15}}}$$

$$T_{count} = \frac{15,2}{\sqrt{10,40}}$$

$$T_{count} = \frac{15,2}{3,2}$$

$$T_{count} = 4.75$$

$$T_{count} > t_{tables}, 4.75 > 2,048$$

The result shows that the $t_{count} = 4.75 > t_{table} = 2,048$, it means t_{count} is greater than t_{table}, so H0 is rejected and H1 is received. So there is a difference students' understanding between the experiment groups that use mathematic learning book (with flannel board) with the control group that are not. This showed that the book and media that are developed effective can improve students' understanding of the multiplication concepts in the second grade of SDN 2 Nglandeyan, Blora.

Based on explanation discussion level of attractiveness and effectiveness of the above. It can be concluded that the mathematic learning book (flannel board) that is developed have high level of validity. This is supported by the theory that "scope lesson materials one only consists of supporting information". This information is intended for the students can be

more interested or clarify a sub topic from teaching materials."[67] So that it is very appropriate when this book consists of the illustration pictures as supporting information. With the existence of the illustration or picture is expected to be able to help the students to imagine about what is learned so that they can make it easier to students in understanding the material. Besides this book also effective in increasing students' understanding. This is in accordance with the theory of Piaget that "students of SD/MI are still bound with concrete objects".[68] For the learning of the multiplication, mathematic learning book (with flannel board) attend concept of multiplication from abstract to the real world through the illustration on the book and the objects on the board flannel.

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[67] Hamdani, Strategi Belajar Mengajar (Bandung: Pustaka Setia, 2011), p. 122-123.

[68] Heruman, *Model Pembelajaran Matematika Di Sekolah Dasar* (Bandung: PT Remaja rosdakarya, 2007), p. 1-2.

CHAPTER VI
CLOSING

A. Conclusion

Based on the research problems in this research and development, the conclution can be explained as follows:

1. Mathematic learning book (with flannel board), the book here that has many pictures relevance the material of multiplication. The picture on the book is the result of photo cats from the pictures or objects are made from flannel fabric. This book presents various concepts of multiplication for the second grade at class II SD/MI to attend the real world and the implementation of the multiplication in dalily life. The book has size A4 and printed full color and equipped with flannel board media. Pictures or objects the are made not only functioned in the book but also can be served through this media.

2. The development result of mathematic learning book (with flannel board) in improving students' understanding on multiplication concept at the second grade SDN 2 Nglandeyan, Blora have high level of validity based on assessment of the experts as follow: reached 80 % according to the expert of content, 92% according to the expert of mathematic learning, 85% according to the expert of design and 100% according to practitioner/teacher at the second grade SDN 2 Nglandeyan, Blora.

3. The development result of mathematic learning book (with flannel board) in improving students' understanding on multiplication concept at the second grade SDN 2 Nglandeyan, Blora have high level of attractiveness

based on assasment of questionnaire students' respose as follow: reached 97% based on the result of preliminary field testing, 97 % based on the result of main field testing and 91% based on the result of the operational field testing.

While the effectiveness of mathematic learning book (with flannel board) that developed is measured using value test between the control group and the experiment group as follow:

a. The average (mean) post-test value of experiment groups 84,69 is greater than the average (mean) post-test value of control groups 69,47. It is shown that learning in experiment groups using the mathematic learning book (with flannel board) are effective.

b. Based on the result of t test, obtained $t_{count} = 4.75$ greater than t table = 2,048 table, so is H0 rejected and H1 is accepted, so that there is difference students' understanding between experiment group that use mathematic learning book (with flannel board) with the control group that are not use it. This is show that the mathematic learning book (with flannel board) are effective can improve students' understanding on multiplication concept at the second grade SDN 2 Nglandeyan, Blora.

B. Suggestions

Suggestions are proposed include suggestions for product utilization, dissemination of product, and utilization product for furtheir development. The detail are explained as follow

1. **Suggestion for Product Utilization**

   The mathematic learning book (with flannel board) should be used as an alternative mathematic teaching because it can increase the students' understanding on multiplication concept and can associate with the implementation of the multiplication in daily life. Better in mathematic learning teacher as facilitators and supported the book and media that have been developed.

2. **Suggestions for Dissemination of Products**

   This product has been made based on students' needs and students' characteristics of the second grade at SDN 2 Nglandeyan Blora, so that is needed to be done more adjustment and assessment according to the existing characteristics that will be disseminated.

3. **Suggestions for Further Development**

   The product development should be developed further to other materials with new innovation relevance with learning development.

   The form of any innovation that used in developing the book and media should follow the steps of careful and consistent development.

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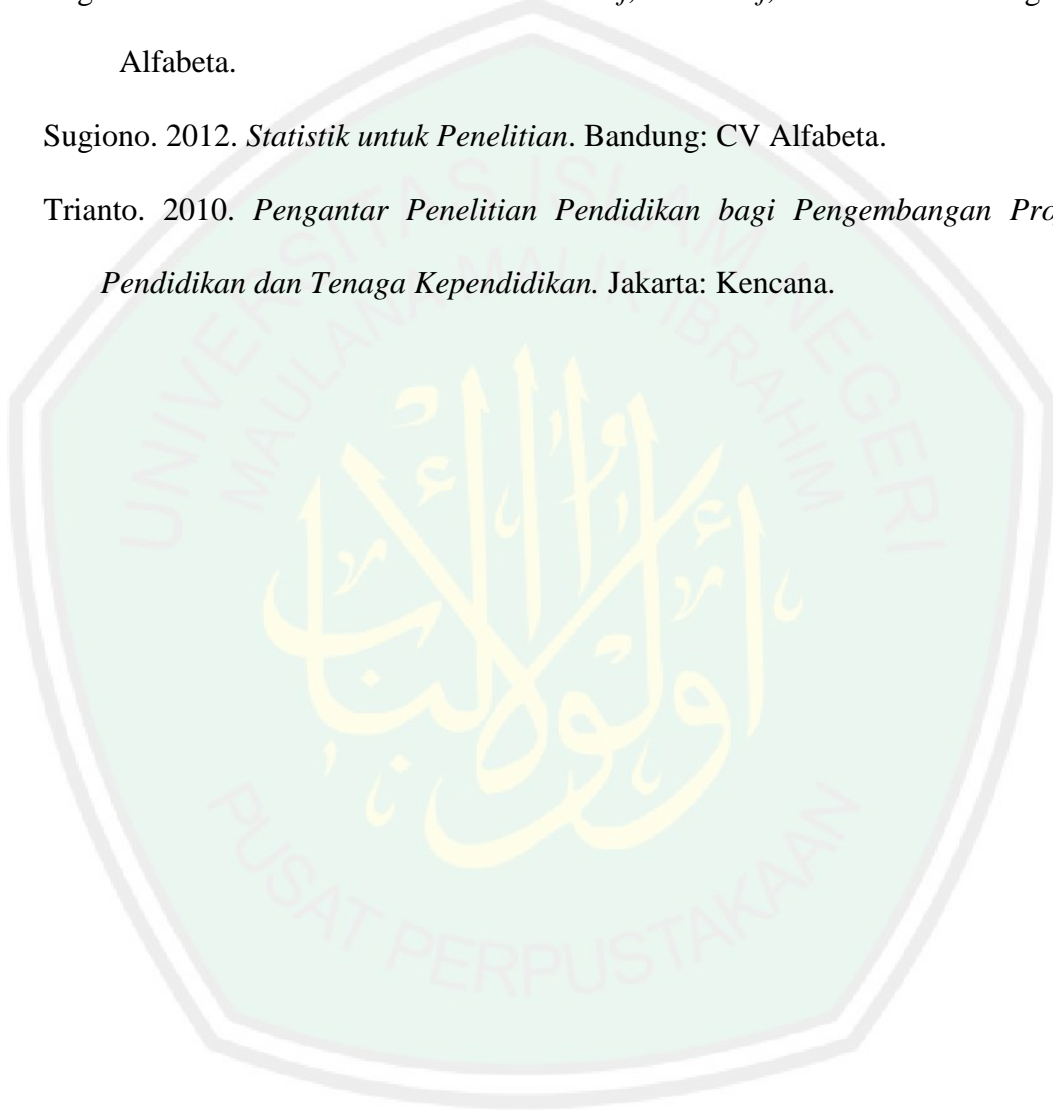
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Appendix I (Thesis Consultation)

BUKTI KONSULTASI SKRIPSI
JURUSAN PENDIDIKAN GURU MADRASAH IBTIDAIYAH
FAKULTAS ILMU TARBIYAH DAN KEGURUAN

Nama : DITA SAFITRI

NIM : 13140033

Judul : Developing Flannel Drawing Book to Improve the Second Grade Students' Understanding on Multiplication Concept at SDN 2 Nglandeyan, Blora.

Dosen Pembimbing : Yeni Tri Asmaningtias, M.Pd

No.	Tgl/ Bln/ Thn	Materi Konsultasi	Tanda Tangan Pembimbing Skripsi
1.	30 Maret 2017	Revisi proposal	
2.	3 April 2017	Konsultasi hasil produk dan instrumen	
3.	17 April 2017	Konsultasi desain produk	
4.	19 April 2017	Konsultasi revisi produk	
5.	24 April 2017	Konsultasi hasil validasi	
6.	8 Mei 2017	Konsultasi hasil validasi	
7.	17 Mei 2017	Konsultasi Bab I – IV	
8.	29 Mei 2017	Konsultasi Bab I – VI	
9.	23 Mei 2017	ACC Keseluruhan	
10.			
11.			
12.			

Malang, ... 20.17.
Mengetahui
Ketua Jurusan PGMI,

Dr. Muhammad Walid, MA
NIP. 197308232000031002

Appendix II (Certificate of research from faculty to SDN 2 Nglandeyan, Blora)

KEMENTERIAN AGAMA
UNIVERSITAS ISLAM NEGERI MAULANA MALIK IBRAHIM MALANG
FAKULTAS ILMU TARBIYAH DAN KEGURUAN
Jalan Gajayana 50, Telepon (0341) 552398 Faximile (0341) 552398 Malang
http:// fitk.uin-malang.ac.id. email : fitk_uinmalang@yahoo.com

Nomor	: Un.3.1/TL.00.1/943/2017	11 April 2017
Sifat	: Penting	
Lampiran	: -	
Hal	: **Izin Penelitian**	

Kepada
Yth. Kepala SDN 2 Nglandeyan Blora
di
    Blora

Assalamu'alaikum Wr. Wb.

Dengan hormat, dalam rangka menyelesaikan tugas akhir berupa penyusunan skripsi mahasiswa Fakultas Ilmu Tarbiyah dan Keguruan (FITK) Universitas Islam Negeri Maulana Malik Ibrahim Malang, kami mohon dengan hormat agar mahasiswa berikut:

Nama	:	Dita Safitri
NIM	:	13140033
Jurusan	:	Pendidikan Guru Madrasah Ibtidaiyah (PGMI)
Semester – Tahun Akademik	:	Genap - 2016/2017
Judul Skripsi	:	*Developing Flannel Drawing Book to Improve the Second Grade Students' Understanding on Multiplication Concept at SDN 2 Nglandeyan Blora*
Lama Penelitian	:	**Maret 2017** sampai dengan **Mei 2017** (3 bulan)

diberi izin untuk melakukan penelitian di lembaga/instansi yang menjadi wewenang Bapak/Ibu.

Demikian, atas perkenan dan kerjasama Bapak/Ibu yang baik disampaikan terima kasih.

Wassalamu'alaikum Wr. Wb.

a.n. Dekan
Wakil Dekan Bid. Akademik,

Dr. Hj. Sulalah, M.Ag
NIP. 19651112 199403 2 002

Tembusan :
1. Yth. Ketua Jurusan PGMI
2. Arsip

Appendix III (Certificate of research from faculty to SDN 1 Nglandeyan, Blora)

KEMENTERIAN AGAMA
UNIVERSITAS ISLAM NEGERI MAULANA MALIK IBRAHIM MALANG
FAKULTAS ILMU TARBIYAH DAN KEGURUAN
Jalan Gajayana 50, Telepon (0341) 552398 Faximile (0341) 552398 Malang
http:// fitk.uin-malang.ac.id. email : fitk_uinmalang@yahoo.com

Nomor	: Un.3.1/TL.00.1/ 88 /2017	25 April 2017
Sifat	: Penting	
Lampiran	: -	
Hal	: **Izin Penelitian**	

Kepada
Yth. Kepala SDN 1 Nglandeyan Blora
di
      Blora

Assalamu'alaikum Wr. Wb.

Dengan hormat, dalam rangka menyelesaikan tugas akhir berupa penyusunan skripsi mahasiswa Fakultas Ilmu Tarbiyah dan Keguruan (FITK) Universitas Islam Negeri Maulana Malik Ibrahim Malang, kami mohon dengan hormat agar mahasiswa berikut:

Nama	:	Dita Safitri
NIM	:	13140033
Jurusan	:	Pendidikan Guru Madrasah Ibtidaiyah (PGMI)
Semester – Tahun Akademik	:	Genap - 2016/2017
Judul Skripsi	:	***Developing Flannel Drawing Book to Improve the Second Grade Students' Understanding on Multiplication Concept at SDN 2 Nglandeyan Blora***
Lama Penelitian	:	**April 2017** sampai dengan **Juni 2017** (3 bulan)

diberi izin untuk melakukan penelitian di lembaga/instansi yang menjadi wewenang Bapak/Ibu.

Demikian, atas perkenan dan kerjasama Bapak/Ibu yang baik disampaikan terima kasih.

Wassalamu'alaikum Wr. Wb.

a.n Dekan
Wakil Dekan Bid. Akademik,

Dr. Hj. Sulalah, M.Ag
NIP. 19651112 199403 2 002

Tembusan :
1. Yth. Ketua Jurusan PGMI
2. Arsip

Appendix IV (Certificate of research from SDN 2 Nglandeyan, Blora)

PEMERINTAH KABUPATEN BLORA
DINAS PENDIDIKAN
UPT TK/SD KECAMATAN KEDUNGTUBAN
SDN 2 NGLANDEYAN
Alamat: Dukuh Pilang Desa Nglandeyan Kec. Kedungtuban Kab. Blora Kode Pos 58381

SURAT KETERANGAN PENELITIAN
Nomor :   /   /   /

Yang bertanda tangan di bawah ini Kepala SDN 2 Nglandeyan, dengan ini menerangkan bahwa:

Nama   : Dita Safitri
NIM   : 13140033
Jurusan   : Pendidikan Guru Madrasah Ibtidaiyah (PGMI)
                   UIN Maulana Malik Ibrahim Malang

Benar-benar telah melakukan penelitian di SDN 2 Nglandeyan pada bulan April 2017 sampai dengan Mei 2017 guna menyelesaikan tugas akhir penyusunan skripsi dengan judul **"Developing Flannel Drawing Book to Improve The Second Grade Students' Understanding on Multiplication Concept at SDN 2 Nglandeyan, Blora"**.

Demikian surat keterangan ini dibuat untuk dapat dipergunakan sebagaimana semestinya.

Blora, 8 Mei 2017
Kepala SDN 2 Nglandeyan

TRIWOKO, S.Pd
NIP. 19620719 198405 1 002

Appendix V (Certificate of research from SDN 1 Nglandeyan, Blora)

PEMERINTAH KABUPATEN BLORA
DINAS PENDIDIKAN
UPT TK/SD KECAMATAN KEDUNGTUBAN
SDN 1 NGLANDEYAN
Alamat: Desa Nglandeyan Kec. Kedungtuban Kab. Blora Kode Pos 58381

SURAT KETERANGAN PENELITIAN
Nomor :   /   /   /

Yang bertanda tangan di bawah ini Kepala SDN 1 Nglandeyan, dengan ini menerangkan bahwa:

Nama	:	Dita Safitri
NIM	:	13140033
Jurusan	:	Pendidikan Guru Madrasah Ibtidaiyah (PGMI)
		UIN Maulana Malik Ibrahim Malang

Benar-benar telah melakukan penelitian di SDN 1 Nglandeyan pada bulan Mei 2017 guna menyelesaikan tugas akhir penyusunan skripsi dengan judul **"Developing Flannel Drawing Book to Improve The Second Grade Students' Understanding on Multiplication Concept at SDN 2 Nglandeyan, Blora"**.

Demikian surat keterangan ini dibuat untuk dapat dipergunakan sebagaimana semestinya.

Blora, 5 Mei 2017
Kepala SDN 1 Nglandeyan

TUKIJO, S.Pd
NIP. 19630812 198508 1 003

Appendix VI (Validation result from content expert)

INSTRUMEN VALIDASI AHLI ISI MATERI

Buku Bergambar Flanel untuk Perkalian Kelas 2 SD/MI

A. Pengantar

Kepada

Yth. H. Wahyu Henky Irawan, M.Pd

di tempat

Assalamu'alaikum Wr. Wb.

Dengan Hormat, dalam rangka penyusunan tugas akhir berupa penyusunan skripsi mahasiswa Fakultas Ilmu Tarbiyah dan Keguruan UIN MALIKI Malang dengan judul *"Developing Flannel Drawing Book to Improve the Second Grade Students' Understanding on Multiplication Concept at SDN 2 Nglandeyan, Blora"*, peneliti bermaksud untuk mengadakan validasi buku tersebut dengan tujuan untuk mengetahui kevalidan buku serta sebagai pengukuran buku yang layak. Besar harapan peneliti agar Bapak bersedia memberikan penilaian baik berupa kritik dan saran dengan mengisi angket di bawah ini. Penilaian dan pendapat dari Bapak akan sangat bermanfaat untuk perbaikan dan peningkatan kualitas buku ini agar dapat dimanfaatkan dalam pembelajaran. Atas kesediaannya, peneliti ucapkan terima kasih.
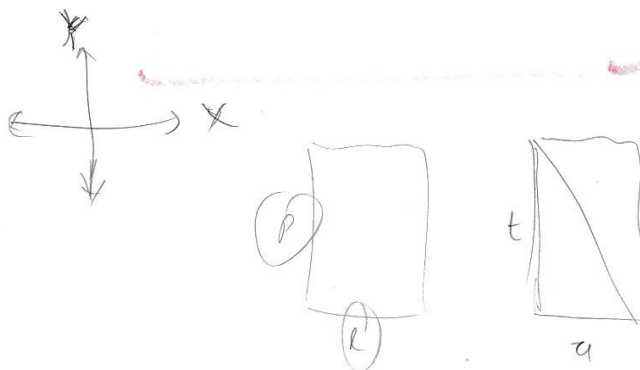
Wassalamu'alaikum Wr. Wb.

Malang, 27 April 2017

Peneliti

Dita Safitri

B. Identitas Ahli

Nama : H. Wahyu Henky Irawan

NIP : 19710420200003 1003

Instansi : UIN Maliki Malang

Jabatan : Dosen Matematika

Pendidikan Terakhir : S-3.

C. Petunjuk Pengisian Angket

1. Sebelum mengisi angket ini mohon terlebih dahulu Bapak/Ibu membaca atau mempelajari buku yang telah dikembangkan.

2. Intrumen ini terdiri dari kolom pernyataan dan kolom jawaban. Pilihlah satu jawaban dengan memberi tanda centang ($\sqrt{}$) pada setiap pernyataan sesuai penilaian Bapak/Ibu yang dianggap paling tepat.

3. Keterangan skor pada pilihan jawaban, sebagai berikut;

Skor	Keterangan
1	*Sangat tidak baik*
2	Kurang baik
3	Cukup baik
4	Baik
5	Sangat baik

D. Kriteria-kriteria Angket

No	Pernyataan	Keterangan Skor				
		1	2	3	4	5
1.	Kesesuaian indikator dengan SK dan KD yang telah ditetapkan dalam KTSP 2006.				$\sqrt{}$	
2.	*Kesesuaian materi dengan kompetensi yang harus dikuasai siswa.*				$\sqrt{}$	
3.	Contoh penjelasan sesuai dengan kompetensi yang harus dikuasai siswa.				$\sqrt{}$	
4.	Evaluasi dapat mengukur kemampuan siswa berdasarkan kompetensi yang harus dikuasai.				$\sqrt{}$	
5.	Kedalaman uraian materi sesuai dengan tingkat perkembangan siswa kelas 2 SD/MI.				$\sqrt{}$	
6.	Gambar yang digunakan sesuai dengan materi.				$\sqrt{}$	
7.	Sistematika uraian materi dalam buku.				$\sqrt{}$	

8.	Materi yang disajikan dekat dengan kehidupan sehari-hari siswa.				✓	
9.	Materi yang disajikan mendorong siswa membangun pengetahuannya sendiri.				✓	
10.	Materi yang disajikan berfokus pada pemahaman konsep.				✓	
11.	Ketepatan penggunaan ejaan dan istilah.	✓				
12.	Struktur kalimat sesuai dengan tingkat *pemahaman siswa.*			✓		
13.	Kesesuaian papan flanel sebagai media pendukung dalam mempelajari materi pada buku.				✓	
14.	Kesesuaian media papan flanel dengan karakteristik siswa.				✓	

E. Kesimpulan Umum

Berdasarkan penilaian di atas, maka buku ini dinyatakan bahwa:

a. Dapat digunakan tanpat revisi

b. Dapat digunakan dengan revisi kecil

c. Dapat digunakan dengan revisi besar

d. Belum dapat digunakan

Kritik dan saran:

Penggunaan kata jumlah dan banyak perlu diperhatikan.

Malang, 27 April 2017

Validator,

K. Wahyu K. Irawan

NIP. 197104202000031003.

INSTRUMEN VALIDASI AHLI MATERI

Buku Bergambar Flanel untuk Perkalian Kelas 2 SD/MI

A. Pengantar

Kepada

Yth. H. Wahyu Henky Irawan, M.Pd

di tempat

Assalamu'alaikum Wr. Wb.

Dengan Hormat, dalam rangka penyusunan tugas akhir berupa penyusunan skripsi mahasiswa Fakultas Ilmu Tarbiyah dan Keguruan UIN MALIKI Malang dengan judul *"Developing Flannel Drawing Book to Improve the Second Grade Students' Understanding on Multiplication Concept at SDN 2 Nglandeyan, Blora"*, peneliti bermaksud untuk mengadakan validasi buku tersebut dengan tujuan untuk mengetahui kevalidan buku serta sebagai pengukuruan buku yang layak. Besar harapan peneliti agar Bapak bersedia memberikan penilaian baik berupa kritik dan saran dengan mengisi angket di bawah ini. Penilaian dan pendapat dari Bapak akan sangat bermanfaat untuk perbaikan dan peningkatan kualitas buku ini agar dapat dimanfaatkan dalam pembelajaran. Atas kesediaannya, peneliti ucapkan terima kasih.

Wassalamu'alaikum Wr. Wb.

Malang, 29 April 2017

Peneliti

Dita Safitri

B. Identitas Ahli

Nama   : H. Wahyu Henky Irawan

NIP   : 197104202000031003

Instansi   : UIN Maliki Malang

Jabatan   : Dosen Matematika

Pendidikan Terakhir : S-3

C. Petunjuk Pengisian Angket

1. Sebelum mengisi angket ini mohon terlebih dahulu Bapak/Ibu membaca atau mempelajari buku yang telah dikembangkan.
2. Intrumen ini terdiri dari kolom pernyataan dan kolom jawaban. Pilihlah satu jawaban dengan memberi tanda centang (√) pada setiap pernyataan sesuai penilaian Bapak/Ibu yang dianggap paling tepat.
3. Keterangan skor pada pilihan jawaban, sebagai berikut;

Skor	Keterangan
1	Sangat tidak baik
2	Kurang baik
3	Cukup baik
4	Baik
5	Sangat baik

D. Kriteria-kriteria Angket

No	Pernyataan	Keterangan Skor				
		1	2	3	4	5
1.	Kesesuaian indikator dengan SK dan KD yang telah ditetapkan dalam KTSP 2006.				√	
2.	Kesesuaian materi dengan kompetensi yang harus dikuasai siswa.				√	
3.	Contoh penjelasan sesuai dengan kompetensi yang harus dikuasai siswa.				√	
4.	Evaluasi dapat mengukur kemampuan siswa berdasarkan kompetensi yang harus dikuasai.				√	
5.	Kedalaman uraian materi sesuai dengan tingkat perkembangan siswa kelas 2 SD/MI.				√	
6.	Gambar yang digunakan sesuai dengan materi.				√	
7.	Sistematika uraian materi dalam buku.				√	

8.	Materi yang disajikan dekat dengan kehidupan sehari-hari siswa.				✓	
9.	Materi yang disajikan mendorong siswa membangun pengetahuannya sendiri.				✓	
10.	Materi yang disajikan berfokus pada pemahaman konsep.				✓	
11.	Ketepatan penggunaan ejaan dan istilah.				✓	
12.	Struktur kalimat sesuai dengan tingkat pemahaman siswa.				✓	
13.	Kesesuaian papan flanel sebagai media pendukung dalam mempelajari materi pada buku.				✓	
14.	Kesesuaian media papan flanel dengan karakteristik siswa.				✓	

E. Kesimpulan Umum

Berdasarkan penilaian di atas, maka buku ini dinyatakan bahwa:

a. *Dapat digunakan tanpat revisi*

b. Dapat digunakan dengan revisi kecil

c. Dapat digunakan dengan revisi besar

d. Belum dapat digunakan

Kritik dan saran:

Revisi : Penggunaan gambar pd soal latihan
sebaiknya ditiadakan agu pd penerapan
dn konsep.
Sec. umum, isi sudah baik dan layak
digunakan

Malang, 29 April 2017

Validator,

H. Wahyu Henky Irawan

NIP. 197104202000031003

INSTRUMEN VALIDASI AHLI PEMBELAJARAN MATEMATIKA
Buku Bergambar Flanel untuk Perkalian Kelas 2 SD/MI

A. **Pengantar**

Kepada

Yth. Drs. Arif Djunaidi, M.Pd

di tempat

Assalamu'alaikum Wr. Wb.

Dengan Hormat, dalam rangka penyusunan tugas akhir berupa penyusunan skripsi mahasiswa Fakultas Ilmu Tarbiyah dan Keguruan UIN MALIKI Malang dengan judul "*Developing Flannel Drawing Book to Improve the Second Grade Students' Understanding on Multiplication Concept at SDN 2 Nglandeyan, Blora*", peneliti bermaksud untuk mengadakan validasi buku tersebut dengan tujuan untuk mengetahui kesesuaian pemanfaatan buku serta sebagai pengukuruan buku yang layak. Besar harapan peneliti agar Bapak bersedia memberikan penilaian baik berupa kritik dan saran dengan mengisi angket di bawah ini. Penilaian dan pendapat dari Bapak akan sangat bermanfaat untuk perbaikan dan peningkatan kualitas buku ini agar dapat dimanfaatkan dalam pembelajaran. Atas kesediaannya, peneliti ucapkan terima kasih.

Wassalamu'alaikum Wr. Wb.

Malang, 21 April 2017

Peneliti

Dita Safitri

B. Identitas Ahli

Nama :

NIP :

Instansi :

Jabatan :

Pendidikan Terakhir :

C. Petunjuk Pengisian Angket

1. Sebelum mengisi angket ini mohon terlebih dahulu Bapak/Ibu membaca atau mempelajari buku yang telah dikembangkan.

2. Intrumen ini terdiri dari kolom pernyataan dan kolom jawaban. Pilihlah satu jawaban dengan memberi tanda centang pada setiap pernyataan sesuai penilaian Bapak/Ibu yang dianggap paling tepat.

3. Keterangan skor pada pilihan jawaban, sebagai berikut:

Skor	Keterangan
1	Sangat tidak baik
2	Kurang baik
3	Cukup baik
4	Baik
5	Sangat baik

D. Kriteria-kriteria Angket

No	Pernyataan	Keterangan Skor				
		1	2	3	4	5
1.	Kesesuaian materi pembelajaran yang disajikan dengan dengan SK dan KD KTSP 2006.					✓
2.	Sistematika uraian isi pembelajaran dalam buku.				✓	
3.	Inti pembelajaran yang dirancang dalam buku berfokus pada siswa.				✓	
4.	Materi pembelajaran yang disajikan dalam buku dapat meningkatkan dan membangun pemahaman siswa.				✓	
5.	Materi pembelajaran yang disajikan dalam buku dapat menumbuhkan minat dan motivasi belajar siswa.					✓

6.	Evaluasi yang digunakan sesuai dengan tujuan pembelajaran.				✓	
7.	Penggunaan bahasa dan pemilihan kata dapat dipahami oleh siswa.					✓
8.	Ilustrasi gambar yang digunakan sesuai dengan materi pembelajaran dan dekat dengan kehidupan anak.					✓
9.	Media papan flanel dapat membantu siswa dalam memahami konsep perkalian pada buku ini.					✓
10.	Media papan flanel dapat meningkatkan minat dan motivasi belajar siswa.					✓

E. Kesimpulan Umum

Berdasarkan penilaian di atas, maka buku ini dinyatakan bahwa:

a. Dapat digunakan tanpat revisi

b. Dapat digunakan dengan revisi kecil

c. Dapat digunakan dengan revisi besar

d. Belum dapat digunakan

Kritik dan saran:

Soal latihan di buat sesuai Contoh kemandi. Soal pembulihan.

Malang, 21 April 2017

Validator

Drs Arif Djunaidi. MPd

NIP. 196509211995031001

Terima Kasih

Appendix VIII (Validation result from design expert)

INSTRUMEN VALIDASI AHLI DESAIN
Buku Bergambar Flanel untuk Perkalian Kelas 2 SD/MI

A. Pengantar

Kepada Nafsiati Astuti, M.Pd

Yth. Rini Nafsiari, M.Si

di tempat

Assalamu'alaikum Wr. Wb.

   Dengan Hormat, dalam rangka penyusunan tugas akhir berupa penyusunan skripsi mahasiswa Fakultas Ilmu Tarbiyah dan Keguruan UIN MALIKI Malang dengan judul *"Developing Flannel Drawing Book to Improve the Second Grade Students' Understanding on Multiplication Concept at SDN 2 Nglandeyan, Blor*a", peneliti bermaksud untuk mengadakan validasi buku tersebut dengan tujuan untuk mengetahui kesesuaian pemanfaatan buku serta sebagai pengukuruan buku yang layak. Besar harapan peneliti agar Ibu bersedia memberikan penilaian baik berupa kritik dan saran dengan mengisi angket di bawah ini. Penilaian dan pendapat dari Ibu akan sangat bermanfaat untuk perbaikan dan peningkatan kualitas buku ini agar dapat dimanfaatkan dalam pembelajaran. Atas kesediaannya, peneliti ucapkan terima kasih.

Wassalamu'alaikum Wr. Wb.

Malang, 20 April 2017

Peneliti

Dita Safitri

B. Identitas Ahli

Nama   :

NIP   :

Instansi   :

Jabatan   :

Pendidikan Terakhir :

C. Petunjuk Pengisian Angket

1. Sebelum mengisi angket ini mohon terlebih dahulu Bapak/Ibu membaca atau mempelajari buku yang telah dikembangkan.

2. Intrumen ini terdiri dari kolom pernyataan dan kolom jawaban. Pilihlah satu jawaban dengan memberi tanda centang pada setiap pernyataan sesuai penilaian Bapak/Ibu yang dianggap paling tepat.

3. Keterangan skor pada pilihan jawaban, sebagai berikut:

Skor	Keterangan
1	Sangat tidak baik
2	Kurang baik
3	Cukup baik
4	Baik
5	Sangat baik

D. Kriteria-kriteria Angket

No	Pernyataan	Keterangan Skor				
		1	2	3	4	5
1.	Desain cover sesuai dengan materi pembelajaran.			✓		
2.	Desain warna yang digunakan pada buku menarik				✓	
3.	Jenis huruf yang digunakan sesuai dengan siswa kelas 2 SD/MI.				✓	
4.	Ukuran huruf yang digunakan sesuai dengan siswa kelas 2 SD/MI.			✓		
5.	Gambar yang digunakan sesuai dengan materi pembelajaran.				✓	
6.	Gambar yang digunakan dekat dengan kehidupan siswa.				✓	
7.	Gambar yang digunakan menarik perhatian siswa.			✓		
8.	Tata letak gambar pada buku menarik.			✓	✓	
9.	Ukuran gambar pada buku tepat.			✓		

10.	Layout pada buku menarik.				√	
11.	Desain papan flanel sebagai media pendukung menarik..				√	
12.	Media papan flanel dapat digunakan secara praktis.			√		

E. Kesimpulan Umum

Berdasarkan penilaian di atas, maka buku ini dinyatakan bahwa:

a. Dapat digunakan tanpat revisi

b. Dapat digunakan dengan revisi kecil

c. Dapat digunakan dengan revisi besar

d. Belum dapat digunakan

Kritik dan saran:

1. Gambar Cover kurang Kontekstual (belum jelas, belum Kongkret kurang representatif)
2. Mohon di cek kembali beberapa huruf ter lalu kecil.
3. " Sudah sesuai kah

SK, KD dan indikatornya?
klu pemahaman konsep menggunakan indikator apa? dasar bukunya dari mana?

Malang, 20 April 2017

Validator

Rini Nafsiati A, M.Pd

NIP.

Terima Kasih

INSTRUMEN VALIDASI AHLI DESAIN

Buku Bergambar Flanel untuk Perkalian Kelas 2 SD/MI

A. Pengantar

Kepada

Yth. Yuniar Setyo Marandy, S.Sn

di tempat

Assalamu'alaikum Wr. Wb.

Dengan Hormat, dalam rangka penyusunan tugas akhir berupa penyusunan skripsi mahasiswa Fakultas Ilmu Tarbiyah dan Keguruan UIN MALIKI Malang dengan judul *"Developing Flannel Drawing Book to Improve the Second Grade Students' Understanding on Multiplication Concept at SDN 2 Nglandeyan, Blor*a", peneliti bermaksud untuk mengadakan validasi buku tersebut dengan tujuan untuk mengetahui kevalidan buku serta sebagai pengukuruan buku yang layak. Besar harapan peneliti agar Ibu bersedia memberikan penilaian baik berupa kritik dan saran dengan mengisi angket di bawah ini. Penilaian dan pendapat dari Ibu akan sangat bermanfaat untuk perbaikan dan peningkatan kualitas buku ini agar dapat dimanfaatkan dalam pembelajaran. Atas kesediaannya, peneliti ucapkan terima kasih.

Wassalamu'alaikum Wr. Wb.

Malang, 3 Mei 2017

Peneliti

Dita Safitri

B. Identitas Ahli

Nama : Yuniar Setyo Marandy, S.Sn

NIP : 19900607208031003

Instansi : FITK UIN Maulana Malik Ibrahim Malang

Jabatan : Laboran Multimedia

Pendidikan Terakhir : S1 Desain Komunikasi Visual

C. Petunjuk Pengisian Angket

1. Sebelum mengisi angket ini mohon terlebih dahulu Bapak/Ibu membaca atau mempelajari buku yang telah dikembangkan.

2. Intrumen ini terdiri dari kolom pernyataan dan kolom jawaban. Pilihlah satu jawaban dengan memberi tanda centang pada setiap pernyataan sesuai penilaian Bapak/Ibu yang dianggap paling tepat.

3. Keterangan skor pada pilihan jawaban, sebagai berikut:

Skor	Keterangan
1	Sangat tidak baik
2	Kurang baik
3	Cukup baik
4	Baik
5	Sangat baik

D. Kriteria-kriteria Angket

No	Pernyataan	Keterangan Skor				
		1	2	3	4	5
1.	Desain cover sesuai dengan materi pembelajaran.					√
2.	Desain warna yang digunakan pada buku menarik					√
3.	Jenis huruf yang digunakan sesuai dengan siswa kelas 2 SD/MI.				√	
4.	Ukuran huruf yang digunakan sesuai dengan siswa kelas 2 SD/MI.				√	
5.	Gambar yang digunakan sesuai dengan materi pembelajaran.				√	
6.	Gambar yang digunakan dekat dengan kehidupan siswa.				√	
7.	Gambar yang digunakan menarik perhatian siswa.				√	
8.	Tata letak gambar pada buku menarik.				√	
9.	Ukuran gambar pada buku tepat.				√	

	sesuai dengan siswa kelas 2 SD/MI.					
8.	Ilustrasi gambar yang digunakan sesuai dengan materi pembelajaran dan dekat dengan kehidupan anak.					✓
9.	Media papan flanel dapat membantu siswa dalam memahami konsep perkalian pada buku ini.					✓
10.	Media papan flanel dapat meningkatkan minat dan motivasi belajar siswa.					✓

E. Kesimpulan Umum

Berdasarkan penilaian di atas, maka buku ini dinyatakan bahwa:

a. Dapat digunakan tanpa revisi

b. Dapat digunakan dengan revisi kecil

c. Dapat digunakan dengan revisi besar

d. Belum dapat digunakan

Kritik dan saran:

Buku bergambar Fland tentang perkalian ini sangat baik untuk membantu siswa dalam mendalami konsep pembelajaran, khususnya materi perkalian. Kami berharap buku bergambar Flanel ini dikembangkan dalam pemberian konsep materi pembelajaran SK / KD yang lainnya

Malang, 13 Mei 2017

Validator

Drs. Nor Syamsu

NIP. 196105191982011002

Terima Kasih

Appendix IX (Validation result from teacher)

INSTRUMEN VALIDASI PRAKTISI PEMBELAJARAN MATEMATIKA

Buku Bergambar Flanel untuk Perkalian Kelas 2 SD/MI

A. Pengantar

Kepada

Yth. Drs. Noer Syamsu

di tempat

Assalamu'alaikum Wr. Wb.

Dengan Hormat, dalam rangka penyusunan tugas akhir berupa penyusunan skripsi mahasiswa Fakultas Ilmu Tarbiyah dan Keguruan UIN MALIKI Malang dengan judul "Developing Flannel Drawing Book to Improve the Second Grade Students' Understanding on Multiplication Concept at SDN 2 Nglandeyan, Blora", peneliti bermaksud untuk mengadakan validasi buku tersebut dengan tujuan untuk mengetahui kevalidan buku serta sebagai pengukuruan buku yang layak. Besar harapan peneliti agar Bapak bersedia memberikan penilaian baik berupa kritik dan saran dengan mengisi angket di bawah ini. Penilaian dan pendapat dari Bapak akan sangat bermanfaat untuk perbaikan dan peningkatan kualitas buku ini agar dapat dimanfaatkan dalam pembelajaran. Atas kesediaannya, peneliti ucapkan terima kasih.

Wassalamu'alaikum Wr. Wb.

Malang, 13 Mei 2017

Peneliti

Dita Safitri

B. Identitas Ahli

Nama   : Drs. Nor Syamsu

NIP   : 19610519 198201 1 002

Instansi   : SDN 2 Nglandeyan, Kec. Kedungtuban

Jabatan   : Guru Kelas SD

Pendidikan Terakhir : S1 Kependidikan

C. Petunjuk Pengisian Angket

1. Sebelum mengisi angket ini mohon terlebih dahulu Bapak/Ibu membaca atau mempelajari buku yang telah dikembangkan.

2. Intrumen ini terdiri dari kolom pernyataan dan kolom jawaban. Pilihlah satu jawaban dengan memberi tanda centang pada setiap pernyataan sesuai penilaian Bapak/Ibu yang dianggap paling tepat.

3. Keterangan skor pada pilihan jawaban, sebagai berikut:

Skor	Keterangan
1	Sangat tidak baik
2	Kurang baik
3	Cukup baik
4	Baik
5	Sangat baik

D. Kriteria-kriteria Angket

No	Pernyataan	Keterangan Skor				
		1	2	3	4	5
1.	Kesesuaian materi pembelajaran yang disajikan dengan dengan SK dan KD KTSP 2006.					✓
2.	Inti pembelajaran yang dirancang dalam buku berfokus pada siswa.					✓
3.	Materi pembelajaran yang disajikan dalam buku dapat meningkatkan dan membangun pemahaman siswa.					✓
4.	Materi pembelajaran yang disajikan dapat menumbuhkan minat dan motivasi belajar siswa.					✓
5.	Evaluasi yang digunakan dapat mengukur pemahaman siswa.					✓
6.	Penggunaan bahasa dan pemilihan kata dapat dipahami oleh siswa.					✓
7.	Jenis dan ukuran huruf yang digunakan					✓

	sesuai dengan siswa kelas 2 SD/MI.					
8.	Ilustrasi gambar yang digunakan sesuai dengan materi pembelajaran dan dekat dengan kehidupan anak.					✓
9.	Media papan flanel dapat membantu siswa dalam memahami konsep perkalian pada buku ini.					✓
10.	Media papan flanel dapat meningkatkan minat dan motivasi belajar siswa.					✓

E. Kesimpulan Umum

Berdasarkan penilaian di atas, maka buku ini dinyatakan bahwa:

a. Dapat digunakan tanpa revisi

b. Dapat digunakan dengan revisi kecil

c. Dapat digunakan dengan revisi besar

d. Belum dapat digunakan

Kritik dan saran:

Buku bergambar Fland tentang perkalian ini sangat baik untuk membantu siswa dalam mendalami konsep pembelajaran, khususnya materi perkalian. Kami berharap buku bergambar Flanel ini dikembangkan dalam pemberian konsep materi pembelajaran SK / KD yang lainnya

Malang, 13 Mei 2017

Validator

Drs. Nur Syamsu

NIP. 196105191982011002

Terima Kasih

Appendix X (Questionaire result student response to the product)

    a. Preliminary field testing

Angket Respon Siswa Terhadap Buku Bergambar Flanel
untuk Perkalian Kelas 2 SD/MI

A. Pengantar

Assalamu'alaikum Wr. Wb.

Adik, selain buku LKS yang sudah didapat, kalian juga bisa mempelajari beberapa buku lainnya untuk membantu adik dalam memahami materi pelajaran, salah satunya adalah buku bergambar flanel. Buku bergambar flanel ini ditujukan untuk siswa kelas 2 SD/MI pada mata pelajaran matematika materi perkalian. Buku bergambar flanel perkalian adalah buku yang terdiri dari beberapa gambar untuk memperjelas dan mempermudah dalam memahami konsep perkalian.

Sehubungan dengan penyusunan tugas akhir berupa skripsi dengan judul "Pengembangan Buku Bergambar Flanel untuk Perkalian Kelas 2 SD/MI", peneliti bermaksud untuk mengadakan pengecekan buku yang telah dibuat sebagai salah satu bahan ajar. Tujuan dari pengisian angket ini adalah untuk mengetahui kemenarikan buku. Untuk itu, peneliti mohon kesediaan adik agar mengisi angket di bawah ini. Hasil dari pengisian angket akan digunakan untuk perbaikan dan peningkatan kualitas buku ini agar dapat dimanfaatkan dalam pembelajaran. Atas kesediaannya, peneliti ucapkan terima kasih.

Nama : Hafzah articha Ramadhani

Kelas : 2 (Dua)

Sekolah: SDN I Nglandeyan

B. Petunjuk Pengisian Angket

1. Sebelum mengisi angket ini mohon terlebih dahulu adik membaca atau mempelajari buku yang telah dikembangkan.

2. Berilah tanda silang (X) pada salah satu huruf A, B, C, D atau E pada jawaban sesuai dengan penilaian adik yang dianggap paling tepat.

C. Pertanyaan-pertanyaan Angket

1. Apakah buku bergambar flanel perkalian ini dapat memudahkan adik dalam belajar?

   A. sangat mudah
   B. mudah
   C. cukup mudah
   D. kurang mudah
   E. sulit

2. Apakah dengan menggunakan buku bergambar flanel perkalian ini memberi semangat adik dalam belajar?

   A. sangat memberi semangat
   B. memberi semangat
   C. cukup memberi semangat
   D. kurang memberi semangat
   E. tidak memberi semangat

3. Apakah adik senang belajar dengan menggunakan buku bergambar flanel perkalian ini?

   A. sangat mudah
   B. mudah
   C. cukup mudah
   D. kurang mudah
   E. sulit

4. Apakah bahasa yang digunakan dalam buku bergambar flanel perkalian ini mudah dipahami?

   A. sangat mudah dipahami
   B. mudah dipahami
   C. cukup mudah dipahami
   D. kurang mudah dipahami
   E. sulit dipahami

5. Apakah kegiatan pembelajaran dalam buku bergambar flanel perkalian ini mudah dilakukan?

   A. sangat mudah dilakukan
   B. mudah dilakukan
   C. cukup mudah dilakukan
   D. kurang mudah dilakukan
   E. sulit dilakukan

6. Apakah huruf dalam buku bergambar flanel perkalian ini mudah dibaca?

   A. sangat mudah dibaca   D. kurang mudah dibaca

   B. mudah dibaca   E. sulit dibaca

   C. cukup mudah dibaca

7. Apakah gambar dalam buku bergambar flanel perkalian ini memberi semangat adik dalam belajar?

   A. sangat memberi semangat   D. kurang memberi semangat

   B. memberi semangat   E. tidak memberi semangat

   C. cukup memberi semangat

8. Apakah contoh penjelasan dan soal-soal dalam buku bergambar flanel perkalian ini mudah dipahami?

   A. sangat mudah dipahami   D. kurang mudah dipahami

   B. mudah dipahami   E. sulit dipahami

   C. cukup mudah dipahami

9. Menurut adik, bagaimana desain buku bergambar flanel perkalian ini?

   A. sangat bagus   D. kurang bagus

   B. bagus   E. tidak bagus

   C. cukup bagus

10. Apakah media papan flanel dapat membantu Adik dalam mempelajari materi perkalian pada buku bergambar flanel ini?

    A. sangat membantu   D. kurang membantu

    B. membantu   E. tidak membantu

    C. cukup membantu

Tuliskan komentar atau pendapat adik tentang buku bergambar flanel perkalian ini!

buku bergambar Flanel perkalian ini memberi semangat kita untuk belajar dengan giat buku bergambar Flanel ini sangat menyenangkan sekali

Angket Respon Siswa Terhadap Buku Bergambar Flanel
untuk Perkalian Kelas 2 SD/MI

A. Pengantar

Assalamu'alaikum Wr. Wb.

Adik, selain buku LKS yang sudah didapat, kalian juga bisa mempelajari beberapa buku lainnya untuk membantu adik dalam memahami materi pelajaran, salah satunya adalah buku bergambar flanel. Buku bergambar flanel ini ditujukan untuk siswa kelas 2 SD/MI pada mata pelajaran matematika materi perkalian. Buku bergambar flanel perkalian adalah buku yang terdiri dari beberapa gambar untuk memperjelas dan mempermudah dalam memahami konsep perkalian.

Sehubungan dengan penyusunan tugas akhir berupa skripsi dengan judul "Pengembangan Buku Bergambar Flanel untuk Perkalian Kelas 2 SD/MI", peneliti bermaksud untuk mengadakan pengecekan buku yang telah dibuat sebagai salah satu bahan ajar. Tujuan dari pengisian angket ini adalah untuk mengetahui kemenarikan buku. Untuk itu, peneliti mohon kesediaan adik agar mengisi angket di bawah ini. Hasil dari pengisian angket akan digunakan untuk perbaikan dan peningkatan kualitas buku ini agar dapat dimanfaatkan dalam pembelajaran. Atas kesediaannya, peneliti ucapkan terima kasih.

Nama : Miftahul Husna Fauziah
Kelas : 2 (dua)
Sekolah : SDN I Nladeyan

B. Petunjuk Pengisian Angket

1. Sebelum mengisi angket ini mohon terlebih dahulu adik membaca atau mempelajari buku yang telah dikembangkan.
2. Berilah tanda silang (X) pada salah satu huruf A, B, C, D atau E pada jawaban sesuai dengan penilaian adik yang dianggap paling tepat.

C. Pertanyaan-pertanyaan Angket

1. Apakah buku bergambar flanel perkalian ini dapat memudahkan adik dalam belajar?

   X. sangat mudah   D. kurang mudah

   B. mudah   E. sulit

   C. cukup mudah

2. Apakah dengan menggunakan buku bergambar flanel perkalian ini memberi semangat adik dalam belajar?

   X. sangat memberi semangat   D. kurang memberi semangat

   B. memberi semangat   E. tidak memberi semangat

   C. cukup memberi semangat

3. Apakah adik senang belajar dengan menggunakan buku bergambar flanel perkalian ini?

   X. sangat mudah   D. kurang mudah

   B. mudah   E. sulit

   C. cukup mudah

4. Apakah bahasa yang digunakan dalam buku bergambar flanel perkalian ini mudah dipahami?

   X. sangat mudah dipahami   D. kurang mudah dipahami

   B. mudah dipahami   E. sulit dipahami

   C. cukup mudah dipahami

5. Apakah kegiatan pembelajaran dalam buku bergambar flanel perkalian ini mudah dilakukan?

   X. sangat mudah dilakukan   D. kurang mudah dilakukan

   B. mudah dilakukan   E. sulit dilakukan

   C. cukup mudah dilakukan

6. Apakah huruf dalam buku bergambar flanel perkalian ini mudah dibaca?

A. sangat mudah dibaca   D. kurang mudah dibaca

B. mudah dibaca   E. sulit dibaca

C. cukup mudah dibaca

7. Apakah gambar dalam buku bergambar flanel perkalian ini memberi semangat adik dalam belajar?

A. sangat memberi semangat   D. kurang memberi semangat

B. memberi semangat   E. tidak memberi semangat

C. cukup memberi semangat

8. Apakah contoh penjelasan dan soal-soal dalam buku bergambar flanel perkalian ini mudah dipahami?

A. sangat mudah dipahami   D. kurang mudah dipahami

B. mudah dipahami   E. sulit dipahami

C. cukup mudah dipahami

9. Menurut adik, bagaimana desain buku bergambar flanel perkalian ini?

A. sangat bagus   D. kurang bagus

B. bagus   E. tidak bagus

C. cukup bagus

10. Apakah media papan flanel dapat membantu Adik dalam mempelajari materi perkalian pada buku bergambar flanel ini?

A. sangat membantu   D. kurang membantu

B. membantu   E. tidak membantu

C. cukup membantu

Tuliskan komentar atau pendapat adik tentang buku bergambar flanel perkalian ini!

Buku ini sangat bagus dan bukunya bergambar mudah untuk mempelajari Buku ini

b. Main field testing

Angket Respon Siswa Terhadap Buku Bergambar Flanel
untuk Perkalian Kelas 2 SD/MI

A. **Pengantar**

Assalamu'alaikum Wr. Wb.

Adik, selain buku LKS yang sudah didapat, kalian juga bisa mempelajari beberapa buku lainnya untuk membantu adik dalam memahami materi pelajaran, salah satunya adalah buku bergambar flanel. Buku bergambar flanel ini ditujukan untuk siswa kelas 2 SD/MI pada mata pelajaran matematika materi perkalian. Buku bergambar flanel perkalian adalah buku yang terdiri dari beberapa gambar untuk memperjelas dan mempermudah dalam memahami konsep perkalian.

Sehubungan dengan penyusunan tugas akhir berupa skripsi dengan judul "Pengembangan Buku Bergambar Flanel untuk Perkalian Kelas 2 SD/MI", peneliti bermaksud untuk mengadakan pengecekan buku yang telah dibuat sebagai salah satu bahan ajar. Tujuan dari pengisian angket ini adalah untuk mengetahui kemenarikan buku. Untuk itu, peneliti mohon kesediaan adik agar mengisi angket di bawah ini. Hasil dari pengisian angket akan digunakan untuk perbaikan dan peningkatan kualitas buku ini agar dapat dimanfaatkan dalam pembelajaran. Atas kesediaannya, peneliti ucapkan terima kasih.

Nama : Alfalubna Azzahra Miftakhul Yulvianti

Kelas : 2

Sekolah: SD.N I Nglandeyan

B. **Petunjuk Pengisian Angket**

1. Sebelum mengisi angket ini mohon terlebih dahulu adik membaca atau mempelajari buku yang telah dikembangkan.
2. Berilah tanda silang (X) pada salah satu huruf A, B, C, D atau E pada jawaban sesuai dengan penilaian adik yang dianggap paling tepat.

C. Pertanyaan-pertanyaan Angket

1. Apakah buku bergambar flanel perkalian ini dapat memudahkan adik dalam belajar?

   A. sangat mudah   D. kurang mudah

   B. mudah   E. sulit

   C. cukup mudah

2. Apakah dengan menggunakan buku bergambar flanel perkalian ini memberi semangat adik dalam belajar?

   A. sangat memberi semangat   D. kurang memberi semangat

   B. memberi semangat   E. tidak memberi semangat

   C. cukup memberi semangat

3. Apakah adik senang belajar dengan menggunakan buku bergambar flanel perkalian ini?

   A. sangat mudah   D. kurang mudah

   B. mudah   E. sulit

   C. cukup mudah

4. Apakah bahasa yang digunakan dalam buku bergambar flanel perkalian ini mudah dipahami?

   A. sangat mudah dipahami   D. kurang mudah dipahami

   B. mudah dipahami   E. sulit dipahami

   C. cukup mudah dipahami

5. Apakah kegiatan pembelajaran dalam buku bergambar flanel perkalian ini mudah dilakukan?

   A. sangat mudah dilakukan   D. kurang mudah dilakukan

   B. mudah dilakukan   E. sulit dilakukan

   C. cukup mudah dilakukan

6. Apakah huruf dalam buku bergambar flanel perkalian ini mudah dibaca?

   ~~A.~~ sangat mudah dibaca   D. kurang mudah dibaca

   B. mudah dibaca   E. sulit dibaca

   C. cukup mudah dibaca

7. Apakah gambar dalam buku bergambar flanel perkalian ini memberi semangat adik dalam belajar?

   ~~A.~~ sangat memberi semangat   D. kurang memberi semangat

   B. memberi semangat   E. tidak memberi semangat

   C. cukup memberi semangat

8. Apakah contoh penjelasan dan soal-soal dalam buku bergambar flanel perkalian ini mudah dipahami?

   ~~A.~~ sangat mudah dipahami   D. kurang mudah dipahami

   B. mudah dipahami   E. sulit dipahami

   C. cukup mudah dipahami

9. Menurut adik, bagaimana desain buku bergambar flanel perkalian ini?

   ~~A.~~ sangat bagus   D. kurang bagus

   B. bagus   E. tidak bagus

   C. cukup bagus

10. Apakah media papan flanel dapat membantu Adik dalam mempelajari materi perkalian pada buku bergambar flanel ini?

   ~~A.~~ sangat membantu   D. kurang membantu

   B. membantu   E. tidak membantu

   C. cukup membantu

Tuliskan komentar atau pendapat adik tentang buku bergambar flanel perkalian ini!

buku bergambar flanel mudah untuk belajar dan huruf dalam buku bergambar flanel sangat mudah dibaca

Angket Respon Siswa Terhadap Buku Bergambar Flanel
untuk Perkalian Kelas 2 SD/MI

A. **Pengantar**

Assalamu'alaikum Wr. Wb.

Adik, selain buku LKS yang sudah didapat, kalian juga bisa mempelajari beberapa buku lainnya untuk membantu adik dalam memahami materi pelajaran, salah satunya adalah buku bergambar flanel. Buku bergambar flanel ini ditujukan untuk siswa kelas 2 SD/MI pada mata pelajaran matematika materi perkalian. Buku bergambar flanel perkalian adalah buku yang terdiri dari beberapa gambar untuk memperjelas dan mempermudah dalam memahami konsep perkalian.

Sehubungan dengan penyusunan tugas akhir berupa skripsi dengan judul "Pengembangan Buku Bergambar Flanel untuk Perkalian Kelas 2 SD/MI", peneliti bermaksud untuk mengadakan pengecekan buku yang telah dibuat sebagai salah satu bahan ajar. Tujuan dari pengisian angket ini adalah untuk mengetahui kemenarikan buku. Untuk itu, peneliti mohon kesediaan adik agar mengisi angket di bawah ini. Hasil dari pengisian angket akan digunakan untuk perbaikan dan peningkatan kualitas buku ini agar dapat dimanfaatkan dalam pembelajaran. Atas kesediaannya, peneliti ucapkan terima kasih.

Nama : Amilatun Nisa Amel
Kelas : 2 Dua
Sekolah: SDn 1 ngelan neyan

B. **Petunjuk Pengisian Angket**

1. Sebelum mengisi angket ini mohon terlebih dahulu adik membaca atau mempelajari buku yang telah dikembangkan.

2. Berilah tanda silang (X) pada salah satu huruf A, B, C, D atau E pada jawaban sesuai dengan penilaian adik yang dianggap paling tepat.

C. Pertanyaan-pertanyaan Angket

1. Apakah buku bergambar flanel perkalian ini dapat memudahkan adik dalam belajar?

   A. sangat mudah   D. kurang mudah
   B. mudah   E. sulit
   C. cukup mudah

2. Apakah dengan menggunakan buku bergambar flanel perkalian ini memberi semangat adik dalam belajar?

   A. sangat memberi semangat   D. kurang memberi semangat
   B. memberi semangat   E. tidak memberi semangat
   C. cukup memberi semangat

3. Apakah adik senang belajar dengan menggunakan buku bergambar flanel perkalian ini?

   A. sangat mudah   D. kurang mudah
   B. mudah   E. sulit
   C. cukup mudah

4. Apakah bahasa yang digunakan dalam buku bergambar flanel perkalian ini mudah dipahami?

   A. sangat mudah dipahami   D. kurang mudah dipahami
   B. mudah dipahami   E. sulit dipahami
   C. cukup mudah dipahami

5. Apakah kegiatan pembelajaran dalam buku bergambar flanel perkalian ini mudah dilakukan?

   A. sangat mudah dilakukan   D. kurang mudah dilakukan
   B. mudah dilakukan   E. sulit dilakukan
   C. cukup mudah dilakukan

6. Apakah huruf dalam buku bergambar flanel perkalian ini mudah dibaca?

    A. sangat mudah dibaca

    D. kurang mudah dibaca

    B. mudah dibaca

    E. sulit dibaca

    C. cukup mudah dibaca

7. Apakah gambar dalam buku bergambar flanel perkalian ini memberi semangat adik dalam belajar?

    A. sangat memberi semangat

    D. kurang memberi semangat

    B. memberi semangat

    E. tidak memberi semangat

    C. cukup memberi semangat

8. Apakah contoh penjelasan dan soal-soal dalam buku bergambar flanel perkalian ini mudah dipahami?

    A. sangat mudah dipahami

    D. kurang mudah dipahami

    B. mudah dipahami

    E. sulit dipahami

    C. cukup mudah dipahami

9. Menurut adik, bagaimana desain buku bergambar flanel perkalian ini?

    A. sangat bagus

    D. kurang bagus

    B. bagus

    E. tidak bagus

    C. cukup bagus

10. Apakah media papan flanel dapat membantu Adik dalam mempelajari materi perkalian pada buku bergambar flanel ini?

    A. sangat membantu

    D. kurang membantu

    B. membantu

    E. tidak membantu

    C. cukup membantu

Tuliskan komentar atau pendapat adik tentang buku bergambar flanel perkalian ini!

sangat menyenangkan sekali

Buku sudah lengkap

tulisan sudah terlihat

c. Operational field testing

Angket Respon Siswa Terhadap Buku Bergambar Flanel
untuk Perkalian Kelas 2 SD/MI

A. Pengantar

Assalamu'alaikum Wr. Wb.

Adik, selain buku LKS yang sudah didapat, kalian juga bisa mempelajari beberapa buku lainnya untuk membantu adik dalam memahami materi pelajaran, salah satunya adalah buku bergambar flanel. Buku bergambar flanel ini ditujukan untuk siswa kelas 2 SD/MI pada mata pelajaran matematika materi perkalian. Buku bergambar flanel perkalian adalah buku yang terdiri dari beberapa gambar untuk memperjelas dan mempermudah dalam memahami konsep perkalian.

Sehubungan dengan penyusunan tugas akhir berupa skripsi dengan judul "Pengembangan Buku Bergambar Flanel untuk Perkalian Kelas 2 SD/MI", peneliti bermaksud untuk mengadakan pengecekan buku yang telah dibuat sebagai salah satu bahan ajar. Tujuan dari pengisian angket ini adalah untuk mengetahui kemenarikan buku. Untuk itu, peneliti mohon kesediaan adik agar mengisi angket di bawah ini. Hasil dari pengisian angket akan digunakan untuk perbaikan dan peningkatan kualitas buku ini agar dapat dimanfaatkan dalam pembelajaran. Atas kesediaannya, peneliti ucapkan terima kasih.

Nama : Syalaisa Aninindya mayan Fa'una
Kelas : (dua) II
Sekolah: SDN 2 Nglandeyan

B. Petunjuk Pengisian Angket

1. Sebelum mengisi angket ini mohon terlebih dahulu adik membaca atau mempelajari buku yang telah dikembangkan.
2. Berilah tanda silang (X) pada salah satu huruf A, B, C, D atau E pada jawaban sesuai dengan penilaian adik yang dianggap paling tepat.

C. Pertanyaan-pertanyaan Angket

1. Apakah buku bergambar flanel perkalian ini dapat memudahkan adik dalam belajar?

   A. sangat mudah   D. kurang mudah

   B. mudah   E. sulit

   C. cukup mudah

2. Apakah dengan menggunakan buku bergambar flanel perkalian ini memberi semangat adik dalam belajar?

   A. sangat memberi semangat   D. kurang memberi semangat

   B. memberi semangat   E. tidak memberi semangat

   C. cukup memberi semangat

3. Apakah adik senang belajar dengan menggunakan buku bergambar flanel perkalian ini?

   A. sangat mudah   D. kurang mudah

   B. mudah   E. sulit

   C. cukup mudah

4. Apakah bahasa yang digunakan dalam buku bergambar flanel perkalian ini mudah dipahami?

   A. sangat mudah dipahami   D. kurang mudah dipahami

   B. mudah dipahami   E. sulit dipahami

   C. cukup mudah dipahami

5. Apakah kegiatan pembelajaran dalam buku bergambar flanel perkalian ini mudah dilakukan?

   A. sangat mudah dilakukan   D. kurang mudah dilakukan

   B. mudah dilakukan   E. sulit dilakukan

   C. cukup mudah dilakukan

6. Apakah huruf dalam buku bergambar flanel perkalian ini mudah dibaca?

   A. sangat mudah dibaca   D. kurang mudah dibaca

   B. mudah dibaca.   E. sulit dibaca

   C. cukup mudah dibaca

7. Apakah gambar dalam buku bergambar flanel perkalian ini memberi semangat adik dalam belajar?

   A. sangat memberi semangat   D. kurang memberi semangat

   B. memberi semangat   E. tidak memberi semangat

   C. cukup memberi semangat

8. Apakah contoh penjelasan dan soal-soal dalam buku bergambar flanel perkalian ini mudah dipahami?

   A. sangat mudah dipahami   D. kurang mudah dipahami

   B. mudah dipahami   E. sulit dipahami

   C. cukup mudah dipahami

9. Menurut adik, bagaimana desain buku bergambar flanel perkalian ini?

   A. sangat bagus   D. kurang bagus

   B. bagus   E. tidak bagus

   C. cukup bagus

10. Apakah media papan flanel dapat membantu Adik dalam mempelajari materi perkalian pada buku bergambar flanel ini?

   A. sangat membantu   D. kurang membantu

   B. membantu   E. tidak membantu

   C. cukup membantu

Tuliskan komentar atau pendapat adik tentang buku bergambar flanel perkalian ini!

Oh Buku ini Sudah bangus bu

/.

Angket Respon Siswa Terhadap Buku Bergambar Flanel
untuk Perkalian Kelas 2 SD/MI

A. Pengantar

Assalamu'alaikum Wr. Wb.

Adik, selain buku LKS yang sudah didapat, kalian juga bisa mempelajari beberapa buku lainnya untuk membantu adik dalam memahami materi pelajaran, salah satunya adalah buku bergambar flanel. Buku bergambar flanel ini ditujukan untuk siswa kelas 2 SD/MI pada mata pelajaran matematika materi perkalian. Buku bergambar flanel perkalian adalah buku yang terdiri dari beberapa gambar untuk memperjelas dan mempermudah dalam memahami konsep perkalian.

Sehubungan dengan penyusunan tugas akhir berupa skripsi dengan judul "Pengembangan Buku Bergambar Flanel untuk Perkalian Kelas 2 SD/MI", peneliti bermaksud untuk mengadakan pengecekan buku yang telah dibuat sebagai salah satu bahan ajar. Tujuan dari pengisian angket ini adalah untuk mengetahui kemenarikan buku. Untuk itu, peneliti mohon kesediaan adik agar mengisi angket di bawah ini. Hasil dari pengisian angket akan digunakan untuk perbaikan dan peningkatan kualitas buku ini agar dapat dimanfaatkan dalam pembelajaran. Atas kesediaannya, peneliti ucapkan terima kasih.

Nama : Mahana Sayanadif

Kelas : 2 (Dua)

Sekolah: SD 2 ngclandcayan

B. Petunjuk Pengisian Angket

1. Sebelum mengisi angket ini mohon terlebih dahulu adik membaca atau mempelajari buku yang telah dikembangkan.

2. Berilah tanda silang (X) pada salah satu huruf A, B, C, D atau E pada jawaban sesuai dengan penilaian adik yang dianggap paling tepat.

C. Pertanyaan-pertanyaan Angket

1. Apakah buku bergambar flanel perkalian ini dapat memudahkan adik dalam belajar?
    - A. sangat mudah
    - B. mudah
    - C. cukup mudah
    - D. kurang mudah
    - E. sulit

2. Apakah dengan menggunakan buku bergambar flanel perkalian ini memberi semangat adik dalam belajar?
    - A. sangat memberi semangat
    - B. memberi semangat
    - C. cukup memberi semangat
    - D. kurang memberi semangat
    - E. tidak memberi semangat

3. Apakah adik senang belajar dengan menggunakan buku bergambar flanel perkalian ini?
    - A. sangat mudah
    - B. mudah
    - C. cukup mudah
    - D. kurang mudah
    - E. sulit

4. Apakah bahasa yang digunakan dalam buku bergambar flanel perkalian ini mudah dipahami?
    - A. sangat mudah dipahami
    - B. mudah dipahami
    - C. cukup mudah dipahami
    - D. kurang mudah dipahami
    - E. sulit dipahami

5. Apakah kegiatan pembelajaran dalam buku bergambar flanel perkalian ini mudah dilakukan?
    - A. sangat mudah dilakukan
    - B. mudah dilakukan
    - C. cukup mudah dilakukan
    - D. kurang mudah dilakukan
    - E. sulit dilakukan

6. Apakah huruf dalam buku bergambar flanel perkalian ini mudah dibaca?

   A. sangat mudah dibaca   D. kurang mudah dibaca

   B. mudah dibaca   E. sulit dibaca

   C. cukup mudah dibaca

7. Apakah gambar dalam buku bergambar flanel perkalian ini memberi semangat adik dalam belajar?

   A. sangat memberi semangat   D. kurang memberi semangat

   B. memberi semangat   E. tidak memberi semangat

   C. cukup memberi semangat

8. Apakah contoh penjelasan dan soal-soal dalam buku bergambar flanel perkalian ini mudah dipahami?

   A. sangat mudah dipahami   D. kurang mudah dipahami

   B. mudah dipahami   E. sulit dipahami

   C. cukup mudah dipahami

9. Menurut adik, bagaimana desain buku bergambar flanel perkalian ini?

   A. sangat bagus   D. kurang bagus

   B. bagus   E. tidak bagus

   C. cukup bagus

10. Apakah media papan flanel dapat membantu Adik dalam mempelajari materi perkalian pada buku bergambar flanel ini?

   A. sangat membantu   D. kurang membantu

   B. membantu   E. tidak membantu

   C. cukup membantu

Tuliskan komentar atau pendapat adik tentang buku bergambar flanel perkalian ini!

Sangat mudah kalau memakai buku ini

Appendix XI (The value of pre-test)

Pre test	Nilai:

Pre test
SEMESTER II TAPEL 2017 SDN 2 NGLANDEYAN, BLORA

Mata Pelajaran : Matematika
Materi Pokok : Perkalian
Nama : Bambang andrea Tw
Kelas : II (2)
No Absen : (18)

Nilai: 72,5

A. **Kerjakan soal di bawah ini dengan teliti!**

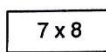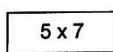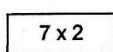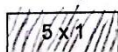1. Berilah tanda silang (X) pada salah satu jawaban di bawah ini yang benar!

5 + 5 + 5 = 15, sama artinya dengan ....

A. 3 + 5　　　　　C. 3 x 5
B. 5 + 3　　　　　D. 5 x 3

2. Isilah titik-titik di bawah ini dengan jawaban yang benar!
1 + 1 + 1 + 1 = 4, jika diubah ke dalam bentuk perkalian adalah .4 X 1 =.

3. Arsirlah jawaban di bawah ini yang hasil perkaliannya merupakan bilangan genap!

5 x 1	7 x 2	5 x 7	7 x 8

4. Jodohkanlah bentuk penulisan perkalian dengan bentuk penjumlahan berulangnya!

3 x 6		3 + 3 + 3 + 3 + 3 + 3
6 x 3		6 + 6 + 6

5. Berilah tanda silang (X) pada huruf B jika pernyataan benar dan pada huruf S jika pernyataan salah!

Semua bilangan dikalikan dengan 0 (nol) hasilnya bukan 0 (nol).　　B　　S

6. Isilah titik-titik di bawah ini dengan jawaban yang benar!
6 x 7 = .7. x 6

7. Berilah tanda silang (X) pada salah satu jawaban di bawah ini yang benar!
Di halaman rumah ada 7 tanaman bunga. Setiap tanaman disiram air 2 ember. Berapa banyak air yang dibutuhkan untuk menyiram seluruh pohon?
A. 5 ember　　　　C. 14 ember
B. 8 ember　　　　D. 21 ember

8. Perhatikan soal di bawah ini dan arsirlah pada salah satu jawaban yang benar!
Ada 30 tas di dalam kelas 2B. Setiap tas berisi 2 buku. Berapa banyak tas seluruhnya?!

2 x 30	3 x 20	30 x 2	20 x 3	Buku

9. Jodohkanlah bentuk penjumlahan berulang yang sesuai dengan penulisan perkaliannya!

| 5 + 5 + 5 + 5 + 5 + 5 + 5 +5 | | 5 x 8 |

| 8 + 8 + 8 + 8 + 8 | | 8 x 5 |

10. Berilah tanda silang (X) pada huruf B jika pernyataan benar dan pada huruf S jika pernyataan salah!

Hasil kali dari 3 x 4 sama dengan 4 x 3, karena berlaku sifat pertukaran (komutatif).

Ⓑ Ⓢ

B. Kerjakan soal di bawah ini dengan benar!

1. (15) Perhatikan gambar di bawah ini!

Ada 3 mobil.

Masing-masing mobil mempunyai roda 4.

Banyak roda mobil seluruhnya adalah 12

Bentuk penulisan perkaliannya adalah 3 X 3

2. $3 \times 0 = 3 + 3 + 3$
   $= 9$

3. $1 + 1 + 1 + 1 + 1 = 5 \times 1$
   $= 5$

4. $9 \times 10 = 10 \times 9$

5. Ada 2 tim sepak bola sedang bertanding di lapangan. Jika setiap tim terdiri dari 11 pemain sepak bola. Berapa banyaknya pemain sepak bola di lapangan? Tuliskan ke dalam bentuk perkalian!

11 + 11 = 22

11 X 11 = 110   ?

Selamat mengerjakan, semoga sukses...

80
65 +
145 : 2 = 72,5

Pre test	Nilai:
SEMESTER II TAPEL 2017 SDN 2 NGLANDEYAN, BLORA	

Mata Pelajaran : Matematika
Materi Pokok : Perkalian
Nama : Slamet rumadi
Kelas : 2. II dua
No Absen : 2

Nilai: 62,5

A. Kerjakan soal di bawah ini dengan teliti!

1. Berilah tanda silang (X) pada salah satu jawaban di bawah ini yang benar!

5 + 5 + 5 = 15, sama artinya dengan ....

A. 3 + 5   C. 3 x 5
B. 5 + 3   D. 5 x 3

2. Isilah titik-titik di bawah ini dengan jawaban yang benar!

1 + 1 + 1 + 1 = 4, jika diubah ke dalam bentuk perkalian adalah 1 x 4

3. Arsirlah jawaban di bawah ini yang hasil perkaliannya merupakan bilangan genap!

| 5 x 1 | 7 x 2 | 5 x 7 | 7 x 8 |

4. Jodohkanlah bentuk penulisan perkalian dengan bentuk penjumlahan berulangnya!

| 3 x 6 | | 3 + 3 + 3 + 3 + 3 + 3 |
| 6 x 3 | | 6 + 6 + 6 |

5. Berilah tanda silang (X) pada huruf B jika pernyataan benar dan pada huruf S jika pernyataan salah!

Semua bilangan dikalikan dengan 0 (nol) hasilnya bukan 0 (nol).   B   (S)

6. Isilah titik-titik di bawah ini dengan jawaban yang benar!
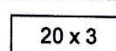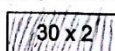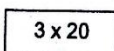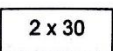
6 x 7 = 13 x 6

7. Berilah tanda silang (X) pada salah satu jawaban di bawah ini yang benar!

Di halaman rumah ada 7 tanaman bunga. Setiap tanaman disiram air 2 ember. Berapa banyak air yang dibutuhkan untuk menyiram seluruh pohon?

A. 5 ember   C. 14 ember
B. 8 ember   D. 21 ember

8. Perhatikan soal di bawah ini dan arsirlah pada salah satu jawaban yang benar!

Ada 30 tas di dalam kelas 2B. Setiap tas berisi 2 buku. Berapa banyak tas seluruhnya?!

| 2 x 30 | 3 x 20 | 30 x 2 | 20 x 3 | Buku

9. Jodohkanlah bentuk penjumlahan berulang yang sesuai dengan penulisan perkaliannya!

5 + 5 + 5 + 5 + 5 + 5 + 5 +5		5 x 8
8 + 8 + 8 + 8 + 8		8 x 5

10. Berilah tanda silang (X) pada huruf B jika pernyataan benar dan pada huruf S jika pernyataan salah!

Hasil kali dari 3 x 4 sama dengan 4 x 3, karena berlaku sifat pertukaran (komutatif).

B ~~S~~

B. Kerjakan soal di bawah ini dengan benar!

1. Perhatikan gambar di bawah ini!

Ada 3 mobil.

Masing-masing mobil mempunyai roda 4.

Banyak roda mobil seluruhnya adalah 12

Bentuk penulisan perkaliannya adalah 3X4

2. 3 x 0 = 0 + 0 + 3   ?
        = 30

3. 1 + 1 + 1 + 1 + 1 = 5 x 1.
                    = 5

4. 9 x 10 = 10 x 9

5. Ada 2 tim sepak bola sedang bertanding di lapangan. Jika setiap tim terdiri dari 11 pemain sepak bola. Berapa banyaknya pemain sepak bola di lapangan? Tuliskan ke dalam bentuk perkalian!

11   2 X1   ?

Selamat mengerjakan, semoga sukses...

40
60
100 : 2 = 50.

	Pre test	Nilai:
	SEMESTER II TAPEL 2017 SDN 2 NGLANDEYAN, BLORA	
Mata Pelajaran	: Matematika	
Materi Pokok	: Perkalian	50
Nama	: Syakilsa aminindya mayon Fa'una	
Kelas	: II	
No Absen	: 25	

A. Kerjakan soal di bawah ini dengan teliti!

1. Berilah tanda silang (X) pada salah satu jawaban di bawah ini yang benar!

5 + 5 + 5 = 15, sama artinya dengan ....

A. 3 + 5   C. 3 x 5

B. 5 + 3   D. 5 x 3 (X)

2. Isilah titik-titik di bawah ini dengan jawaban yang benar!

1 + 1 + 1 + 1 = 4, jika diubah ke dalam bentuk perkalian adalah 1 X 4

3. Arsirlah jawaban di bawah ini yang hasil perkaliannya merupakan bilangan genap!

| 5 x 1 (diarsir) | 7 x 2 | 5 x 7 | 7 x 8 |

4. Jodohkanlah bentuk penulisan perkalian dengan bentuk penjumlahan berulangnya!

| 3 x 6 | | 3 + 3 + 3 + 3 + 3 + 3 |

| 6 x 3 | | 6 + 6 + 6 |

5. Berilah tanda silang (X) pada huruf B jika pernyataan benar dan pada huruf S jika pernyataan salah!

Semua bilangan dikalikan dengan 0 (nol) hasilnya bukan 0 (nol).   B (X)   S

6. Isilah titik-titik di bawah ini dengan jawaban yang benar!

6 x 7 = 7 x 6

7. Berilah tanda silang (X) pada salah satu jawaban di bawah ini yang benar!

Di halaman rumah ada 7 tanaman bunga. Setiap tanaman disiram air 2 ember. Berapa banyak air yang dibutuhkan untuk menyiram seluruh pohon?

A. 5 ember   C. 14 ember

B. 8 ember (X)   D. 21 ember

8. Perhatikan soal di bawah ini dan arsirlah pada salah satu jawaban yang benar!

Ada 30 tas di dalam kelas 2B. Setiap tas berisi 2 buku. Berapa banyak buku seluruhnya?!

| 2 x 30 | 3 x 20 | 30 x 2 (diarsir) | 20 x 3 |

9. Jodohkanlah bentuk penjumlahan berulang yang sesuai dengan penulisan perkaliannya!

| 5 + 5 + 5 + 5 + 5 + 5 + 5 +5 |
| 8 + 8 + 8 + 8 + 8 |

| 5 x 8 |
| 8 x 5 |

10. Berilah tanda silang (X) pada huruf B jika pernyataan benar dan pada huruf S jika pernyataan salah!

| Hasil kali dari 3 x 4 sama dengan 4 x 3, karena berlaku sifat pertukaran (komutatif). |

Ⓑ Ⓢ

B. Kerjakan soal di bawah ini dengan benar!

1. Perhatikan gambar di bawah ini!

Ada 3. mobil.

Masing-masing mobil mempunyai roda 4.

Banyak roda mobil seluruhnya adalah 12.

Bentuk penulisan perkaliannya adalah 3x4

2. $3 \times 0 = 0 + 0 + 0$

$= 3.$

3. $1 + 1 + 1 + 1 + 1 = 5 \times 1.$

$= 5.$

4. $9 \times 10 = 10 \times 9$

5. Ada 2 tim sepak bola sedang bertanding di lapangan. Jika setiap tim terdiri dari 11 pemain sepak bola. Berapa banyaknya pemain sepak bola di lapangan? Tuliskan ke dalam bentuk perkalian!

$22 + 11 = 22$?

$2 \times 11 = 22$

Selamat mengerjakan, semoga sukses...

40
40
80 : 2 = 40

Pre test	Nilai:
SEMESTER II TAPEL 2017 SDN 2 NGLANDEYAN, BLORA	

Mata Pelajaran	: Matematika
Materi Pokok	: Perkalian
Nama	: Rizal
Kelas	: II (Dua)
No Absen	: 13

Nilai: (40)

A. Kerjakan soal di bawah ini dengan teliti!

1. Berilah tanda silang (X) pada salah satu jawaban di bawah ini yang benar!

   5 + 5 + 5 = 15, sama artinya dengan ....

   X 3 + 5   C. 3 x 5

   B. 5 + 3   D. 5 x 3

2. Isilah titik-titik di bawah ini dengan jawaban yang benar!

   1 + 1 + 1 + 1 = 4, jika diubah ke dalam bentuk perkalian adalah 1 x 4

3. Arsirlah jawaban di bawah ini yang hasil perkaliannya merupakan bilangan genap!

5 x 1	7 x 2	5 x 7	7 x 8

4. Jodohkanlah bentuk penulisan perkalian dengan bentuk penjumlahan berulangnya!

3 x 6		3 + 3 + 3 + 3 + 3 + 3
6 x 3		6 + 6 + 6

5. Berilah tanda silang (X) pada huruf B jika pernyataan benar dan pada huruf S jika pernyataan salah!

   Semua bilangan dikalikan dengan 0 (nol) hasilnya bukan 0 (nol).   (B)   (S)

6. Isilah titik-titik di bawah ini dengan jawaban yang benar!

   6 x 7 = 7 x 6

7. Berilah tanda silang (X) pada salah satu jawaban di bawah ini yang benar!

   Di halaman rumah ada 7 tanaman bunga. Setiap tanaman disiram air 2 ember. Berapa banyak air yang dibutuhkan untuk menyiram seluruh pohon?

   X 5 ember   C. 14 ember

   B. 8 ember   D. 21 ember

8. Perhatikan soal di bawah ini dan arsirlah pada salah satu jawaban yang benar!

   Ada 30 tas di dalam kelas 2B. Setiap tas berisi 2 buku. Berapa banyak tas seluruhnya?!

2 x 30	3 x 20	30 x 2	20 x 3

9. Jodohkanlah bentuk penjumlahan berulang yang sesuai dengan penulisan perkaliannya!

| 5 + 5 + 5 + 5 + 5 + 5 + 5 +5 | | 5 x 8 |

| 8 + 8 + 8 + 8 + 8 | | 8 x 5 |

10. Berilah tanda silang (X) pada huruf B jika pernyataan benar dan pada huruf S jika pernyataan salah!

| Hasil kali dari 3 x 4 sama dengan 4 x 3, karena berlaku sifat pertukaran (komutatif). | **B** **S** |

B. Kerjakan soal di bawah ini dengan benar!

1. Perhatikan gambar di bawah ini!

Ada 3. mobil.

Masing-masing mobil mempunyai roda 4.

Banyak roda mobil seluruhnya adalah 12.

Bentuk penulisan perkaliannya adalah 4×3

2. $3 \times 0 = 0 + 0 + 0$

$= 0$

3. $1 + 1 + 1 + 1 + 1 = 1 \times 5$

$= 5$

4. $9 \times 10 = 10 \times 9$

5. Ada 2 tim sepak bola sedang bertanding di lapangan. Jika setiap tim terdiri dari 11 pemain sepak bola. Berapa banyaknya pemain sepak bola di lapangan? Tuliskan ke dalam bentuk perkalian!

$2 \times 11 = 22$

$11 \times 2 = 22$

Selamat mengerjakan, semoga sukses...

$\begin{array}{r} 70 \\ 55 + \\ \hline 125 \end{array} : 2 = 62,5$

Appendix XII (The value of post-test)

    a.   The highest score of control group

Post test	Nilai:
SEMESTER II TAPEL 2017 SDN 2 NGLANDEYAN, BLORA	

Mata Pelajaran : Matematika
Materi Pokok : Perkalian
Nama : ....Sela.............
Kelas : .....2............ ....
No Absen : ....19...............

Nilai: 90

A. Kerjakan soal di bawah ini dengan teliti!

1. Berilah tanda silang (X) pada salah satu jawaban di bawah ini yang benar!

   3 + 3 + 3 + 3 = 12, sama artinya dengan ....

   A. 3 + 4   ⊠ 3 x 4
   B. 4 + 3   D. 4 x 3

2. Isilah titik-titik di bawah ini dengan jawaban yang benar!

   8 x 12 = 12 x 8

3. Arsirlah jawaban di bawah ini yang hasil perkaliannya merupakan bilangan genap!

   | 3 x 0 | 7 x 1 | //9 x 2// | 7 x 9 |

4. Jodohkanlah bentuk penulisan perkalian dengan bentuk penjumlahan berulangnya!

   | 4 x 5 | | 4 + 4 + 4 + 4 + 4 |
   | 5 x 4 | | 5 + 5 + 5 + 5 |

5. Berilah tanda silang (X) pada huruf B jika pernyataan benar dan pada huruf S jika pernyataan salah!

   | Dalam perkalian tidak berlaku sifat pertukaran, yaitu a x b = b x a | ⊗B | S |

6. Berilah tanda silang (X) pada salah satu jawaban di bawah ini yang benar!
   Di kebun ada 8 pohon mangga. Setiap pohon disiram air 7 ember. Berapa ember air yang dibutuhkan untuk menyiram seluruh pohon?

   A. 15   C. 78
   ⊠ 56   D. 87

7. Isilah titik-titik di bawah ini dengan jawaban yang benar!

   1 + 1 + 1 + 1 + 1 = 5, jika diubah ke dalam bentuk perkalian adalah .. 5 x 1

8. Arsirlah jawaban di bawah ini yang hasil perkaliannya adalah 24!

   | 2 x 7 | //4 x 6// | 4 x 8 | 8 x 6 |

9. Jodohkanlah bentuk penjumlahan berulang yang sesuai dengan penulisan perkaliannya!

| 8 + 8 + 8 + 8 + 8 + 8 + 8 | ●————————————● | 7 x 8 |
| 7 + 7 + 7 + 7 + 7 + 7 + 7 + 7 | ●————————————● | 8 x 7 |

10. Berilah tanda silang (X) pada huruf B jika pernyataan benar dan pada huruf S jika pernyataan salah!

| Semua bilangan dikalikan dengan 0 (nol) hasilnya sama dengan 0 (nol) | (B̸) (S) |

B. Jawablah soal di bawah ini dengan benar!

1. Perhatikan gambar di bawah ini!

   Ada .3 wadah buah apel.

   Masing-masing wadah berisi .6 buah apel.

   Banyak buah apel seluruhnya adalah .18

   Bentuk penulisan perkaliannya adalah .3X 6

2. Ninung menanam 4 tanaman bunga. Setiap tanaman berbunga 3. Berapa banyak bunga Ninung? Tuliskan ke dalam bentuk perkalian!

   4x3=12

3. Ada 5 ekor ayam di kandang. Setiap ayam berkaki dua. Berapa banyak kaki ayam seluruhnya? Tuliskan ke dalam bentuk perkalian!

   5x2= 10

4. Ada 2 tim sepak bola sedang bertanding di lapangan. Jika setiap tim terdiri dari 11 pemain sepak bola. Berapa banyaknya pemain sepak bola di lapangan? Tuliskan ke dalam bentuk perkalian!

   2X11=22

5. Tentukan pasangan bilangan yang hasil kalinya sudah ditentukan sebagai berikut!

48		
6	x	8
8	x	6
3	x	16
7	x	74

80
100
180 : 2 = 90

b. The lowest score of control group

	Post test	Nilai:
	SEMESTER II TAPEL 2017 SDN 2 NGLANDEYAN, BLORA	52,5

Mata Pelajaran : Matematika
Materi Pokok : Perkalian
Nama : MULIA
Kelas : II
No Absen : 11

A. Kerjakan soal di bawah ini dengan teliti!

1. Berilah tanda silang (X) pada salah satu jawaban di bawah ini yang benar!

3 + 3 + 3 + 3 = 12, sama artinya dengan ....

A. 3 + 4
B. 4 + 3
C. 3 x 4
D. 4 x 3 (X)

2. Isilah titik-titik di bawah ini dengan jawaban yang benar!

8 x 12 = 12 x 8

3. Arsirlah jawaban di bawah ini yang hasil perkaliannya merupakan bilangan genap!

| 3 x 0 | 7 x 1 | ~~9 x 2~~ | 7 x 9 |

4. Jodohkanlah bentuk penulisan perkalian dengan bentuk penjumlahan berulangnya!
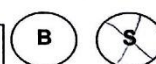
| 4 x 5 | ● | ● | 4 + 4 + 4 + 4 + 4 |
| 5 x 4 | ● | ● | 5 + 5 + 5 + 5 |

5. Berilah tanda silang (X) pada huruf B jika pernyataan benar dan pada huruf S jika pernyataan salah!

Dalam perkalian tidak berlaku sifat pertukaran, yaitu a x b = b x a   (B)   S

6. Berilah tanda silang (X) pada salah satu jawaban di bawah ini yang benar!

Di kebun ada 8 pohon mangga. Setiap pohon disiram air 7 ember. Berapa ember air yang dibutuhkan untuk menyiram seluruh pohon?

A. 15
B. 56
C. 78 (X)
D. 87

7. Isilah titik-titik di bawah ini dengan jawaban yang benar!

1 + 1 + 1 + 1 + 1 = 5, jika diubah ke dalam bentuk perkalian adalah 5 x 1 = 5

8. Arsirlah jawaban di bawah ini yang hasil perkaliannya adalah 24!

| 2 x 7 | 4 x 6 | ~~4 x 8~~ | 8 x 6 |

9. Jodohkanlah bentuk penjumlahan berulang yang sesuai dengan penulisan perkaliannya!

| 8 + 8 + 8 + 8 + 8 + 8 + 8 |

| 7 + 7 + 7 + 7 + 7 + 7 + 7 + 7 |

| 7 x 8 |

| 8 x 7 |

10. Berilah tanda silang (X) pada huruf B jika pernyataan benar dan pada huruf S jika pernyataan salah!

| Semua bilangan dikalikan dengan 0 (nol) hasilnya sama dengan 0 (nol) |

B ⊗S

B. Jawablah soal di bawah ini dengan benar!

1. Perhatikan gambar di bawah ini!

Ada 3. wadah buah apel.

Masing-masing wadah berisi 5. buah apel.

Banyak buah apel seluruhnya adalah 18. 15

Bentuk penulisan perkaliannya adalah 5x2=10

2. Ninung menanam 4 tanaman bunga. Setiap tanaman berbunga 3. Berapa banyak bunga Ninung? Tuliskan ke dalam bentuk perkalian!

   4x3 =12

3. Ada 5 ekor ayam di kandang. Setiap ayam berkaki dua. Berapa banyak kaki ayam seluruhnya? Tuliskan ke dalam bentuk perkalian!

   5x3=23

4. Ada 2 tim sepak bola sedang bertanding di lapangan. Jika setiap tim terdiri dari 11 pemain sepak bola. Berapa banyaknya pemain sepak bola di lapangan? Tuliskan ke dalam bentuk perkalian!

   2x11=22

5. Tentukan pasangan bilangan yang hasil kalinya sudah ditentukan sebagai berikut!

48		
1	x	1
2	x	2
3	x	3
4	x	4

50
55
105 : 2 = 52,5

c. The highest score of experiment group

	Post test	Nilai:
	SEMESTER II TAPEL 2017 SDN 2 NGLANDEYAN, BLORA	(95)

Mata Pelajaran : Matematika
Materi Pokok : Perkalian
Nama : Arjunadai Saputro
Kelas : ...2...
No Absen : ...7...

A. Kerjakan soal di bawah ini dengan teliti!

1. Berilah tanda silang (X) pada salah satu jawaban di bawah ini yang benar!

   3 + 3 + 3 + 3 = 12, sama artinya dengan ....

   A. 3 + 4   C. 3 x 4

   B. 4 + 3   D. 4 x 3

2. Isilah titik-titik di bawah ini dengan jawaban yang benar!

   8 x 12 = 12 x 8

3. Arsirlah jawaban di bawah ini yang hasil perkaliannya merupakan bilangan genap!

   | 3 x 0 | 7 x 1 | 9 x 2 | 7 x 9 |

4. Jodohkanlah bentuk penulisan perkalian dengan bentuk penjumlahan berulangnya!

   | 4 x 5 | ● | ● | 4 + 4 + 4 + 4 + 4 |
   | 5 x 4 | ● | ● | 5 + 5 + 5 + 5 |

5. Berilah tanda silang (X) pada huruf B jika pernyataan benar dan pada huruf S jika pernyataan salah!

   Dalam perkalian tidak berlaku sifat pertukaran, yaitu a x b = b x a   B   (S)

6. Berilah tanda silang (X) pada salah satu jawaban di bawah ini yang benar!

   Di kebun ada 8 pohon mangga. Setiap pohon disiram air 7 ember. Berapa ember air yang dibutuhkan untuk menyiram seluruh pohon?

   A. 15   C. 78

   B. 56   D. 87

7. Isilah titik-titik di bawah ini dengan jawaban yang benar!

   1 + 1 + 1 + 1 + 1 = 5, jika diubah ke dalam bentuk perkalian adalah 5 x 1

8. Arsirlah jawaban di bawah ini yang hasil perkaliannya adalah 24!

   | 2 x 7 | 4 x 6 | 4 x 8 | 8 x 6 |

9. Jodohkanlah bentuk penjumlahan berulang yang sesuai dengan penulisan perkaliannya!

| 8 + 8 + 8 + 8 + 8 + 8 + 8 |
| 7 + 7 + 7 + 7 + 7 + 7 + 7 + 7 |

| 7 x 8 |
| 8 x 7 |

10. Berilah tanda silang (X) pada huruf B jika pernyataan benar dan pada huruf S jika pernyataan salah!

| Semua bilangan dikalikan dengan 0 (nol) hasilnya sama dengan 0 (nol) |

Ⓑ Ⓢ

B. Jawablah soal di bawah ini dengan benar!

1. Perhatikan gambar di bawah ini!

Ada 3 wadah buah apel.

Masing-masing wadah berisi 6 buah apel.

Banyak buah apel seluruhnya adalah 18.

Bentuk penulisan perkaliannya adalah 3X6

2. Ninung menanam 4 tanaman bunga. Setiap tanaman berbunga 3. Berapa banyak bunga Ninung? Tuliskan ke dalam bentuk perkalian!

   $4 \times 3 = 3 + 3 + 3 + 3 = 12$

3. Ada 5 ekor ayam di kandang. Setiap ayam berkaki dua. Berapa banyak kaki ayam seluruhnya? Tuliskan ke dalam bentuk perkalian!

   $5 \times 2 = 2 + 2 + 2 + 2 + 2 = 10$

4. Ada 2 tim sepak bola sedang bertanding di lapangan. Jika setiap tim terdiri dari 11 pemain sepak bola. Berapa banyaknya pemain sepak bola di lapangan? Tuliskan ke dalam bentuk perkalian!

   $11 \times 2 = 22$

5. Tentukan pasangan bilangan yang hasil kalinya sudah ditentukan sebagai berikut!

48		
6	x	8
2	x	24
8	x	6
3	x	16

$$\begin{array}{r} 100 \\ 90 + \\ \hline 190 : 2 = 95 \end{array}$$

d. The lowest score of experiment group

Post test	Nilai:
SEMESTER II TAPEL 2017 SDN 2 NGLANDEYAN, BLORA	

Mata Pelajaran : Matematika
Materi Pokok : Perkalian
Nama : Rizqiaya mahmudsolehah
Kelas : II (DUA)
No Absen : 13

Nilai: (72,5)

A. Kerjakan soal di bawah ini dengan teliti!

1. Berilah tanda silang (X) pada salah satu jawaban di bawah ini yang benar!

   3 + 3 + 3 + 3 = 12, sama artinya dengan ....

   A. 3 + 4
   B. 4 + 3
   C. 3 x 4
   D. 4 x 3 (X)

2. Isilah titik-titik di bawah ini dengan jawaban yang benar!

   8 x 12 = 12 x 8

3. Arsirlah jawaban di bawah ini yang hasil perkaliannya merupakan bilangan genap!

   | 3 x 0 | //7X1// | 9 x 2 | 7 x 9 |

4. Jodohkanlah bentuk penulisan perkalian dengan bentuk penjumlahan berulangnya!

   | 4 x 5 | | 4 + 4 + 4 + 4 + 4 |
   | 5 x 4 | | 5 + 5 + 5 + 5 |

5. Berilah tanda silang (X) pada huruf B jika pernyataan benar dan pada huruf S jika pernyataan salah!

   Dalam perkalian tidak berlaku sifat pertukaran, yaitu a x b = b x a   B   (S)

6. Berilah tanda silang (X) pada salah satu jawaban di bawah ini yang benar!

   Di kebun ada 8 pohon mangga. Setiap pohon disiram air 7 ember. Berapa ember air yang dibutuhkan untuk menyiram seluruh pohon?

   A. 15
   B. 56
   C. 78 (X)
   D. 87

7. Isilah titik-titik di bawah ini dengan jawaban yang benar!

   1 + 1 + 1 + 1 + 1 = 5, jika diubah ke dalam bentuk perkalian adalah 5 x 1

8. Arsirlah jawaban di bawah ini yang hasil perkaliannya adalah 24!

   | 2 x 7 | //4X6// | 4 x 8 | 8 x 6 |

9. Jodohkanlah bentuk penjumlahan berulang yang sesuai dengan penulisan perkaliannya!

| 8 + 8 + 8 + 8 + 8 + 8 + 8 | | | 7 x 8 |

| 7 + 7 + 7 + 7 + 7 + 7 + 7 + 7 | | | 8 x 7 |

10. Berilah tanda silang (X) pada huruf B jika pernyataan benar dan pada huruf S jika pernyataan salah!

| Semua bilangan dikalikan dengan 0 (nol) hasilnya sama dengan 0 (nol) | B | (S) |

B. Jawablah soal di bawah ini dengan benar!

1. Perhatikan gambar di bawah ini!

(15)

Ada 3. wadah buah apel.

Masing-masing wadah berisi 6. buah apel.

Banyak buah apel seluruhnya adalah 18.

Bentuk penulisan perkaliannya adalah 6 X 3

2. Ninung menanam 4 tanaman bunga. Setiap tanaman berbunga 3. Berapa banyak bunga Ninung? Tuliskan ke dalam bentuk perkalian!

4 X 3 = 12

3. Ada 5 ekor ayam di kandang. Setiap ayam berkaki dua. Berapa banyak kaki ayam seluruhnya? Tuliskan ke dalam bentuk perkalian!

5 X 2 = 10 ..

4. Ada 2 tim sepak bola sedang bertanding di lapangan. Jika setiap tim terdiri dari 11 pemain sepak bola. Berapa banyaknya pemain sepak bola di lapangan? Tuliskan ke dalam bentuk perkalian!

11 X 2 = 22

5. Tentukan pasangan bilangan yang hasil kalinya sudah ditentukan sebagai berikut!

48		
6	x	8
8	x	6
3	x	16
4	x	12

$$\frac{\begin{array}{r}60\\85\end{array}}{145} : 2 = \boxed{72,5}$$

Appendix XIII (Lesson plan)

RENCANA PELAKSANAAN PEMBELAJARAN

NamaSekolah	**:** SDN 2 Nglandeyan
Mata Pelajaran	**:** Matematika
Kelas/semester	**:** 2 / II
Materi Pokok	**:** Perkalian
AlokasiWaktu	**:** 4 JP/ (4 x 35 menit)

A. Standar Kompetensi

3. Melakukan perkalian dan pembagian bilangan sampai dua angka.

B. Kompetensi Dasar

3.1 Melakukan perkalian bilangan yang hasilnya bilangan dua angka.

C. Indikator

1. Menjelaskan arti perkalian bilangan asli yang kurang dari 10.
2. Menyimpulkan hasil perkalian dengan bilangan 0 dan 1, serta hasil mengalikan bilangan 2.
3. Menyimpulkan sifat pertukaran pada perkalian bilangan asli yang kurang dari 10.
4. Menggunakan perkalian bilangan asli yang kurang dari 10 dalam penerapan kehidupan sehari-hari.

D. Tujuan Pembelajaran

1. Dengan mengamati teks naskah dan gambar kedua tangan, siswa dapat menjelaskan arti perkalian bilangan asli yang kurang dari 10 dengan percaya diri.
2. Dengan mengamati bentuk penulisan perkalian berdasarkan gambar apel hijau, siswa dapat menyimpulkan hasil perkalian bilangan 0 dengan tepat.

3. Dengan mengamati bentuk penulisan perkalian berdasarkan gambar baju, siswa dapat menyimpulkan hasil perkalian bilangan 1 dengan tepat.

4. Dengan mengamati bentuk penulisan perkalian berdasarkan gambar buku tulis, siswa dapat menyimpulkan hasil mengalikan bilangan 2 dengan tepat.

5. Dengan mengamati bentuk penulisan perkalian pada kedua susunan buah pir yang berbeda, siswa dapat menyimpulkan sifat pertukaran pada perkalian bilangan asli yang kurang dari 10 dengan tepat.

6. Dengan menghitung banyak objek dari gambar pada buku atau papan flanel, siswa dapat menggunakan perkalian bilangan asli yang kurang dari 10 dalam penerapan kehidupan sehari-hari.

E. Materi

F. Metode Pembelajaran

Tanya jawab, ceramah, praktek dan penugasan.

G. Media

Papan flanel dan objeknya.

H. Sumber Belajar

Buku bergambar flanel perkalian.

Diri sendiri.

I. Langkah-langkah pembelajaran

1. Pendahuluan (10 menit)

a. Siswa menjawab salam dari guru, dilanjutkan dengan membaca doa belajar bersama.

b. Siswa ditanyai kabar dilanjutkan dengan mengabsensi disertai dengan "Password".

c. Siswa dikondisikan untuk siap dan semangat menerima pelajaran melalui lagu dan macam tepuk. *(kalau kau suka duduk manis, tepuk konsentrasi, tepuk diam, tepuk siap)*

d. Siswa mendengarkan penjelasan guru tentang materi yang akan dipelajari dan manfaat dalam kehidupan sehari-hari.

e. Siswa mendengarkan penjelasan guru tentang langkah kegiatan yang akan ditempuh dalam pembelajaran.

J. Kegiatan Inti (125 menit)

Perkalian sebagai penjumlahan berulang

a. Siswa mengamati kedua tangan diri masing-masing.

b. Siswa dan guru saling tanya jawab untuk mengarahkan kepahaman siswa.

c. Siswa membaca teks naskah pada buku tentang perkalian sebagai penjumlahan berulang.

d. Siswa menyampaikan pendapatnya tentang arti perkalian pada kegiatan "Ayo Berkomentar".

e. Guru memberikan penguatan tentang arti perkalian dan cara pengerjaannya melalui media papan flanel.

f. Siswa mengerjakan soal latihan melalui praktek menempel objek pada papan flanel dan menghitungnya.

g. Siswa menjawab soal-soal pada kegiatan "Siapa Berani".

Perkalian dengan bilangan 0

h. Siswa mengamati bentuk penulisan perkalian berdasarkan gambar apel hijau.

i. Siswa menyampaikan pendapatnya tentang perkalian bilangan 0 pada kegiatan "Ayo Berkomentar"

j. Guru memberikan penguatan tentang perkalian bilangan 0.

k. Siswa mengerjakan soal latihan melalui praktek menempel objek pada papan flanel dan menghitungnya.

l. Siswa menjawab soal-soal pada kegiatan "Siapa Berani".

Perkalian dengan bilangan 1

m. Siswa mengamati bentuk penulisan perkalian berdasarkan gambar baju.

n. Siswa menyampaikan pendapatnya tentang perkalian bilangan 1 pada kegiatan "Ayo Berkomentar"

o. Guru memberikan penguatan tentang perkalian bilangan 1.

p. Siswa mengerjakan soal latihan melalui praktek menempel objek pada papan flanel dan menghitungnya.

q. Siswa menjawab soal-soal pada kegiatan "Siapa Berani".

Mengalikan bilangan 2

r. Siswa mengamati bentuk penulisan perkalian berdasarkan gambar buku.

s. Siswa menyampaikan pendapatnya tentang hasil mengalikan bilangan 2 pada kegiatan "Ayo Berkomentar"

t. Guru memberikan penguatan tentang mengalikan bilangan 2.

u. Siswa mengerjakan soal latihan melalui praktek menempel objek pada papan flanel dan menghitungnya.

v. Siswa menjawab soal-soal pada kegiatan "Siapa Berani".

Sifat penukaran pada perkalian

w. Siswa mengamati bentuk penulisan perkalian pada kedua susunan buah pir yang berbeda.

x. Siswa menyampaikan pendapatnya tentang bentuk penulisan perkalian di atas pada kegiatan "Ayo Berkomentar"

y. Guru memberikan penguatan tentang sifat pertukaran pada perkalian.

z. Siswa mengerjakan soal latihan melalui praktek menempel objek pada papan flanel dan menghitungnya.

aa.   Siswa menjawab soal-soal pada kegiatan "Siapa Berani".

Penerapan perkalian dalam kehidupan

bb.   Siswa mengerjakan soal cerita yang ada kaitannya dengan perkalian melalui praktek menempel objek pada papan flanel dan menghitungnya.

cc.   Siswa mengerjakan soal test untuk mengetahui tingkat pemahaman siswa terhadap konsep perkalian. *(soal post test)*

K. Penutup (10 menit)

a. Siswa melakukan refleksi dengan menjawab pertanyaan yang diberikan oleh guru. *(apa saja yang telah kita pelajari hari ini?)*

b. Siswa dan guru bersama-sama membaca doa akhir belajar.

c. Siswa menjawab salam dari guru

L. Penilaian

1. Penilaian Sikap

a. Pengamatan

Berilah tanda centang (√) pada kolom di bawah ini!

No.	Nama Siswa	Perubahan Tingkah Laku								
		Cermat			Percaya diri			Bertanggung jawab		
		SB	B	PB	SB	B	PB	SB	B	PB
1.										
2.										
3.										
4.										
5.										

2. Penilaian Pengetahuan

a. Tes tulis

Terlampir

3. **Penilaian Keterampilan**

   a. **Unjuk kerja**

   Mengerjakan soal latihan pada buku atau media papan flanel.

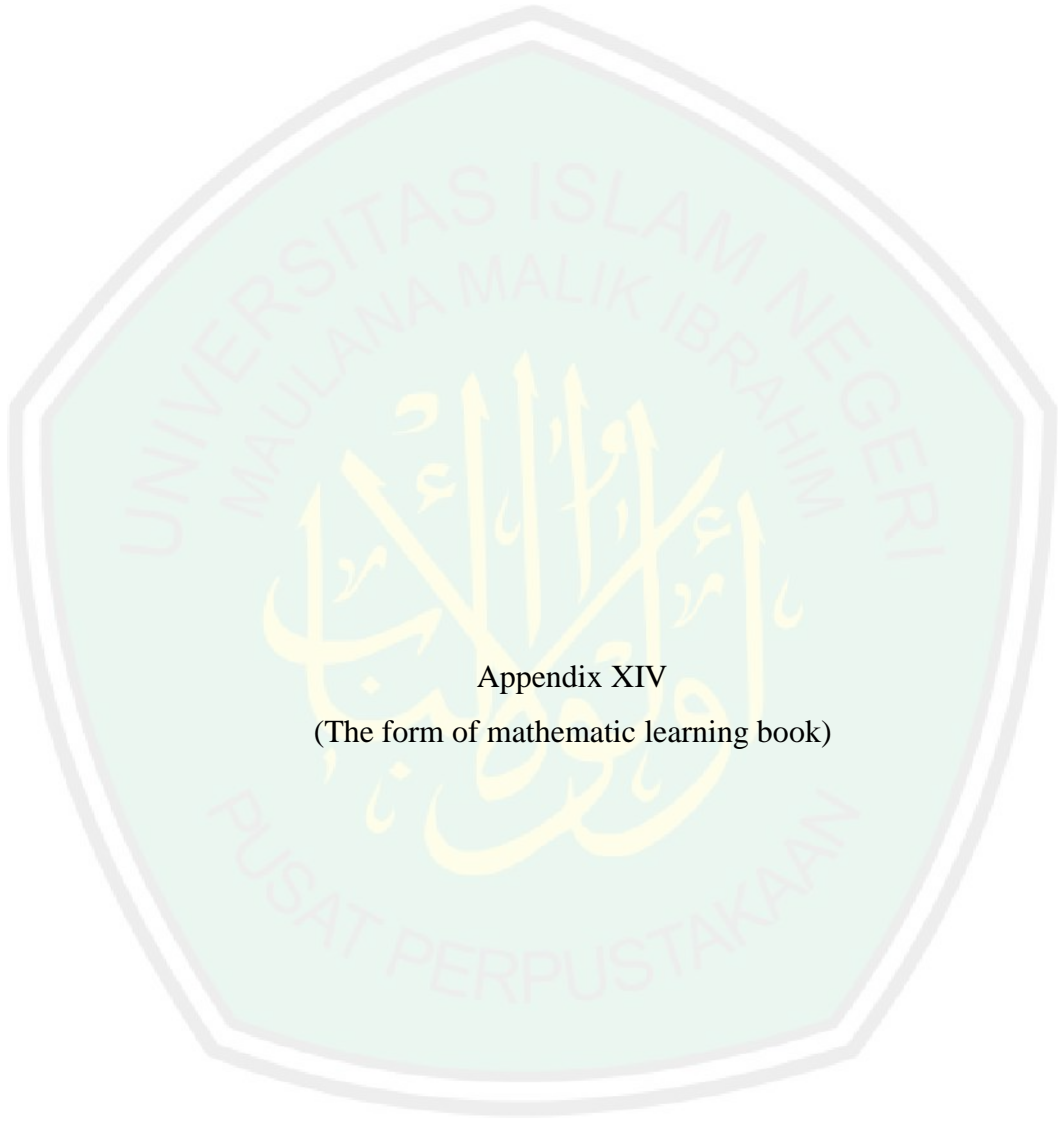   Berilah tanda centang (√) pada kolom di bawah ini!

No.	Nama Siswa	Baik Sekali	Baik	Cukup	Perlu Bimbingan
1.					
2.					
3.					
4.					
5.					

Mengetahui,   Blora, 13 Mei 2017

Guru Kelas 2   Praktikan Kelas 2

Drs. Noer Syamsu   Dita Safitri

NIP. 196105191982011002   NIM 13140033

Appendix XIV

(The form of mathematic learning book)

Buku Ajar Matematika
PERKALIAN

$3 + 3 + 3 + 3$

$4 \times 3 = 12$

Matematika
Untuk SD/MI

Kelas **2**

Dita Safitri

Kata Pengantar

Alhamdulillah, atas limpahan rahmat, nikmat, taufik, hidayah, serta inayah Allah sehingga penulis dapat menyelesaikan pembuatan buku ajar matematika untuk perkalian kelas 2 SD/MI.

Struktur materi dalam buku ini telah disesuaikan dengan standar isi dan kompetensi dasar matematika SD/MI khususnya materi perkalian.

Hampir setiap bagian dari hidup kita mengandung matematika, untuk dapat menghargai bahwa matematika adalah aktivitas manusia sehari-hari. Maka buku ini disusun dengan berbagai permasalahan dalam kehidupan sehari-hari yang ada kaitannya dengan perkalian. Dilengkapi dengan ilustrasi gambar (foto) objek yang terbuat dari flanel dan telah dibuat mirip dengan aslinya.

Semoga buku ini dapat meningkatkan pemahaman siswa terhadap konsep perkalian kelas 2 SD/MI dan bermanfaat untuk pengembangan ilmu pengetahuan.

Malang, Maret 2017

Penulis

Daftar Isi

Pemetaan SK, KD dan Indikator

Perkalian

STANDAR KOMPETENSI
3. Melakukan perkalian dan pembagian bilangan sampai dua angka

KOMPETENSI DASAR
3.1 Melakukan perkalian bilangan yang hasilnya bilangan dua angka

Indikator
1. Menjelaskan arti perkalian bilangan asli yang kurang dari 10
2. Menyimpulkan hasil perkalian dengan bilangan 0 dan 1 serta mengalikan bilangan 2
3. Menyimpulkan sifat pertukaran pada perkalian bilangan asli yang kurang dari 10
4. Menggunakan perkalian bilangan asli yang kurang dari 10 dalam penerapan kehidupan sehari-hari

Petunjuk Penggunaan Buku

Pemetaan SK, KD, dan Indikator
Menyajikan kompetensi yang harus dicapai oleh siswa

Peta Konsep
Memudahkan siswa untuk memahami alur pembelajaran

Judul Topik
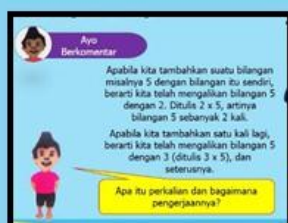Mengetahui materi yang akan dipelajari
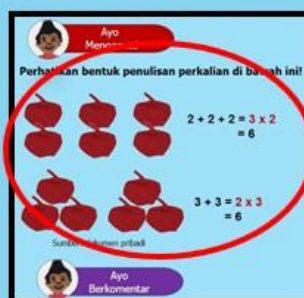
Materi Pembelajaran
Mendorong siswa untuk membangun pengetahuan sendiri

v

Ayo Mengamati
Pembelajaran dimulai dengan pengantar "Mengamati Gambar"

Ayo Berkomentar
Kegiatan memberikan komentar berdasarkan gambar yang diamati

Kini Aku Tahu
Menyajikan konsep perkalian pada setiap pokok bahasan

Ayo Berlatih
Mengerjakan soal latihan pada setiap pokok bahasan

Siapa Berani

A. Kerjakan soal di bawah ini dengan teliti!

1. $2 \times 3 = \_ + \_ = \_$
2. $3 \times 4 = \_ + \_ + \_ = \_$
3. $4 \times 6 = \_ + \_ + \_ = \_$
4. $6 \times 7 = \_ + \_ + \_ + \_ + \_ = \_$

A. Jawablah soal di bawah ini dengan benar!

1. $5 \times 6 = \_$
2. $6 \times 7 = \_$
3. $7 \times 8 = \_$
4. $8 \times 9 = \_$

Siap Berani
Mengerjakan soal tanpa representasi gambar

Rangkuman

1. Perkalian merupakan penjumlahan berulang bilangan yang sama.
2. Semua bilangan dikalikan dengan bilangan 0 (nol) hasilnya sama dengan 0 (nol).
3. Semua bilangan dikalikan dengan bilangan 1 (satu) hasilnya sama dengan bilangan itu sendiri (tetap).
4. Mengalikan bilangan 2 dengan suatu bilangan hasilnya merupakan bilangan genap.
5. Dalam perkalian berlaku sifat pertukaran (komutatif), yaitu $a \times b = b \times a$.

Rangkuman
Berisi rangkuman materi yang telah dipelajari

Uji Kompetensi

A. Kerjakan soal di bawah ini dengan teliti!
1. Berilah tanda silang (X) pada salah satu jawaban di bawah ini yang benar!

$3 + 3 + 3 + 3 = 12$, sama artinya dengan ....
A. $3 + 4$ C. 3×4
B. $4 + 3$ D. 4×3

2. Isilah titik-titik di bawah ini dengan jawaban yang benar!
$8 \times 12 = \_ \times 8$

3. Arsirlah jawaban di bawah ini yang hasil perkaliannya merupakan bilangan genap!

3×0 7×1 9×2 7×9

Uji Kompetensi
Mengerjakan soal untuk mengukur pemahaman siswa terhadap materi yang telah dipelajari

Peta Konsep

Konsep
(sebagai penjumlahan berulang)

Perkalian

Dengan bilangan 0, 1, dan 2

Sifat Pertukaran
(a x b = b x a)

Penerapan dalam kehidupan

1. Perkalian Sebagai Penjumlahan Berulang

Ayo Mengamati

Sekarang coba amati kedua tanganmu!
Satu tangan terdiri dari 5 jari.
Kamu mempunyai dua tangan, maka
banyaknya jari tanganmu adalah
$2 \times 5 = 5 + 5 = 10$.
Jadi banyak jari tanganmu adalah 10 jari.
Dalam menghitung jari tangan, kamu
telah mengalikan dua bilangan.

Sumber: dokumen pribadi

Ayo Berkomentar

Apabila kita tambahkan suatu bilangan
misalnya 5 dengan bilangan itu sendiri,
berarti kita telah mengalikan bilangan 5
dengan 2. Ditulis 2 x 5, artinya
bilangan 5 sebanyak 2 kali.

Apabila kita tambahkan satu kali lagi,
berarti kita telah mengalikan bilangan 5
dengan 3 (ditulis 3 x 5), dan
seterusnya.

Apa itu perkalian dan bagaimana
pengerjaannya?

1

Kini Aku Tahu

Perkalian bilangan asli merupakan penjumlahan berulang bilangan yang sama.

Perhatikan contoh pengerjaan perkalian berikut ini!

- ❑ Berapa banyak tangan kita?
  (2 tangan)
- ❑ Berapa banyak jari setiap tangan?
  (5 jari)
- ❑ Berapa banyak jari seluruhnya?
  (5 + 5 = 10)

Sumber: dokumen pribadi

Ditulis dalam bentuk perkalian yaitu:
(2 x 5 = 10)

Jadi banyak jari tangan kita seluruhnya adalah 10 jari.

2

Ayo Berlatih

Apa yang kamu lakukan untuk menghitung banyaknya roda mobil?

Sumber: dokumen pribadi

- ❑ Berapa banyak mobil?
  (… mobil)
- ❑ Berapa banyak roda setiap mobil?
  (… roda)
- ❑ Berapa banyak roda seluruhnya?
  (… + … + … + … + … = …)

Tuliskan dalam bentuk perkalian!
(… x … = …)

3

Siapa Berani

A **Kerjakan soal di bawah ini dengan teliti!**

1. 2 x 3 = ... + ... = ...
2. 3 x 4 = ... + ... + ... = ...
3. 4 x 6 = ... + ... + ... + ... = ...
4. 6 x 7 = ... + ... + ... + ... + ... + ... = ...

B **Jawablah soal di bawah ini dengan benar!**

1. 5 x 6 = ...
2. 6 x 7 = ...
3. 7 x 8 = ...
4. 8 x 9 = ...

2. Perkalian dengan Bilangan 0

Ayo Mengamati

Amati gambar di bawah ini dengan teliti!

Sumber: dokumen pribadi

Ayo Berkomentar

Berdasarkan gambar di atas, banyak apel merah adalah

| 2 | x | 0 | = | 0 | + | 0 |

| = | 0 |

Berikan komentarmu tentang perkalian dengan bilangan 0 !

5

Kini Aku Tahu

Semua bilangan asli dikalikan dengan bilangan 0 (nol) hasilnya sama dengan 0 (nol).

Ayo Berlatih

Terdapat ice cream rasa strawberry dengan warna pink. Apa yang kamu lakukan untuk menghitung banyaknya ice cream rasa anggur?

Sumber: dokumen pribadi

❑ Berapa banyak kelompok ice cream?
   (... kelompok)
❑ Berapa banyak ice cream rasa anggur setiap kelompok?
   (... ice cream)
❑ Berapa banyak ice cream rasa anggur seluruhnya?
   (... + ... + ... = ...)

Tuliskan dalam bentuk perkalian!
(... x ... = ...)

Siapa Berani

A Kerjakan soal di bawah ini dengan teliti!

1. $3 \times 0 = \ldots + \ldots + \ldots = \ldots$
2. $4 \times 0 = \ldots + \ldots + \ldots + \ldots = \ldots$
3. $5 \times 0 = \ldots + \ldots + \ldots + \ldots + \ldots = \ldots$
4. $6 \times 0 = \ldots + \ldots + \ldots + \ldots + \ldots + \ldots = \ldots$

B Jawablah soal di bawah ini dengan benar!

1. $7 \times 0 = \ldots$
2. $8 \times 0 = \ldots$
3. $9 \times 0 = \ldots$
4. $10 \times 0 = \ldots$

3. Perkalian dengan Bilangan 1

Ayo Mengamati

Sumber: dokumen pribadi

Ayo Berkomentar

Berdasarkan gambar di atas, banyak baju seluruhnya adalah

| 4 | x | 1 | = | 1 | + | 1 | + | 1 | + | 1 |

| = | 4 |

Berikan komentarmu tentang perkalian dengan bilangan 1!

Kini Aku Tahu

Semua bilangan asli dikalikan dengan bilangan 1 (satu) hasilnya sama dengan bilangan itu sendiri (tetap).

Ayo Berlatih

Apa yang kamu lakukan untuk menghitung banyaknya strawbery?

Sumber: dokumen pribadi

Banyak strawbery seluruhnya adalah
(... + ... + ... + ... + ... = ...)

Tuliskan dalam bentuk perkalian!
(... x ... = ...)

Siapa Berani

A Kerjakan soal di bawah ini dengan teliti!

1. 1 x 1 = …
2. 2 x 1 = … + … = …
3. 3 x 1 = … + … + … = …
4. 4 x 1 = … + … + … + … = …

B Jawablah soal di bawah ini dengan benar!

1. 17 x 1 = …
2. 22 x 1 = …
3. 25 x 1 = …
4. 30 x 1 = …

4. Mengalikan Bilangan 2

Ayo Mengamati

Amati gambar di bawah ini dengan teliti!

Sumber: dokumen pribadi

Ayo Berkomentar

Berdasarkan gambar di atas terdapat dua buku tulis, setiap buku tulis terdiri dari 36 halaman. Banyak halaman seluruhnya adalah

2	x	36	=	36	+	36
			=	72		

Berikan komentarmu tentang perkalian dengan bilangan 2!

Kini Aku Tahu

Mengalikan bilangan 2 dengan suatu bilangan hasilnya merupakan bilangan genap.

Contoh: 2 x **5** = **5** + **5** = 10

Tambahkan saja

Ayo Berlatih

Apa yang kamu lakukan untuk menghitung banyak roda becak seluruhnya?

Sumber: dokumen pribadi

❑ Berapa banyak becak?
(... becak)
❑ Berapa banyak roda setiap becak?
(... roda)
❑ Berapa banyak roda becak seluruhnya?
(... + ... = ...)

Tuliskan dalam bentuk perkalian!
(... x ... = ...)

A Kerjakan soal di bawah ini dengan teliti!

1. 2 x 8 = ... + ... = ...
2. 2 x 15 = ... + ... = ...
3. 2 x 20 = ... + ... = ...
4. 2 x 35 = ... + ... = ...

B Jawablah soal di bawah ini dengan benar!

1. 2 x 12 = ...
2. 2 x 21 = ...
3. 2 x 27 = ...
4. 2 x 30 = ...

4. Sifat Penukaran pada Perkalian

Ayo Mengamati

Perhatikan bentuk penulisan perkalian di bawah ini!

$2 + 2 + 2 = 3 \times 2$
$= 6$

$3 + 3 = 2 \times 3$
$= 6$

Sumber: dokumen pribadi

Ayo Berkomentar

Apa yang kamu temukan tentang bentuk penulisan perkalian pada susunan buah pir yang pertama dan kedua? Bagaimana hasil perkaliannya?

Berikan komentarmu tentang bentuk penulisan perkalian di atas!

14

Kini Aku Tahu

Hasil perkalian jika kita tukarkan letak bilangan-bilangannya, ternyata hasilnya sama.

Jadi dalam perkalian berlaku sifat pertukaran (komutatif).

$$a \times b = b \times a$$

Ayo Berlatih

Tuliskan bentuk perkalian berdasarkan gambar di bawah ini!

Sumber: dokumen pribadi

... + ... + ... + ... + ... = ... x ...

= ...

Sumber: dokumen pribadi

... + ... = ... x ...

= ...

15

Siapa Berani

A Kerjakan soal di bawah ini dengan teliti!

1. $3 \times 4 = \ldots + \ldots + \ldots = \ldots$
$4 \times 3 = \ldots + \ldots + \ldots + \ldots = \ldots$

2. $5 \times 6 = \ldots + \ldots + \ldots + \ldots + \ldots = \ldots$
$6 \times 5 = \ldots + \ldots + \ldots + \ldots + \ldots + \ldots = \ldots$

B Jawablah soal di bawah ini dengan benar!

1. $7 \times 8 = \ldots$
$8 \times 7 = \ldots$

2. $9 \times 10 = \ldots$
$10 \times 9 = \ldots$

5. Penerapan Perkalian dalam Kehidupan

Ayo Mengamati

Sumber: dokumen pribadi

Keluarga Pak Somat terdiri dari 4 orang yaitu Pak Somat, Bu Inah, Dudung dan Ninung. Jika setiap orang mempunyai 2 kaki. Berapa banyak kaki pada keluarga Pak Somat?

❑ Berapa banyak orang pada keluarga Pak Somat?

....

❑ Berapa banyak kaki setiap orang?

....

❑ Berapa banyak kaki seluruhnya?

(... + ... + ... + ... = ...)

Tuliskan dalam bentuk perkalian!

(... x ... = ...)

17

Ayo Mengamati

Amati gambar di bawah ini dengan teliti!

Sumber: dokumen pribadi

Pagi hari Bu Inah memasak kentang untuk sarapan pagi keluarganya. Setiap mangkuk terdapat 3 kentang. Berapa banyak kentang yang telah dimasak oleh Bu Inah?

- ❑ Berapa banyak mangkuk untuk sarapan keluarga pak Somat?

  ....
- ❑ Berapa banyak kentang setiap mangkuk?

  ....
- ❑ Berapa banyak kentang seluruhnya?

  (... + ... + ... + ... = ...)

Tuliskan dalam bentuk perkalian!

(... x ... = ...)

Ayo Mengamati

Amati gambar di bawah ini dengan teliti!

Sumber: dokumen pribadi

Dudung dan Ninung hendak pergi ke sekolah dengan sepeda. Setiap sepeda beroda dua. Berapa banyak roda sepeda seluruhnya?

❑ Berapa banyak sepeda?

....

❑ Berapa banyak roda setiap sepeda?

....

❑ Berapa banyak roda sepeda seluruhnya?

(... + ... = ...)

Tuliskan dalam bentuk perkalian!

(... x ... = ...)

Ayo Mengamati

Amati gambar di bawah ini dengan teliti!

Sumber: dokumen pribadi

Setelah pulang sekolah, Dudung dan Ninung membantu orang tua memetik apel di kebun. Ada 6 keranjang apel, masing-masing berisi 6 apel. Berapa banyak jumlah apel yang sudah dipetik?

❑ Berapa banyak keranjang apel?

....

❑ Berapa banyak apel setiap keranjang?

....

❑ Berapa banyak apel seluruhnya?

(... + ... + ... + ... + ... + ... = ...)

Tuliskan dalam bentuk perkalian!

(... x ... = ...)

Ayo Mengamati

Amati gambar di bawah ini dengan teliti!

Menjelang petang, keluarga Pak Somat sibuk memasukkan ayam ke dalam kandang. Terdapat tiga kandang, jika masing-masing kandang muat 4 ayam, berapa banyak ayam seluruhnya?

❑ Berapa banyak kandang ayam?

....

❑ Berapa banyak ayam setiap kandang?

....

❑ Berapa banyak ayam seluruhnya?

(... + ... + ... = ...)

Tuliskan dalam bentuk perkalian!

(... x ... = ...)

Ayo Mengamati

Amati gambar di bawah ini dengan teliti!

Ketika malam, pak Somat menonton sepak bola di TV. Tim garuda meraih kemenangan 5 kali. Setiap menang tim garuda telah berhasil mencetak 2 gol. Berapa banyak gol yang telah diraih seluruhnya?

- ❑ Berapa banyak tim garuda meraih kemenangan?
  ....
- ❑ Berapa banyak gol setiap kemenangan?
  ....
- ❑ Berapa banyak gol seluruhnya?
  (... + ... + ... + ... + ... = ...)

Tuliskan dalam bentuk perkalian!
(... x ... = ...)

Rangkuman

1. Perkalian merupakan penjumlahan berulang bilangan yang sama.
2. Semua bilangan dikalikan dengan bilangan 0 (nol) hasilnya sama dengan 0 (nol).
3. Semua bilangan dikalikan dengan bilangan 1 (satu) hasilnya sama dengan bilangan itu sendiri (tetap)
4. Mengalikan bilangan 2 dengan suatu bilangan hasilnya merupakan bilangan genap.
5. Dalam perkalian berlaku sifat pertukaran (komutatif), yaitu axb = bxa.

Uji Kompetensi

A. Kerjakan soal di bawah ini dengan teliti!
1. Berilah tanda silang (X) pada salah satu jawaban di bawah ini yang benar!

3 + 3 + 3 + 3 = 12, sama artinya dengan ….

A. 3 + 4   C. 3 x 4

B. 4 + 3   D. 4 x 3

2. Isilah titik-titik di bawah ini dengan jawaban yang benar!
8 x 12 = … x 8

3. Arsirlah jawaban di bawah ini yang hasil perkaliannya merupakan bilangan genap!

| 3 x 0 | 7 x 1 | 9 x 2 | 7 x 9 |

4. Jodohkanlah bentuk penulisan perkalian dengan bentuk penjumlahan berulangnya!

4 x 5 ●   ● 4 + 4 + 4 + 4 + 4

5 x 4 ●   ● 5 + 5 + 5 + 5

5. Berilah tanda silang (X) pada huruf B jika pernyataan benar dan pada huruf S jika pernyataan salah!

Dalam perkalian berlaku sifat pertukaran, yaitu
a x b = b x a

(B)　(S)

6. Berilah tanda silang (X) pada salah satu jawaban di bawah ini yang benar!
Di kebun ada 8 pohon mangga. Setiap pohon disiram air 7 ember. Berapa banyak ember air yang dibutuhkan untuk menyiram seluruh pohon?
A. 15　　　　　　　　C. 78
B. 56　　　　　　　　D. 87

7. Isilah titik-titik di bawah ini dengan jawaban yang benar!
1 + 1 + 1 + 1 + 1 = 5, jika diubah ke dalam bentuk perkalian adalah ....

8. Arsirlah jawaban di bawah ini yang hasil kalinya adalah 24!

| 2 x 7 | 4 x 6 | 4 x 8 | 8 x 6 |

9. Jodohkanlah bentuk penjumlahan berulang yang sesuai dengan bentuk penulisan perkalian!

| 8+8+8+8+8+8+8 | ● | ● | 7 x 8 |
| 7+7+7+7+7+7+7+7 | ● | ● | 8 x 7 |

10. Berilah tanda silang (X) pada huruf B jika benar dan pada huruf S jika salah!

| Semua bilangan dikalikan dengan 0 (nol) hasilnya sama dengan 0 (nol) | B | S |

B. Jawablah soal di bawah ini dengan benar!

1. Perhatikan gambar di bawah ini!

Ada ... keranjang buah apel.
Masing-masing keranjang berisi ... buah apel.
Banyaknya buah apel adalah ....
Bentuk penulisan perkaliannya adalah ....

2. Ninung menanam 4 tanaman bunga. Setiap tanaman berbunga 3. Berapa banyak bunga Ninung? Tuliskan ke dalam bentuk perkalian!

_____

_____

3. Ada 5 ekor ayam di kandang. Setiap ayam berkaki dua. Berapa banyaknya kaki ayam seluruhnya? Tuliskan ke dalam bentuk perkalian!

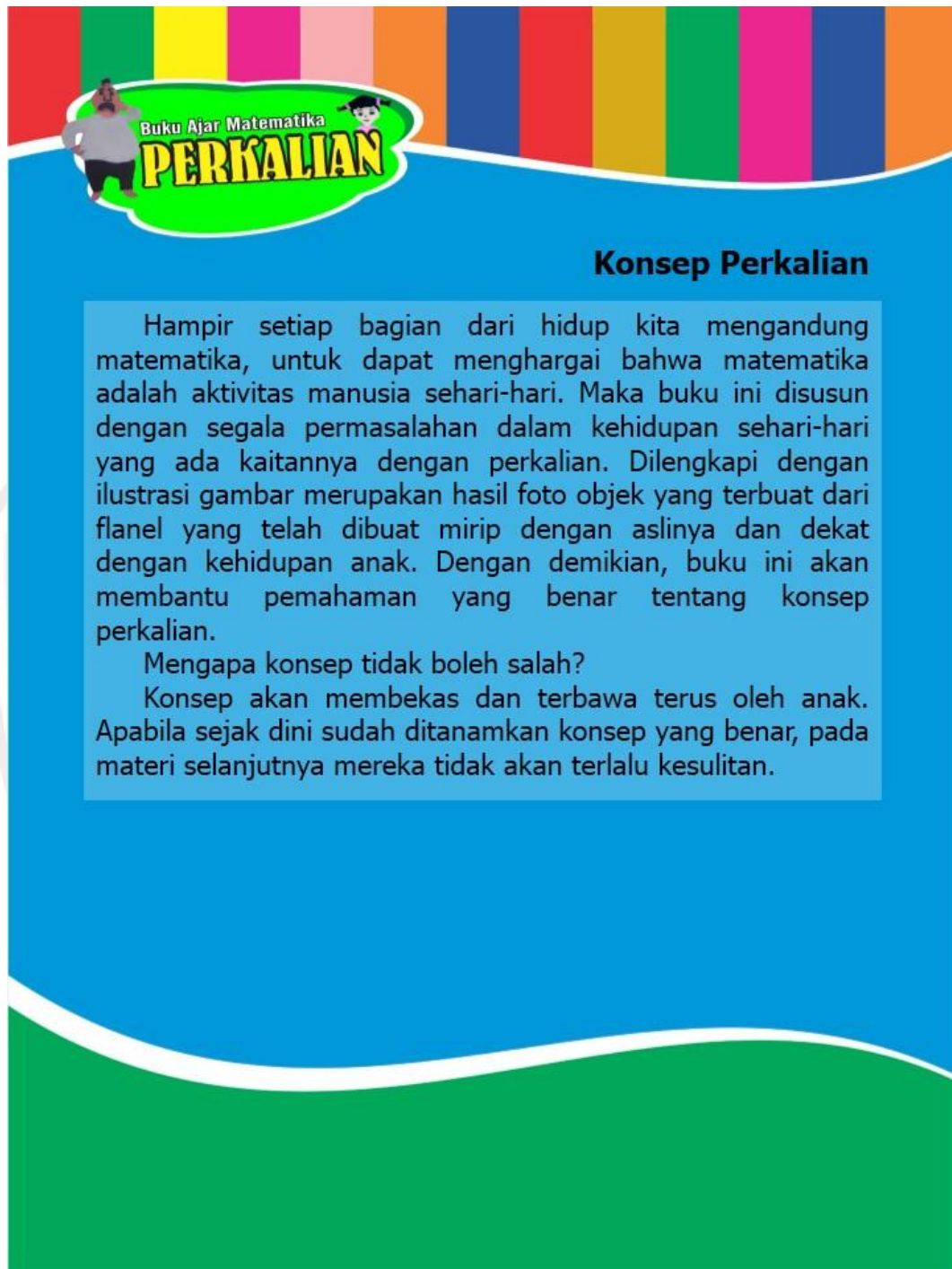_____

_____

4. Ada 2 tim sepak bola sedang bertanding di lapangan. Jika setiap tim terdiri dari 11 pemain sepak bola. Berapa banyaknya pemain sepak bola di lapangan? Tuliskan ke dalam bentuk perkalian!

_____

_____

5. Tentukan pasangan bilangan yang hasil kalinya sudah ditentukan sebagai berikut!

48		
...	x	...
...	x	...
...	x	...
...	x	...

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Buku Ajar Matematika PERKALIAN

Konsep Perkalian

Hampir setiap bagian dari hidup kita mengandung matematika, untuk dapat menghargai bahwa matematika adalah aktivitas manusia sehari-hari. Maka buku ini disusun dengan segala permasalahan dalam kehidupan sehari-hari yang ada kaitannya dengan perkalian. Dilengkapi dengan ilustrasi gambar merupakan hasil foto objek yang terbuat dari flanel yang telah dibuat mirip dengan aslinya dan dekat dengan kehidupan anak. Dengan demikian, buku ini akan membantu pemahaman yang benar tentang konsep perkalian.

Mengapa konsep tidak boleh salah?

Konsep akan membekas dan terbawa terus oleh anak. Apabila sejak dini sudah ditanamkan konsep yang benar, pada materi selanjutnya mereka tidak akan terlalu kesulitan.

Appendix XV (Documentation)

    a. Preliminary field testing

b. Main field testing

C. Operational field testing of control group

d. Operational field testing of experiment group

Appendix XVI (Curriculum Vitae)

CURRICULUM VITAE

Name	: Dita Safitri
Place of Birth	: Blora
Date of Birth	: November 19th, 1994
Faculty	: Education and Teacher Training Faculty
Study Program	: Islamic Primary Teacher Education Program
Entrance Year	: 2013
Address	: Rt 01 Rw 04 Kecamatan Kedungtuban Kabupaten Blora
Contact Person	: 085649930610
Email	: dithasafitri15@gmail.com

Biography of education   : (2001-2007) SDN 2 Nglandeyan, Blora

(2007-2010) MTSN II Bojonegoro

(2010-2013) MAN I Bojonegoro

(2013-2017) PGMI-UIN MALIKI Malang

Informal education   : (2013-2014) Modern Islamic Boarding School of

Ma'had Sunan Ampel Al-Aly

(2014-2017) Salafy Islamic boarding School of Al

Mubarok, Malang.

Malang, July 12th, 2017

Dita Safitri