THE DEVELOPMENT OF PROBLEM BASED MATHEMATIC'S WORKSHEET TO INCREASE CREATIVE THINKING OF THIRD STATE PREPARATION OF ISLAMIC PRIMARY MIFTAHUL HUDA TUREN

THESIS

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MALANG
2019

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Research Thesis

THE DEVELOPMENT OF PROBLEM BASED MATHEMATIC'S WORKSHEET TO INCREASE CREATIVE THINKING OF THIRD STATE PREPARATION OF ISLAMIC PRIMARY MIFTAHUL HUDA TUREN

Presented to Faculty of Education and Teacher Training
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For the Degree of *Sarjana Pendidikan* (S.Pd)

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2019

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APPROVAL SHEET

THE DEVELOPMENT OF PROBLEM BASED MATHEMATIC'S WORKSHEET TO INCREASE CREATIVE THINKING OF THIRD STATE PREPARATION OF ISLAMIC PRIMARY MIFTAHUL HUDA TUREN

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THE DEVELOPMENT OF PROBLEM BASED MATHEMATIC'S WORKSHEET TO INCREASE CREATIVE THINKING OF THIRD STATE PREPARATION OF ISLAMIC PRIMARY MIFTAHUL HUDA TUREN

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CERTIFICATE OF THESIS AUTORSHIP

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

Malang, 26 April 2019

Tutut Hartina Ilmiah Ningsih
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MOTTO

مَّثَلُ الَّذِينَ يُنْفِقُونَ أَمْوَلَهُمْ فِى سَبِيْلِ اللّٰهِ كَمَثَلِ حَبَّةٍ أَنبَتَتْ سَبْعَ سَنَابِلَ فِى

كُلِّ سُنبُلَةٍ مِّاْئَةُ حَبَّةٍۗ وَاللّٰهُ يُضَاعِفُ لِمَنْ يَشَآءُۗ وَاللّٰهُ وَسِعٌ عَلِيمٌ ﴿٢٦١﴾

Meaning:

216. The example of those who spend their wealth in the way of Allah is like a seed (of grain) which grows seven spikes; in each spike is a hundred grains. And Allah multiplies (His reward) for whom He wills. And Allah all-Encompassing and Knowing. **(Q.S Al-Baqarah : 261)**[1]

[1] Al-Qur'an dan Terjemahan Departemen Agama RI, *Al-Quran dan Terjemahannya,* (Jakarta: PT Syamil Cipta Media, 2005), hlm. 96

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DEDICATION

This thesis is dedicated to:

Thank's to Allah S.W.T because of all blessing and guidance

Alhamdulillahirabbil'alamin

My motivator, Bapak and Ibu,(M. Sukri and Nuril Ilmi) who always support me and give me everything and believing me.

My sister, Jannah, who has supported me and make me better.

For Abah Marzuqi and Umi' Saidah who has always been my clerk

member of Room 1 Gasek Malang, Roommate, and neigbourhood to warming my heart. Thank's for your kindness and support.

Thank's to member of ICP PGMI E 2014, you are awesome.

And for my special friend, thank's for the beautiful days

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TRANSLATION GUIDELINES OF ARAB LATIN

Translation of Arab latin in this thesis utilize the translation guidelines based on the agreement and decision together between Ministry of Education and Culture of Republic of Indonesia No. 158 year 1987 and no. 0543 b/U/1987. Tahat is could explained as follow:

A. Letter

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

B. Long Vowels

Vowel lenght (a) = â

Vowel lenght (i) = î

Vowel lenght (u) = û

C. Vokal Diphthongs

اَوْ = aw

اَيْ = ay

اُوْ = û

اِيْ = î

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ABSTRACT

Ningsih, Tutut Hartina Ilmiah . 2019. *The Development of Problem Based Mathematic's Worksheet to Increase Creative Thinking of Third State Preparation of Islamic Primary Miftahul Huda Turen.* Thesis. Teacher Education of Islamic Elementary School. Faculty of Tarbiyah and Teaching Training. Advisor: Dr. H. Nur Ali, M.Pd

Key word: Development, Student's Worksheet, Problem-based, Creative Thinking.

Mathematics Learning in primary school is a foundation that determines interest in mathematics, therefore it takes interesting learning resources and provides education and can improve the thinking, one of which is creative thinking with daily problem-solving. So, become habituation for the future.

The purpose of this development research is to: (1) to know how the needs analysis of students based on the development of problem-based mathematics' worksheet for grade III State Preparation of Islamic Primary Miftahul Huda Turen. (2) to describe how to develop Mathematics' Worksheet for Grade III State Preparation of Islamic Primary Miftahul Huda Turen. (3) to explain the effectiveness of the development of problem-based Mathematics' worksheet for grade III State Preparation of Islamic Primary Miftahul Huda Turen.

To achieve the above objectives, researchers used to research and Development development (R&D) with a research model of Plomp 2013. The research procedure includes, (1) Preliminary Research, (2) Prototyping Phase, (3) Assessment Phase. Data collection instrument using interview, sheet validation, Quertionnaires, and Test Result the Achievement Learning. The results of the study are a problem-based mathematic's worksheet to increase creative thinking for students of grade III State Preparation of Islamic Primary Miftahul Huda Turen Malang.

The results of the research development of student worksheets based on mathematical problems to increase the creativity of class III students State Preparations of Islamic Primary Miftahul Huda Turen include: (1) Analysis of third graders showed that class III students Need habituation to train creativity using interesting and fun problem solving, (2) The results of Student worksheet development includes three parts i.e. opening sections, core parts and attachments that correspond to the curriculum 2013, (3) The effectiveness of the use of student worksheets have valid criteria with the results of material expert validation reaches 85%, Design expert validation results reached 92.5%, and the learning expert validation results reached 82.5%. Student response results in the 84% experiment class. In the results of T SPSS test the level of significance 0.05 is obtained from the results of $T_{hitung} > T_{tabel}$ that is 5, 847 > 2.021 means H_0 rejected and H_a accepted. This shows that the student worksheets are developed worthy of use in learning.

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ABSTRAK

Ningsih, Tutut Hartina Ilmiah . 2019. *The Development of Problem Based Mathematic's Worksheet to Increase Creative Thinking of Third State Preparation of Islamic Primary Miftahul Huda Turen.* Skripsi. Pendidikan Guru Madrasah Ibtidaiyah. Fakultas Ilmu Tarbiyah dan Keguruan. Universitas Islam Negeri Maulana Malik Ibrahim Malang. Pembimbing: Dr. H. Nur Ali, M.Pd

Kata Kunci: Pengembangan, Lembar Kerja Siswa, Berbasis Masalah, Berpikir Kreatif.

Pembelajaran matematika pada sekolah dasar merupakan fondasi utama yang menentukan ketertarikan dalam bidang matematika, oleh karena itu dibutuhkan sumber belajar yang menarik dan memberikan edukasi serta dapat meningkatkan daya berpikir, salah satunya adalah berpikir kreatif dengan pemecahan masalah sehari-hari. Sehingga, menjadi pembiasaan untuk masa depan.

Tujuan penelitian pengembangan ini adalah untuk: (1) Mengetahui analisis kebutuhan pada siswa kelas III Madrasah Ibtidaiyah Persiapan Negeri Miftahul Huda Turen Malang (2) Mendeskripsikan hasil dari pengembangan lembar kerja siswa berbasis masalah untuk kelas III Madrasah Ibtidaiyah Persiapan Negeri Miftahul Huda Turen Malang (3) Menjelaskan keefektifan penggunaan lembar kerja siswa berbasis masalah untuk kelas III Madrasah Ibtidaiyah Persiapan Negeri Miftahul Huda Turen Malang.

Untuk mencapai tujuan diatas, peneliti menggunakan penelitian pengembangan *Research and Development* (R&D) dengan model penelitian dari Plomp 2013. Prosedur penelitian meliputi (1) *Preliminary Research* (2) *Prototyping Phase* (3) *Assesment Phase*. Pengumpulan data menggunakan metode wawancara, lembar validasi, angket, dan tes hasil belajar. Hasil penelitian ini berupa lembar kerja siswa matematika berbasis masalah untuk melatih kreativitas siswa kelas III Madrasah Ibtidaiyah Persiapan Negeri Miftahul Huda Turen Malang.

Hasil penelitian pengembangan lembar kerja siswa berbasis masalah matematika untuk meningkatkan kreativitas siswa kelas III Madrasah Ibtidaiyah Persiapan Negeri Miftahul Huda Turen meliputi : (1) Analisis siswa kelas tiga menunjukkan bahwa siswa kelas III membutuhkan pembiasaan untuk melatih kreativitas menggunakan pemecahan masalah yang menarik dan menyenangkan ,(2) Dalam hasil pengembangan lembar kerja siswa meliputi tiga bagian yakni bagian pembuka, bagian inti dan lampiran yang sesuai dengan kurikulum 2013, (3) Keefektifan penggunaan lembar kerja siswa memiliki kriteria valid dengan hasil validasi ahli materi mencapai 85%, hasil validasi ahli desain mencapai 92,5%, dan hasil validasi ahli pembelajaran mencapai 82,5% dan hasil tanggapan siswa pada kelas eksperimen 84%. Pada hasil uji T SPSS dengan taraf signifikansi 0,05 di peroleh dari hasil $T_{hitung} > T_{tabel}$ yaitu 5, 847 > 2,021 artinya H_0 ditolak dan H_a diterima. Hal ini menunjukkan bahwa lembar kerja siswa yang dikembangkan layak digunakan dalam pembelajaran.

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ملخص

نينغسيه ، توتوت هرتينا علمية. 2019. تطوير ورقه عمل الموضوع القائم علي المشكلة لزيادة التفكيرالإبداعي لشركه ميمن الثالثة لهدي تورين اطروحه. مدرسه تعليم المعلم الإبداع. كليه التربية والعلوم التربوية. جامعه الدولة الاسلاميه مولانا مالك إبراهيم مالانغ. المشرف: د. ح. نور علي ، ماجيستر

الكلمات الرئيسية: التطوير ، أوراق عمل الطلاب ، التفكير الإبداعي القائم علي المشاكل.

المدرسة الابتدائية الرياضيات التعلم هو الأساس الأساسي الذي يحدد الفائدة في الرياضيات ، التالي فانه ياخذ الموارد التعليمية للاهتمام ويوفر التعليم ويمكن تحسين التفكير ، واحده منها هو التفكير الإبداعي مع حل المشكلات اليومية. لذلك ، تصبح التعود للمستقبل .

والغرض من هذا البحث التنموي هو: (١) لوصف الحاجة إلى تحليل طلاب الصف الثالث الاستعدادات الحكومية الخاصة بالمدرسة ، ميتاهول هدي تورين مالانغ (٢) تصف نتائج تطوير ورقه عمل الطالب القائمة علي المشاكل بالنسبة للفئة الثالثة من اعداد دوله المدرسة الصناعية ميتاهول هدي تورين مالانغ (٣) شرح فعاليه استخدام ورقه عمل الطالب القائمة علي المشاكل للفئة الثالثة الاعداد القطري للمدرسة.

لتحقيق الأهداف المذكورة أعلاه ، استخدم الباحثون البحث وتطوير التنمية (R&D) مع نموذج البحث من ٢٠١٣. يتضمن اجراء البحث (١) ، البحث الاولي (٢) مرحله النماذج (٣) مرحله التقييم. جمع البيانات باستخدام أساليب المقابلة ، وأوراق التحقق ، واستطلاعات الراي ، واختبارات نتائج الدراسة. نتائج الدراسة هي مشكله في ورقه العمل الرياضية القائمة علي الطالب للطلاب من الصف الثالث المدرسة الابتدائية الدولة من ميتاهول هدي تورين مالانغ.

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نتائج تطوير البحوث من أوراق العمل الطلابية علي أساس المشاكل الرياضية لزيادة الإبداع من طلاب الصف الثالث من الاستعدادات الدولة المدرسة البديعة مفتاح الهدي تورين تشمل: (١) أظهر تحليل طلاب الصف الثالث أن طلاب الصف الثالث تحتاج إلى التعود على تدريب الإبداع باستخدام حل المشاكل ممتعة ومثيرة للاهتمام، (٢) في نتائج تطوير ورقة عمل الطالب يتضمن ثلاثة أجزاء، أي فتح أقسام، أجزاء أساسية ومرفقات تتوافق مع المناهج الدراسية ٢٠١٣ ,(٣) فعالية استخدام أوراق عمل الطلاب لديها معايير صالحه مع نتائج التحقق من الخبراء المادية تصل إلى ٨٥ ٪ ، تم التوصل إلى نتائج التحقق من صحة خبراء التصميم ٩٢,٥ % ، وبلغت نتائج التحقق من صحة خبراء التعلم ٨٢,٥%. نتائج استجابه الطالب في فئة التجربة ٨٤%. في نتائج اختبار T SPSS مع مستوي الاهميه ٠,٠٥ يتم الحصول عليها من نتائج $T_{hitung} > T_{tabel}$ التي ٥,٨٤٧ >٢,٠٢١ يعني ه و رفض وقبول هء .وهذا يدل علي ان أوراق عمل الطلاب يتم تطويرها جديرة بالاستخدام في التعلم.

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PREFACE

Bismillahirrohmanirrahim

Alhamdulillah, all praises be to Allah S.W.T who has giving us the mercies, blessing and guidance. Sholawat and Salam to our prophet Muhammad SAW, who has brought us from the darkness to the lightness by Islam religion, until we can complete this research with the title The Development of Problem Based Mathematic's Worksheet to Increase Creative Thinking of Third State Preparation of Islamic Primary Miftahul Huda Turen.

With the help of some parties, finally this thesis can be resolved. Therefore, awardz and a very sincere thank you to the author gave to the honorable:

1. Both of my parents, Mr. M. Sukri and Mrs. Nuril Ilmi, and also my beloved Cindri Roudhotul jannah, who constantly pray and always provide support.
2. Prof. Dr. H. Abdul Haris, M.Ag as Rector of Maulana Malik Ibrahim State Islamic University, Malang.
3. Dr. H. Agus Maimun, M.Pd as the Dean of Faculty of Education and Teacher Training.p
4. H. Achmad Sholeh, M.Ag as chairman of the Teacher Education Program Elementary School.
5. Dr. H. Nur Ali, M.Pd as lecture supervisor and above guidance, suggestion, criticisms and correction in the thesis.
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7. Mrs. Churiyatul, S.Pd.I as the teacher at third grade State Preparation of Islamic Primary Miftahul Huda Turen, who always help the writer to guidance in the process of field trial.
8. All of my family who believe me, and give some of kindness.

We realize that there are still many shortage in compiling this assignment, because we think this assignment is still far from perfection. Therefore we expect criticism and constructive suggestions, to the perfection of this thesis.

For your attention and time, we say many thanks.

Malang, 24 April 2019

Author's

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CHAPTER I

INTRODUCTION

A. Background of The Research

Mathematics is a discipline that can improve the power to think and argue, provide a contribution in solving problems and every day in the world of work, as well as providing support in the development of science and technology. The needs and applications of mathematics to current and future not only for everyday purposes, but especially in the world of work, and to support the development of science. Therefore, mathematics as a science base needs to be ruled wisely by students, especially since the age of primary school.[2]

Children at primary school age (7-11 years) are at the stage of concrete operations. Children at this age have a tendency of behavior, namely: *first*, the child begins to perceive the world objectively, shifting from one aspect to another aspect and looked reflectively elements simultaneously; *second*, the child begins thinking operationally; *third*, the child is able to use the operational way of thinking to classify the objects; *fourth*, the child can grasp the concept of substance, length, width, wide, high, low, light and heavy.[3]

Mathematical learning in primary school which is a starting point for students to learn Mathematics should pay attention to the principle of the concrete to the abstract, from easy to difficult, and from the simple to the complex. In learning, math requires a variable and creative methods. Monotonous learning can lead to

[2] Ahmad Susanto, *Teori Belajar & Pembelajaran di Sekolah Dasar*, (Jakarta: Prenadamedia Group, 2013), hlm.185.

[3] Andi Prastowo, *Pengembangan Bahan Ajar Tematik; Tinjauan Teoritik Dan Praktik*, (Jakarta: Kencana Prenadamedia Group, 2014), hlm. 83.

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the impression that mathematics is boring and hard. This situation is indeed alarming. One way in overcoming this situation is how the students play an active role in developing the ability to be able to understand, plan, implement and communicate the results and so on. This need for development in the system of learning students through the development of Worksheets Students so that children can learn not only on teachers. Starting with the concept of planting right in accordance with the creativity of students so that the child can communicate the learning. To confront this other source of support is needed in learning.

Education in Primary School is currently guided by the curriculum in 2013. One of the objectives that are intended to be achieved in the curriculum 2013 is the scoring generation that has creative thinking skills. In the learning process so that students have the skills of creative thinking, it takes a specially designed learning resource to improve students ' creative thinking skills. One of the learning resources in the learning process is student worksheets.

Therefore it takes the Student Worksheets can assist learners in the learning process, as stated by Prastowo among others are as materials that could minimize the role of educator, facilitate learners to understand the material, as the materials are concise and rich tasks to practice, as well as to facilitate the implementation of teaching to learners.[4]

[4] Andi Prastowo, *Panduan Kreatif Membuat Bahan Ajar Inovatif, (*Jogjakarta: DIVA Press, 2012), hlm. 205.

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The curriculum 2013 has been officially launched. Some schools have been targeted. One of them is State Preparation of Islamic Primary Miftahul Huda Turen. Students are given student books and mathematics books have also been equipped with a teacher's grip. But in the way, there are many things that are less optimal. Researchers conducted research in the State Preparation of Islamic Primary Miftahul Huda Turen because it is one of the schools that are relatively advanced and have many students, but still in the level of adjustment with the curriculum 2013 So in need of other learning resources to support students ' learning.[5]

Observation activities are undertaken in class III C at State Preparation of Islamic Primary Miftahul Huda Turen. From the results of the interview to the teacher of class three, Latifatus Sholikhah, shows that in 2013 the curriculum books not much any problems, more in the form of readings. So for the subjects of math, lack of exercise conditioning methods that make in the face of a problem. One such matter is the multiplication and Division. In multiplication and division child trouble digesting material multiplication and division.[6]

In this study, several problems were found, including (1) Learning with the curriculum 2013 in the school is still in the adjustment phase. (2) The curriculum 2013 already contains problem-based learning. Unfortunately, the application of problem-based learning that is in the book impresses less according to the understanding of problem-based learning and the characteristics of students. (3)

[5] Interviews with H.M. Shodiq, Principal of State Preparation of Islamic Primary on August 13th, 2018.

[6] Interviews with Latifatus Sholikhah, Teacher of Grade 3 State Preparation of Islamic Primary Miftahul Huda, on August 16th, 2018.

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Assignments are lacking because the book only contains a few issues so other learning resources are needed. A good assignment usually gives students the opportunity to use their creative powers according to their own potential, (4) The absence of specially designed learning resources to enhance student creativity in accordance with educational objectives in the curriculum 2013.

There, researchers found that in learning multiplication and division, the handbook contains a little child in a matter of practice, so that the child is a little practice. Whereas, in mathematical learning, the child must be a lot of practice in order to get used to working on a math problem. The development of student worksheets can be used as a companion book in the learning of mathematics. With an attractive design and questions, students obtain the stimulus to develop their ability. Children can also develop their ideas in every activity.

Based on the observations of other researchers, many student worksheets contain only a summary overview of the material, so that the child cannot think creatively. The ability of creative thinking can be developed through creative activities in the learning of mathematics. Creative activities are activities that encourage learning in or bring up the creativity of students. Creativity can be seen as a product of creative thinking. Creative thinking is defined as a person's mental activity that is used to build up a new idea or ideas.[7]

Much of the building of understanding of early mathematics occurs concurrently, so a child can be developing the basic ideas related to multiplication and division whilst also investigating the place-value system.

[7] Abdul Aziz Saefudin, *Proses Berpikir Kreatif Siswa Sekolah Dasar (SD) Berkemampuan Matematika Tinggi Dalam Pemecahan Masalah Matematika Terbuka*, Thesis, (eprints.uny.ac.id, retrieved 13 July 2018 at 09.50 p.m), hlm. 1-2.

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However, there are some useful foundations necessary for multiplication and division of the whole number is some experience with forwards and backward skip counting and some experience doubling and halving small numbers.[8]

The national education goals contained in article 3 of ACT No. 20 of the national education system that describes human development of faith and piety to God Almighty, healthy, learned, accomplished, creative, independent, and become citizens of a democratic State as well as responsible. These goals should be achieved with planned and systematic efforts through educational activities in schools.[9]

Creative thinking is a process to build a new idea with activities in the learning of mathematics. So creative thinking is needed in learning mathematics in grade III. Students are faced with the problem so that the students can think creatively. According to Torrance, there are four accessible combinations of creativity, which are fluency, flexibility, elaboration, and originality. But according to Hamalik concluded that a special aspect of creative thinking is divergent thinking that has features: flexibility, originality, and fluency.[10]

Based on the explanation above, creative thinking aspects or indicators of divergent thinking in solving mathematical problems in this study are fluency, flexibility, and originality.[11] Thus the indicator of student creativity in solving

[8] Australian Mathematical Sciences Institute (AMSI), *Multiplication and Division (Number and Algebra: Module 3) (www.amsi.org.au*, retrieved 17 Agustus 2018 at 08.23 a.m).

[9] Ridwan Abdullah Sani, *Pembelajaran Saintifik Untuk Implementasi Kurikulum 2013.* (Jakarta: Bumi Aksara, 2014), hlm. 27.

[10] Indah Purnama Sari, Andri Nofrianto, Mira Amelia Amri. *Creative Problem Solving: Bagaimana Pengaruhnya Terhadap Kreativitas Siswa.* Journal Elements(Vol 3 No. 1, January 2017) hlm. 88

[11] *Ibid.*

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mathematical problems in this research is that students are able to provide solutions and create new stories according to students, but general solutions according to teachers.

Creative thinking and problem-solving can be built into instruction in many ways. For example, teachers can encourage students to seek out new connections between disparate ideas or ask students to offer multiple varied solutions to complex problems. If the ability to be creative is indeed vital for students' future success, teachers must explicitly foster and teach creativity in school. On this view, creativity training should be a key component of primary and secondary education.[12]

One of the skills where appropriate against the ability of the creative thinking of students is a Polya problem-solving skills. Hudoyo mentions a problem-solving strategy is to hasten to teach and learning in schools is the problem-solving that is integrated into teaching and learning activities in mathematics. The skills of solving problems must be owned by students.[13]

The problem-solving method is a method in learning activities with the way train students face many problems, either personal issues or problems to be solved alone or group together. The orientation of the analytical study was investigation and discovery that is basically problem-solving. Problem-solving methods advantages are as follows: (1) train students to design an invention, (2) creative thinking and acting, (3) solve problems faced realistically, (4) identify

[12] Emma Gregory, Mariale Hardiman, Julia Yarmolinskaya, Luke Rinne, and Charles Limb. *Building Creative Thinking in the Classroom: From Research to Practice* (olms.cte.jhu.edu, retrieved July 13, 2018, at 05.20 p.m.), hlm. 3.

[13] Herman Hudoyo, *Pengembangan Kurikulum Matematika dan Pelaksanaanya di Depan Kelas*, (Surabaya: Usana Offset Printing, 1979), hlm. 156.

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and conduct investigations, (5) interpret and evaluate the results of observations, (6) stimulates the development of the student's thinking progress to resolve the problems faced by right, (7) can make school education more relevant to the lives of especially the workforce.[14]

Using an approach problem-solving learning allows students that become more critical and analytical in taking decisions in life. In addition, by using this learning approach to teaching students for learning to think or reason, namely learning to think or to reason to apply knowledge-knowledge that has been gained earlier for new issues that have never been found. With the learning of problem-solving requires students to learn actively, instead of teachers who are more active in presenting the subject matter. Active learning can foster a creative attitude. A creative attitude is looking for themselves, find, formulate, or conclude for yourself.[15] This shows that the problem-solving skills Polya proved perfectly suited to know the level of creative thinking of students.

Student worksheet-based problem solving gives space to the students to develop ideas in solving problems, either through individual or group discussion. By administering the student Worksheet-based problem-solving students faced with problems with troubleshooting steps based on the steps of Polya. Math problem-solving Polya posited process of completing math problems covering the process of understanding the problem, devising a plan, carrying out of the plan, and lastly looking back the settlement obtained.[16] While the mathematical

[14] Hamdani, *Strategi Belajar Mengajar*, (Bandung: CV Pustaka Setia, 2011), hlm. 84
[15] Ahmad Susanto, *op.cit.*, hlm. 204 - 205.
[16] Albert B. Bennet, Jr. *Mathematics for Elementary Teachers, a Conceptual Approach. 9th Edition*, (New York: McGraw-Hill, 2012), hlm.4

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problem in question is the questions to be answered or responded to complaints by students in the form of a math problem.

In developing this teaching material should be considered development models to ensure quality. One development model is the Plomp development model. There are three phases in the development of Plomp namely, preliminary research, prototyping phase, and assessment phase. In principle, the core of this product development procedure is that researchers need to understand the development process so that the products that develop meet the good product criteria and tested empirically.

Based on the background of this issue, then the researchers poured the idea by developing a learning device in the form of Worksheets Students entitled ***"The Development of Problem Based Mathematics' Worksheet to Increase Creative Thinking of Third State Preparation of Islamic Primary Miftahul Huda Turen".***

B. Formulation of The Problem

Based on the background that has been presented above, the formulation of the problem that can be taken:

1. How do students against needs assessment analysis worksheet-based math problem students in grade III State Preparation of Islamic Primary Miftahul Huda Turen?
2. How the development of problem-based Mathematics' worksheet for grade III State Preparation of Islamic Primary Miftahul Huda Turen?

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3. How the effectiveness of the development of problem-based Mathematics' worksheet for grade III State Preparation of Islamic Primary Miftahul Huda Turen?

C. Objectives of the Development

Based on the formulation of the problem, the purpose of this research is as follows:

1. To know how the needs analysis of students based on the development of problem-based mathematics' worksheet for grade III State Preparation of Islamic Primary Miftahul Huda Turen.
2. To describe how to develop Mathematics' Worksheet for Grade III State Preparation of Islamic Primary Miftahul Huda Turen.
3. Find out the effectiveness of the development of problem-based Mathematics' worksheet for grade III State Preparation of Islamic Primary Miftahul Huda Turen.

D. Significances of The Research

In this research, researchers hope that the results of the research can provide the functionality and benefit to the parties, including:

1. Benefits of Theoretic research

   The results of this research are expected to contribute to the quality of the student's worksheet-based problems in particular in the sphere of primary school.

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2. Benefits of Practical research

   a. For students

      Efforts to improve the understanding of the concept of students on the material of multiplication and division and also as an alternative learning resource to increase creative thinking of students.

   b. For teachers

      Give positive contribution to one of the ways to increase the creativity of the student and help teachers to develop and stimulate the creativity of students through student's worksheet.

   c. For school Principal

      Provide additional reference materials in the form of a student's worksheet of problem-based Mathematics to increase creative thinking ability of grade III.

   d. For other researchers

      To add insight and knowledge of how to do practical steps in the development of the student worksheet.

E. Assuming and Construct of The Study

The assumption of the development of teaching materials is:

1. By using problem-based student worksheets, students will be more diligent and more eager in doing a math problem.
2. By using the student worksheet based problem students can increase creative thinking because the student worksheet is dedicated to increasing the creative thinking of students.

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3. Student worksheets developed to get a positive response and can be used independently by students both inside and outside the classroom.

F. Scope of The Development

To clarify the scope of the problem examined then held the limitation problem:

1. Research carried out in State Preparation of Islamic Primary Miftahul Huda Turen, exactly on Kauman Street 2 No. 18, Turen, Malang.
2. The subject in this study was the grade III State Preparation of Islamic Primary Miftahul Huda Turen consisting of 21 students.
3. Research carried out on the Odd semester academic year 2018/2019.
4. This research focuses on the validity of work students support the creativity of students in learning mathematics subject multiplication and division.

G. Product Specifications

The products developed in the form of worksheets students' problem-based creative thinking to enhance the grade III State Preparation of Islamic Primary Miftahul Huda Turen Malang that have the following specifications.

1. Student worksheet based on this issue (printed) book shaped.
2. Student worksheet in design as learning support mathematics grade III on the material of the multiplication and Division curriculum tailored to 2013.

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3. A student worksheet is complemented by mathematical application materials as a learning experience that is interesting and also troubleshooting experience and formulates a problem.
4. This student worksheet in rows corresponds to problem-solving Polya.
5. Structure of learning tailored to the current learning, reference and presented in accordance with the basic competencies and indicators that there is so much that is systematically arranged.
6. It contains 5M according to the curriculum 2013.
7. It contains indicators to improve creativity namely fluency, flexibility, and originality.
8. Equipped with interesting images, conclusion, evaluation, and reflection.
9. Teaching material will be developed by the researcher has an extrinsic specification, as follow :
    a. Using Baar Metanoia font and have letter size 18.
    b. Space will be development teaching material is 2,0 cm.
    c. Margin in size of paper in the development teaching material is top 4 cm, left 4 cm, bottom 3 cm, right 3 cm.
    d. The dominant color that will be used is green and orange.
    e. The thick of the paper will be used is A4.

H. Research Originality

The originality in this research proved based on the results of research and survey bachelor theses related to the title of this research. Now the bachelor theses referred to:

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1. Thesis by Dewi Anggraini Shalehah with the title *Pengembangan Lembar Kerja Siswa (LKS) Berbasis Problem Based Learning Untuk Meningkatkan Berpikir Kritis Siswa Tema Lingkungan Sahabat Kita Subtema Pelestarian Lingkungan Kelas V di MIN Sukosewu Gandusaru Bitar*.

   Dewi anggraini found that device model-based learning PBL has been declared invalid or meets eligibility as a learning device in environmental preservation subtheme in class V. Device-based learning PBL developed have been through several stages. A difference research study with Dewi Anggraini is: *first,* the material examined is different. *Second,* Dewi anggraini shalehah enhances critical thinking while this research enhances creative thinking. *Third,* in the stage of problem use phases of John Dewey while this research uses the stages of Polya. Research on the equation of Dewi Anggraini and this study, namely: *first,* the same kind of research i.e. Research and Development. *Second,* the worksheet contains problem-based learning.

2. Journal by Ike Suci Pariska, Sri Elniati, and Syafriandi with the title *Pengembangan Lembar Kerja Siswa Matematika Berbasis Masalah.*

   For it is necessary to develop a problem-based worksheet to engage students in active learning mathematics. This study used a developmental research 4-D that has been modified. The result of the validation and testing of the problem-based worksheets developed shows that the student worksheet is valid, practical, and effective. The differences

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research of Ike Suci Pariska, Sri Elniati, and Syafriandi is not to increase in creative thinking, but in this study used to improve students ' thinking skills. The research equation Ike Suci Pariska is developing products in the form of worksheets students based problems. The equation of this research with researchers is to make worksheet-based problems.

3. Thesis by Latifah Churiyatul with the title *Pengembangan Buku Ajar Tematik Berbasis Praktik Untuk Melatih Berpikir Kritis Dan Kreatif Siswa Kelas 1 SDN Blarang 1 Tutur Pasuruan*.

   Research development produces thematic textbook-based practice to train students to think critically and creatively to these products have met the textbook as a component of a good, valid and feasible. The difference between the research of Latifah Churiyatul are: *first*, the material examined is different. *Second*, on the research of developing learning materials Churiyatul Latifah while researchers only develop the student worksheet. Meanwhile, *third*, based his practice while this research using methods based on the problem. Equation research of Churiyatul Latifah equation and this study, namely: *first*, the same kind of research i.e. Research and Development. *Second*, this research enhances creative thinking, but also develop critical thinking students.

To make it easier to see the similarities and differences of the research with previous research, then the table is created as follows:

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Table 1.1 Research Originality

No.	The researcher, headings, forms, and Publisher	Similarities	Differences	Originality of Research
1.	Thesis by Dewi Anggraini Shalehah with the title *Pengembangan Lembar Keja Siswa (LKS) Berbasis Problem Based Learning untuk Meningkatkan Berpikir Kritis Siswa Tema Lingkungan Sahabat Kita Subtema Pelestarian Lingkungan Kelas V di MIN Sukosewu Gandusaru Bitar.*	• The same kind of research i.e. Research and Development. • The device was developed in the form of problem-based mathematic's worksheet	• The material examined is different. • Improve critical thinking. • Stages of the problem using the phases of John Dewey • Different materials and objectives.	• I.e Research and Development. • Develop of worksheet students • Stages of the problem using the phases of *Polya.* • Improve Creative Thinking
2.	Journal by Ike Suci Pariska, Sri Elniati, and Syafriandi with the title *Pengembangan Lembar Kerja Siswa Matematika Berbasis Masalah.*	• The same kind of research i.e. Research and Development. (RnD) • Researching or developing products in the form of worksheets students based problems.	• Improve just at students ' thinking skills. • Limit secondary as too broad.	

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3.	Thesis by Latifah Churiyatul with the title *Pengembangan Buku Ajar Tematik Berbasis Praktik Untuk Melatih Berpikir Kritis Dan Kreatif Siswa Kelas 1 SDN Blarang 1 Tutur Pasuruan*.	• The same kind of research is Research and Development. • Increase creative thinking, but also develop critical thinking students.	• The material examined is different. • Research to develop learning materials. • Practice-based methods while this research using methods based on the problem.	

From the table above, it is found that many previous studies have been able to develop student worksheets, but the topic of discussion and step is different. In this study developed a problem-based student worksheet that uses the measures Polya to increase the creativity of students according to the needs of students studied in the State Preparation of Islamic Primary Miftahul Huda Turen.

I. Definition of Key Terms

Some of the terms expressed in the development of the student's math worksheet are as follows:

1. The students ' worksheets was a supporter of the book in the achievement of competence of students, to direct the learning process of students, where learning oriented learners.

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2. Mathematics is a subject which deals with ideas or abstract concepts that are arranged in hierarchical and deductive reasoning.
3. Multiplication is a basic arithmetic process where one number be multiplied in accordance with numbers that multiply in it. In simple terms, it can be said that the multiplication is repeated addition.
4. The division is a basic arithmetic process in which a number of broken down flat into a smaller number corresponds to the number of its divisors.
5. The issue is a question that is understood by students but a challenge and is a question that cannot be answered with a routine procedure that has been unnoticed by students.
6. Problem-based learning is learning that is based on daily problems that allow students to be experienced so that students could present solutions in resolving the problems that are being encountered.
7. Problem-based learning on this material is characterized by Polya consisting of four steps, another understanding the problem, devising a plan, carrying out the plan, looking back that is designed to support the improvement of students ' creative thinking.
8. Creative thinking is to learn to create something new in a life, linked from ideas that have been taken in daily processes.
9. The ability of the creative thinking of the students is able to resolve problems in math learning by using many alternatives to solve the problem. The indicators include fluency, flexibility, and originality.

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J. Systematic of the Writing

Systematic of writing in this bachelor theses is planned to be arranged in the five chapters namely chapter I to chapter V, Bibliography, and Appendix.

CHAPTER I INTRODUCTION which contains: (a) background of the research, (b) formulation of the problem, (c) objectives of the research, (d) significances of the research, (e) assuming and construct of the study, (f) scope of the research, (g) product specification, (h) originality of research, (i) definition of key terms, and (j) systematic of the writing.

CHAPTER II LITERATURE REVIEW that contains related to research and the framework of thinking in the research.

CHAPTER III RESEARCH METHODS that contains a type of research, model development, procedures development, product's trials that contains design trials, trial subject, types of data, data collection instruments, and data analysis techniques.

CHAPTER IV THE RESULT OF DEVELOPMENT is exposure of research and development data which includes the presentation of trial data, data analysis, and product revision.

CHAPTER V PRODUCT REVIEW AND ADVICE, this chapter contains a revised product review. It also explains the conclusions and suggestions on the utilization, dissemination and further product development.

REFERENCES, Bibliography serves to provide direction for the readers of papers who want to continue the study or to perform a re-check of the relevant papers.

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APPENDIX contains a document required by the author or reader that support in the process of developing instructional product.

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CHAPTER II

LITERATURE REVIEW

A. Student Needs analysis

1. Analysis of Student Grade III Primary School

People thrive through four stages of cognitive development between the time of birth and the age of adulthood, according to Jean Piaget. Each stage is characterized by the emergence of new intellectual abilities that enable people to understand this world in a tricky way.[17]

Table 2.1 Stages of Piaget development [18]

Stage	Approximate age	Key achievements
Sensorimotor	Born up to 2 years	The formation of the concept of "permanence object" and gradual progress of reflecsive behavior to the intended behavior is directed.
Praoperasional	2 to 7 years old	The ability to use symbols to symbolize objects in this world. Thought remains egocentric and centralized.
Concrete operations	7 to 11 years	Improved logical capabilities. New capabilities include reversible operational use. Thinking is not centralized, and problem solving is less constrained by egocentrism. Abstract thought is unlikely.
Formal operations	11 years to adulthood	Abstract thought and purely symbolic is possible. Problems can be solved through the use of systematic experimentation.

In grade III students, children experience a concrete operational stage. Children at this stage can form concepts, see relationships, and solve

[17] Robert E. Slavin, Psikologi Pendidikan : *Teori dan Praktik*, (Jakarta: PT Indeks, 2008), hlm. 46

[18] *Ibid.*

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problems, but only to the extent that they involve familiar objects and situations.[19]

The end of childhood lasting from six to children reached sexual maturity, which is about 13 years of age for girls and 14 years old for boys by parents is called a time of complicating. By educators called Elementary school age and by psychology experts is called "group Age" or "creative age".[20] From 6 to 11 years of age and start school. Known as the elementary school year period. Start mastering reading, counting and writing skills.[21]

In the phases of elementary school age children, cognitive development of children has different levels. In grade III students are included in concrete operations. Cognitive development is one of the important aspects of education guidelines. Cognitive realm is a realm related to learning objectives that is oriented to the thinking skills in education known as the Bloom taxonomy of cognitive domains, namely remember, understand, apply, analyse, evaluate, and create. These six levels are the result of revisions made by *Anderson and Krathwohl* from previous versions of knowledge, understanding, application, analysis, synthesis and evaluation.[22]

In this phase, cognitive abilities are increasing. The child can already solve a complicated problem, because the child has quite a lot of knowledge, insight and experience of the previous prses-process. In this phase, the child

[19]Robert E. Slavin, *Psikologi Pendidikan : Teori dan Praktik,* (Jakarta: PT Indeks, 2008), hlm. 51

[20] Yudrik Jahja, *Psikologi Perkembangan,* (Jakarta: Kencana, 2011.), hlm. 217

[21] *Ibid.*, hlm. 466

[22] Dian Andesta Bujuri, *Analisis Perkembangan Kognitif Anak Usia Dasar dan Implikasinya dalam kegiatan belajar Mengajar.* Journal Literasi (Vol IX, No. 1, 2018), hlm. 40-41

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enters a higher cognitive realm i.e. the realm of applying (C3). The ability to implement is the ability to use or apply materials already learned in a new situation and the use of rules or principles.[23]

2. Need Analysis on Student Worksheets

In the cognitive phase of the student, children's mathematical skills are getting better, the child not only knows the type of flat wake up, but can already calculate the area of a flat wake up and can already know the room and already know the room.[24] In learning math children can calculate the numbers in mind but for large numbers still use calculations in manual way. So it takes another supporting book in learning.

There are many teaching materials in the learning process, one of which is the student worksheet. Student worksheets are also part of the RPP used for achieving learning indicators. Student Worksheet development Policy is an orientation achievement indicator based on the formulation of lesson materials and learning activities.[25]

In its own learning objective increased creativity is one of the learning objectives in the 2013 curriculum. The efforts to facilitate students to get used to problem solving and to develop their creativity are through a structured and varied activities. These activities can be arranged in such a way in a teaching materials in the form of Student Worksheet. Student Worksheet can be useful in many ways including academics achievement. For example, as a supplement to

[23] Dian Andesta Bujuri, *Analisis Perkembangan Kognitif Anak Usia Dasar dan Implikasinya dalam kegiatan belajar Mengajar.* Journal Literasi (Vol IX, No. 1, 2018), hlm. 45

[24] *Ibid.*,hlm. 45-46

[25] Sistiana Windyariani, *Pembelajaran Berbasis Kontekstual dan Kreativitas (Strategi untuk Pembelajaran Sains di abad 20),* (Yogyakarta: Deepublish Publisher, 2019), hlm. 14

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books, providing additional information for a particular class, can help student construct knowledge, otherwise student Worksheet will be able to attract students when combined with specific method.[26]

B. Worksheet Development

1. Definition of The Worksheet

One type of print materials that are used in the study is the student worksheet. In Abdul Majid described the student worksheet is the sheet to do the students, usually in the form of instructions, steps in the task.[27]

According to Hamdani, student worksheet is one type of learning tool. In General, the device is a student worksheet learning as a compliment or a means of supporting the implementation of Learning Plans. Student worksheets in the form of a sheet of paper in the form of information or questions (questions that should be answered by the students). Excellent student worksheet used for improving student engagement in learning.[28]

While according to Prastowo, student worksheet is a print learning materials in the form of sheets-sheet of paper that contains content, summary, and learning tasks implementation instructions to do the students, both theoretical and or practical, referring to the basic competence to be achieved students; and its use hanging with other materials.[29]

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[26] Anida Luthfiana. dkk, *Developing Worksheet Based on Multiple intelligences to Optimize the Creativity Thinking Students*, (JIPM (Jurnal Ilmiah Pendidikan Matematika) 7(1), 2018), hlm. 1-12.

[27] Abdul Majid. *Perencanaan Pembelajaran Mengembangkan Standard Kompetensi Guru*, (Bandung: PT Remaja Rosdakarya,2011), hlm. 176

[28] Hamdani, *op. cit.*, hlm. 74

[29] Andi Prastowo, *Pengembangan Bahan Ajar Tematik; Tinjauan Teoritik Dan Praktik*, (Jakarta: Kencana Prenadamedia Group, 2014), hlm. 269

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Based on the definition above, it can be concluded that the students ' worksheets were one learning resource that demands the active participation of the students, as for problems that occur in the student worksheet more enrichment for students and also able to give the appeal to students.

Based on the understanding of the Student Worksheet, basically, it's been predictable what does it do in the learning activities. However more details here will be disclosed that the student worksheet has four functions, namely: *first,* as a student worksheet learning materials that could minimize the role of the educator but rather enable students. *Second,* student worksheet as learning materials that facilitate students to understand the material given. *Third,* the student worksheet as learning materials that are concise and rich duty practicing. And, *fourth,* the student worksheet eases the implementation of teaching to the students.[30]

Durri Andriani revealed that, at least, there are three important points to which it was the use of worksheets students, namely: *first,* the present learning materials that make it easy for students to interact with the material provided; *Second,* the present tasks that enhance student mastery against the given material; *third,* the students learned self-reliance; *fourth,* make it easier for educators to deliver tasks to students.[31]

Student worksheet used students must be designed in such a way that it can be done well and students can motivate student learning.

[30] *Ibid*., hlm. 270
[31] *Ibid*.

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According to Team Penatar I Dati Province of Central Java, the things that are required in the preparation of the student worksheet are:[32]

a. Based on the outline of the Teaching Program, AMP, the Synod of students book (book package).
b. Prioritize the important ingredient.
c. Adjust the level of maturity of the thinking of students.

According to Handoyo, the advantages of the use of worksheets students are:

a. Increasing the activity of learning.
b. Encourage students to work alone.
c. Guide the student well towards the development of the concept.

2. Development Procedure of The Worksheet

The existence of worksheets students who hope to become innovative and creative of all students. Because the worksheets that students will create an innovative and creative learning process becomes more enjoyable. Each educator is required to make the learning materials themselves innovative so that learning takes place active and creative. To generate a worksheet that students need to do the steps of proper preparation, namely:[33]

a. Analysis of the curriculum.

   This analysis is done with regard for the subject matter, the student learning experience, and competencies to be achieved, students.

b. Compile map needs of student worksheets.

[32] Hamdani, *op.cit.*, hlm. 75
[33] Andi Prastowo, *op.cit.*, hlm. 274 - 284

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Map student worksheet needs are indispensable to know what material should be written in the student worksheet. This map is also able to view the sequence or sequence of matter worksheet students. Student worksheet sequences are very needed in determining the priority of writing material.

c. Specify the titles of the student worksheet

Student worksheet titles should conform to the basic competence mapping results, subject matter or a learning experience between the subjects.

d. Students worksheets writing

To write the student worksheet, steps that need to be implemented, namely as follows: *first,* formulating indicators and intercultural learning experience subjects from a central theme that has been agreed upon. *Second,* determine the assessment tools. Assessment of the work we do and the work of students. *Third,* the compiled material. To compile the material the student worksheet, there are several points to note are:

1) The student worksheet Materials depends greatly on the basic competencies that will be achieved. Student worksheet materials in the form of supporting information, namely an overview or the scope of substances that will be studied.
2) The material can be taken from a variety of sources, such as books, magazines, the internet, and the journal of research results.

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3) So that an understanding of students against a stronger material, shows the references used so that students can read it more about such material.
4) The duties should be written clearly in order to reduce the questions from students about things that are supposed to be students can do it.

Fourth, pay attention to the structure of the student worksheet. This is the final step in the preparation of the student worksheet, i.e. compile the material based on the structure of the student worksheet. We must understand that the structure of the student worksheet consists of six components, namely: title, lesson learned (student instructions), the competence of which will be achieved, supporting information, tasks, and measures work, and assessment. When we write the student worksheet, then at least the six core components must exist.

1) Develop meaningful student worksheet

   To make a meaningful student worksheet, then there is one important point to note, that makes it interesting learning materials for students. To develop a student worksheet "rich benefit", we need to pay attention to two important things, namely design and development steps.

2) Determine the design development of the student worksheet

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There are two important factors to consider in designing student worksheet, i.e. the level of student reading skills and knowledge of students.

General restrictions that can be used as a guideline on when determining the student's worksheet design, ie: size, the density of the pages, page numbering, and clarity.

1) Size.

   Use sizes that can accommodate the needs of the learning that has been set.

2) Density page

   In this case, we have to strive so that the page is not too populated mostly with writing. The overcrowded young page will result in the student's hard focusing attention.

3) Page numbering

   Organizing pages also should not miss, because it can help students, especially the difficulty of determining where the title and where the subtitles and where the title of the material that we provide in the student worksheet.

4) Obviousness

   Make sure that the material and instruction we provide in worksheets students can clearly read the students.

5) Measures the development of student worksheets

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To develop the student's worksheet, there are four steps that need to be taken, namely: *first*, the determination of learning objectives; *second*, the collection of the material; *third*, the drafting of the elements; and *fourth*, the examination and refinement:

a) Specify learning objectives to be breakdown into the student worksheet.

   In this step, we must determine the design according to the learning objectives. Note the variable size, density of the pages, page numbering, and clarity.

b) The collection of the material.

   In this step you need to do is specify the material and tasks that will be included in the student worksheet. For this make sure that the choice is in line with the purpose of learning.

c) Examination and refinement.

   The important thing to do is to carry out checking back against the worksheets that students have already developed. There are four variables that are important to scrutiny before the student worksheet handed out to the students, namely: *first*, the suitability of the design with the aim of learning from basic competence. *Second*, the suitability of the materials with the purpose of learning. *Third*, the suitability of the elements with the purpose of learning. Make sure that the tasks and

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exercises that we give to support the achievement of the learning objectives. And, *fourth*, the clarity of delivery.

Whether the student worksheet easy to read, whether there is enough space to do the requested tasOf course, student worksheets we have developed above immediately conducted the evaluation. Here's how by requesting comment after students using the student worksheet. Input from students can be used to improve the student's worksheet.

3. Design of Plomp Development 2013

By its nature, design development research is relevant for educational practice (and therefore also for educational policy) as it aims to develop research-based solutions for complex problems in educational practice or to develop or validate theories about processes of learning and teaching.[34]

Whatever the purpose of design development, the research process always incorporates systematic educational design processes, as illustrated:

Picture 2.1. Systematic Design Cycles

[34] Plomp, T (Ed). *Educational Design Research*. (Enschede: Netherlands Institute for Curriculum Development (LSO). 2013) . hlm.17

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The student worksheet development model that will be applied is the Plomp development model 2013. Plomp 2013 expressed the development model consists of three phases, namely, *preliminary research, prototyping phase, and assessment phase*.[35]

1. **Preliminary research**

   This stage is conducted to collect information and formulate learning problems of rational thought about the importance of developing the model. Researchers begin to observe and analyze the creative thinking ability of students by conducting preliminary studies, analyze the weaknesses of student worksheets, as well as reviewing the learning material. Criteria in design research emphasis are mainly on content validity, not much on consistency and practicality. Description of activities is a review of the literature and of (past and/or present) projects addressing questions similar to the ones in this study. This results in (guidelines for) a framework and first blueprint for the intervention.

2. **Prototyping phase**

   Researchers began designing prototype product development. This prototype can be interpreted as an early draft which is the basic product of product development. The criteria in design research is initially: consistency (construct validity) and practicality. Later on, mainly practicality and gradually attention for effectiveness.

[35] Nurul Ikhsan Karimah, *Model Plomp Materi Segiempat*, Jurnal Euclid, Universitas Swadaya Gunung Jati. Vol. 2. No.1, 2015 (*www.fkip-unswagati.ac.id*. Retrieved 25 July 2018 at 21.05), hlm.162-165.

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Description of activities is the development of a sequence of prototypes that will be tried out and revised on the basis of formative evaluations. Early prototypes can be just paper-based for which the formative evaluation takes place via expert judgments resulting in expected practicality.

3. **The Assessment phase**

At this stage, researchers do development worksheet students who support an increase in the ability of the creative thinking of the students by using approach Problem Solving Polya.

The assessment phase is the evaluation stage to conclude whether the intervention or solution meets the specifications that have been set previously. The criteria in design research is practicality and effectiveness. Description of activities is evaluating whether the target users can work with the intervention (actual practicality) and are willing to apply it in their teaching (relevance & sustainability).[36] Also whether the intervention is effective. In this study, researchers tested the practicality and effectively student worksheets on elementary school students grade three.

4. Problem-based student worksheets

Hudoyo (1979) says that teaching students to resolve problems that allow students to become more analytical in taking decisions in life.[37] Students are trained to solve problems so that students are able to take decisions, analyze,

[36] Plomp, T (ed). *Educational Design Research*. (Enschede: Netherlands Institute for Curriculum Development (LSO). 2013) . hlm.30

[37] Herman Hudoyo, op.cit., hlm. 161

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scrutinize and return the result. Mathematics is presented to students in the form of the issue will give them the motivation to learn these lessons.

The problem-solving method is a way of presenting a lesson by encouraging students to find and solve a problem or question in order to achieve the purpose of teaching. The basic principle in this method is the need for activity in learning something. Activities students will arise if the teacher explains the benefits of lessons for students and the community. The problem-solving method is a method in learning activities with the way train students face many problems, both personal issues and problems to be solved alone or group together. The orientation of the analytical study was investigation and discovery that there was is basically problem-solving.[38]

Problem-solving is an important component to learning math in the present because the basic problem-solving ability is a must-have student. With problem-solving, students will have basic capabilities are more than just the ability to think, and can make the completion strategies for the next issues. This is in accordance with the statement of Kirkley (2003:1), that problem solving is a key component of the ' curriculum '. Stanick and Kilpatrick (Schoenfeld, 1992) also stated that problem-solving is the hearth of mathematics. The statement also endorsed by NCTM (2000), stating that it should be the main focus of problem-solving in a mathematics curriculum. [39]

Students who feel satisfied when it has solved the problem. Therefore it will be good mathematical activities such as searching for generalization and infuse

[38] Hamdani, *op.cit.,* hlm. 84

[39] Isrok'atun (et al.). *Melatih kemampuan Problem Posing melalui Situation-Based Learning Bagi Siswa Sekolah Dasar,* (Sumedang: UPI Sumedang Press, 2018), hlm.10

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creativity through problem-solving strategies. Polya suggested four-step problem solving are:[40]

a. Understanding the problem

The first step in understanding this problem is an important step in this approach when a person does not understand the problem properly, it will have difficulty in proceeding with the next step. This resulted in the students cannot solve these problems well and true.

In understanding problems in problem-solving, Polya suggests, that a problem solver needs to become better acquainted with a problem and work toward a clearer understanding of it before progressing toward a solution. Increased understanding can come from rereading the statement of the problem, drawing a sketch or diagram to show connections and relationships, restating the problem in your own words, or making a reasonable guess at the solution to help become acquainted with the details.[41]

In understanding the problem, these measures include: a) what is known, a description of what is given, or how the description of the problem; b) whether description of yan given enough to look for what is asked; c the description) are not quite, or description an exaggeration; and d) make the appropriate notation or image.[42]

b. Devising a plan

[40] Albert B. Bennet, Jr. *op, cit., hlm. .4*
[41] *Ibid.*
[42] Ahmad Susanto, *op.cit.* hlm.4

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The path from understanding a problem to devising a plan may sometimes be long. Most interesting problems do not have obvious solutions. Experience and practice are the best teachers for devising plans. Throughout the text, you will be introduced to strategies for devising plans to solve problems.[43]

On stage in the drafting of the plan will depend on the experience of students in solving a problem before. Generally, taken very reserved completed students, it will be increasingly creative students in drafting plans for problem resolution.

This step consists of a) have you ever found a problem like this before, has a similar problem exists in other forms; b) formula which can be used in this matter; c) pay attention to what is asked; and d) can result and the method then used here. [44]

c. Carrying out of the plan

The plan gives a general outline of direction. Write down your thinking so your steps can be retraced. Is it clear that each step has been done correctly? Also, it's all right to be stuck, and if this happens, it is sometimes better to put aside the problem and return to it later.[45]

After the students plan to solve a problem, then students will easily execute this stage. Students carry out the plans that have been made in the previous stage in this stage until the given problem is resolved.

[43] Albert B. Bennet, *loc.cit.*
[44] Ahmad Susanto, *loc.cit.*
[45] Albert B. Bennet, *loc.cit.*

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This step places emphasis on the implementation of the settlement plan that includes: a) check each step whether it is correct or not; b) how to prove that the selected step is correct, and c) carry out calculations in accordance with the plans made.[46]

d. Looking back

When a result has been reached, verify or check it by referring to the original problem. In the process of reaching a solution, other ways of looking at the problem may become apparent. Quite often after you become familiar with a problem, new or perhaps more novel approaches may occur to you. Also, while solving a problem, you may find other interesting questions or variations that are worth exploring.[47]

Once students can finish the problem provided, the last stage is very helpful to students in reducing the possibility of errors being made in resolving these problems. By doing the looking back, we can see the problems with the obvious and expected to obtain the correct answer in accordance with a given problem.

This step emphasizes on how to check the correctness of the answers obtained, consisting of a) can review the truth answer; b) can answer that is sought by other means, and c) can answer the way or used for other problems.[48]

[46] Ahmad Susanto, *loc.cit.*
[47] Albert B. Bennet, *loc.cit.*
[48] Ahmad Susanto, *loc.cit.*

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C. Description of Creative Thinking

a. Definition of Creative Thinking

Al-Ibda ' (creativity) in Arabic is a noun form of the verb. Creativity is the ability to reveal new relationships, looking at things from a new point of view and form a new combination of two or more concepts that dominated before, then creative thinking can be meant by thinking that can connect or see things from a new point of view. Creativity is also an ability that is spontaneous, occurring as a result of the referral is internal, and its existence cannot be predicted. Creative ideas usually arise due to the interaction with the environment or the extra stimuli.[49]

Some experts define creative thinking with different viewpoints. Johnson[50], creative thinking that suggests the persistence, discipline, attention and involve mental activities such as asking questions, consider new information and ideas that are not usually with an open mind, create relationships, particularly between something similar, hooking one another freely, apply imagination on any situations that evoke new and different ideas, and pay attention to intuition. Creative ability is generally understood as creativity. Often, individuals who are considered to be creative thinkers is a synthesis which is a really good build connection between different things not realized others spontaneously. A creative attitude is at least as important as creative thinking skills. This relative nature creative.

[49]Ahmad Susanto, *op.cit*, hlm.109

[50] T. E. Y Siswono, *Identifikasi Proses Berpikir Kreatif Dalam Pengajuan Masalah (Problem Possing) Matematika. Berpandu Dengan Model Wallas dan Creative Problem Solving (CPS),* (Makalah. Jurusan Matematika. FMIPA. Unesa. 2004), hlm.2

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Torrance assumes that creative thinking is a process that involves elements of originality, fluency, flexibility, and elaboration. It said further that creative thinking is a process of becoming aware or sensitive to the problems, deficiencies, and gaps in the knowledge for which there are no solutions are studied, as well as bringing information from warehouse of memory or external sources, define the difficulties or identifying the missing elements, looking for solutions, suspect, creating alternatives, refining and finally communicate its results.[51]

As for creative thinking, according to Ennis can manifestation in five groups, i.e. thinking skills: 1) elementary clarification; 2) basic support ; 3) inference; 4) advanced clarification; 5) strategy and tactics.[52] Creative thinking can also cultivate perseverance, self-discipline and practice full, which can involve mental activity, such as 1) asking the question; 2) consider new information and ideas that are not uncommon with the thought of open; 3) building linkages, in particular, the transfer of different things, sought a variety of things that are free; 5) apply imagination in every situation to produce new and different things; and 6) listening to intuition.[53]

Based on some of the above can be said that creative thinking is a mental activity associated with sensitivity to an issue, consider new information and ideas that are not usually with an open mind, as well as can create relationships in resolving a problem.

[51]Ahmad Susanto, *op.cit.*, hlm.110
[52] *Ibid.*
[53] *Ibid.*, hlm.110-111

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b. Creative Thinking Indicator's

A wide range of views about the sense and the components of creativity or creative thinking, in principle all argued in line but such disclosure only. The components of creative thinking, according to Munandar, at least include fluency, flexibility, originality, and elaboration. The explanation of the characteristics associated with such skills are outlined as follows.[54]

a. Distinctive skills fluency

i.e. gave many ideas, answers, troubleshooting or questions, give suggestions or the many ways to do a variety of things, always think of more than one answer. This skill is demonstrated by student behavior such as:

1) Asked a lot of questions.
2) Responded with a number of answers if you have questions.
3) Having many ideas about how to workaround.
4) Smoothly in expressing his ideas.
5) Work more quickly and doing a lot more than other kids.
6) Can quickly see a mistake or lack of an object or situation.

b. Characteristics of flexible thinking skills (flexibility):

1) Produce variations of the idea of solving problems or answer a question.
2) I can look at things from a different point of view.
3) Presents a concept in different ways.

[54] *Ibid.,* hlm.111-113

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c. Features original skills (authenticity):

1) Be able to reveal new and unique thing in resolving the problem.

2) Unorthodox thinking of ways to express yourself.

3) Makes the combination unusual-a combination of parts or elements.

d. Specified the skills traits (elaborations):

1) Develop or enrich an idea or product.

2) Add, organize or detail a notion so as to improve the quality of the idea.

Related to this, Treffinger gives four reasons for the importance of creative learning, including[55]

a. Creative Learning helps children to be more successful if we are not with them.

b. Creative Learning creates possibilities to solve problems that we cannot afford the foretold will arise in the future.

c. Creative Learning can lead to huge consequences in our lives.

d. Creative Learning can lead to satisfaction and pleasure, and with creative learning allows new ideas, new ways, new results and as a valuable contribution to national development.

But according to the formula issued by the Department of national education, the indicator that students who have the creativity, namely:

a. It has great curiosity.

[55] *Ibid.*, hlm.114 - 115

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b. Often ask questions that are weighted.

c. Gives a lot of ideas and suggestion of a problem.

d. Capable of stating opinions spontaneously and not shy.

e. Have and appreciate the sense of beauty.

f. Its own opinion and can express them, not affected other people.

g. Has a sense of humor.

h. Had a strong imagination.

i. Able to offer, the problem-solving idea different from others (original).

j. It can work on its own.

k. Love to try new things.

l. Able to develop or elaborated the idea (the ability of elaboration).

Similarly, with Torrance, there are four components of creativity that can be accessed, namely fluency, flexibility and versatility (flexibility), detail or elaboration and originality (originality). However, Hamalik (2002) concluded that a special aspect of creative thinking is divergent thinking that has its features: flexibility (suppleness), originality (authenticity), and fluency (quantity output). The thinking ability of a person has a level according to the work produced by that person. As well as a person's creativity, it is therefore used as a level of creativity as a hierarchical role in the creativity of students. The following levels of

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creativity in problem-solving are adapted from the research of Tatag Yuli Eko Siswono (2008) in Table 2.1[56]

Table 2.2 Levels of creativity according to Siswono [57]

Level	Characteristics
Level 4 (Very creative)	Students are able to demonstrate fluency, flexibility and originality or originality and flexibility in solving problems.
Level 3 Creative	Students are able to demonstrate fluency, and originality or fluency and flexibility in solving problems.
Level 2 (Quite Kreatif)	Students are able to demonstrate originality or flexibility in solving problems.
Level 1 (Less creative)	Students are able to demonstrate fluency in solving problems.

Based on the explanation above, a special aspect of creative thinking or an indicator of divergent thinking in solving mathematical problems in this study is fluency, flexibility, and originality. Fluency is the ability to produce many ideas.

Indicators of student creativity in solving mathematical problems in this research are students already able to provide at least two different solutions for the problem given. Flexibility is an ability to propose a variety of strategies in solving problems until the correct outcome of completion. Indicators of student creativity in solving mathematical problems in this research are students already able to provide at least two

[56] Indah Purnama Sari, Andri Nofrianto, Mira Amelia Amri. *Creative Problem Solving: Bagaimana Pengaruhnya Terhadap Kreativitas Siswa.* Journal Elements(Vol 3 No. 1, January , 2017) hlm. 88

[57] *Ibid.*.

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different strategies to solve the problem given. Originality is the ability to spark new and unique ideas.[58]

In the phases of elementary school age children, cognitive development of children has different levels. In grade III students are included in concrete operations. Cognitive development is one of the important aspects of education guidelines. Cognitive realm is a realm related to learning objectives that is oriented to the thinking skills in education known as the Bloom taxonomy of cognitive domains, namely remember, understand, apply, analysis, evaluate, and create. These six levels are the result of revisions made by *Anderson and Krathwohl* from previous versions of knowledge, understanding, application, analysis, synthesis and evaluation.[59]

At the cognitive level C6 of Anderson, it creates a very closely related experience of student learning at a previous meeting. Although creating leads to a creative thinking process, it does not in total affect the ability of the student to create. Creating here directs students to be able to implement and produce work that can be made by all students. The difference in creating this with the other dimensions of cognitive thinking is on other dimensions such as understanding, implementing and

[58] Indah Purnama Sari, Andri Nofrianto, Mira Amelia Amri. *Creative Problem Solving: Bagaimana Pengaruhnya Terhadap Kreativitas Siswa.* Journal Elements(Vol 3 No. 1, January 2017) hlm. 88

[59] Dian Andesta Bujuri, *Analisis Perkembangan Kognitif Anak Usia Dasar dan Implikasinya dalam kegiatan belajar Mengajar*. Journal Literasi (Vol IX, No. 1, 2018), hlm. 40-41

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analyzing students working with familiar information, while on creating students ' work and Produce something new.[60]

c. The Stages of Increasing Creative Thinking

Creative thinking is the idea of how to build something can be applied in life. The various steps are defined in the conduct of the creative process, summarized in five stages, i.e.:[61]

a. Stimuli

To be able to think creatively is the need for stimulus from the mind of the other. The initial stimulus is driven by an awareness that the problem must be resolved, or a feeling that it is not clear that there is no idea so can be captured or fully realized. Often this situation triggered by a challenge on student thinking, given by the teacher.

b. Exploration

Students are helped to pay attention to the choice of alternatives before making a decision. To think creatively, students should be able to investigate further. And see what they need. Techniques or certain principles can be applied to improve the range and quality of the ideas collected. These techniques include: (a) divergent thinking, that kind of thinking that builds many different answers, not limited to the convergent thinking that looking for one answer true or absolute; (b) differing judgment, namely the principle of thinking now, consider

[60] Husamah, dkk, *Belajar dan Pembelajaran*, (Malang: UMM Press, 2016), hlm. 157-158

[61] Indah Purnama Sari, Andri Nofrianto, Mira Amelia Amri. *Creative Problem Solving: Bagaimana Pengaruhnya Terhadap Kreativitas Siswa.* Journal Elements(Vol 3 No. 1, January 2017). hlm.115 - 117

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then eliminate the anxiety that it is true, and prevent the imagination was arrested by consideration. This principle is useful when students are working for yourself, think of ideas in one group; (c) extending the effort to expand the efforts of the students need to be given the opportunity, support, interest, questions, and stimulus by adults; (d) allowing time, i.e. giving students enough time to build ideas with an important stage in the creative process. This is one of the techniques that are useful for troubleshooting activities; and (e) encouraging play, that is, to see how far an idea can be expanded, give students the opportunity to build it, describe it, presentation, action, and test it in action.

c. Planning

After being held to a stimulus in the form of a problem, then performs the exploration for solving these problems, further opening up various plans or strategies for problem-solving. From a variety of plans are made, can be taken a few the most appropriate plans for solutions.

d. Activity

The creative process begins with an idea or set of ideas. We need to give an opportunity to the students to realize their creative thinking in the form of other words in action planning is cooked then conducted activities or carry out various plans set.

e. Review

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The student needs to hold an evaluation and review of the work. Students can be trained to use their imagination and judgment to evaluate.

Creative problem solving is still impersonal and more lead to the process of research, integration of creative problem-solving in the process of learning in the classroom is used as stages in solving problems see the thought process complex that is creative and critical. Initially divergent thinking to acquire the idea as much as possible (creative thinking), then convergent thinking (logical and critical thinking) to select their idea or draw conclusions.[62]

Casdan and Welsh in his research found that students who have high creativity tend to be more independent, lobbies for changes in their environment, interpersonal relations and it's more open and active. Following exposure to the creative child's behavior that has a high level of intelligence, as follows:[63]

a. Active thinking is characterized by great curiosity as well as a quick response in resolving the issue.
b. Caution in taking an action, which always takes into account the range of consequences that may arise due to such action.
c. Excited in solving problems and tend to like a challenge.
d. Always trying can be better from time to time, so tend to always want to do or make something new.

[62] *Ibid.,* hlm.117
[63] *Ibid.,* hlm. 117-118

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e. It has a high sensitivity making it easy to capture or reading opportunities.

f. Flexible and have high stimula spontaneity that arises out of the environment.

As for the efforts of teachers in improving the ability of creative thinking is the steps as presented Filsaime:[64]

a. Removes a barrier to creative thinking power of students.

b. Make them aware of the origins of creative thinking.

c. Introduce and practice creative thinking strategies.

d. Created a creative environment.

Creative talent, in fact, exists on each person. However, in terms of education, the more important is that this creative talent can be nurtured and developed. Related to this, there is suggests that Munandar conditions environment that can foster the creativity of children, namely the psychological security and psychological freedom.

First, psychological security can be created with the steps, as follows:[65]

a. Educators can accept it, without reservation, with all its strengths and weaknesses, as well as providing confidence to him that it's basically good and capable.

[64] *Ibid.*, hlm. 118-119
[65] *Ibid.*, hlm. 119-120

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b. The process of education cultivates an atmosphere where children feel valued by others. Give a judgment against a person will only be perceived as a threat, giving rise to the need for self-preservation.

c. Learning pass judgment in a sense can understand the thoughts, feelings, and behavior of children, be able to put yourself in the situation of the child and the look from the point of view of a child.

Second, the psychological freedom needed to foster children's creativity when he felt the psychological freedom, i.e., where parents and teachers give her a chance to express their thoughts and feeling. The ambiance or climate that supports this psychological freedom can also be created by the teacher with the anticipated ways offered the following Munandar.

a. Being open to the idea of interest and protege.

b. Give time on students to think and develop creative ideas.

c. Create an atmosphere of mutual respect and mutual acceptance between a student with other students, between students with teachers.

d. Push divergent thinking activities and become a speaker.

e. Warm and supportive of providing security and freedom to think exploratory.

f. Give the opportunity for students to participate in making decisions.

g. Aim to have all students involved and support ideas and problem-solving students to problems and plan (project).

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h. Being positive toward failure and help students to realize the mistakes and weaknesses and try to increase their business and the idea in order to qualify, in an atmosphere that is conducive or supportive.

The important purpose of teaching is to help students more creatively. Creative process as a five-step sequence:[66]

a. Preparation. Students drowned with issues of problems that attracted them and their curiosity arose.
b. Incubation. Students cultivate ideas in their heads, a point where they tend to make some unusual connections in their minds.
c. Insight. Students experience the "Aha!" moment when the puzzle pieces are seen matching each other.
d. Evaluation. Now, students must decide on a valuable idea and be worthy of pursuing. They have to think, "Is it a new idea or obvious?"
e. E. Elaboration. The final step often covers the longest span of time and involves a difficult job. This move was thought by the American inventor Thomas Edison, who was famous in the 20th century as he said that creativity is 1 percent inspiring and 99 percent sweat

Mihaly Csikszentmihalyi argues that this five-step sequence provides a framework of thinking about developing creative ideas.[67]

[66] John W. Santrock, *Psikologi Pendidikan,* (Jakarta: Salemba Humanika, 2014). hlm. 20
[67] *Ibid.*,hlm. 20

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D. Effectiveness of student worksheets to improve creativity

1. Relationship of Problem-based learning with student creativity

Education is an environment or conditioning conscious effort towards learners. When the conditioning efforts, lack of support for enlightenment and or development of reasoning, as well as good thinking skills, will give birth to a less optimal educational graduate.[68]

As of the year 2012, many learning models have been introduced that stimulate learners to think critically and creatively. One of them is a problem-based learning model (solving based learning), or contextual learning (contextual learning). These two learning models are part of a conditioning effort for learners to think creatively and critically.[69]

The relationship of problem solving with creative thinking is put on Treffinger stating that creative thinking skills are needed to solve problems, especially complex problems.[70]

2. Relationship of student worksheets with student creativity

An important aspect of thinking is to think creatively. Creativity is the ability to think about new, unusual ways, and come up with a unique solution.[71]

The mathematics learning goals it is clear that one of the goals of the learning of mathematics is so that each student has the skills and problem-solving ability

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[68] Momon Sudarma, *Mengembangkanketerampilan berpikir kreatif.* (Jakarta: Rajawali Press, 2013), hlm. 47

[69] *Ibid.*, hlm. 48

[70] Ali Mahmudi, *Pemecahan Masalah dan Berpikir Kreatif*, (Konferensi Nasional Matematika (KNM) XIV , 2008), Retrieved from staff.uny.ac.id on 25 Juny 2019 at 22.17, hlm.9

[71] John W. Santrock, *Psikologi Pendidikan*, (Jakarta: Salemba Humanika, 2014). hlm. 20

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in mathematics. One of the concepts that are described in the Qur'an is that of the number contained in the Al-Fajr Q.S. verse 3:[72]

وَالشَّفْعِ وَالْوَتْرِ

It means: *"for the sake of the even and odd."* (Al-Fajr Q.S. (89): 3)

Students will be trying to solve a problem given his teacher if you receive a challenge to the issue. [73] It is important for teachers to formulate sentences on the issues that will be presented to students in interesting ways, related to real life so it's not too abstract. By developing the student's worksheet-based problems, students viewed the issue with more creative and interesting.

[72] Fadjar Shadiq, *Pemecahan Masalah: Penalaran dan Komunikasi Matematika,* (Yogyakarta: Departemen Pendidikan Nasional, 2004,) hlm.16

[73] *Ibid.*

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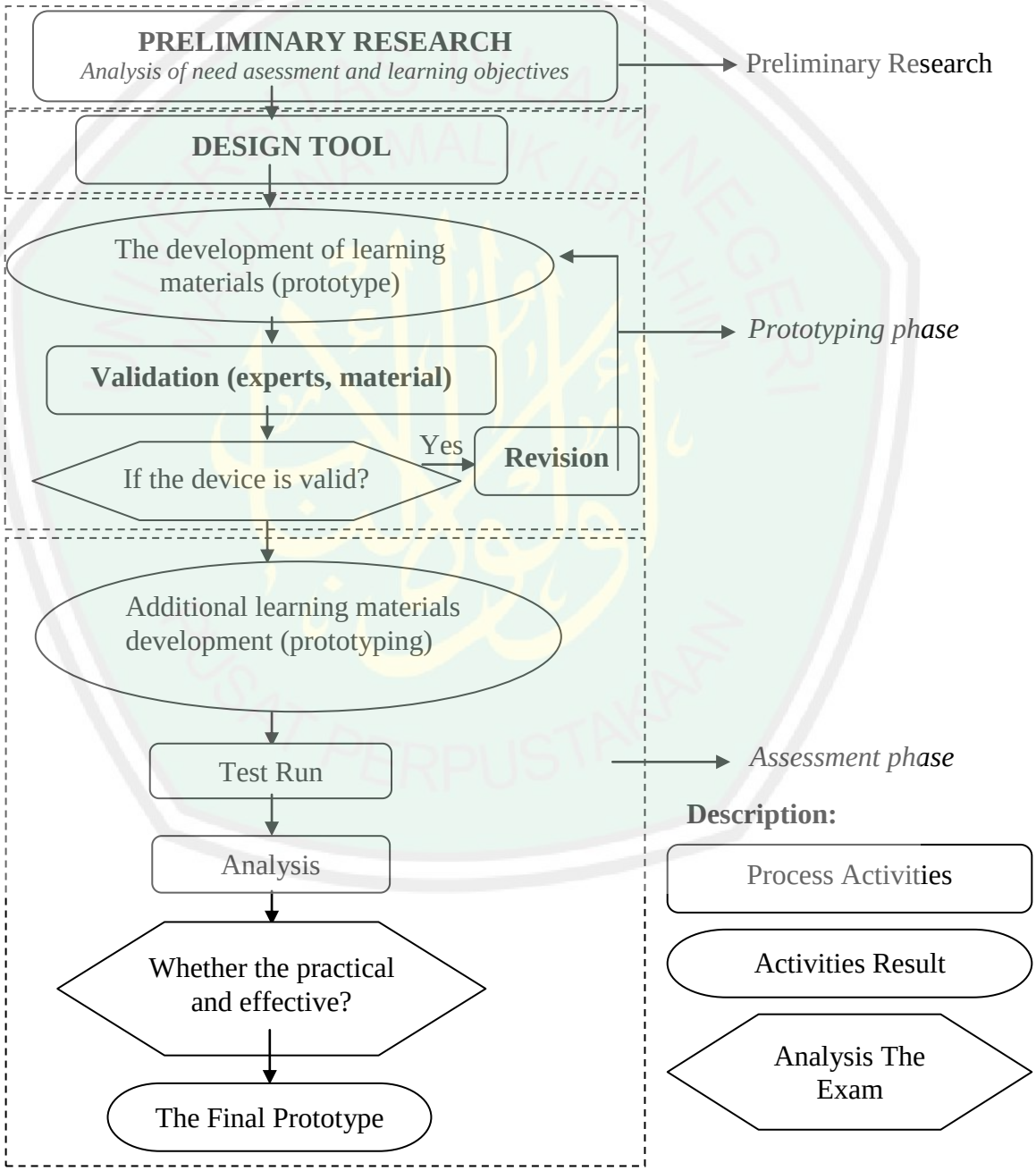
E. Research Roadmap

Then based on the theory of the above proposal in the frame of this study researcher presented in the chart below.

Picture 2.2 Research Roadmap Modified of Inayatul Fithriyah[74]



[74] Inayatul Fithriyah, *Pengembangan Perangkat Pembelajaran Bercirikan Problem Solving Polya yang mendukung Peningkatan Kemampuan Berpikir Kritis Siswa Kelas VII SMP* (Master Thesis). (Malang: Universitas Negeri Malang, 2016).

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CHAPTER III

METHOD OF THE RESEARCH

A. Type of Research

This type of research is the Research and Development of the research method used to produce a particular product, valid, and test the practicality and effectiveness of a particular product.[75]Researchers develop student worksheet learning resources to support the creativity of students in learning mathematics. This method is one of the means used to develop educational products. The research and development method is widely used in the fields of natural science and engineering science. However, it is also commonly used in the social sciences such as psychology, sociology, education, management, and others.[76] Research development is a person's research to develop and test a product that has been developed.

B. Model of The Development

The development of student-based math worksheets this workaround using design research of the Plomp 2013 development Model. There are three phases in the development of a modified Plomp 2013, namely (1) preliminary research, (2) prototyping phase, (3) assessment phase. The model contains the procedural stages that must be followed by researchers to develop a product that has previously been there be a more perfect product.

[75] Sugiyono, *Metode Penelitian Pendidikan.* (Bandung: CV Alfabeta, 2008), hlm. 107
[76] *Ibid.,* hlm: 108

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The stages of development that are used in the development of this research are preliminary research, prototyping phase, and the assessment phase. The following description of the procedure developed in this research.

1. *Preliminary research*

   Researchers do initial research about the facts that exist in the field. At this stage carried out an analysis of the ability and willingness of the student learning and curriculum analysis (analysis of the material, formulating basic competency criteria, and work).

   This development, in research at an early stage researcher, started observing and analyzing the creative thinking ability of students by conducting preliminary studies, analyze the weaknesses of the student worksheet that was used previously, as well as reviewing the material learning.

2. *Prototyping phase*

   Researchers began to develop the student's worksheet, instruments, and perform validation against the devices that have been developed. The development phase is a recurring development stage, which consists of several cycles of *formative* evaluation research as part of the most important research activities are focused on improving. worksheet students developed a researcher measures tailored to the Problem Solving Polya and indicators of creative thinking. Student worksheet components developed to include the main cover, basic competencies, core competencies, learning objectives,

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Indicators, problems, and resolution of the problems of using a problem-based approach to Polya. The student worksheet developed is divided into two parts namely the student worksheets intended as a handle for the teacher and the student worksheet used students in the learning process for students. The difference between the two student worksheets developed was in the student worksheets for teachers given description questions that can improve the four indicators of creative thinking, while on a worksheet for students not given such information. In this stage also developed a test to measure the ability of the creative thinking of students both tests are used in research as well as beginning at the end of the study.

At this stage, after the researchers do development of student worksheets and research instrument, researchers tested device validation of learning that has been developed. The validation activities by doing and asking experts of mathematics and mathematics teachers of elementary school as a validator. As for the specification of a lecturer as a validator, among others, Professor of mathematics at the College of education has completed a minimum of master's degree.

3. *Assessment phase*

This evaluation stage to conclude whether the solution or specification of the intervention. In this study, researchers tested the practicality and effectiveness of student worksheets that have been developed. In this study, researchers conducting trials of practicality and effectiveness on student

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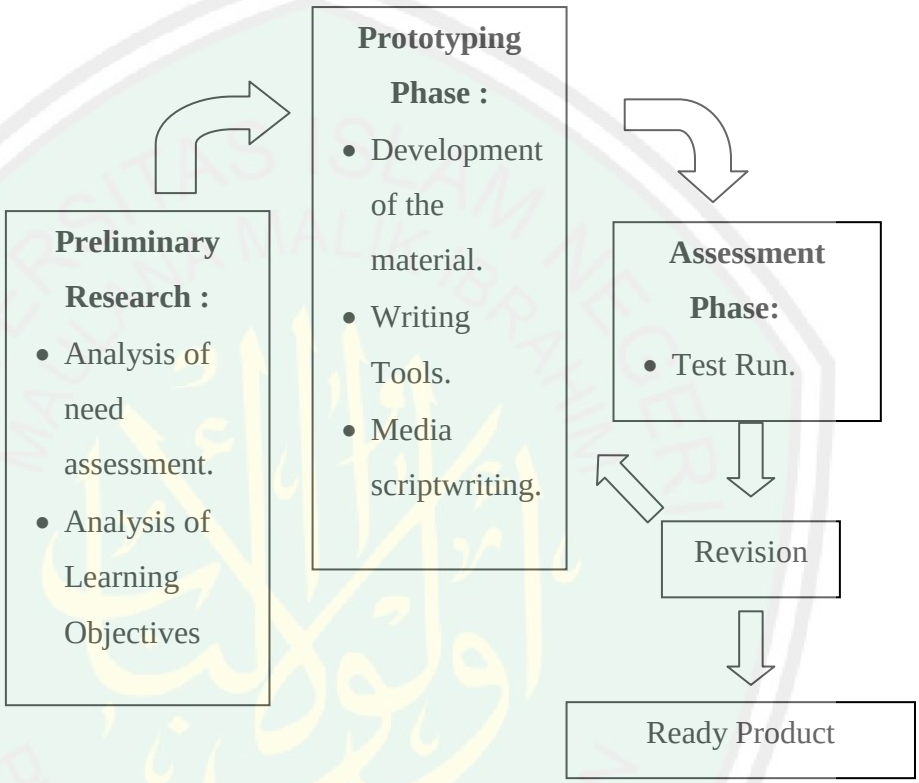
worksheet grade III State Preparation of Islamic Primary Miftahul Huda Turen.

As for the easier, it can be seen in the pictures below:



Picture 3.1 Stages of Development.

C. The Procedure of The Development

The procedures used in this study is to use the steps instructed Plomp 2013 in Inayatul Fithriyah[77]. This study followed the stage of the Plomp on Inayatul Fithriyah, but for the second revision phase was removed because it did not match the stage implemented in this study.

[77] Inayatul Fithriyah, *Pengembangan Perangkat Pembelajaran Bercirikan Problem Solving Polya yang mendukung Peningkatan Kemampuan Berpikir Kritis Siswa Kelas VII SMP* (Master Thesis). (Malang: Universitas Negeri Malang, 2016).

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1. Preliminary Research

In preliminary Research, the researcher carrying out two steps, including the following:

a. Analysis of Need Assesment

In order for the student worksheets will be developed can be accepted by the students, the first researcher to see how the characteristics and behavior of students in the learning process. This characteristic is important in designing learning.

Children at primary school age (7-11 years) are at the stage of concrete operations. Children at this age have a tendency of behavior, namely: *first*, the child begins to perceive the world objectively, shifting from one aspect to another aspect and looked reflectively elements simultaneously; *second*, the child begins thinking operationally; *third*, the child is able to use the operational way of thinking to classify the objects; *fourth*, the child can grasp the concept of substance, length, width, wide, high, low, light and heavy.[78]

b. Analysis of the learning objectives

This first step is looking at the first general purpose in learning. Then identify and conduct a needs analysis to determine what goals to be achieved by the students after learning activity.

To get an idea of the expected competencies and qualifications can be owned by the student in the following learning can be done by reviewing

[78] Andi Prastowo, *Pengembangan Bahan Ajar Tematik; Tinjauan Teoritik Dan Praktik*, (Jakarta: Kencana Prenadamedia Group, 2014), hlm. 83.

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curriculum 2013 on the regulation of the Minister of education and culture number 20 the year 2016.

Table 3.1 The Standard Of Competency Graduates SD/MI/SDLB/Pack A[79]

No	Dimensions	Qualifying Competence
1	Attitude	Have a behavior that reflects the attitude of: 1. Have faith and conscious of God 2. Character, honest, and caring; 3. Responsible 4. True life long learners, and 5. Healthy physical an spiritual Appropriate child development in an environment of family, school, society, and the natural environment, nation and State.
2	Knowledge	Have knowledge of the factual, conceptual, procedural, and Metacognition on the ground level with regard to: 1. Science, 2. Technology, 3. Art, and 4. Culture. Able to associate the above knowledge in the context of self, family, school, community, and the natural environment, the nation, and the State.
3	Skills	Have the skills to think and act: 1. Creative, 2. Productive, 3. Critical, 4. Independent, 5. Collaborative, and 6. Communicative. Through a scientific approach in accordance with the stages of child development that are relevant to the given task.

In the book master class III also mentioned the Standard of competence and core competence of graduates as well as Basic

[79] bsnp-indonesia.org. *Lampiran Permendikbud No 20 Tahun 2016*. Retrieved 10 April 2016. At 21.01.

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Competence in the relevant class III with material multiplication and Division can be seen in the following table:[80]

Table 3.2 Core Competency Class III

Core Competency Class III	
1	Receive and run the religious teachings that are adhered to.
2	Shows honest behavior, discipline, responsibility, caring, polite, and confident in interacting with family, friends, teachers, and neighbors.
3	Understand the factual knowledge by way of observing (hear, see, reading) and ask yourself based on curiosity about himself, God's creation and its activities, and objects that he found her at home and at school.
4	Presents factual knowledge in a language that is clear, logical, and systematic, in the work of the aesthetic, in a movement that reflects a healthy child, and in the actions that reflect the child's behavior have the faith and honor.

Table 3. 3 Basic Competencies

Basic Competencies	
1.1	Receive and run the religious teachings that are adhered to.
2.1	Shows a careful and conscientious, honest, orderly, and follow the rules, care, discipline and time not easily give up in doing tasks.
3.1	Understand the properties of the natural numbers count operations through observation of the pattern of addition and multiplication.
4.2	Formulate your own expressions, making mathematical models, and selecting effective strategies in solving real problems every day having to do with addition, subtraction, multiplication, and Division of whole numbers, time, length, weight, and money as well as checking the correctness of the answers.

2. Prototyping Phase

a. Design Tool

[80] Kementerian Pendidikan dan Kebudayaan Republik. *Pertumbuhan dan Perkembangan Makhluk Hidup: Buku Guru / Kementerian Pendidikan dan Kebudayaan.* (Jakarta: Kementerian Pendidikan dan Kebudayaan, 2018), hlm. xiii

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In identifying the material to be incorporated into learning, it requires identification of the specific skills and knowledge a must-have in order to be ready to enter learning and using the student worksheet. As is known beforehand that the student worksheet user this is a grade III Islamic primary. in the previous step, namely the initial analysis that students already have the stock material multiplication on class II.

In this step, the researchers compile material multiplication and Division in accordance with the learning objectives to be achieved. The behavior of feedback and General characteristics of the learners is also very important to be known as material or reference in designing learning.

Based on a formula of learning objectives, indicators will be formulated in accordance with the basic competency test and assessment instruments, as well as the measurements to find out the level close to the learning objectives and successes already set These include multiple choice tests covering an essay. As for the instruments of such tests can be seen in appendix IX.

The steps of this math learning design activities are the development and selection of the student worksheet. A student worksheet is one source of knowledge for students in schools that are the very means of supporting the process of teaching and learning activities. Book study also determines the success of education students in demanding lessons in school. Therefore, the book is a good learning quality, in addition to

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being a source of knowledge that can support the success of learning students also can guide and direct the process of teaching and learning in the classroom toward the process of teaching and learning in the classroom toward the learning process quality.

Student worksheet this problem-based tailored to curriculum 2013 accordance with the objectives of the school as well as the applicable yan developed with reference to *Problem Solving Polya*. As for the results of this development in the form of *printed materials* are categorized into the student's book this is caused due to the specific nature of the material is limited to the material of the multiplication and Division.

b. Validation

A formative evaluation was conducted to obtain data to revise the resulting student worksheet for more make effective. Formative evaluation is done by two groups, namely, evaluation experts and evaluation of the use of worksheets for students.

Evaluation by experts conducted to validate the eligibility of the student worksheet. The evaluation carried out a content expert, design expert, and learning expert. For more details can be found in Appendix IV-VIII.

c. Revision

Data obtained from the formative evaluation are collected and interpreted to be fixed in accordance with the repeated suggestions of improvement from experts.

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The stage of the revision will be presented in the results of development that includes a presentation of test data worksheet students. The exposure includes the results of evaluation experts.

3. Assessment Phase

a. Test Run

Product testing is a series of tests the student worksheet to users that have been developed in accordance with predetermined learning objectives.

The criteria for effectiveness is the same as with the valid criteria. Criteria for effective Student Worksheet if the worksheet Students developed can support an increase in the ability of the creative thinking of students in accordance with the original purpose of product development. Test the effectiveness of the student Worksheet with the students as a way of asking respondents to fill out the question form provided to test the practicality of Worksheets Students developed. Data retrieval effectiveness only to grade III C. Questionnaires can be seen in Appendix X.

In doing the test the practicality of worksheets students, researchers will compare the results of the test score pre-test and post-test of this research. Research conducted on grade III C and III B as many as 42 people state preparation islamic primary Miftahul Huda Turen. At the end of this chapter will be given development flowchart using the development model Plomp 2013 of modified Fitriyah (2016) used in this study.

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b. Analysis

The analysis is used whether the data has been shown to be valid, practical and effective in its use. In its analysis using descriptive analyses and test T.

c. The Final Product

Products that have been revised and invalidation will be a product that can be used for students in learning to support learning and improve the creativity of students.

D. Product's Trial

Product trials are meant to gather data that can be used as the basis for setting the level of effectiveness and practicality of the product produced. In this chapter the following need to be addressed:

1. Design Trials

The trial design is done in order to determine the level of validity, practically, and effectiveness of the product. The product tested the level of validity, practically, and effectiveness. Level of validity, practically, and effectiveness of instructional materials known from the results of analysis trial activities through several phases.

The product trial is done when the product is finished. Product testing was done with the quasi-experiment comparing the experiment class and the control class. The experiment class is the class that gets the treatment from the teacher in the form of a problem-based student worksheet.

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While the other class as a control class who did not get the treatment of the teacher used as a comparator.

Here's an explanation associated with experimental models of before-after:[81]

R	O1	×	O2
R	O3	×	O4

Picture 3.2 Design of Experimental

Specifications:

R : Experimental and control groups are chosen at random

O1: The value of the initial capability group experiments.

O2: The value of the ability after getting treatment.

O3: The value of the initial capability of the control group.

O4: The value of the capability of the post-test without any treatment.

× : Treatment

2. Trial Subject

The subject trial in this study is the matter expert, media experts, teachers of mathematics of class III C State Preparation of Islamic Primary Miftahul Huda Malang. The condition of the subject of this study can be explained that is a student who has a character quite complex so need learning that can enable students. The approach is suitable the use ib mathematic learning in State Preparation of Islamic Primary Miftahul Huda Malang is a problem-based model, because very

[81] Sugiyono, *Metode Penelitian Pendidikan* (Bandung: Alfabeta, 2009), hlm. 120

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many activities that capable of directing students to be active and independent.

Here's an explanation related to the subject of trial:

a. Content expert

Validation of content expert by lecture who expert in the mathematics studies. Validation of this content expert aims to determine of worksheets that use of the student in accordance, with the learning contained in main competence (KI), basic competencies (KD), and indicators that have been made. The content expert is professor or teacher of mathematics at the College of education has completed a minimum of master's degree, an expert in mathematic's education, and have experience in learning mathematics, especially in multiplication and division, from above researcher choose Mrs. Ulfia Churidatul Andriani, M.Pd to be validation expert of content mathematics. The expert content related to the opinion or comment about the quality of the book proud has developed in terms of contents or materials that will be used for the improvement of the textbook based mathematically.

b. Design Expert

Design experts are to determine whether worksheets flexible to use students in learning. Aspects of quality assessment of worksheets determined according to the terms of the preparation of worksheets that didactic requirement, construction, and technical. The design

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expert is professor or teacher of design media at the College of education has completed a minimum of master's degree, expert in product design, and have experience in developing product design, willing to follow the entire process of the assessment from this statement researcher choose Mr. Makki Hasan, M.Pd to be validation of expert product design.

c. Learning Expert

The validation of a learning expert is conducted by a teacher of a math lesson. Validation of learning expert aims to know whether the worksheets that will be used in accordance with the learning material contained in main competence (KI), basic competencies (KD), and indicators that have been made. Researcher develops the aspects of assessment accordance with the product learning with the qualifications are teachers are teaching in elementary school with min S-1, having experience in teaching mathematics lesson, and willing as testers and users of instructional materials for the source of the data from the development result. The selected expert learning is Mrs. Latifatus Sholikha, S.Pd.I, teacher of third grade State Preparation of Islamic Primary Miftahul Huda Turen, Malang.

d. Field trial

Field trial that applied to the student in class III. The purpose of the field trials is to operationalize of the worksheets and learning tools. Field trials consisted of some of the following activities.

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1) Developers observe students who are learning to use the student worksheet.
2) Students providing an assessment of learning materials.
3) Developers do data analysis of the results of the assessment.
4) Developers make improvements based on the results of the student worksheet analysis assessment.

Trials conducted in class III C by 21 children for *experimental class*, and class III B by 21 children for *control class* in State Preparation of Islamic Primary Miftahul Huda Turen.

3. Types of Data

The data collected on research in the form of quantitative data as data points and the qualitative data in the form of advice and input from respondents as additional data. The data gives an overview of the feasibility of the product being developed.

a. Qualitative Data

At this stage of validation expert, qualitative data derived from criticism, suggestions, and comments from experts towards the student worksheet. While in field trials, qualitative data derived from the answers of the students at the time of filling the now against student response student worksheets provided.

b. Quantitative Data

Quantitative data in the form of a point the assessment given by experts against worksheets students in accordance with the

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judgment was given and value pre-test and post-test results of student learning.

4. Data Collection Instrument

A research instrument is a tool that will be used to acquire data for answers and solve problems dealing with the question of research. Development in the research technique which is used to collect the data above includes discussion, review documents, and test each is briefly described as follows:

a. Interview

The interview was conducted to find out data about the State of learning and the need for the development of the student worksheet. Interviews conducted in unstructured, namely in conducting interviews, the researcher did not prepare a research instrument in a systematic and complete in the form of written questions which the alternative answer has been prepared. Interview guidelines used with the outlines of a problem that should be asked.[82] The interview was conducted at the stage of preliminary research to obtain the real condition of field trials.

b. Sheet Validation

Sheet validation is used to collect the data validator results. Sheet form validation question form validation.

[82] Sugiyono, *Metode Penelitian Pendidikan* (Bandung: Alfabeta, 2009), p. 137

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c. Questionnaires

Data collection techniques by giving or sending a questionnaire to be filled by the respondent. Most of the social researcher, including education, using the questionnaire as the selected techniques to collect data. The now can be viewed as a research technique that many have in common with interviews, except in its implementation, namely the now executed in writing, whereas the interviews orally. Therefore it is also called with the written interview.[83] Researchers are now spreading to the grade III to obtain data or information needed against the use of the media the worksheets that students have been developed.

d. Test Results the achievement of Learning

The test is a series of questions or other tools used to measure skills, knowledge and intelligence, ability, or talent that individual or group. In educational research, tests the ability of the potential and ability of learning outcomes is a test to measure the ability of a person achieved after making the learning process.[84]

In this study uses two types of tests i.e. pretest and post-test experimental class and good classroom control. The granting of a test intended to measure how far the results obtained Grade III C in the implementation or after the use of the student worksheet. The tests are arranged and conducted to know the ability of mathematical subjects

[83] Pupuh Fathurahman, *Metode Penelitian Pendidikan* (Bandung: Pustaka Setia, 2011), hlm. 177.

[84] *Ibid*, hlm. 185.

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in accordance with the cycle of existence both classes are given preferential treatment or classes that are not given preferential treatment.

5. **Data Analysis Techniques**

Data analysis is one in a series of research activities. Data obtained from this research is data resulting from the question form or questionnaire by experts (both design expert and content expert), and also the results of the interviews, observation, and the now of the students.

a. **Descriptive analysis**

Validation is the process of design activities to assess whether the design of the product, in this case, the new working system rationally will be more effective than long ones or not.

Test the effectiveness of the research was performed by the practitioner, in which case grade III C State Preparation of Islamic Primary Miftahul Huda. Test the effectiveness it aimed to test whether a development product is in compliance with the original purpose i.e. supports increased student creativity. To see the level of practice is seen from a comparison of test scores of the students at the beginning of the end of learning and instruction. In addition, there is nothing creative thinking can be seen from the indicators of the ability of creative thinking. The question of the beginning or the end of the learning is structured in accordance with the indicators of creative

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thinking so that the questions can be used as a benchmark of high-low levels of creativity in students.

The result of this descriptive analysis is used to determine the level of validity, practically, and effectively of the worksheet, to analyze the results of the response of the validator using the following formula[85]:

$$P = \frac{\sum x}{\sum x_1} \times 100\ \%$$

Specifications:

P = Percentage of validity

∑x = The total number of scores answer validator (real value)

∑x1=The total of highest response (expected value)

Aspects on the sheet validation, practicality and effectively are rated with 4 scales of assessment are as follows:

Qualification	Score
Valid	Va = 4
Quite Valid	3 ≤ Va < 4
Less Valid	2 ≤ Va < 3
Invalid	2 ≤ Va < 1

Table 3.4 The Scale of Assessment[86]

From the results of the analysis, if the results of the validation show Va < 3, then device learning need to be in the revision (either partial or total revision). Conversely, if the results of the validation of

[85] Arikunto, Dasar-Dasar Evaluasi Pendidikan (Jakarta: Bumi Aksara, 2003), hlm: 313

[86] Inayatul Fithriyah, *Pengembangan Perangkat Pembelajaran Bercirikan Problem Solving Polya yang mendukung Peningkatan Kemampuan Berpikir Kritis Siswa Kelas VII SMP* (Master Thesis). (Malang: Universitas Negeri Malang, 2016).

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≥ 3, then the worksheets students do not need to be revised, researchers and developers can make improvements or refinements by observing the suggestions/comments from the validator against learning devices developed.

The data collected was analyzed by quantitative descriptive analysis technique that is expressed in the distribution of the score and percentage against the assessment scale categories have been determined. After the presentation in the form of a percentage, the next step is to describe and take a conclusion about each indicator.

b. Analysis of Test Results

Data analysis results of tests used to measure the comparison of student learning outcomes, in field trials conducted using experiments by comparing the situation before and after the use of new teaching methods (before-after). Data can be seen in design trials. [87]

The data of field trials collected using questionnaires and achievement tests. The data of field trials was then collected using a pre-test and post-test to know the comparison of results of field trials, to calculate the level of comparison.

To find out if there is a difference between classes that use Student worksheet products with classes that do not use student worksheet products, then test results compared t_{tabel}. With a significance 0.05 is

[87] Sugiyono, *op.cit.*, hlm. 414

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Ho = The lack of difference between learning outcomes increase in students using problem-based mathematic's worksheet with students who do not use a problem based on mathematic's worksheet.

Ha = The existence of differences between the learning outcomes increase in students using problem-based mathematic's worksheet with students who do not use a problem based on mathematic's worksheet.

Conclusion :

1) If $t_{hitung} > t_{tabel}$, then the results are significant, meaning H_1 accepted.
2) If $t_{hitung} < t_{tabel}$, then the results are non-significant, meaning H_1 rejected.

The results of this research are also evidenced by the use of SPSS 22, namely by using Descriptive analysis, Normality Test, Paired Sample t-Test, homogeneity Test, Independent Sample Test[88] for experimental class (21 students) III C and control class (21 students) III B.

1) Descriptive Test

   Descriptive statistical analysis is useful for displaying and describing research data, including the amount of data, maximum value, minimal value, minimal value, average value, etc.

2) Normality Test

[88]Sahid Raharjo,"File YT-Data Analisis Data Kelas Eks-Kon Full" (*www.spssindonesia.com.*2018, Retrieved on 30th May 2019.

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The normality test is performed to determine whether the research data is in a normal distribution. Normal Data is an absolute condition before we perform parametric statistical analysis (test paired sample T-test and test Independent sample T-test). In parametric statistics, there are 2 kinds of tests of normality used in this study namely the Kolmogorov-Smirnov test and the Shapiro-Wilk test.

3) Paired Sample t-Test

Test paired sample T-test is used to determine if there is an average difference of two pairs of samples. The requirement in test paired T-test is normal distribution data.

4) Homogeneity Test

The homogeneity test aims to determine whether a variance of data from two or more groups is homogeneous (equal) or heterogeneous (not the same). Homogeneous Data is one of the terms (not absolute condition) in the Independent sample T-test.

5) Independent Sample Test.

Independent test of Sample t-test is used to determine if there is an average difference of two unpaired samples. The main requirement in an independent test of sample t-test is normal and homogeneous (not absolute) distribution data.

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CHAPTER IV

DATA EXPOSURE AND DEVELOPMENT RESULTS ANALYSIS

A. Data Presentation

1. The result of analysis of the needs and characteristics of students of State Preparation of Islamic Primary Miftahul Huda Turen

The early stages of the Plomp 2013 is preliminary research, the researcher carrying out field observations at the State Preparation of Islamic Primary Miftahul Huda Turen, of observations performed shows in class III uses the same book package that contains less matter of exercise, so it is in the process of learning teaching was not enough to stimulate the students in learning in the classroom. Students also study in rewriting the problems created by the teacher. If this continues to do so will result in less good practice with children and less interested in confronting challenges. See characteristics of the students has no interest in practicing on a math lesson in particular textbooks that are considered boring.

Through interviews to student of class III C, argue :

> "Pembelajaran matematikanya masih sulit tapi ada yang mudah sih bu, mungkin karena jarang ngerjain bu dan biasanya ibu guru nulis di papan untuk soal tambahan dan saya nyalin nya di buku tulis saya bu. Saya juga masih belum hafal perkalian bu. Dulu pernah diajarin tapi sekarang sudah lupa lagi."
>
> ("The mathematical learning is still difficult but there is an easy hell, miss, maybe because of the rare ngerjain, miss and usually a teacher on the board for additional questions and I copy her in my notebook, Miss. I also still do not memorize multiplication, miss. Used to have been taught but now it's forgotten again. ")

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In the learning mathematics, problem exercises in the book fit on learning the cause is still a little less motivated students in learning mathematics, so that in need of innovation that is more than a teacher to evoke the spirit of student learning.

From the result of the interview with the teacher in State Preparation of Islamic Primary Miftahul Huda Turen about use of thematic books in school especially in class and the teacher's opinion in class III,

> "Pada kelas III-C sudah menggunakan buku tematik yang sudah diterbitkan oleh pemerintah dalam pembelajaran berbasis kurikulum 2013. Tetapi, buku tematik tersebut belum memuat banyak soal yang dapat mengasah keterampilan siswa terutama dalam latihannya, sehingga dibutuhkan buku tambahan yang menarik agar anak suka dan terbiasa untuk mengerjakan soal matematika."
>
> ("In class III-C already used thematic books already published by the government in curriculum-based learning 2013. However, the thematic book does not contain many questions that can hone the skills of students especially in their training, so it takes additional books that are interesting so that children like and get used to doing math problems. ")

From interview of Head master of State Preparation of Islamic Primary, Mr. Shodiq, he said that :

> "Kurikulum 2013 ini masih baru digunakan pada sekolah ini, yang sudah menggunakan itu kelas satu sampai tiga untuk sementara, tapi nanti akan di lanjutkan kelas lainnya. Jadi untuk pembelajaran kurikulum 2013 ini masih dibutuhkan penyesuaian."
>
> ("The 2013 curriculum is still recently used in this school, which is already using it class one to three for a while, but later on will continue with other classes. So for Learning curriculum 2013 This is still needed adjustments.")

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Viewed from various previous research about media student worksheets are very effective as a companion student learning in the classroom and outside the classroom to enhance the creativity of students in the learning process.

In this research, several problems were found, including:

a. Learning with the curriculum 2013 in the school is still in the adjustment phase.
b. The curriculum 2013 already contains problem-based learning. Unfortunately, the application of problem-based learning that is in the book impresses less according to the understanding of problem-based learning and the characteristics of students.
c. Assignments are lacking because the book only contains a few issues so other learning resources are needed. A good assignment usually gives students the opportunity to use their creative powers according to their own potential.
d. The absence of specially designed learning resources to enhance student creativity in accordance with educational objectives in the curriculum 2013.

2. Description of student Worksheets Development Results

Basically, the products resulting from the research and development of this thesis is problem based mathematic's worksheet students on the material multiplication and Division in state preparation of islamic primary Miftahul Huda Turen.

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Product identity

Physical form : Printed material

Title : Student worksheet based on mathematical problems for SD/MI class III

Goal : Students of class III C State Preparation of Islamic Primary Miftahul Huda Turen.

Author name : Tutut Hartina Ilmiah Ningsih

Mould : First

Paper Size : A4 (21 cm x 29.7 cm)

The worksheet in the form of printed material produced in this development contains several sub sections i.e. part introduction, core parts, and attachment. The introduction consists of cover, preface, usage instructions book, excess books, table of contents, learning activities, and concept maps. In the core parts are composed of material that contains the multiplication and Division are *ayo memahami, tahukah kamu, ayo berlatih, ayo mencoba, asyiknya cerita,* conclusion, reflection and evaluation. In the attachment is bibliography and biography of the author Furthermore in this case researchers will describe some part of the specification of the worksheets that students have already developed that contains among others:

1) The Introduction

Table 4.1 Book section and Description (Introduction)

No.	Part of the Book	Description

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1.		Cover design using corel draw with a selection of colors and images that fit the character of the third grade of elementary school students. The cover consists of book titles, images, logos "curriculum 2013 ", and the name of the author.
2.		Cover the back, in the minimalist design of the front cover, which consists of the books ' content and logo's "University's" writers.
3.		The preface is the page that contains the remark upon the completion of a book with a good greeting, gratitude, gratitude, hope, purpose and benefits as well as the demand for advice and criticism that building as well as the place and time of the making of books.
4.		Usage instructions book contains about a guide for the reader in using the contents of the book. So the students get an overview early in a book

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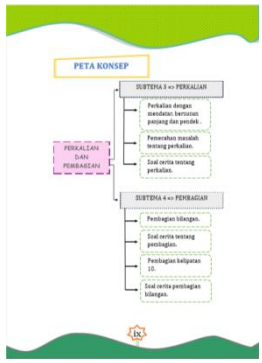
5.		The advantages of book contains content about the benefits and advantages of belonging from the book.
6.		Table of contents of the page into a sheet of instructions the contents of principal book which is useful to make it easier for readers to explain the contents of the book to be studied.
7.		Learning activities about the basic competencies, core competencies, learning objectives and indicators in accordance with the curriculum of 2013.
8.		Concept map is a picture that depicts the structure of the concept of a main picture. Therefore, the concept map will encourage students in linking the concept of values in a learning so that the learning objectives are achieved effectively and efficiently.

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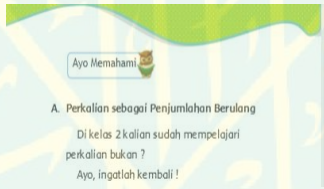
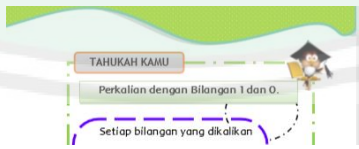
2) The Content

Table 4.2 Book section and Description (The Content).

No.	Part of the Book	Description
1.		Opening material i.e. contains the phrase stimulus to start learning. Here teachers stimulate student knowledge. Opening material is located at the beginning of the opening chapters of material multiplication and Division.
2.		*Ayo memahami* is the additional material to equip students in studying the concepts being studied.
3.		*Ayo berlatih* contains about a matter of practice to develop the competence of students of knowledge.
4.		*Tahukah kamu* is a great addition to add to the knowledge of the student insight in the form of tips or tricks and others.
5.		*Ayo mencoba* is learning activity in the form of observation images or situations to stimulate creative thinking power of students.

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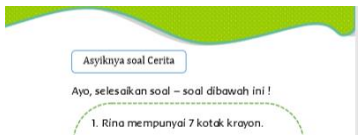
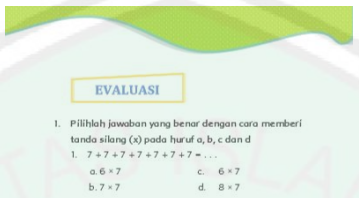
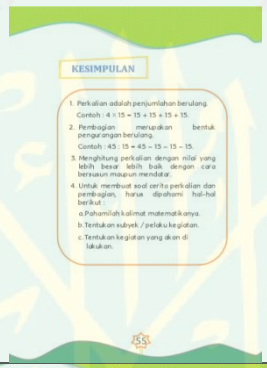
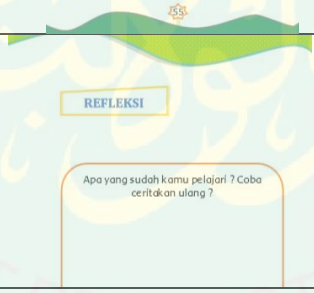
6.		*Asyiknya cerita* Describes skills solve the story and makes the question of the story to develop student creativity.
7.		Evaluation is the final assessment of student learning outcomes.
8.		The conclusion is a summary of the material in the book that are stacked in a paragraph.
9.		Reflection is an activity of a learning self-assessment.

3) The Attachment

Table 4.3 Book section and Description (The Attachment)

No.	Part of the Book	Description
1.		Bibliography is a reference from a variety of sources that has researchers use.

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2.		Biography of the author made up the story of the author's life, name, place and date of birth and travel writer who has education.

3. Presentation of Data Validation Results

This stage researchers doing early field test product worksheet students on the experts to get critique and suggestions for product perfection worksheets students. As for the results of the validation of the products from the experts. The validation data in this study is qualitative data and quantitative data. Qualitative Data is obtained from additional assessments of criticism and suggestions for improving student worksheets. Quantitative Data is obtained from the charging of a poll that has been filled by the validator.

The following value scoring criteria are used in the validation process as follows:

Table 4.4 Scoring Criteria Design Expert, Content Expert and Learning expert

Answer	Description	Score
SB	Excellent	4
B	Good	3
TB	Not Good	2
STB	Very not good	1

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Table 4.5 Questionnaire criteria Class III student scoring

Jawaban	Skor
A	4
B	3
C	2
D	1

Table 4.6 Expert qualification Assessment criteria and Student Trials

Achievement Level	Qualification	Criteria
76% < skor < 100%	Valid	No revision
51% < skor < 75%	Quite Valid	No revision
26% < skor < 50%	Less Valid	Revision
0% < skor < 25%	Invalid	Revision

The results of data presentation and analysis of poll assessment data by material experts, design experts, and learning experts are as follows:

a. Validation of Design Expert (First Phase)

1) Presentation of Quantitative Data

Lecturer of Design expert in the student worksheet "multiplication and Division" is Ahmad Makki Hasan M.Pd, lecturer of Teacher Education of Islamic Primary School Department, Faculty of Tarbiyah and Teaching Training. Design validation is done by providing the products and the question form to be filled by design expert. The sheet validation contains 10 round assessment sheet assessment. The validation process is twice phase. The first validation was carried out in building C and a second validation was carried out in building B. With regard to the results of the analysis of data from learning media expert shows the percentage of assessment as follows:

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$$P = \frac{\sum x}{\sum x_1} \times 100\%$$

$$P = \frac{31}{40} \times 100\%$$

$$P = 77{,}5\ \%$$

4.7 The Assesment Results of the First Phase Design Expert

No.	Statement	X	Xi	P (%)	Level of validity	Criteria
1	Detail of *cover* in accordance with the contents of the material.	3	4	75	Quite Valid	Not Revision
2	The typeface is used in accordance with the SD/MI students of class III.	4	4	100	Valid	Not Revision
3	The clarity of the instructions in the book learning.	3	4	75	Quite Valid	Not Revision
4	The pictures on the worksheet students match with the material.	3	4	75	Quite Valid	Not Revision
5	Image used interest students.	3	4	75	Quite Valid	Not Revision
6	The layout of the pictures worksheets students interest.	3	4	75	Quite Valid	Not Revision
7	The pictures on the worksheet students close to the lives of students.	3	4	75	Quite Valid	Not Revision
8	The size of the image on the right of the student worksheet.	3	4	75	Quite Valid	Not Revision
9	The colors on the student worksheet is consistent.	3	4	75	Quite Valid	Not Revision
10	*Layout* on the worksheet of student interest.	3	4	75	Quite Valid	Not Revisi

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						on
Total		31	40	77,50%	Valid	Not Revision

Based on the results of the assessment above, developed media products get 77.5%. That value when converted based on the qualifications of eligibility based on percentage. Then the student worksheet media products that were developed included in criteria for "Valid", but there is still a deficiency in different parts.

2) Presentation of Qualitative Data

Qualitative Data is derived from critical validator suggestions and recommendations to improve the product in some aspects. As for the comments and suggestions of the design experts is as follows.

a) Check the order page and writing worksheets students more enlarged.

b) Improved bio author.

3) Revision of Product Development

a) Cover

On the cover page contains the title of the media-based student worksheets math class III. In addition to the title also comes with a character that corresponds to class III and is also the name of the author. Purpose is to make students interested in and easily understand the material to be conveyed.

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Table 4.8 Comparison of revision on the cover

	
Before revision	After revision

b) Biography of the Author

In this biography, the author's photo should be given. In a Biography must be attached a brief bio of the author and is involved in the manufacture of the product. So that so that users can know and understand.

Table 4.9 Comparison of revisions on the biography of the author

	
Before revision	After revision

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c) The page numbering

Table 4.10 Comparison of revision on the page numbering.

	
Before revision	After revision

b. Validation of Design Expert (Second phase)

1) Presentation of Quantitative Data

The improved product worksheet development was retested to Mr. Ahmad Makki Hasan M. Pd to validate the results of the improvement that researchers have done. Exposure to assessment results from design experts is done through polls. The sheet validation contains 10 round assessment sheet assessment. The validation process is twice phase. The first validation was carried out in building C and a second validation was carried out in building B. The results obtained from the poll are as follows:

Table 4.11 The Assessment Results of the Second Phase Design Expert

No.	Statement	X	Xi	P (%)	Level of Validity	Criteria
1	Detail of *cover* in accordance with the contents of the material.	4	4	100	Valid	Not Revision

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2	The typeface is used in accordance with the SD/MI students of class III.	4	4	100	Valid	Not Revision
3	The clarity of the instructions in the book learning.	4	4	100	Valid	Not Revision
4	The pictures on the worksheet students match with the material.	4	4	100	Valid	Not Revision
5	Image used interest students.	3	4	75	Quite Valid	Not Revision
6	The layout of the pictures worksheets students interest.	4	4	100	Valid	Not Revision
7	The pictures on the worksheet students close to the lives of students.	3	4	75	Quite Valid	Not Revision
8	The size of the image on the right of the student worksheet.	4	4	100	Valid	Not Revision
9	The colors on the student worksheet is consistent.	4	4	100	Valid	Not Revision
10	*Layout* on the worksheet of student interest.	3	4	75	Quite Valid	Not Revision
Total		37	40	92,5 %	Valid	Not Revision

$$P = \frac{\sum x}{\sum x_1} \times 100\%$$

$$P = \frac{37}{40} \times 100\%$$

$$P = 92{,}5\ \%$$

Based on the results of the assessment above, developed media products getting a 92.5%. That value when converted based on the

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qualifications of Eligibility based on percentage. Then the student worksheet media products that were developed included in criteria for "Valid".

2) Presentation of Qualitative Data

Qualitative Data in this study was the suggestion of a design expert after a revision. After revision by researchers, this product deserves to be used in class III mathematics learning on multiplication and division materials to enhance student creativity.

c. Validation of Content Expert (First Phase)

1) Presentation of Quantitative Data

Lecturer of content expert in the student worksheet media validation "multiplication and Division" is Mrs. Ulfia Churidatul Andriani, M.Pd, lecturer of Teacher Education of islamic Primary School Department, Faculty of Tarbiyah and Teaching Training. Media validation is done by providing the products and the question form to be filled by content expert. The now contains 10 round sheet assessment. The validation process is performed twice. The first validation is carried out at the home of content expert and a second validation was carried out in building B. With regard to the results of the analysis of data from the study showed material percentage of expert assessment as follows:

$$P = \frac{\sum x}{\sum x_1} \times 100\%$$

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$$P = \frac{31}{40} \times 100\%$$

$$P = 77{,}5\%$$

Table 4.12 The Assesment Results of the first phase Content Expert

No.	Statement	X	Xi	P (%)	Level of Validity	Criteria
1	The suitability of the formulation of the topic on development materials.	3	4	75	Quite Valid	Not Revision
2	The suitability of the material presented on the development of learning materials.	4	4	100	Valid	Not Revision
3	Conformity with basic competencies core competencies.	3	4	75	Quite Valid	Not Revision
4	The basic competence of conformity with the indicators.	3	4	75	Quite Valid	Not Revision
5	The suitability of the content descriptions of systematic instruction.	3	4	75	Quite Valid	Not Revision
6	The clarity of the exposure to the material.	3	4	75	Quite Valid	Not Revision
7	Stories related to the suitability of the material.	3	4	75	Quite Valid	Not Revision
8	Conformity with the summary of the discussion.	3	4	75	Quite Valid	Not Revision
9	The precision of the evaluation instruments used can measure students ' ability.	3	4	75	Quite Valid	Not Revision

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10	The ease of language used in learning materials.	3	4	75	Quite Valid	Not Revision
Total		31	40	77,5%	Valid	Not Revision

Based on the results of the assessment above, media products developed get 77,5%. That value when converted based on the qualifications of eligibility based on percentage. Then the student worksheet media products that were developed included in criteria for "Valid". There is still a deficiency in different parts. At this first phase validation of content expert, representations can be used with minor revisions.

2) Presentation of Qualitative Data

Qualitative Data is derived from critical validator suggestions and recommendations to improve the product in some aspects. As for the comments and suggestions of the content experts is as follows.

a) The selection of sentences and pictures more note criteria child class III primary school.
b) Reduced the question
c) For the settlement of the question of the story, the dialogue box more magnified.
d) Fixed the basic competencies and indicators.

The results of the content expert assessment on this first phase is done against the media worksheet students to student worksheet products developed better.

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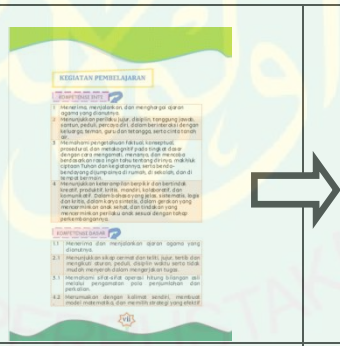
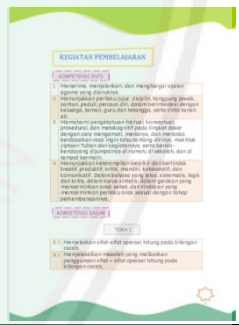
3) Revisio of Product Development

Based on the advice by design experts made improvements and several revisions to the following sections:

a) Basic Competencies and Indicators

In the basic competencies and indicators to customized according to the learning objectives. In the Indicators should reflect the Basic Competence of the researchers have been specified.

Table 4.13 Comparison of revision on basic competencies and indicators.

	
Before revision	After revision

b) The questions on the student worksheet

In the matter of student worksheets, the validator would suggest to alleviate some of the problem and performed in accordance with point only.

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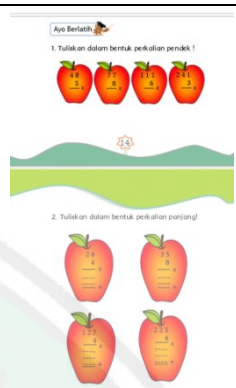
Table 4.14 Comparison of revision on the content

	
Before revision	After revision

c) The contents of the book

In the matter of student worksheets, there are suggested to shape the validator on the important part. So that students can determine the focus point.

Table 4.15 Comparison of revision on the content

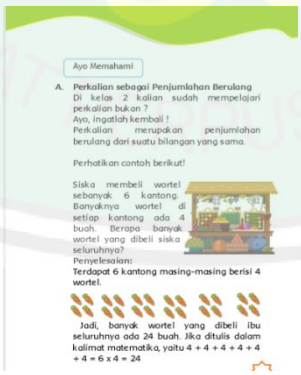
	
Before revision	After revision

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Table 4.16 Comparison on the revision content

	
Before revision	After revision

Table 4.17 Comparison on the revision content

	
Before revision	After revision

d. Validation Results of Content Expert (Second Phase)

1) Presentation of Quantitative Data

The improved product worksheet development of students was returned to the material members Mrs. Ulfia Churidatul Andriani, M. Pd, to validate the results of the improvement that researchers have

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done. Exposure of assessment results from media experts is conducted through polls. The results obtained from the poll are as follows:

Table 4.18 The Assessment Results of the Second Phase Content Expert

No.	Statement	X	Xi	P (%)	Level of Validity	Criteria
1	The suitability of the formulation of the topic on pengembagan materials.	3	4	75	Quite Valid	Not Revision
2	The suitability of the material presented on the development of learning materials.	4	4	100	Valid	Not Revision
3	Conformity with basic competencies core competencies.	4	4	100	Valid	Not Revision
4	The basic competence of conformity with the indicators.	4	4	100	Valid	Not Revision
5	The suitability of the content descriptions of systematic instruction.	3	4	75	Quite Valid	Not Revision
6	The clarity of the exposure to the material.	3	4	75	Quite Valid	Not Revision
7	Stories related to the suitability of the material.	4	4	100	Valid	Not Revision
8	Conformity with the summary of the discussion.	3	4	75	Quite Valid	Not Revision
9	The precision of the evaluation instruments used can measure students ' ability.	3	4	75	Quite Valid	Not Revision

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10	The ease of language used in learning materials.	3	4	75	Quite Valid	Not Revision
Total		34	40	85%	Valid	Not Revision

$$P = \frac{\sum x}{\sum x_1} \times 100\%$$

$$P = \frac{34}{40} \times 100\%$$

$$P = 85\ \%$$

Based on the results of the assessment above, developed media products get 85%. That value when converted based on the qualifications of Eligibility based on percentage. Then the student worksheet media products that were developed included in criteria for "Valid". So the product can be test to grade III as well as content expert considered was enough so that no more advice for his material.

2) Presentation of Qualitative Data

Qualitative Data in this study was advice from material experts after revisions were made. After revision by researchers, this product deserves to be used in class III mathematics learning on multiplication and division materials to enhance student creativity.

e. Validation of Learning Experts

1) Presentation of Quantitative Data

Validation of media student worksheet "multiplication and Division" next is Latifatus Sholikhah, s. Pd. I, teacher III C State Preparation of Islamic Primary Miftahul Huda Turen. Media validation is done by

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providing the products and the question form to be filled by learning expert. The now contains 10 round sheet assessment. Validation is carried out at the office State Preparation of Islamic Primary Miftahul Huda Turen. As for the results of the data analysis from learning expert showing the percentage of assessment as follows:

$$P = \frac{\sum x}{\sum x_1} \times 100\%$$

$$P = \frac{33}{40} \times 100\%$$

$$P = 82{,}5\%$$

Table 4.19 The Assesment Result of the Learning Expert

No	Statement	X	Xi	P (%)	Level of Validity	Criteria
1	Suitability of topic outline of the development of learning materials.	3	4	75	Quite Valid	Not Revision
2	The suitability of the material presented on the development of learning materials.	3	4	100	Quite Valid	Not Revision
3	Alignment of core competencies with competency base.	4	4	100	Valid	Not Revision
4	The basic competence of conformity with the indicators.	3	4	100	Quite Valid	Not Revision
5	Suitability of indicators with the purpose of learning.	3	4	75	Quite Valid	Not Revision

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6	Suitability of learning systematics contents description.	4	4	75	Valid	Not Revision
7	The clarity of the exposure to the material.	3	4	100	Quite Valid	Not Revision
8	Stories related to the suitability of the material.	4	4	75	Valid	Not Revision
9	The precision of the evaluation instruments used can measure students ' ability.	3	4	75	Quite Valid	Not Revision
10	The ease of language used in learning materials.	3	4	75	Quite Valid	Not Revision
Total		33	40	82,50%	Valid	Not Revision

Based on the results of the assessment above, developed media products get 82.5%. That value when converted based on the qualifications of eligibility based on percentage. Then the student worksheet media products that were developed included in criteria for "Valid" and the media can already be tested to students even though there are still suggestions for product development that is material and reproduce the questions. After revision by researchers, this product deserves to be used in class III mathematics learning on multiplication and division materials to enhance student creativity.

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B. Effectiveness and attactiveness of Problem Based Mathematic's Worksheet

After obtaining the results of validation by material experts, design experts and learning experts and obtaining advice and revisions, researchers carried out the trials in the field. Trials are conducted using Student worksheet products in classroom learning. After using the student worksheets that have been developed, students fill in a poll to find out the effectiveness and Ministry of student worksheets.Based on the comments on questionnaire of the student can be obtained from data on some aspects of related problem based mathematic's worksheet. To measure the percentage effectiveness and the student-based worksheets of multiplication and division material problem, can use the following formula:

$$P = \frac{\sum x}{\sum x_1} \times 100\ \%$$

Specifications:

P = Percentage of validity

∑x = The total number of scores answer validator (real value)

∑x1=The total of highest response (expected value)

The results obtained from the student response questionnaire are as follows:

$$P = \frac{\sum x}{\sum x_1} \times 100\%$$

$$P = \frac{1773}{2100} \times 100\%$$

$$P = 84\%$$

Data can be seen in Appendix VII. Based on comments from students on the questionnaire can be obtained that information worksheet students get value 84%.

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The students expressed their interest towards the products of student-based problem worksheet developed by the researchers, because it is easy and practical to use. Most of the students interested in student worksheet due to extensive material and easily understood illustrations image into one of the reasons students like the student worksheet developed by the researchers.

C. Improved Results of Student Learning Outcomes to Enhance Student Creativity

Data of student learning outcomes Pre-Test and Post-Test problem based mathematic's worksheet that developed from the results of product testing performed on the 42 students of class III State Preparation of Islamic Primary Miftahul Huda Turen i.e 21 students III C for experimental class and 21 students III B for control class.

1. Trial Result with T-test SPSS 22

The first step, is to make Ho and Ha

Ho = The lack of difference between learning outcomes increase in students using problem-based mathematic's worksheet with students who do not use a problem based on mathematic's worksheet.

Ha = The existence of differences between the learning outcomes increase in students using problem-based mathematic's worksheet with students who do not use a problem based on mathematic's worksheet.

The second step, i.e. calculating Descriptive Analysis to find the amount of data, maximum value, minimal value, minimal value, average value, etc.

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Table 4.20 Descriptive Statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Pre-Test Eksperiment	21	56	76	67,33	6,135
Post-Test Eksperiment	21	80	92	85,57	3,668
Pre-Test Kontrol	21	55	84	67,38	8,071
Post-Test Kontrol	21	67	89	77,29	5,359
Valid N (listwise)	21				

From the output above obtained the number of students, maximum value, minimum value, mean and Standart Deviation of the Experiment Class and ControlClass.

The third step, calculating the normality value for knowing the data is normal distribution or not.

Table 4.21 Tests of Normality

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Kelas	Statistic	df	Sig.	Statistic	df	Sig.
Kreativitas Siswa	Pre-Test Eksperimen (III C)	,145	21	,200*	,942	21	,238
	Post-Test Eksperimen (III C)	,121	21	,200*	,944	21	,260
	Pre-Test Kontrol (III B)	,100	21	,200*	,965	21	,615
	Post-Test Kontrol (III B)	,184	21	,061	,944	21	,260

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

Based on the output in the known value of significance (Sig.) for all data in both the Kolmogorov-Smirnov test and the Shapiro-Wilk test > 0.05, it can be concluded the NORMAL distribution of research data. Because, the

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research data is normal distribution, then we can use parametric statistics (test paired sample T test and test Independent sample t test) to perform data analysis.

Step four, calculating Sample Paired T-Test

Table 4.22 Paired Sample Test

Paired Samples Test

		Paired Differences					T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Pre-Test Eksperiment - Post-Test Eksperiment	-18,238	7,635	1,666	-21,713	-14,763	-10,947	20	,000
Pair 2	Pre-Test Kontrol - Post-Test Kontrol	-9,905	5,983	1,305	-12,628	-7,182	-7,587	20	,000

Based on the output of Pair 1 obtained by Tilapia Sig. (2-tailed) for 0.000 < 0.05, it can be concluded there is an average difference in learning outcomes in enhancing student creativity for Pre-test class experiments with experimental class Post-Test (using Product). Based on the output Pair 2 obtained the value of Sig. (2-tailed) amounting to 0.000 < 0.05, it can be concluded there is a difference in the average student learning results for Pre-test control class with the Post-test class control (not using the product). Can be concluded based on discussion of Pair 1 there is a significant influence on the use of Student worksheet products seen from Pair 1.

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Step five, researchers carry out homogeinity tests to determine whether a variance of two group data is homogeneous (equal) or heterogeneous.

Table 4.23 Test Homogeneity

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Kreativitas Siswa	Based on Mean	,584	1	40	,449
	Based on Median	,579	1	40	,451
	Based on Median and with adjusted df	,579	1	30,806	,453
	Based on trimmed mean	,574	1	40	,453

Based on the output above, it can be known the value of significance (Sig.) Based on Mean is 0.449 > 0.05, so it can be concluded that the Post-Test data variances of the Post-Test class data experiment control are the same or homogeneous.

Step six, researchers carry out independent Sample T-test test

Table 4.24 Group Statistics

Group Statistics

	Kelas	N	Mean	Std. Deviation	Std. Error Mean
Kreativitas Siswa	Post Test Kelas Eksperimen	21	85,57	3,668	,801
	Post Test Kelas Kontrol	21	77,29	5,359	1,169

Based on the table output "Group statistics" above known amount of data for student creativity for the experimental class as many as 21 students, while for the control class also as many as 21 students. The average value of student learning results for the experiment class is 85.57, while for the control

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class at 77.29. As such, descriptive statistics can be concluded there is an average difference in learning outcomes between experimental classes and control classes.

Table 4.25 Independent Sample Test

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Kreativitas Siswa	Equal variances assumed	,584	,449	5,847	40	,000	8,286	1,417	5,422	11,150
	Equal variances not assumed			5,847	35,370	,000	8,286	1,417	5,410	11,161

Based on the output above, it is known that the value of Sig. Levene's Test for Equality Of Variances is 0.449 > 0.05 then it can be interpreted that the data variances between the experimental classes and the control class are homogeneous/equal.

Based on the table output "Independent Samples Test" in the section "Equal variances assumed" known values of Sig. (2-tailed) amounting to 0.000 < 0.05, as the basis of decision making in Test Independent sample T test, can be concluded that H0 rejected and Ha accepted. It can thus be

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concluded that there is a significant (real) difference between the average learning outcomes to enhance creativity in experimental classes and the control class.

Next from the output table above the known "Mean Difference" value is 8.286. This value shows the difference between the average learning outcomes to increase creativity in the experiment class and the controls are 85, 5777, 29 =-8.286 and the difference between the differences is 5.422 to 11.150 (95% Confidence Interval of the Difference Lower Upper).

Steps 7, Determine

Level of Significances 0,05

$t_{tabel} t_{tabel} t_{hitung}$ $dk = n_1 - n_2 - 2$= 21+21-2 = 40, resulting in data table 40, thus = 2.021

Step eight, Comparing t_{hitung} and t_{tabel}

Conclusion :

1) If $t_{hitung} > t_{tabel}$, then the results are significant, meaning H_1 accepted.
2) t_{tabel} If $t_{hitung} < t_{tabel}$, then the results are non-significant, meaning H_1 rejected.

The result of the count and t_{tabel} is 5.847 > 2.021 then it can be deduced Ho rejected and Ha accepted. It can be concluded that "there is a significant difference between the creativity of students who use a student worksheet based on the problem of multiplication and division material with students who do not use student worksheet-based material issues Multiplication and division.

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D. Desiminasi

This is a great program delivery results of product development to its users and professionals through a forum meetings or write them down in a journal or it could be in the form of a book. While the results of this research product development shaped a book thesis, of which the delivery will be delivered by professionals at the forum session.

E. Data Analysis

The final results of a study of this development is a media student worksheet based learning math class III material multiplication and Division. The purpose of the student worksheet media development to improve creativity of students and capture their attention in reading books as well as getting used to practice in accordance with the curriculum of 2013.

Research development of the model used is a model of Plomp. After fulfilling the stages in the development of media-generated worksheet, students with a valid and worthy of use in the learning process and can support the learning process.

1. Analysis of Design Expert Validation

Product development media learning worksheets students can already be said is valid and worthy of use. This is in accordance with the judgment given validator we can see from the typeface, font size, lay-out, color and more. Expert assessment of the media presentation of validation as follows.

$$P = \frac{\sum x}{\sum x_1} \times 100\%$$

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$$P = \frac{37}{40} \times 100\%$$

$$P = 92{,}5\ \%$$

Based on the above calculation describes media development worksheet students get a percentage of 92.5% when converted based on the qualifications of Eligibility based on percentage in the category of "Valid", and the media can already in trials to students.

2. Analysis of Content Expert Validation

Product development media learning worksheets students can already be said is valid and worthy of use. This is in accordance with the judgment given validator we can see from the suitability of the topic, material core, core competencies, Competency base, summary, evaluation, and the ease of language. Expert assessment of the media presentation of validation as follows:

$$P = \frac{\sum x}{\sum x_1} \times 100\%$$

$$P = \frac{34}{40} \times 100\%$$

$$P = 85\ \%$$

Based on the above calculation describes media development worksheet students get a percentage of 85%. If the conversion based on the qualifications of Eligibility upon the percentage in the category of "Valid", and the media can already in trials to students.

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3. Analysis of Learning Expert Validation

Valid views of the relevance of the media learning with curriculum, the suitability of the material with KI and KD, fitness evaluation and the ease of language. Assessment of learning Expert presentation as follows.

$$P = \frac{\sum x}{\sum x_1} \times 100\%$$

$$P = \frac{33}{40} \times 100\%$$

$$P = 82{,}5\%$$

Based on the above calculation describes media development worksheet students get percentage 82.5% when converted based on the qualifications of Eligibility based on percentage in the category either, and the media can already in trials to students.

4. Data analysis on the Questionnaire Students

$$P = \frac{\sum x}{\sum x_1} \times 100\%$$

$$P = \frac{1773}{2100} \times 100\%$$

$$P = 84\%$$

Based on the above question form which was distributed to students processed indicates percentage of 84% When converted based on the qualifications of eligibility based on the percentage still in the category of "Valid". This shows the existence of interest of the media was developed.

The results of Pre-Test and Post-Test students given preferential treatment (III C) in the calculation of SPSS. Acquisition value of Pre-Test of grade III C

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gets average 67,33, while for Post-Test get an average value of 85,57. The value of Pre-Test of grade III B get an average value of 67,38 as for Post-Test get an average value of 77,29.

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CHAPTER V

PRODUCT REVIEW AND ADVICE

A. Revised Product Review

Product research and development results in the student worksheet-based problems in field of study mathematics class III. The material contained is "multiplication and Division". Student worksheet is a print learning materials in the form of sheets-sheet of paper that contains content, summary, and learning tasks implementation instructions to do the students, both theoretical and practical, or referring to the basic competence to be achieved students; and its use hanging with other materials.[89]

This product was developed based on the results of the interviews on the field, that students do not have adequate student worksheet to get used to working on the question of independent, accompanied by pictures and interesting activities. While the teacher yet can create worksheets that support student learning.

In product development worksheet students researchers use model plomp (2013). Starting from the Preliminery Research, where researchers before developing products should know the State of the class when the learning process takes place and find the problems faced by teachers as well as students learning. Prototyping Phase, here researchers began implementing the planning, design, and product development of learning and the latter is just my Assesment

[89] Andi Prastowo, *Pengembangan Bahan Ajar Tematik; Tinjauan Teoritik Dan Praktik,* (Jakarta : Kencana Prenadamedia Group, 2014), hlm. 269

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Phase, where product research provided an assessment that will be given feedback by the validator. In this study also uses problem solving Polya math material as the basis for development. Polya suggested four-step Problem solving are: Understanding the problem, Devising a plan, Carrying out of the plan, and looking back.[90]

Further test results from the initial field test and field test Advanced on experts such as media experts, material, and the learning of mathematics, this is done to obtain qualitative and quantitative data in the form of advice to the refinement of the product. The next revision to test the implementation stage.

The stage of field trials beginning and advanced to expert media. Product development worksheet students do refinement gradually through some advice from the experts the media get the percentage of 92.5% when converted based on the qualifications of Eligibility based on percentage in the category of good, which We can see from the typeface, font size, color and lay out, etc.

Further product development in terms of expert material. Product development worksheet students do refinement gradually through some advice from the experts the material gets a percentage of 85% if the conversion based on the qualifications of Eligibility upon the percentage in the category of good, which We can see from the suitability of the topic, material core, core competencies, Competency base, summary, evaluation, and the ease of language.

[90] Albert B. Bennet,Jr. *op,cit,*. hlm .4

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Media researcher who developed the form of worksheets students containing material multiplication and Division are in accordance with the age and characteristics of primary students. students worksheets development Products include three parts namely, part introduction, core parts , and attachment. The introduction consists of cover, preface, usage instructions book, excess books, table of contents, learning activities, and concept maps. In the core parts are composed of material the multiplication and Division that contains *ayo memahami, tahukah kamu, ayo berlatih, ayo mencoba, asyiknya cerita,* conclusion, the reflection and evaluation. In the attachment are composed of, author biography and bibliography.

1. The introduction
    a. Cover

        The cover consists of a front and back cover. Cover design using corel draw with a selection of colors and images that fit the character of the third grade of elementary school students. The cover consists of book titles, images, logos "curriculum 2013 ", and the name of the author.

    b. Preface

        The preface is the page that contains the remark upon the completion of a book with a good greeting, gratitude, gratitude, hope, purpose and benefits as well as the demand for advice and criticism that building as well as the place and time of the making of books.

    c. Usage instructions book

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Usage instructions book contains about a guide for the reader in using the contents of the book. So the students get an overview early in a book

d. Table of contents

Table of contents of the page into a sheet of instructions the contents of principal book which is useful to make it easier for readers to explain the contents of the book to be studied.

e. Learning activities

Learning activities about the basic competencies, core competencies, learning objectives and indicators in accordance with the curriculum of 2013.

f. Concept map

Concept map is the structure of the contents of the book that describes the flow of learning a whole book.

2. Core parts

a. Opening material

Opening material i.e. contains the phrase stimulus to start learning. Here teachers stimulate student knowledge. Opening material is located at the beginning of the opening chapters of material multiplication and Division.

b. Material content

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In material content there are some learning material that is designed with Ayo Memahami, Ayo Berlatih, Tahukah Kamu, Ayo Mencoba, and Asyiknya bercerita

c. Evaluation

Evaluation is the final assessment of student learning outcomes.

d. Conclusion

The conclusion is a summary of the material in the book that are stacked in a paragraph.

e. Reflection

Reflection is an activity of a learning self-assessment

3. Attachment

a. Bibliography is a reference from a variety of sources that has researchers use.

b. Biography of the author made up the story of the author's life, name, splace and date of birth and travel writer who has education.

Educators label the end of childhood with elementary school age. At the age of the child is expected to get the target-base of knowledge that is given to the success of self-adaptation to adult life and learn about certain important skills, both quasar and extracurricular. Educators are also looking at this period as a critical period where the encouragement of achieving a future where the child forms a habit to achieve success, is not successful or highly successful.[91]

[91] Yudrik Jahja, Psikologi Perkembangan (Jakarta: Kencana, 2011), hlm. 204

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Every human being is essentially a creative creature. Stimulation from the outside, is an important part that can encourage or melt human creative ability. But optimization of that potential needs learning, and habituation. This indicates that creativity and creative human beings were born in a variety of contexts, but have one thing in common: he is able to get out of the frozen situation and the raw environment itself.[92]

As stated, the creative ability does not develop in a vacuum, but rather requires environmental support. The environmental powers of isaccent can be context, place, situation, climate, or social factors. One of the contexts that support the growth of creative thinking is the problem solving activity. This is in accordance with McIntosh's opinion that problem solving can be seen or acted as context. The importance of problem solving in the development of creative thinking skills also expressed Robinson that the development of creative thinking skills require activity (doing something).[93]

In the worksheet the students have developed a wide range of activities to enhance the creativity of students with troubleshooting steps of the Polya problem. So with habituation that the students are accustomed to develop good thinking power.

The results of the revised product development based on the results of the validation are as follows:

[92] Momon Sudarma, *Mengembangkan keterampilan berpikir kreatif.* (Jakarta: Rajawali Press, 2013), hlm. 13

[93] Ali Mahmudi, *Pemecahan Masalah dan Berpikir Kreatif*, (Konferensi Nasional Matematika (KNM) XIV , 2008), Retrieved from staff.uny.ac.id on 25 Juny 2019 at 22.17hlm.10

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1. Needs analysis worksheet State Prepaation of Islamic Primary Miftahul Huda students based on the situation in the classroom In this research, several problems were found, including:
   a. Learning with the curriculum 2013 in the school is still in the adjustment phase.
   b. The curriculum 2013 already contains problem-based learning. Unfortunately, the application of problem-based learning that is in the book impresses less according to the understanding of problem-based learning and the characteristics of students.
   c. Assignments are lacking because the book only contains a few issues so other learning resources are needed. A good assignment usually gives students the opportunity to use their creative powers according to their own potential.
   d. The absence of specially designed learning resources to enhance student creativity in accordance with educational objectives in the curriculum 2013.

2. This research resulted in the student worksheet on mathematical subjects worthy of use in the learning process by using the Polya model.There are 4 step : Understanding the Problem, Devising a Problem, Carrying out of the Plan, and Looking Back. Student worksheets tailored to Core Competencies (KI) and basic competencies (KD), as well as the State of the grade III. The use of language that is easily understood, the presentation of Full Colour, as well as several images that support.

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Student worksheet is used as a companion book in the learning process. The Model of Development based on Plomp 2013, there are 3 steps : Preliminary Research, Prototyping Phase and Assesment Phase.

3. Result from expert assesment, there are result design expert validation :92,5 %, content expert validation :85 %, Learning Expert validation : 82,5 %, and questionnaire student : 84 %. This shows the existence of interest of the media was developed. The results of Pre-Test and Post-Test students given preferential treatment (III C) in the calculation of SPSS. Acquisition value of Pre-Test of grade III C gets average 67,33, while for Post-Test get an average value of 85,57. The value of Pre-Test of grade III B get an average value of 67,38 as for Post-Test get an average value of 77,29. The result of the T hitung and T tabel is 5.847 > 2.021 then it can be deduced Ho rejected and Ha accepted. It can be concluded that "there is a significant difference between the creativity of students who use a student worksheet based on the problem of multiplication and division material with students who do not use student worksheet-based material issues Multiplication and division.

B. Suggestions Utilization, Desiminasi, and Further product development.

Learning materials developed i.e. worksheets students who are expected to support the learning of students and enhance the creativity of students in the class III primary school (SD/MI). As for suggestions in regard to further development of media student worksheets are grouped into three parts namely advice utilization, desiminasi, and advanced product development.

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1. Utulization Advice

Product utilization advice worksheets students in fields of study material maths multiplication and Division as follows:

a. For Student

Expected to be using the student worksheet with the media well and take advantage of the student worksheet both in school and outside school.

b. For Education Practitioners

Expected as a companion book in teaching materials of multiplication and Division in the grade III Primary School.

2. Desiminasi

This is a great program delivery results of product development to its users and professionals through a forum meetings or write them down in a journal or it could be in the form of a book. While the results of this research product development shaped a book thesis, of which the delivery will be delivered by professionals at the forum session.

3. Further product development

As for suggestions for further development:

a. The development of a broader material not only on the material of the multiplication and Division are in accordance with the core competence and basic competence in the subjects of mathematics class III.

b. Subject research should be done on the subject. Both the students and the school used for the test.

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CENTRAL LIBRARY OF MAULANA MALIK IBRAHIM STATE ISLAMIC UNIVERSITY OF MALANG

APPENDIX I

Research Permit Letter

CENTRAL LIBRARY OF MAULANA MALIK IBRAHIM STATE ISLAMIC UNIVERSITY OF MALANG

❖ Research Permit letter from Faculty of Education and Teacher Training

KEMENTERIAN AGAMA REPUBLIK INDONESIA
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@uin-malang.ac.id

Nomor : 3131/Un.03.1/TL.00.1/12/2018
Sifat : Penting
Lampiran : -
Hal : Izin Penelitian

06 Desember 2018

Kepada
Yth. Kepala MI Miftahul Huda Turen Malang
di
Malang

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	:	Tutut Hartina Ilmiah
NIM	:	14140103
Jurusan	:	Pendidikan Guru Madrasah Ibtidaiyah (PGMI)
Semester - Tahun Akademik	:	Ganjil - 2018/2019
Judul Skripsi	:	**The Development of Problem Based Mathematic's Worksheet to Ibcrease Creative Thinking of Third MI Miftahul Huda Turen**
Lama Penelitian	:	**Desember 2018** sampai dengan **Januari 2019** (2 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
Dr. H. Agus Maimun, M.Pd
NIP. 19650817 199803 1 003

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

CENTRAL LIBRARY OF MAULANA MALIK IBRAHIM STATE ISLAMIC UNIVERSITY OF MALANG

❖ Research Permit Letter From State Preparation of Islamic Primary Miftahul Huda Turen

MADRASAH IBTIDAIYAH PERSIAPAN NEGERI
MIPN MIFTAHUL HUDA TUREN
NSM : 111235070288 NPSN : 60715274
TERAKREDITASI "A"
Alamat : Jl.Kauman No. 18 Turen Malang, Telp. 085102088475
e-mail: mi.miftahulhuda.turen@yahoo.com Website: http//minturen.blogspot.co.id

SURAT KETERANGAN
Nomor : 185.2/MI.MH.30.18/A1/XII/2018

Yang bertanda tangan dibawah ini :

Nama : H. M. SHODIQ, S.Pd.I
Jabatan : KEPALA MADRASAH

Menerangkan bahwa :

Nama : TUTUT HARTINA ILMIAH
NIM : 14140103
Jurusan : Pendidikan Guru Madrasah Ibtidaiyah (PGMI)

Telah melaksanakan penelitian di Madrasah Ibtidaiyah Persiapan Negeri (MIPN Miftahul Huda Turen) dengan judul "The Development of Problem Based Mathematic's Worksheet to Ibcrease Creative Thinking of Third MI. Miftahul Huda Turen" Selama bulan Desember 2018 s/d Januari 2019 (2 bulan).

Demikian surat keterangan ini kami buat dan untuk digunakan sebagaimana mestinya.

Turen, 12 Desember 2018
Kepala MIPN Miftahul Huda Turen

H.M. SHODIQ, S.Pd.I
NIP. -

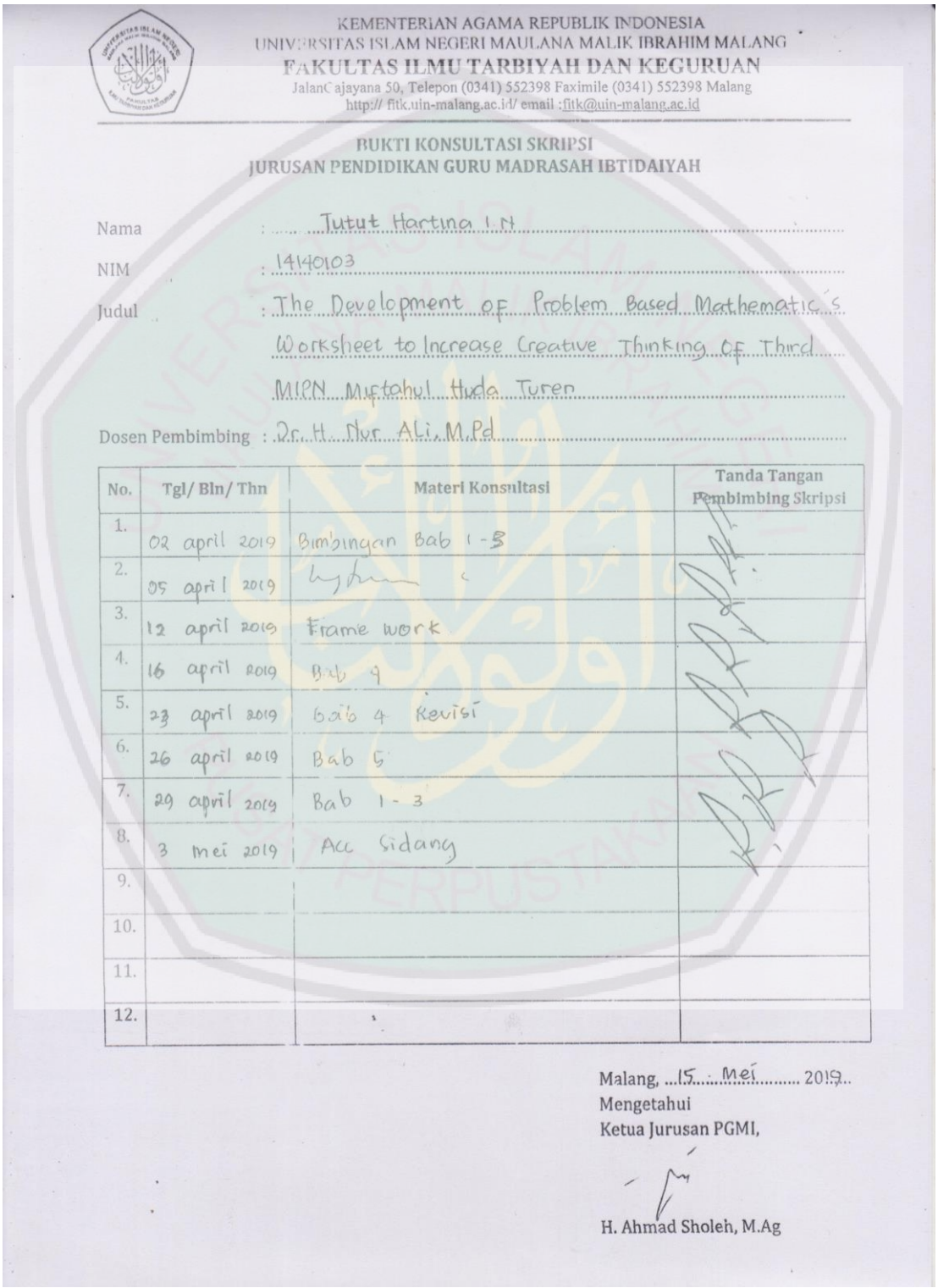
CENTRAL LIBRARY OF MAULANA MALIK IBRAHIM STATE ISLAMIC UNIVERSITY OF MALANG

APPENDIX II

Evidence of Consultation

CENTRAL LIBRARY OF MAULANA MALIK IBRAHIM STATE ISLAMIC UNIVERSITY OF MALANG

❖ Evidence of Consultation



KEMENTERIAN AGAMA REPUBLIK INDONESIA
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@uin-malang.ac.id

BUKTI KONSULTASI SKRIPSI
JURUSAN PENDIDIKAN GURU MADRASAH IBTIDAIYAH

Nama : Tutut Hartina I.N
NIM : 14140103
Judul : The Development of Problem Based Mathematics Worksheet to Increase Creative Thinking of Third MIPN Miftahul Huda Turen
Dosen Pembimbing : Dr. H. Nur Ali, M.Pd

No.	Tgl/ Bln/ Thn	Materi Konsultasi	Tanda Tangan Pembimbing Skripsi
1.	02 april 2019	Bimbingan Bab 1-3	
2.	05 april 2019		
3.	12 april 2019	Frame work	
4.	16 april 2019	Bab 4	
5.	23 april 2019	bab 4 Revisi	
6.	26 april 2019	Bab 5	
7.	29 april 2019	Bab 1-3	
8.	3 mei 2019	Acc Sidang	
9.			
10.			
11.			
12.			

Malang, 15 Mei 2019
Mengetahui
Ketua Jurusan PGMI,

H. Ahmad Sholeh, M.Ag

CENTRAL LIBRARY OF MAULANA MALIK IBRAHIM STATE ISLAMIC UNIVERSITY OF MALANG

APPENDIX III

Validation Sheet

CENTRAL LIBRARY OF MAULANA MALIK IBRAHIM STATE ISLAMIC UNIVERSITY OF MALANG

❖ Validation Sheet of First Phase Design Expert

Instrumen Validasi Ahli Media
FORMAT PENILAIAN ISI MEDIA

Fakultas	**: Ilmu Tarbiyah dan keguruan**
Jurusan	**: Pendidikan Guru Madrasah Ibtidaiyah**
Judul Bahan Ajar	**: Lembar Kerja Siswa Berbasis Masalah "Perkalian dan Pembagian" Kelas 3**
Penyusun	**: Tutut Hartina Ilmiah Ningsih**

A. Pengantar

Berkaitan dengan pelaksanaan pengembangan lembar kerja siswa berbasis masalah untuk meningkatkan berpikir kreatif siswa kelas III MI Miftahul Huda Turen, peneliti bermaksud untuk mengadakan validasi lembar kerja siswa yang telah dicetak sebagai bahan pembelajaran. Untuk itu, dimohon Bapak/ Ibu mengisi angket dengan format dibawah, dengan tujuan untuk mengetahui kesesuaian pemanfaatan lembar kerja siswa serta sebagai pengukuran sumber belajar sehingga layak digunakan. Atas kesediaannya diucapkan terima kasih.

Nama : Ahmad Makki Hasan
Instansi : UIN Maulana Malik Ibrahim Malang
Pendidikan : S3
Alamat : Singosari

B. Petunjuk Pengisian

1. Bacalah setiap item dengan cermat
2. Instrumen ini terdiri dari kolom pernyataan dan kolom jawaban. Silahkan isi tanda salah satu jawaban yang sesuai dengan pernyataan anda.
3. Keterangan makna pada huruf pilihan anda adalah sebagai berikut.

Jawaban	Keterangan	Skor
SB	Sangat Baik	4
B	Baik	3
TB	Tidak Baik	2
STB	Sangat Tidak Bauk	1

CENTRAL LIBRARY OF MAULANA MALIK IBRAHIM STATE ISLAMIC UNIVERSITY OF MALANG

❖ Validation Sheet of First Phase Design Expert

C. **Kriteria Angket**

No.	Pernyataan	Keterangan			
		SB	B	TB	STB
1	Detail *cover* sesuai dengan isi materi.		✓		
2	Jenis huruf yang digunakan sesuai dengan siswa SD/MI kelas III.	✓			
3	Kejelasan petunjuk dalam buku pembelajaran.		✓		
4	Gambar pada lembar kerja siswa sesuai dengan materi.		✓		
5	Gambar yang digunakan menarik minat siswa.		✓		
6	Tata letak gambar lembar kerja siswa menarik.		✓		
7	Gambar pada lembar kerja siswa dekat dengan kehidupan siswa.		✓		
8	Ukuran gambar pada lembar kerja siswa tepat.		✓		
9	Warna pada lembar kerja siswa konsisten.		✓		
10	*Layout* pada lembar kerja siswa menarik.		✓		
	Jumlah				

Berdasarkan penilaian diatas, maka saya menyatakan bahwa lembar kerja siswa ini :

a. Dapat digunakan tanpa revisi.
b. Dapat digunakan dengan revisi kecil.
c. Dapat digunakan dengan revisi besar.
d. Belum dapat digunakan.

D. **Kritik dan saran**

1. cek Halaman lagi
2. Perbaiki Biografi
3. Tulisan lembar kerja siswa agak digeser

Malang, 1 Desember 2018

Ahmad Makki Hasan

CENTRAL LIBRARY OF MAULANA MALIK IBRAHIM STATE ISLAMIC UNIVERSITY OF MALANG

❖ Validation Sheet of Second Phase Design Expert

Instrumen Validasi Ahli Media
FORMAT PENILAIAN ISI MEDIA

Fakultas	**: Ilmu Tarbiyah dan keguruan**
Jurusan	**: Pendidikan Guru Madrasah Ibtidaiyah**
Judul Bahan Ajar	**: Lembar Kerja Siswa Berbasis Masalah "Perkalian dan Pembagian" Kelas 3**
Penyusun	**: Tutut Hartina Ilmiah Ningsih**

A. Pengantar

Berkaitan dengan pelaksanaan pengembangan lembar kerja siswa berbasis masalah untuk meningkatkan berpikir kreatif siswa kelas III MI Miftahul Huda Turen, peneliti bermaksud untuk mengadakan validasi lembar kerja siswa yang telah dicetak sebagai bahan pembelajaran. Untuk itu, dimohon Bapak/ Ibu mengisi angket dengan format dibawah, dengan tujuan untuk mengetahui kesesuaian pemanfaatan lembar kerja siswa serta sebagai pengukuran sumber belajar sehingga layak digunakan. Atas kesediaannya diucapkan terima kasih.

Nama : Ahmad Makki Hasan
Instansi : UIN Maulana Malik Ibrahim Malang
Pendidikan : S3
Alamat : Singosari Kab. Malang

B. Petunjuk Pengisian

1. Bacalah setiap item dengan cermat
2. Instrumen ini terdiri dari kolom pernyataan dan kolom jawaban. Silahkan isi tanda salah satu jawaban yang sesuai dengan pernyataan anda.
3. Keterangan makna pada huruf pilihan anda adalah sebagai berikut.

Jawaban	Keterangan	Skor
SB	Sangat Baik	4
B	Baik	3
TB	Tidak Baik	2
STB	Sangat Tidak Bauk	1

CENTRAL LIBRARY OF MAULANA MALIK IBRAHIM STATE ISLAMIC UNIVERSITY OF MALANG

❖ Validation Sheet of Second Phase Design Expert

C. **Kriteria Angket**

No.	Pernyataan	Keterangan			
		SB	B	TB	STB
1	Detail *cover* sesuai dengan isi materi.	✓			
2	Jenis huruf yang digunakan sesuai dengan siswa SD/MI kelas III.	✓			
3	Kejelasan petunjuk dalam buku pembelajaran.	✓			
4	Gambar pada lembar kerja siswa sesuai dengan materi.	✓			
5	Gambar yang digunakan menarik minat siswa.		✓		
6	Tata letak gambar lembar kerja siswa menarik.	✓			
7	Gambar pada lembar kerja siswa dekat dengan kehidupan siswa.		✓		
8	Ukuran gambar pada lembar kerja siswa tepat.	✓			
9	Warna pada lembar kerja siswa konsisten.	✓			
10	*Layout* pada lembar kerja siswa menarik.	✓	✓		
Jumlah					

Berdasarkan penilaian diatas, maka saya menyatakan bahwa lembar kerja siswa ini :

(a.) Dapat digunakan tanpa revisi.
b. Dapat digunakan dengan revisi kecil.
c. Dapat digunakan dengan revisi besar.
d. Belum dapat digunakan.

D. **Kritik dan saran**

.....
.....
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Malang, 13 Desember 2018

Ahmad Makki Hasan

CENTRAL LIBRARY OF MAULANA MALIK IBRAHIM STATE ISLAMIC UNIVERSITY OF MALANG

❖ Validation Sheet of First Phase Content Expert

Instrumen Validasi Ahli Materi

FORMAT PENILAIAN ISI MATERI

Fakultas : **Ilmu Tarbiyah dan Keguruan**

Jurusan : **Pendidikan Guru Madrasah Ibtidaiyah**

Judul Bahan Ajar : **Lembar Kerja berbasis Masalah "Perkalian dan Pembagian" Kelas 3**

Penyusun : **Tutut Hartina Ilmiah Ningsih**

A. Pengantar

Berkaitan dengan pelaksanaan pengembangan buku ajar Matematika kelas III materi perkalian dan pembagian, peneliti bermaksud untuk mengadakan validasi lembar kerja siswa yang telah dicetak sebagai bahan pembelajaran. Untuk itu, dimohon Bapak/Ibu mengisi angket dengan format di bawah, dengan tujuan untuk mengetahui kesesuaian pemanfaatan buku serta sebagai pengukuran bahan ajar sehingga layak digunakan. Atas kesediaannya diucapkan terimakasih.

Nama : Ulfia churidatul A, M.Pd.

Instansi : UIN Maulana Malik Ibrahim Malang

Pendidikan : S2

Alamat : Tlogomas Kota Malang

B. Petujuk Pengisian Angket

1. Bacalah setiap item dengan cermat
2. Instrument ini terdiri dari kolom pernyataan dan kolom jawaban. Silahkan tanda salah satu jawaban yang sesuai dengan pernyataan yang sesuai dengan pernyataan anda.
3. Keterangan makna pada huruf pilihan anda adalah sebagai berikut:

Jawaban	Keterangan	Skor
SB	Sangat baik	4
B	Baik	3
TB	Tidak baik	2
STB	Sangat tidak baik	1

CENTRAL LIBRARY OF MAULANA MALIK IBRAHIM STATE ISLAMIC UNIVERSITY OF MALANG

❖ Validation Sheet of First Phase Content Expert

C. Kriteria-Kriteria Angket

No	Pernyataan	Keterangan			
		SB	S	TB	STB
1.	Kesesuaian rumusan topik pada pengembangan bahan ajar		✓		
2.	Kesesuaian materi yang disajikan pada pengembangan bahan ajar	✓			
3.	Kesesuaian kompetensi inti dengan kompetensi dasar		✓		
4.	Kesesuaian kompetensi dasar dengan indikator		✓		
5.	Kesesuaian sistematika uraian isi pembelajaran		✓		
6.	Kejelasan paparan materi		✓		
7.	Kesesuaian cerita yang berhubungan dengan materi		✓		
8.	Kesesuaian rangkuman dengan pembahasan		✓		
9.	Ketepatan instrumen evaluasi yang digunakan dapat mengukur kemampuan siswa		✓		
10.	Kemudahan bahasa yang digunakan dalam bahan ajar		✓		
	Jumlah				

Berdasarkan penelitian di atas, maka saya menyatakan bahwa bahan ajar ini:

a. Dapat digunakan tanpa revisi
b. Dapat digunakan dengan revisi kecil
c. Dapat digunakan dengan revisi besar
d. Belum dapat digunakan

CENTRAL LIBRARY OF MAULANA MALIK IBRAHIM STATE ISLAMIC UNIVERSITY OF MALANG

❖ Validation Sheet of First Phase Content Expert

Kritik dan saran

1. Kurangi pertanyaannya
2. Perbaiki antara Indikator dan KD
3. Beri kotak dialog pada masing-masing inti kalimat
4. Perbesar kotak dialog pada soal cerita.

Malang, 8 Desember 2018

Validator

Ulfia Churidatul A., M.Pd

NIP.

CENTRAL LIBRARY OF MAULANA MALIK IBRAHIM STATE ISLAMIC UNIVERSITY OF MALANG

❖ Validation Sheet of Second Phase Content Expert

Instrumen Validasi Ahli Materi

FORMAT PENILAIAN ISI MATERI

Fakultas : **Ilmu Tarbiyah dan Keguruan**

Jurusan : **Pendidikan Guru Madrasah Ibtidaiyah**

Judul Bahan Ajar : **Lembar Kerja berbasis Masalah "Perkalian dan Pembagian" Kelas 3**

Penyusun : **Tutut Hartina Ilmiah Ningsih**

A. Pengantar

Berkaitan dengan pelaksanaan pengembangan buku ajar Matematika kelas III materi perkalian dan pembagian, peneliti bermaksud untuk mengadakan validasi lembar kerja siswa yang telah dicetak sebagai bahan pembelajaran. Untuk itu, dimohon Bapak/Ibu mengisi angket dengan format di bawah, dengan tujuan untuk mengetahui kesesuaian pemanfaatan buku serta sebagai pengukuran bahan ajar sehingga layak digunakan. Atas kesediaannya diucapkan terimakasih.

Nama : Ulfia Churidatul M.Pd

Instansi : UIN Maulana Malik Ibrahim Malang

Pendidikan : S2

Alamat : Tlogomas - Kota Malang

B. Petujuk Pengisian Angket

1. Bacalah setiap item dengan cermat
2. Instrument ini terdiri dari kolom pernyataan dan kolom jawaban. Silahkan tanda salah satu jawaban yang sesuai dengan pernyataan yang sesuai dengan pernyataan anda.
3. Keterangan makna pada huruf pilihan anda adalah sebagai berikut:

Jawaban	Keterangan	Skor
SB	Sangat baik	4
B	Baik	3
TB	Tidak baik	2
STB	Sangat tidak baik	1

CENTRAL LIBRARY OF MAULANA MALIK IBRAHIM STATE ISLAMIC UNIVERSITY OF MALANG

❖ Validation Sheet of Second Phase Content Expert

C. **Kriteria-Kriteria Angket**

No	Pernyataan	Keterangan			
		SB	S	TB	STB
1.	Kesesuaian rumusan topik pada pengembangan bahan ajar		✓		
2.	Kesesuaian materi yang disajikan pada pengembangan bahan ajar	✓			
3.	Kesesuaian kompetensi inti dengan kompetensi dasar	✓			
4.	Kesesuaian kompetensi dasar dengan indikator	✓			
5.	Kesesuaian sistematika uraian isi pembelajaran		✓		
6.	Kejelasan paparan materi		✓		
7.	Kesesuaian cerita yang berhubungan dengan materi	✓			
8.	Kesesuaian rangkuman dengan pembahasan		✓		
9.	Ketepatan instrumen evaluasi yang digunakan dapat mengukur kemampuan siswa		✓		
10.	Kemudahan bahasa yang digunakan dalam bahan ajar		✓		
Jumlah					

Berdasarkan penelitian di atas, maka saya menyatakan bahwa bahan ajar ini:

a. Dapat digunakan tanpa revisi
b. Dapat digunakan dengan revisi kecil
c. Dapat digunakan dengan revisi besar
d. Belum dapat digunakan

CENTRAL LIBRARY OF MAULANA MALIK IBRAHIM STATE ISLAMIC UNIVERSITY OF MALANG

❖ Validation Sheet of Second Phase Content Expert

Kritik dan saran

.....

.....

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.....

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.....

Malang, 13 Desember 2018

Validator

Ulfia Churotul A., M.Pd

NIP.

CENTRAL LIBRARY OF MAULANA MALIK IBRAHIM STATE ISLAMIC UNIVERSITY OF MALANG

❖ Validation Sheet of Learning Expert

Instrumen Validasi Ahli Pembelajaran

FORMAT PENILAIAN AHLI PEMBELAJARAN

UNTUK GURU BIDANG STUDI MATEMATIKA KELAS III SD/MI

Fakultas : **Ilmu Tarbiyah dan Keguruan**

Jurusan : **Pendidikan Guru Madrasah Ibtidaiyah**

Judul Bahan Ajar : **Lembar Kerja berbasis Masalah "Perkalian dan Pembagian" Kelas 3**

Penyusun : **Tutut Hartina Ilmiah Ningsih**

A. Pengantar

Berkaitan dengan pelaksanaan pengembangan buku ajar Matematika kelas III materi perkalian dan pembagian, peneliti bermaksud untuk mengadakan validasi lembar kerja siswa yang telah dicetak sebagai bahan pembelajaran. Untuk itu, dimohon Bapak/Ibu mengisi angket dengan format di bawah, dengan tujuan untuk mengetahui kesesuaian pemanfaatan buku serta sebagai pengukuran bahan ajar sehingga layak digunakan. Atas kesediaannya diucapkan terimakasih.

Nama : Lahifatur Sholikha, S.Pd.I

Instansi : MIPN Miftahul Huda Turen

Pendidikan : S1 - PGMI

Alamat : Jl. Icebon Alas no. 10 Turen - K

A. Petujuk Pengisian Angket

1. Bacalah setiap item dengan cermat
2. Instrument ini terdiri dari kolom pernyataan dan kolom jawaban. Silahkan tanda salah satu jawaban yang sesuai dengan pernyataan yang sesuai dengan pernyataan anda.
3. Keterangan makna pada huruf pilihan anda adalah sebagai berikut:

CENTRAL LIBRARY OF MAULANA MALIK IBRAHIM STATE ISLAMIC UNIVERSITY OF MALANG

❖ Validation Sheet of Learning Expert

Jawaban	Keterangan	Skor
SB	Sangat baik	4
B	Baik	3
TB	Tidak baik	2
STB	Sangat tidak baik	1

B. Kriteria-Kriteria Angket

No	Pernyataan	Keterangan			
		SB	B	TB	STB
1.	Kesesuaian rumusan topik pada pengembangan bahan ajar		✓		
2.	Kesesuaian materi yang disajikan pada pengembangan bahan ajar		✓		
3.	Kesesuaian kompetensi inti dengan kompetensi dasar	✓			
4.	Kesesuaian kompetensi dasar dengan indicator		✓		
5.	Kesesuaian indikator dengan tujuan pembelajaran		✓		
6.	Kesesuaian sistematika uraian isi pembelajaran.	✓			
7.	Kejelasan paparan materi		✓		
8.	Kesesuaian cerita yang berhubungan dengan materi	✓			
9.	Ketepatan instrumen evaluasi yang digunakan dapat mengukur kemampuan siswa		✓		
10.	Kemudahan bahasa yang digunakan dalam bahan ajar		✓		
Jumlah					

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APPENDIX IV

Validation Sheet to Student

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ANGKET RESPON SISWA
TERHADAP LEMBAR KERJA SISWA BERBASIS MASALAH
UNTUK MENINGKATKAN BERPIKIR KREATIF SISWA KELAS III
MI MIFTAHUL HUDA TUREN

A. Identitas

Nama : _____
No. Absensi : _____
Kelas : _____

B. Petunjuk Pengisian

1. Anak-anak lembaran ini sesuai dengan perasaanmu setelah mengikuti pembelajaran menggunakan lembar kerja siswa berbasis masalah.
2. Berilah tanda centang (X) pada jawaban yang amu pilih.
3. Berilah komentar sesuai pendapat kalian tentang lembar kerja siswa berbasis masalah ini.

C. Pertanyaan-pertanyaan Angket

1. Apakah lembar kerja siswa berbasis masalah ini dapat memudahkan adik dalam belajar ?
   a. Sangat mudah
   b. Mudah
   c. Kurang Mudah
   d. Sulit
2. Apakah dengan menggunakan lembar kerja siswa berbasis masalah ini memberi semangat dalam belajar adik ?
   a. Sangat memberi semangat
   b. Memberi semangat
   c. Kurang memberi semangat
   d. Tidak memberi semangat
3. Apakah adik mudah memahami bahan pelajaran yang ada dalam lembar kerja siswa berbasis masalah ini ?
   a. Sangat mudah
   b. Mudah
   c. Kurang mudah
   d. Sulit
4. Menurut adik, bagaimana soal-soal pada lembar kerja siswa berbasis masalah ini ?
   a. Sangat mudah
   b. Mudah
   c. Kurang mudah
   d. Sulit
5. Bagaimanakah jenis huruf dan ukuran huruf yang terdapat dalam lembar kerja siswa berbasis masalah ini ?
   a. Sangat mudah dibaca
   b. Mudah dibaca

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c. Kurang bisa dibaca
d. Tidak bisa dibaca

6. Selama mempelajari lembar kerja siswa ini, apakah adik-adik menemui kata-kata yang sulit ?
   a. Tidak menemukan
   b. Cukup banyak menemukan
   c. Jarang menemukan
   d. Sering menemukan
7. Bagaimana petunjuk yang terdapat dalam lembar kerja siswa berbasis masalah ini ?
   a. Sangat mudah dipahami
   b. Cukup mudah dipahami
   c. Kurang mudah dipahami
   d. Tidak mudah dipahami
8. Apakah bahasa yang digunakan dalam lembar kerja siswa berbasis masalah dapat dipahami ?
   a. Sangat mudah dipahami
   b. Cukup mudah dipahami
   c. Kurang mudah dipahami
   d. Tidak mudah dipahami
9. Setelah membaca soal-soal latihan, bagaimana soal-soalnya ?
   a. Sangat mudah
   b. Cukup mudah
   c. Kurang mudah
   d. Tidak mudah
10. Selama menggunakan lembar kerja siswa ini, apakah kalian memerlukan bantuan orang lain seperti teman, guru, atau orang tua untuk mempelajarinya ?
    a. Sangat memerlukan bantuan orang lain
    b. Sering memerlukan bantuan orang lain
    c. Kadang – kadang memerlukan bantuan orang lain
    d. Tidak memrlukan bantuan orang lain

D. Kritik dan saran

. . . . . .
. . . . . .
. . . . . .
. . . . . .
. . . . . .

Malang, ...

_____

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APPENDIX V

Student and Validator Data

CENTRAL LIBRARY OF MAULANA MALIK IBRAHIM STATE ISLAMIC UNIVERSITY OF MALANG

Identity Validator Subject Members

No	Name	Position	Evaluator
1	Ulfia Churidatul Andriani, M. Pd	FITK Lecturer, Department of PGMI UIN MALIKI Malang	Mathematics materials Expert
2	Ahmad Makki Hasan	Faculty of FITK, majoring in PBA UIN MALIKI Malang	Design expert
3	Latifatus Sholikha,S.Pd	Teacher of class III MI Miftahul Huda Turen Malang	Learning Expert

Product Trial Subject Identity

Class III C Group Name Respondents Control Class

Student Data of Grade III C		
No	**Name**	**Origin**
1	Revalidza Fitra Syahidah	Siswa Kelas III MIPN Miftahul Huda
2	Fanny Shofia Nurudzihni	Siswa Kelas III MIPN Miftahul Huda
3	Delina Silvia Maharani	Siswa Kelas III MIPN Miftahul Huda
4	Nafisa Faricha M	Siswa Kelas III MIPN Miftahul Huda
5	M. Fahrizi Murtadlo	Siswa Kelas III MIPN Miftahul Huda
6	Ahmad Naufal Fajar F	Siswa Kelas III MIPN Miftahul Huda
7	M. Uliyah Ma'lufi	Siswa Kelas III MIPN Miftahul Huda
8	Effelia Viorentina	Siswa Kelas III MIPN Miftahul Huda
9	Gading Eka Putra E	Siswa Kelas III MIPN Miftahul Huda
10	Aldian Rendra Saputra	Siswa Kelas III MIPN Miftahul Huda
11	Felicia Aurora Mentari	Siswa Kelas III MIPN Miftahul Huda
12	Alex Syauqi	Siswa Kelas III MIPN Miftahul Huda
13	Nafisa Faricha Mardliyyah	Siswa Kelas III MIPN Miftahul Huda
14	Galih Irfan Yusuf	Siswa Kelas III MIPN Miftahul Huda
15	Ziza Nira Ramadhani	Siswa Kelas III MIPN Miftahul Huda
16	Quinsha Fatimatuzzahra	Siswa Kelas III MIPN Miftahul Huda
17	M. Mas'aril Hakim	Siswa Kelas III MIPN Miftahul Huda
18	Zadid Kemal M	Siswa Kelas III MIPN Miftahul Huda
19	Ahmad Revano Anwar	Siswa Kelas III MIPN Miftahul Huda
20	Gilang Bagaskara	Siswa Kelas III MIPN Miftahul Huda
21	Azalah Mirza Febyanto	Siswa Kelas III MIPN Miftahul Huda

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APPENDIX V

Pre-Test and Post Test Results

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No	Kelas Eksperimen		Kelas Kontrol	
	Pre-Test	Post-Test	Pre-Test	Post-Test
1	70	83	55	67
2	75	80	56	72
3	67	87	67	67
4	60	85	84	87
5	61	90	62	77
6	76	90	64	76
7	70	89	70	79
8	68	86	56	77
9	58	85	78	89
10	65	90	60	78
11	68	82	61	76
12	62	89	68	81
13	69	80	59	76
14	56	87	70	77
15	72	92	72	79
16	67	87	74	79
17	58	82	72	74
18	72	82	67	79
19	74	80	69	72
20	76	85	70	78
21	70	86	81	83

- Kelas Eksperimen : Kelas III C (Kelas yang medapatkan perlakuan)
- Kelas Kontrol : Kelas III B (Kelas pembanding)

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APPENDIX VI

Pre-Test and Post Test Question

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Soal Evaluasi Pre Test

NAMA :

KELAS :

A. Pilihlah jawaban yang benar dengan cara memberi tanda silang (x) pada huruf a, b, c dan d

1. 7 x 8 = ...
   a. 52
   b. 54
   c. 56
   d. 58

2. 27 x 5 = 135, maka 135 : 5 = ...
   a. 15
   b. 17
   c. 25
   d. 27

3. Jika 1 lusin merupakan 12 buah maka 8 lusin adalah . . . .
   a. 92
   b. 94
   c. 96
   d. 98

4. Dina membeli 8 kantong wortel. Setiap kantong terdiri dari 24 buah. Berapa keseluruhan wortel yang dibeli Dina ? . . . .
   a. 172
   c. 272

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b. 192 d. 292

5. Deki mempunyai 25 kelereng. Sedang Dimas mempunyai 6 kali kelereng dari kepunyaan Deki. Berapa jumlah kelereng Dimas seluruhnya? . . .

a. 105 kelereng c. 150 kelereng

b. 110 pasang d. 250 kelereng

6. 69 : 3 = . . .

a. 21 c. 23

b. 22 d. 24

7. 153 – 51 – 51 – 51 = 0

Dituliskan dalam bentuk perkalian adalah . . .

a. 3 × 51 = 151 c. 5 × 51 = 151

b. 3 × 51 = 153 d. 7 × 51 = 151

8. Kaka membawa 230 coklat untuk 10 teman baiknya di sekolah. Berapa coklat yang didapat masing-masing teman Kaka ? . . .

a. 21 coklat c. 23 coklat

b. 22 coklat d. 24 coklat

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9. KUD harapan Jaya mempunya persediaaan pupuk urea sebanyak 124 karung. Pupuk tersebut akan disalurkan ke-4 desa. Berapa karung pupuk urea yang didapatkan masing-masing desa ? . .

   a. 31 karung
   b. 32 karung
   c. 33 karung
   d. 34 karung

10. Ibu membeli beras 72 kg. Dalam sehari Ibu memasak 3 kg. Berapa hari beras tersebut akan habis ? . . .

    a. 21 hari
    b. 22 hari
    c. 23 hari
    d. 24 hari

B. Jawablah pertanyaan-pertanyaan ini dengan benar.

1. Sebuah kereta api terdiri dari empat gerbong. Tiap gerbong membawa 50 penumpang. Jika jumlah penumpang laki-laki sebanyak 110 penumpang. Berapa jumlah penumpang perempuan ?

   Jawab:

   .....

   .....

2. Jumlah murid yang mendapatkan hadiah lomba sebanyak 7 orang. Masing-masing murid menerima

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12 buku tulis dan 5 buku gambar. Berapakah jumlah buku yang diterima seluruhnya ?

Jawab:

.....

.....

3. Pak Reno membeli 280 buah manggis di pasar. Masing-masing kardus dapat memuat 90 buah manggis. Berapa jumlah kardus yang dibutuhkan jika ada 10 manggis yang rusak ?

   Jawab:

   .....

   .....

4. Warga RT 15 mendapat sumbangan 15 karton mie instan. Mie tersebut disumbangkan kepada 5 keluarga. Tiap keluarga mendapat sama banyak. Jika tiap karton berisi 10 buah mie, berapa buah mie yang diterima tiap keluarga?

   Jawab:

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.....

.....

5. Buatlah cerita dan selesaikan kalimat matematika dibawah ini ?

   a. 9×17

   b. $30 : 3$

   Jawab:

   .....

   .....

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Soal Evaluasi Post Test

NAMA :

KELAS :

A. Pilihlah jawaban yang benar dengan cara memberi tanda silang (x) pada huruf a, b, c dan d

11. 6 x 9 = ...

c. 52 c. 54

d. 53 d. 55

12. 15 x 8 = ...

c. 110 c. 130

d. 120 d. 140

13. Jika 1 hari 24 jam maka 5 hari adalah . . . .

c. 120 c. 220

d. 140 d. 240

14. Terdapat 9 desa di Kelurahan Telagasari. Setiap desa terdiri dari 30 keluarga. Berapa keseluruhan keluarga di Kelurahan Telagasari . . . .

c. 170 c. 270

d. 190 d. 290

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15. David mempunyai 23 pasang kacamata. Hedra memiliki 5 kali lebih banyak dari kepunyaan David. Berapa pasang kacamata yang dimiliki oleh David . . .

c. 105 pasang
d. 115 pasang
c. 55 pasang
d. 50 pasang

16. 24 : 4 = . . .

c. 4
d. 6
c. 8
d. 10

17. 147 : 7 = . . .

c. 21
d. 22
c. 23
d. 24

18. Ibu membuat 240 kue. Kue-kue tersebut akan dimasukkan ke dalam beberapa kotak. Satu kotak dapat diisi 12 Kue. Berapa kotak yang ibu perlukan ? . . .

c. 10 kotak
d. 12 kotak
c. 20 kotak
d. 24 kotak

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19. Seorang pedagang mempunyai 70 liter minyak goreng yang akan dimasukkan kedalam beberapa wadah. Setiap wadah hanya menampung 5 liter minyak goreng. Berapa banyak wadah yang dapat di isi ? . .

c. 10 wadah
d. 14 wadah
c. 24 wadah
d. 36 wadah

20. Keluarga Doni menghabiskan 4 liter beras dalam sehari. Jika ayah baru saja membeli 124 liter beras. Berapa hari beras tersebut akan habis ? . . .

c. 31 hari
d. 32 hari
c. 33 hari
d. 34 hari

B. Jawablah pertanyaan-pertanyaan ini dengan benar.

1. Sebuah perahu penyeberangan dapat mengangkut 8 penumpang dalam sekali jalan. Jika orang yang menyeberang dalam sehari rata – rata ada 240 orang. Berapa kali perahu tersebut dapat mengangkut penumpang ?

Jawab:

.....

.....

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2. Vino mempunyai 4 buntalan tali dengan panjang masing-masing 80 cm untuk membuat prakarya. Jika setiap prakarya membutuhkan 10 cm pada masing-masing prakarya. Maka, berapa prakarya yang dapat dibuat Vino ?

   Jawab:

   .....

   .....

3. Lena telah membeli 5 kardus apel yang berisi 120 buah pada masing-masing kardusnya. Berapa jumlah apel yang Lena miliki?

   Jawab:

   .....

   .....

4. Sekolah Raya akan menggelar donasi untuk anak yatim tiga bulan lagi. Raya akan membeli hadiah untuk anak panti asuhan dengan uang hasil tabungannya yakni sebesar Rp. 240.000,- Jika harga hadiah yang akan dibeli rata-rata sebesar Rp. 40.000,- . Maka, berapa hadiah yang dapat dibeli oleh Raya ?

   Jawab:

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.....

.....

5. Buatlah cerita dan selesaikan kalimat matematika dibawah ini ?

   c. 8×15

   d. $20 : 2$

   Jawab:

   .....

   .....

   .....

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APPENDIX VII

Student Respons to Worksheet

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Subjek Siswa	Statement											Xi	%
	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	$\sum_{N}$		
1	4	4	3	3	4	3	4	4	4	3	36	40	90%
2	4	4	3	3	4	4	4	4	4	4	38	40	95%
3	3	4	3	3	3	3	4	3	4	3	33	40	83%
4	3	3	3	3	3	3	3	3	3	3	30	40	75%
5	3	4	3	3	3	3	3	3	3	4	32	40	80%
6	4	4	3	3	4	4	4	4	3	3	36	40	90%
7	4	3	3	3	4	3	2	3	4	3	32	40	80%
8	4	4	4	4	4	4	4	4	4	4	40	40	100%
9	4	4	3	3	4	3	4	4	4	3	36	40	90%
10	3	4	3	3	3	3	3	3	3	3	31	40	78%
11	3	4	3	4	4	3	3	3	3	3	33	40	83%
12	4	3	4	3	3	3	4	3	3	4	34	40	85%
13	3	4	3	3	3	3	3	3	3	3	31	40	78%
14	4	2	3	3	4	3	3	3	3	3	31	40	78%
15	3	4	3	3	4	3	3	4	3	3	33	40	83%
31	3	3	3	3	3	3	4	3	3	4	32	40	80%
17	4	4	3	3	4	3	3	3	4	3	34	40	85%
18	4	4	2	4	3	3	3	3	3	3	32	40	80%

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PUSAT PERPUSTAKAAN

19	4	3	3	3	4	3	3	3	4	4	34	40	85%
20	3	4	4	4	4	4	4	3	4	3	37	40	93%
21	4	4	3	4	4	3	3	3	3	3	34	40	85%
$\sum x$	75	77	65	68	76	67	71	69	72	69	709	840	1773%
$\sum x_1$	84	84	84	84	84	84	84	84	84	84	840	840	2100%
%	86%	92%	77%	81%	90%	80%	85%	82%	86%	82%	844%	100	84%
V	Valid	Valid	Valid	Valid	Valid	Valid	Valid	Valid	Valid	Valid	Valid	Valid	Valid

Description:

Aspect Assessment 1 : A student-based spreadsheet of issues can make students interested in learning.

Aspect Assessment 2 : problem-based student worksheets can give students the spirit of learning.

Aspect Assessment 3 : Students ' ability to understand the material in the student's worksheet.

Aspect Assessment 4 : Easy questions on student worksheets.

Aspect Assessment 5 : Fit typeface and font size in student worksheets.

Aspect Assessment 6 : difficulty of words used in student worksheets.

Aspect Assessment 7 : The use of clues that exist on student worksheets.

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Aspect Assessment 8 : Language used in student worksheets

Aspect Assessment 9 : Student Worksheets help students understand the material

Aspect Assessment 10: Students ' use of worksheets.

$$P = \frac{\sum x}{\sum x_1} \times 100\%$$

$$P = \frac{1773}{2100} \times 100\%$$

$$P = 84\%$$

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PUSAT PERPUSTAKAAN

APPENDIX VIII

Document Field

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APPENDIX IX

Curriculum Vitae

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Biography Author

Name	: Tutut Hartina Ilmiah Ningsih lahir
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Faculty	: FITK
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3. MTs Al-Ma'arif 01 Singosari
4. MA Al-Ma'arif 01 Singosari

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