#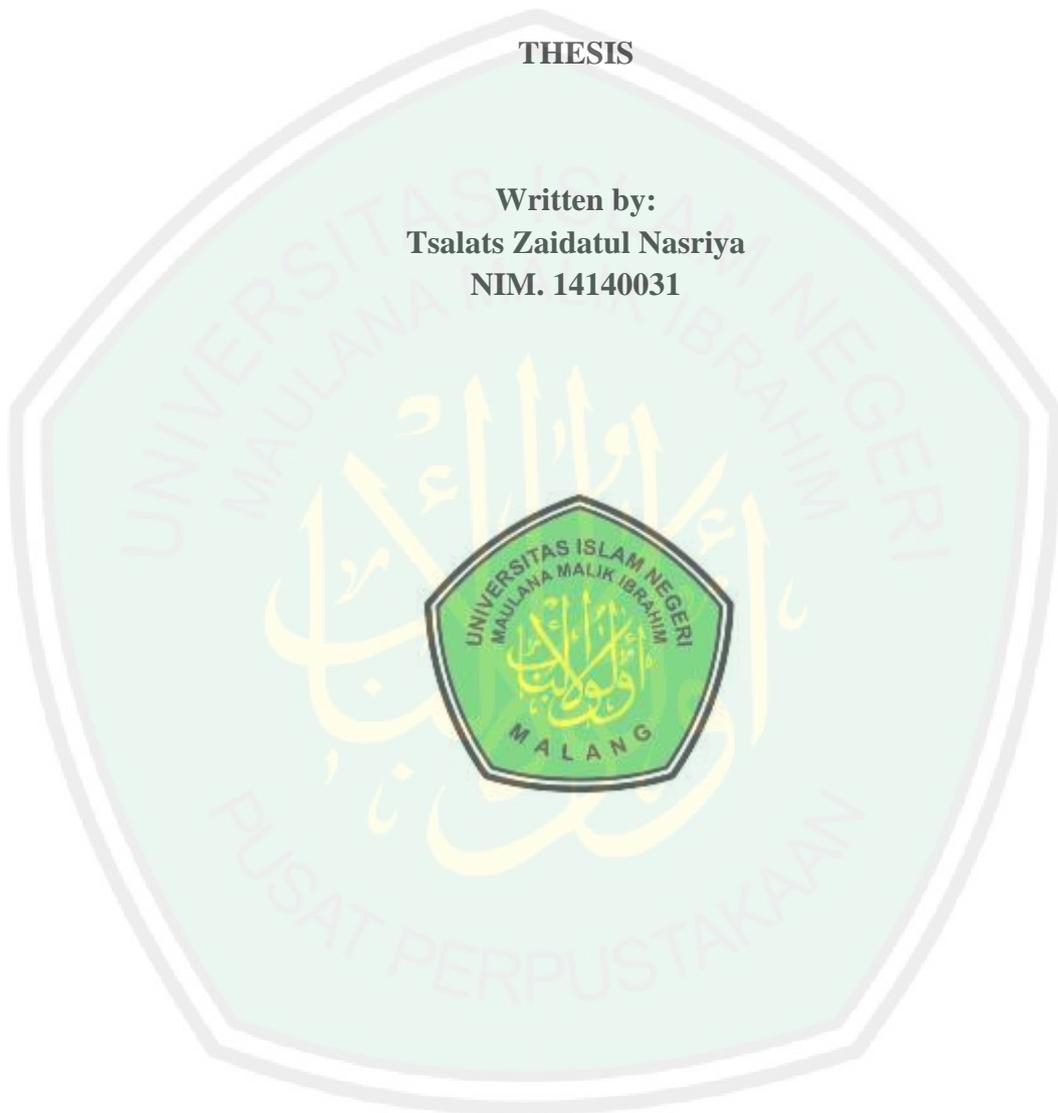 THE DEVELOPMENT OF EXPLOSION BOX AS LEARNING MEDIA FOR TEACHING COMPONENTS OF ECOSYSTEM AT 5TH GRADE MI PERWANIDA BLITAR

THESIS

Written by:
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ISLAMIC ELEMENTARY EDUCATION PROGRAM
TARBIYAH AND TEACHING TRAINING FACULTY
MAULANA MALIK IBRAHIM STATE ISLAMIC UNIVERSITY
MALANG
MAY, 2018

**THE DEVELOPMENT OF EXPLOSION BOX AS
LEARNING MEDIA FOR TEACHING COMPONENTS OF ECOSYSTEM
AT 5TH GRADE MI PERWANIDA BLITAR**

THESIS

**To Present *Skripsi* of Undergraduate Program (S-1) of Islamic Elementary
Education
Tarbiyah and Teaching Training Faculty
Maulana Malik Ibrahim State Islamic University, Malang**

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**Proposed to:
ISLAMIC ELEMENTARY EDUCATION DEPARTEMENT
TARBIYAH AND TEACHING TRAINING FACULTY
MAULANA MALIK IBRAHIM STATE ISLAMIC UNIVERSITY
MALANG
MAY, 2018**

APPROVAL SHEET

THE DEVELOPMENT OF EXPLOSION BOX AS LEARNING MEDIA FOR
TEACHING COMPONENTS OF ECOSYSTEM AT 5TH GRADE MI
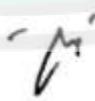PERWANIDA BLITAR

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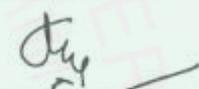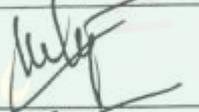
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LEGITIMATION SHEET

APPROVAL SHEET
THE DEVELOPMENT OF EXPLOSION BOX AS LEARNING MEDIA FOR
TEACHING COMPONENTS OF ECOSYSTEM AT 5th GRADE
MI PERWANIDA BLITAR

THESIS

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The board of examiners on 17 May 2018 and declared
PASSED
and accepted as one of the requirement to obtain a first degree
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DEDICATION

I dedicate my little work to:

- Allah SWT and Nabi Muhammad SAW.

- My beloved mother Hj. Siti Masithoh and my beloved father Djaenuri and also my beloved brother Ahmad Nur Agus Salim has never stop to give me support, motivation and pray for me.

- All of my best friends, Billa, Rizkya Rima and Rizka has never stop to supporting me. Zulfa my beloved partner in crime has always be there for me. Indah, Fajar Ayu, Annas, Luthfi, Ayu, Fitri, Ganang, Rizky, Fada, Nando, Erik, Alvin and Roby has coloring my day.

- All of my beloved friends in ICP PGMI 2014.

MOTTO

Love what you do and do what you love

-Ray Bradbury-

Dr. H. Mulyono, MA
The Lecture of Tarbiyah and Teaching Training Faculty
The State Islamic University of Maulana Malik Ibrahim Malang

ADVISOR OFFICIAL NOTE

Matter : Thesis of Tsalats Zaidatul Nasriya   Malang, 23th April 2018
Appendixes : 4 (four) Exemplar

To,
The Dean of Tarbiyah and Teaching Training Faculty
The State Islamic University of Maulana Malik Ibrahim Malang
at
    Malang

Assalamu'alaikum Wr. Wb.

    Having read all the chapter carefully in terms of its contents, language and
writing technique, I testify that following thesis written by:

Name   : Tsalats Zaidatul Nasriya
NIM   : 14140031
Program   : Islamic Elementary Education
Title of Thesis : The Development of Explosion Box as Learning Media for Teaching
                Components of Ecosystem at 5th Grade MI Perwanida Blitar

as her main supervisor, I considered that thesis is qualified to be proposed in the
examination. So, please be advised.

Wassalamu'alaikum, Wr. Wb.

Advisor,

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CERTIFICATE OF THESIS AUTHORSHIP

I certify that the thesis is originally written by Tsalats Zaidatul Nasriya, student of Islamic Elementary Education (PGMI) as the requirement for degree of Education (S.Pd). This thesis does not incorporate any materials previously written or publish by another person. Except those indicated in bibliography. Due the fact, I am the only person who responsible for the thesis if there is any objection or claim from other.

Malang, 17 May 2018

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Tsalats Zaidatul Nasriya
NIM. 14140031

PREFACE

Alhamdulillah praise Allah SWT writer who has give a mercy, taufiq and guidance, so that writer can finish this thesis with the title "The Development of Explosion Box as Learning Media for Teaching Components of Ecosystem at 5th Grade MI Perwanida Blitar".

Prayer and greetings is always devoted to lord the king of the Prophet Muhammad, the family, friends, and followers who have brought the truth of the whole human user *al-Dinnul Islam* we expect his intercession in the world and the hereafter.

The writing and preparation of this is intended of complement the overall learning activities that have been declared by the State Islamic University of Maulana Malik Ibrahim Malang as a form of accountability author was a student of State Islamic University of Maulana Malik Ibrahim Malang and meet one of the requirements to obtain a Bachelor Degree of Islamic Elementary Education.

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

1. My parents Mr. Djaenuri and Hj. Siti Masithoh as well as extended family who always give motivation and their love is always shining on my way.

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2. Prof. Dr. H. Abd. Haris, M.Ag. as Rector of State Islamic University of Maulana Malik Ibrahim Malang.

3. Dr. H. Agus Maimun, M.Pd. as Dean of Tarbiyah and Teaching Training Faculty.

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9. The entire 5th grade of MI Perwanida student who helped the course of this research program.

10. All those who helped in solving this thesis about morale or materially.

Finally the author expect this thesis may be benefit author and readers.

Malang, 17 May 2018

Writer

GUIDELINES FOR ARABIC-LATIN TRANSLITERATION

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

A. Letter

ا	=	a	ز	=	z	ق	=	q
ب	=	b	س	=	s	ك	=	k
ت	=	t	ش	=	sy	ل	=	l
ث	=	ts	ص	=	sh	م	=	m
ج	=	j	ض	=	dl	ن	=	n
ح	=	h̲	ط	=	th	و	=	w
خ	=	kh	ظ	=	zh	ه	=	h
د	=	d	ع	=	'	ء	=	,
ذ	=	dz	غ	=	gh	ي	=	y
ر	=	r	ف	=	f			

B. Vocal

Vokal (a) length = â

Vokal (i) length = î

Vokal (u) length= û

C. Vokal Diphthong

أوْ = aw

أيْ = ay

أوْ = û

إيْ = î

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CHAPTER II

LITERATURE RIVIEW

ABSTRAK

Nasriya, Tsalats Zaidatul. 2018. *Pengembangan Media Pembelajaran Explosion Box Materi Komponen Ekosistem pada Siswa Kelas V MI Perwanida Blitar.* Skripsi. Jurusan Pendidikan Guru Madrasah Ibtidaiyah, Fakultas Ilmu Tarbiyah dan Keguruan, Universitas Islam Negeri Maulana Malik Ibrahim Malang. Pembimbing: Dr. H. Mulyono, MA.

Mata pelajaran IPA merupakan kumpulan pengetahuan atau kumpulan fakta, konsep, prinsip dan teori. Kebanyakan siswa merasa bosan jika harus mempelajarinya lewat buku teks atau LKS. Hal tersebut dikarenakan minimnya pengembangaan media pembelajaran yang efektif dan inofatif. Masalah pemanfaatan media pembelajran yang belum optimal terlihat di kelas 5 MI Perwanida Blitar.

Alasan pemilihan media pembelajaran *Explosion Box* ini karena sesuai dengan karakteristik siswa sekolah dasar yaitu lebih suka bermain dan belajar. Rumusan masalah pada penelitian ini antara lain: 1) Bagaiaman tingkat kelayakan media pembelajaran *Explosion Box* materi Komponen Ekosistem pada siswa kelas 5 MI Perwanida Blitar?, 2) Bagaimana efektivitas dan kemenarikan media pembelajaran *Explosion Box* materi Komponen Ekosistem pada siswa kelas 5 MI Perwanida Blitar?.

Metode pengembangan media pembelajaran yang disusun dalam penelitian ini mengacu pada jenis pengembangan menurut Borg & Gall. Metode ini memiliki sepuluh langkah, namun untuk memudahkan penelitian dan pengembangan ini, maka peneliti membagi beberapa prosedur itu menjadi 6 langkah utama, yaitu: 1) penelitian dan pengumpulan informasi awal, 2) perencanaan, 3) pengembangan format produk awal, 4) uji lapangan dan revisi prosuk, 5) revisi produk akhir, 6) desiminasi dan implementasi. Instrumen pengumpulan data yang digunakan pada penelitian ini yaitu lembar validasi ahli materi, ahli desain dan ahli pembelajaran; lembar angket respon siswa dan tes (*pre-test* dan *post-test*).

Produk tersebut telah melalui validasi dengan hasil: 1) validasi ahli materi sebesar 93,3%, 2) validasi ahli desain sebesar90%, 3) validasi ahli pembelajaran sebesar 93,3%. Hasil uji coba menunjukkan presentase: 1) kelompok kecil sebesar 95,4%, 2) kelompok besar sebesar 94,4%. Data hasil *pre-test* dan *post-test* menunjukkan nilai rata-rata: 1) sebelum menggunakan produk sebesar 70,3, 2) setelah menggunakan produk sebesar 85,9. Kesimpulan dari hasil data di atas yaitu media pembelajaran Explosion Box yang dikembangkan efektif dan masuk dalam kategori sangat valid, sehingga dapat digunakan sebagai media pembelajaran untuk mempermudah proses pembelajaran. Perlu dilakukan penelitian dan pengembangan lebih lanjut pada media ini dengan materi pelajaran yang lain.

Kata Kunci: Pengembangan media pembelajaran, *Explosion Box*, komponen ekosistem.

ABSTRACT

Nasriya, Tsalats Zaidatul. 2018. *The Development of Explosion Box as Learning Media for Teaching Components of Ecosystem at 5th grade MI Perwanida Blitar.* Thesis. Islamic Elementary Education Program, Tarbiyah and Teaching Training Faculty, Maulana Malik Ibrahim State Islamic University of Malang. Advisor: Dr. H. Mulyono, MA.

Science subjects (IPA) is a contains of knowledge or a contains of facts, concepts, principles and theories. Most students feel bored if must learn through textbooks or work sheet (LKS). That is because the lack of an effective and innovative learning media development. The problem of the utilization of the learning media has not been optimally visible in class 5 MI Perwanida Blitar. Even though the facilities at the school already support for the utilization of effective and innovative learning media.

The reason of selection this learning media Explosion Box because according to the characteristics of elementary school students that is more like to play and learn. Problem of the research is 1) how does the level of appropriateness of Explosion Box as Learning Media for Teaching Components of Ecosystem at 5th grade MI Perwanida Blitar?, 2) how the effectiveness and interestness of Explosion Box as Learning Media for Teaching Components of Ecosystem at 5th grade MI Perwanida Blitar?.

Development of learning media in this study refers to the type of development according to Borg & Gall. This method has ten steps, however to simplify research and development, the researchers divided some procedures that became 6 main steps, namely: 1) preliminary research and information assemble, 2) planning, 3) the development format of the preliminary product, 4) field test and revision product, 5) revision of the final product, 6) dissemination and implementation. Data collection instruments used in this study is validation sheet of material expert, design expert and learning expert; qustionnaire of student response and test (pre-test and post-test).

These products have been through validation: 1) material expert validation is 93,3%, 2) design expert validation is 90%, 3) validation of learning expert is 93,3%. Results of trials: 1) small group is 95,4%, 2) large group is 94,4%. Data pre-test and post-test results: 1) the average score before using products is 70,3, 2) the average score after using products is 85,9. The conclusion of the results from the above data is developed learning media Explosion Box is effective and entered the very valid category, so that it can be used as a learning media to facilitate the learning process. Need to do more research and development on this media with the subject matter of the other.

Keywords: Development of learning media, Explosion Box, the components of ecosystem.

الملخص

نصرية، الثلاث زائدة. 2018. *تطوير وسائل التعليم من صندوق الانفجار مادة العنصر من النظام البيئي في الطلاب الصف الخامس MI بروانداء بليتار*. البحث الجامعي. قسم التربية لمعلمي المدرسة الابتدائية، كلية العلوم التربية والتدريس ، جامعة مولانا مالك إبراهيم الإسلامية الحكومية بمالانج. المشرف : الدكتور الحاج موليونو الماجستير.

مادة العلوم الرياضية هي مجموعة من المعرفة ،مجموعة الحقائق، المفاهيم، المبادئ والنظريات. يشعر معظم الطلاب بالملل إذا اضطروا إلى دراستهم من خلال الكراسة أو LKS. يسبب ذلك إلى نقصان التطوير لوسائل التعليم فعالة ومبتكرة. مشكلة الاستفادة من وسائل التعليم التي لم يكن أمثل تنظر في الصف MI 5 برواندا بليتار.

الأسباب من اختيار وسائل التعليم صندوق الانفجار لأنه وافقا لخصائص طلاب المدرسة الإبتدائية اي أكثرهم يحبون اللعب والتعلم. صياغ المشاكل في هذا البحث هي: 1) كيف مستوى الجدارة لوسائل التعليم دراسة صندوق الانفجار مادة العنصر من النظام البيئي في الطلاب الصف الخامس MI بروانداء بليتار؟، 2) كيف الفعالية والجاذبية من وسائل التعليم صندوق الانفجار مادة العنصر من النظام البيئي في الطلاب الصف الخامس MI بروانداء بليتار؟.

طريقة التطوير من وسائل التعليم المجموعة في هذا البحث تشير إلى نوع التطوير وفقًا لـ بروغ و غال. هذا الأسلوب له عشر مراحل، ولكن لتسهيل هذا البحث والتطوير، قسمت الباحثة بعض الإجراءات إلى 6 خطوات رئيسية هي: 1) البحث وجمع المعلومات الأولى، 2) التخطيط، 3) تطوير الشكل من المنتاجة الأولية، 4) الاختبار الميداني و مراجعة المنتاجة، 5) مراجعة المنتاجة النهائية، 6) النشر والتنفيذ. أداة جمع البيانات المستخدمة في هذا البحث هي ورقة التحقق من خبراء المادة، خبراء التصميم وخبراء التعليم. ورقة الاستبيان للطلاب و الاختبار (الاختبار القبلي و الاختبار البعدي).

المنتاجة المذكورة قد مرت بالتحقق بنتائج: 1) التحقق من خبراء المادة بلغ ٪93.3، 2) التحقق من خبراء التصميم بلغ ٪90، 3) التحقق من خبراء التعليم بلغ ٪93.3. نتائج التجربة تشير النسبة المئوية: 1) مجموعة صغيرة من ٪95.4، 2) مجموعة كبيرة من ٪94.4. أشارت بيانات الاختبار القبلي والاختبار البعدي قيمة المعدل: 1) قبل استخدام المنتاجة من 70.3، 2) بعد استخدام المنتاجة من 85.9. الاستنتاجات من نتائج البيانات المذكورة أنّ وسائل التعليم صندوق الانفجار المتطور هي فعالة ومدخولة في الفئة صالحة جدا، حيث يمكن استخدامها كوسيلة التعليم لتسهيل عملية التعليم. يحتاج إلى البحث والتطوير مزيدا في هذه الوسيلة بمادة أخرى.

كلمات البحث: تطوير الوسائل التعليم، صندوق الانفجار، عنصر النظام البيئي

CHAPTER I

INTRODUCTION

A. Background

The quality of education in East Java province is decrease. Seen from the results of the evaluation study conducted nationwide at elementary education level to decrease. The total score of USBN (National Standard School Examination) SD/MI in 2016 from three subjects to be tested only 218.05 by the average 72.68. Three of these subjects are Indonesian Language, Mathematics and Sciences (IPA). This result decreased from the year 2015 which earned score 232.07 by the average 77.35. In addition to the declining score of 2016, the year the number of students who scored below the standards of competence of graduates (SKL) thus increased. Last year, participants who scored under 55 only 69.26%. This year, that percentage increase to 98.15% of 630,092 participants.[1]

The decrease in the score of the USBN SD/MI, one of which also occurred in the Blitar City. The average score of USBN for elementary school level year 2016 is 227.26 or decrease about one percent if compared to the year 2015 with an average score 243.57 of 61 elemantary school. As for the level of Madrasah Ibtidaiyah or MI average value of USBN is 227.54 also

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[1]Bhirawa Danu, *Nilai US SD/MI Kompak Merosot*, http://harianbhirawa.com/2016/06/nilai-us-sdmi-jatim-kompak-merosot/, diakses pada 9 April 2018.

decrease one percent from the previous year total of 244.81 8 MI.[2] Some factors decrease the score of USBN SD/MI are exam results not being determinant of graduation, difficultly the question of getting high, and delivery material that is less effective because of the lack of learning media using.

One of the components that are important in increasing understanding of student learning in school exercise is the use of media of instruction. This is in accordance with the factors of decrease the score of the USBN SD/MI. Learning media availabilities will make teachers more easily in implementing learning and students will bemore helpful in learning. The curriculum is currently being applied is 2013 curriculum, still look foreign because of the obvious lesson of integrative thematic contrast to KTSP curriculum is common in applying it in schools, so much difficulty found after implementing the 2013 curriculum. For example in 5th Ilyas Class of MI Perwanida Blitar, based on premary observation, researcher founded development of learning media inovation condition is not good.[3] This can be overcome easily if accompanied by the creativity and innovation of teachers in the process of teaching and learning so as to be easily delivered and accepted by learners. Creativity and innovation in questionis the ability of teachers provide thematic learning media capable of stimulating activity learn

[2]Nita, *Nilai Ujian Sekolah SD/MI di Kota Blitar Menurun*, http://mayangkaranews.com/nilai-ujian-sekolah-sd-mi-di-kota-blitar-turun/, diakses pada 9 April 2018.

[3] Observasi proses pembelajaran pada kelas V Ilyas MI Perwanida Blitar, tanggal 26 September 2017 jam 09.30-11.00 WIB.

learners in the learning process and in accordance with a curriculumthat is applied.

The above explanation suitable with the meaning of the verses Qur'an surah Al-Baqarah (2) 31:

وَعَلَّمَ ءَادَمَ ٱلْأَسْمَآءَ كُلَّهَا ثُمَّ عَرَضَهُمْ عَلَى ٱلْمَلَٰٓئِكَةِ فَقَالَ أَنۢبِـُٔونِى بِأَسْمَآءِ هَٰٓؤُلَآءِ إِن كُنتُمْ صَٰدِقِينَ ۝

Meaning: "And He taught Adam the names - all of them. Then He showed them to the angels and said, "Inform Me of the names of these, if you are truthful."

From that ayah, God told the Prophet Adam a.s. entirely object names that are in the Earth, then God commanded angels to mention it, the truth is not yet known by the angels. The objects referred to by the Prophet Adam a.s. was ordered by God almighty. of course description has been given shape by Allah swt.

Learning media is a means to convey information or a message to learners. The use of media of instruction in the learning process is expected to help teachers improvethe learning results of learners. Therefore in every teacher's teaching and learning activities should be able to provide and prepare the media learning to help ease the process of teaching and learning in order to achieved the expected learning goals.

According to Hamalik in Arsyad Azhar, the use in learning media in the process of teaching and learning can motivate desire and interest in the

new, demotivating and stimulus motivated activity of learning and psychological influences brought against learners. The use of media can help streamline the learning process and the learning materialdelivery. In addition the media can also help students improve understanding, presenting the subject matter with an interesting as well as facilitate in receiving the subject matter.[4]

The criteria that should be used in the selection of learning media is an endorsement of the materials, cost and convenience create and acquire it. If the media is not available then the appropriate teachers strive to develop it themselves. As for the development of a workable learning media by teachers according to Arsyad was (1) visual-based media which include pictures, charts, graphs, transparencies and slides; (2) audio visual-based media which include video and audio-tape; (3) computer-based media which include interactive computer and video.[5]

The learning process can be done in case of the interaction between learners and teachers with the learning media. Use of the media the media is not limited to learning which is already available in the conventional school. As a professional teacher in the learning process needs to improve and develop the learning innovation can accelerate the achievement of learning objectives.

Use of the media at the primary level is crucial, given that the age of elementary school students are included in the concrete operational stage.

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[4] Azhar Arsyad, *Media Pembelajaran* (Jakarta: PT Raja Grafindo Persada, 2005), hlm.15.
[5] AzharArsyad,*Media Pembelajaran* (Jakarta: Raja Grafindo Persada, 2014), Hlm. 101.

Piaget in Rita Eka Izzaty, et al. 2008, argues that cognitive development stage of elementary school age students is 6 to 12 years is the concrete operational stage, at this stage studentshave been able to form an idea based on the thinking that appears on an object or event logically nearby or in other words the students begin to think logically towarda concrete object, so that the delivery of the material would be more effective if it isaided by a media that can sharpen the level of liveliness and thinking students independently.[6]

Learning media developed in this research is a form of visual media box called Explosion Box. Explosion Box still rarely developed for use as a medium of learning as a complementary learning process. Explosion Box is commonly used as an alternative to the prize, could be for a birthday gift, mother's day gifts, graduation gifts, and others. Its main function is to save the image. But it could be if affixed with writings, drawings, and more.

The media Explosion Box in this research is a box that contains a collection of material and a concise summary of the matter formed in such a way to draw attention to the student. At the time of close box was opened, the four sides of the box will be open-mesh nets resembling a cube and display the material in accordance with the themes that have been determined. Handmade process in making this box makes itunique and different between the box with each other. By using the media Explosion Box as a medium of learning, learners are expected to be interested and understand metery so that

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[6]Rita Eka Izzaty, *Perkembangan Peserta Didik*, (Yogyakarta: UNY Press,2008), hlm. 35

it will have an impact on the improvement of the learningresults of learners. In addition the media Explosion Box can be made by adjusting to the conditions and the material to be taught to learners as well as the uniqueness and inovatifnya of media is suitable for the 2013 curriculum in elementary school level.

To differentiate and compare the current study, researchers used a research comparison of earlier so as not happening plagiasi. Researchers taking research similar to the previous Explosion Box with Pop Up due to the development of the media Explosion Box does not exist on earlier research. The research, entitled the development of Indonesian Language Learning Media in the form of a Pop-Up Picture Books to enhance the speak ability of 3rd grade students of Islam elementary school AS-Salam Malang by Nurul Lailatul Aziza discusses research about learning media development Pop-Up picture book that aims to improve the ability of speaking subjects Indonesia language. In theses Nurul Lailatul Azizah method using the development of Research and Development that produces a product development. It can be concluded that Indonesian Language learning media development in the form of pop-up images can enhance the speak ability of grade 3 students of Islam elementary school AS-Salam Malang.[7]

The school will be used as the subject of the trial is a Perwanida MI Blitar has implemented a 2013 curriculum. Based on early observations

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[7] Nurul Lailatul Azizah, "Pengembangan Media Pembelajaran Bahasa Indonesia dalam Bentuk Buku Gambar Pop-Up untuk Meningkatkan Kemampuan Berbicara Siswa Kelas 3 SD Islam AS-Salam Malang". *Skripsi.* Fakultas Ilmu Tarbiyah dan Keguruan, Program Studi Pendidikan Guru Madrasah Ibtidaiyah, Universitas Islam Negeri Maulana Malik Ibrahim Malang, 2014.

conducted on 26 September 2017 with a master 5th Ilyas class with 32 students, where the class is a class of the second flagship of the 4 classes of parallel based on the cognitive level of learners, through interview along with classroom teacher Mrs. Faridhatun Nikamah, S.H. retrieved data that teachers rarely use the innovative learning media due totime limitations and conditions that are less possible. Teachers often use the textbook and learning by providing experience directly to learners in accordance with the 2013 curriculum, for example such as the learners are invited to plunge directly into the garden, the field or places others who support learning on a specific theme.[8] The selection of the material to be used is Theme 5 ecosystems, subthema 1 about Components of Ecosystem at 5th grade in elementary school.

Based on the background that have been spelled out, researchers pushed to make the title "The Development of Explosion Box as Learning Media for Teaching Components of Ecosystem at 5th grade MI Perwanida Blitar". The focus of research is on the level operates the feasibility, effectiveness and interestness learning media Explosion Box material theme 5 subthema 1 about component of ecosystem. Expected through learning media development Expolosion Box this can improve student learning outcomes.

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[8] Wawancara dengan Ibu Faridatun Nikamah, S.H, Guru kelas V Ilyas MI Perwanida Blitar, tanggal 26 September 2017 pukul 11.00 WIB.

B. Problems of the Research

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

1. How does the level of appropriateness of Explosion Box as Learning Media for Teaching Components of Ecosystem at 5th grade MI Perwanida Blitar?

2. How the effectiveness and interestness of Explosion Box as Learning Media for Teaching Components of Ecosystem at 5th grade MI Perwanida Blitar?

C. Objectives of Developing

This development research aims to:

1. Explain the level of appropriateness of Explosion Box as Learning Media for Teaching Components of Ecosystem at 5th grade MI Perwanida Blitar.

2. Explain the effectiveness and interestness of Explosion Box as Learning Media for Teaching Components of Ecosystem at 5th grade MI Perwanida Blitar.

D. Significances of the Developing

1. Theoretically

   a. The results of this research can be used as material for further study.

   b. The results of this research can be used as a new reference associated with the learning media Explosion Box.

c. The results of this research can serve as a practical step in the development of educational sciences, especially in the field of PGMI.

2. Practically

Learning media development Explosion Box is expected to be an alternative source of learning for students of 5th grade elementary school or Madrasah Ibtidaiyah. The expected benefits in the development of the learning media Explosion Box material component of the ecosystem specifically to obtain:

a. For Students

With the learning media Explosion Box can increase motivation and learning outcomes students as well as facilitate students in reaching learning objectives.

b. For school institution or teachers

As consideration of school and teacher to keep implementing the learning by utilizing the learning media Explosion Box. Expected by having this media can simplify and clarify the delivery of learning activities so that the material can be done properlyand effectively.

c. For researcher

As a means to develop scientific knowledge in the field of education and also can add to the knowledge about this particular learning media development learning media Explosion Box.

E. Development Assumption

Assuming of this a media development is:

1. The learning media Explosion Box for 5th grade of SD/MI can be used to deepen understanding, aside from the main textbook.

2. This learning media Explosion Box will grow interest in students because it supported with innovative media forms and unique form of boxes bursting when it opened.

3. Provide meaningful knowledge to learners with unique and innovative media so that the material can be recorded with a good memory.

F. Scope Limitation of Developing

The limitations of this media development are:

1. The learning media Explosion Box contains only material about theme 5 subtema 1 about component of the ecosystem in 5th grade SD/MI only.

2. The learning media Explosion Box limited to an assessment of the lecturers supervisor, media expert, expert content, classroom teacher, and limited testing by students of 5th grade Ilyas class MI Perwanida Blitar.

3. The learning media Explosion Box just the shape of print media (hardware), not in the form of software or otherwise.

G. Product Specification

Product specifications developed in the research development is as follows:

1. This products of learning media Explosion Box for 5th grade in SD/MI.

2. The learning media Explosion Box reserved for 5th grade in SD/MI students as an additional source of learning and to add knowledge for teachers in adding insight.

3. The learning media Explosion Box contains material component of ecosystem, explain about Biotic and Abiotic components and their each examples on 5th grade in SD/MI.

4. There are pictures for appropriate to the material.

5. The learning Media Explosion Box can be used independently or in groups.

6. The shape of print media (hardware) in the form of box-shaped cubes with size 15 cm x 15 cm, made from manila paper (thick cardboard paper) and linen paper, consisting of 1 layer or sheet, when opened will resemble a nets-mesh cubes. Inside are material, a concise summary of the material and the question of any such material.

H. Research Originality

1. Nurul Lailatul Azizah do research about Development of Media Learning Indonesian Language in the form of a Pop-Up Picture Books to enhance the speak ability of 3rd grade students of Islam elementary school AS-Salam Malang, found the discussion: 1) this Thesis raised research on the development of the learning media pop-up picture book that aims to improve the ability of speaking subjects language Indonesia, 2) using the method of development is Research and Development that produces a

product development, 3) results show that gains tcount ≥ ttable is 11.34 > 2.086 meaning Ho denied and Ha is received. So it can be inferred that the Indonesian Language learning media development in the form of pop-up picture book can enhance the speak ability of grade 3 students of Islam elementary school AS-Salam Malang.[9]

2. Jatu Pramesti do research about the development of the Media Pop-Up Book Theme Events For 3rd grade SD Negeri 1 Pakem, found the discussion: 1) this study aimed to describe the steps of developing the media pop-up book and knowing the level of the validity of the media pop-up book developed, the development Procedure, 2) used the author refers to the model of the research and development of the Borgand Gall, 3 based on the data analysis of media quality can be summed up in a pop-up book developed included in this category with an average of 4.62 of expert material and an average 4.67 from media experts. Student response against the media pop-up book on test execution of the field gets an average of 4.31 with a category of very good.[10]

3. Fazariya Nurlaely do research about the development of the Media Pop-Up Book On Subtema Lingkungan Tempat Tinggalku 4th Grade SDN

[9]Nurul Lailatul Azizah, "Pengembangan Media Pembelajaran Bahasa Indonesia dalam Bentuk Buku Gambar Pop-Up untuk Meningkatkan Kemampuan Berbicara Siswa Kelas 3 SD Islam AS-Salam Malang". *Skripsi.* Fakultas Ilmu Tarbiyah dan Keguruan, Program Studi Pendidikan Guru Madrasah Ibtidaiyah, Universitas Islam Negeri Maulana Malik Ibrahim Malang, 2014.

[10]Jatu Pramesti, "Pengembangan Media *Pop-UpBook* Tema Peristiwa Untuk Kelas III Sd Negeri Pakem 1". *Skripsi.* Fakultas Ilmu Pendidikan Program Studi Pendidikan Guru Sekolah Dasar, Universitas Negeri Yogyakarta, 2014.

Bulukerto 02 Batu, found the discussion: 1) the purpose of the research and development is to produce a product the media Pop-Up Book Theme Tempat Tinggalku Subtema Lingkungan Tempat Tinggalku Grade IV elementary school, 2) based on he results of the analysis of data validation to the data obtained with the validator's overall percentage of 92.5% with valid level "sangat valid". Therefore, the Media Pop-Up Book is very worthy to be used as a medium of instruction.[11]

I. Definition of Terms

1. The learning media development is a process or how to develop existing media in accordance with the materials and subject matter are arranged systematically in order to facilitate teachers and learners achieve learning objectives.

2. The learning media Explosion Box is a box containing a collection of summary material that has elements of three dimensional and motion are shaped in such a way to draw attention to the student. At the time of close box was opened, the four sides of the box will be open-mesh nets resembling a cube and display the material in accordance with the themes that have been determined.

3. The thematic learning is learning that using a specific theme to associate multiple subjects so hopefully can provide meaningful experiences to students. Thematic learning in process, more emphasis on the liveliness of

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[11]Fazariya Nurlaely,"Pengembangan *Media Pop-Up Book* Pada Pembelajaran Subtema Lingkungan Tempat Tinggalku Kelas IV SDN Bulukerto 02 Batu". *Skripsi*.Fakultas Ilmu Pendidikan Program Studi Pendidikan Guru Sekolah Dasar,Universitas Negeri Malang, 2016.

the students so that students can get hands-on experience and find knowledge independently.

J. Sistematic Writing

This study consists of two major sections, namely the study of analytical and product development.

Section I

This section contains analytical study contained in five chapters, namely:

1. Chapter I Introduction, consisting of background issues, the formulation of problems, development goals, development benefits, assuming the development, the scope of development, product specifications, operational research, the definition of originality and Systematics of writing.

2. Chapter II Literature Review, which consists of the nature of thematic learning, the nature of learning media, the nature of graphic madia and the nature of Explosion Box media.

3. Chapter III Research Method, which consists of the type of research, model development, procedures of development (stage initial situation analysis, design development stage, the stage of the writing and the assessment phase) and trial products (test design, test subjects, data types, data collection instruments and data analysis techniques).

4. Chapter IV Development Results, which consists of product design, presentation of trial data, data analysis, and revision of the product.

5. Chapter V Closing, sub chapter consists of two, the first is the study of the product that has been revised, the second is advice utilization, dissemination, and further product development.

Section II

This section contains the results of the learning media development product Explosion Box material Components of Ecosystem at 5th grade SD/MI.

CHAPTER II

LITERATURE REVIEW

A. The Means of Thematic Learning

1. The Sense of Thematic Learning

   Thematic learning emphasizes liveliness students so that students can get hands-on experience and find Knowledge independently. Through the experience obtained directly, students will get the concepts of the material they learned and relate it to other concepts. Thematic learning is one integrated learning model which is a learning system which allows learners, both individually and group actively dug and found the concept and the principles of science in holistic, meaningful and authentic.[12] While Andi Prastowo defines integrated thematic learning as a learning approach that integrates the various competencies of the various subjects into various themes.[13]

   Based on the opinion of the above it can be concluded that thematic learning is one of the learning models using the theme to associate multiple subjects so as to provide meaningful experiences to students. Meaningful means through thematic learning, students can understand the concepts they learn through hands-on and real experience by linking between concept in intra as well as inter-subjects.

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[12] Rusman, *Model-Model Pembelajaran: Mengembangkan Profesionalisme Guru*,(Jakarta: Rajawali Press, 2010), hlm.254.
[13]Andi Prastowo, *Pengembangan Bahan Ajar Tematik*, (Jakarta: Kencana Prenamedia Group, 2014), hlm. 223.

2. The Characteristic of Thematic Learning

The characteristic of thematic learning which are as follows: (a) student-centered so students serve as the subject of study and teacher as a facilitator, (b) provide hands-on experience to students. In understanding a thing, students are exposed to something real or concrete, (c) separation of subjects are not so clear, (d) presents the concept of various subjects in a learning process. (e) flexible teacher associate materials with other subjects or associate with student life, (f) using the principle of learning while playing so that learning takes place is fun.[14]

According to the PGSD developer team 1997, thematic learning characteristics include:[15]

a. A holistic, meaning a symptom or events that became the center of attention in the thematic learning observed and examined from several majors at once.

b. Means. In a study of various aspects of the phenomenon, allowing the formation of a kind of interlacing between schemas owned by students who will provide the impact so the meaningfulness of the material easy to remember by students.

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[14]Abdul Majid,*Pembelajaran Tematik Terpadu* (Bandung : PT Remaja Rosda Karya, 2014), hlm. 89.

[15]Abdul Majid,*Pembelajaran Tematik Terpadu* (Bandung : PT Remaja Rosda Karya, 2014), hlm. 90.

c. Authentic, it's mean thematic learning enables students to understand the concepts and principles directly wanting to be studied.

d. Active. Thematic learning developed based approach to inquiry the discovery. During the learning process, students actively involved while the teacher acting as a facilitator only. Every model of learning must have characteristics. Which make these different learning with other learning. Characteristics of thematic learning centred on the students, providing hands-on experience to students, using the principle of learning while playing, learning takes place meaningful.

B. The Means of Learning Media

1. Definition of Learning Media

The word "media" is derived from the Latin medius meaning 'middle', ' intermediate' or 'introduction'. Gerlach & Ely in Azhar Arsyad said that the media is human, material or events that build the conditions that make the learners are able to acquire knowledge, skills or attitudes.[16] In the process of learning, the media often refers to a graphic tools, photografis or eto capture, process and rearranges the informal verbal or visual. While Gagne and Briggs in Azhar Arsyad said that learning media includes the tool physically used to convey the contents

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[16]Azhar Arsyad, *Media Pembelajaran* (Jakarta: PT Raja Grafindo Persada, 2005), hlm. 3.

of the teaching material. In other words the media component of the physical vehicle or learning resources containing instructional materials in an environment of students who can stimulate students to learn.[17] From the above it can be concluded the media sense that media is the physical tools used in the process of learning to facilitate students in acquiring knowledge, skillsor attitudes.

2. The Kind of Learning Media

There are several types of media used in the learning process of learning is media photos, graphs, Globes, atlas, movies and so on. According to Sudjana, learning media types frequently used in learning activities are: (1) media graphics such as pictures, photographs, graphs, charts or diagrams, posters, cartoons, comics, and so on, (2) medium of three dimensional solid models, is models cross-section, bunk models, model work, mock up, diorama, (3) media projection as slides, films, film strips, OHP and (4) the use of the environment as a medium.[18]

Learning media development following the development of technology. Based on these technological developments, are grouped in several types of media. Leshin, Pollock & Reigeluth in Azhar Arsyad classify media into five types as follows:[19]

a. Human-based media, is teachers, instructors.

b. The print-based media, is a book, loose sheets, module.

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[17]Azhar Arsyad, *Media Pembelajaran* (Jakarta: PT Raja Grafindo Persada, 2005), hlm. 4.
[18]NanaSudjana, *Dasar-dasar Proses Belajar Mengajar* (Bandung: Sinar Baru Alesindo, 2002), hlm. 22.
[19]Azhar Arsyad, *Media Pembelajaran* (Jakarta: PT Raja Grafindo Persada, 2005), hlm.36.

c. Visual-based media, is books, charts, graphs.

d. Audio visual-based media, i.e. games, film, television.

e. Computer-based media, namely interactive video.

3. Function and Benefit of Learning Media

According to Hamalik in Azhar Arsyad, learning media in the process of teaching and learning can evoke desire and interest in the new, demotivating and stimulus evoked activity of learning and psychological influences brought against learners. The use of media can help streamline the learning process and the learning material delivery. In addition the media can also help students improve understanding, presenting the subject matter with an interesting as well as facilitate in receiving the subject matter.[20]

Levie & Lentz in Azhar Arsyad posited the following learning media function is:[21]

a. Attention function, that can attract attention and directing students to concentrate on the content related to the meaning of the displayed visual or text accompanying the subject matter.

b. Affective function, that can be seen from the students ' level of comfort when studying (or read) display text.

c. Cognitive function, media seen from the findings of the study revealed that the visual symbol or image is to accelerate the

[20]Azhar Arsyad, *Media Pembelajaran* (Jakarta: PT Raja Grafindo Persada, 2005), hlm.15.
[21]Azhar Arsyad, *Media Pembelajaran* (Jakarta: PT Raja Grafindo Persada, 2005), hlm.16.

achievement of the goal to understand and remember information or messages contained in the image.

d. Kompensatoris function, visual media serve to accommodate students who are weak and slow to receive and understand the contents of the lessons are presented with text or presented verbally.

As for the benefits of the media in the process of learning is as follows:

a. Clarify the presentation of messages and information so as to facilitate and enhance the learning process and the learning outcomes of students.

b. Improving and directing the attention of the children so that they can give rise tolearning motivation, interaction directly between the student and the environment as well as encourage student learning independence.

c. Media can overcome the limitations of the senses, time and space.

d. Media can provide commonality of experience to students about events that occur in the environment of students.

The benefits of the use of media of instruction is helping teachers in delivering the material and help the students in understanding the material. With the use of the media then learning objectives will be achieved. The benefits of the use of media can be achieved to the maximum if the teacher can select and use the media properly and in accordance with the needs of learning.

4. Criteria for Selecting Learning Media

Nana Sudjana & Ahmad Rivai suggests a few things to look for in selecting a medialearning, as follows:[22]

a. Accuracy with the goal of teaching. The selection of media based on the instructional objectives that have been set.

b. Supporting content learning materials. The learning materials are fact or concept trequires the media to let students easily understand the material.

c. Ease in obtaining media. The media that will be used by the teacher easy to get and easy to use in learning.

d. The teacher skills in using the media. At least the teacher should be able to use the media in the process of learning so that it can improve the quality of learning.

e. The availability time in using it so that the use of the media making the learning process to be effective and efficient.

f. In accordance with the development of the students. The selection of the media should be adapted to the development of students so that students easily understand the material using the right medium.

Whereas Trianto describes few principles in the selection of media:[23]

a. There must be clarity about the goals and purpose of such election.

[22]Nana Sudjana. Ahmad Rivai, *Media Pengajaran* (Bandung: Sinar Baru Algensindo, 2010), hlm. 4.

[23]Trianto, *Desain Pengembangan Pembelajaran Tematik* (Jakarta: Prenada Media Group, 2010), hlm. 231.

b. Selected media should get knowledge of the properties and characteristics.

c. Existence of there are media that can be compared because the media selection is the decision-making process of alternative resolution required by the destination.

The presence of the media, the selection criteria may make it easier for teachers in choosing the appropriate media to the material as well as facilitate teachers in using the media to assist in the implementation of the learning process. Through the use of the media are expected to improve the quality of the learning process that will have an impact on the quality of student learning outcomes.

C. The Means of Graphic Media

In the language of Yunani, grafikos contains the sense of depicting or describing the lines. As an adjective, refers to a graphics explanation of life, a powerful expose oreffective representation. This definition combined with a practical sense, then the graphics as a medium can communicate facts and ideas clearly and powerfully through a blend of disclosure of words and pictures.

It can be concluded that the media graphics are visual media that presents the facts, ideas, or ideas through the presentation of words, sentences, or numbers of images. The graphics used to draw the attention of

the presence, clarify ideas and illustrate the facts so they can be interesting and easy to remember.

As for the advantages of graphical media is facilitating the comprehension of the students against the material presented, equipped with the colors so that it caught the attention of students to use it as well as making relatively easy and cheap. That includes the media graphics including graphics, diagrams, charts, sketches or drawings, posters, flannel board, cartoons, comics, box and others. Print media as well as in the graphic media,

Azhar Arsyad suggested selection criteria a good print media as follows:[24]

1. Be consistent

   In the writing of letters, spaces and distance page format should be consistent

2. Format

   In writing paragraphs, short paragraphs made in 1 column while a long paragraph was made in 2 columns. In addition if the contents of the different paragraphs, then the paragraph should be separated

3. Organization

   Strive to inform students about the extent to which they are in the text. In addition to that text in order to properly assemble interesting and not boring

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[24]Azhar Arsyad, *Media Pembelajaran* (Jakarta: PT Raja Grafindo Persada, 2005), hlm. 86-89.

4. The appeal

Introduce each chapter or section in a different way to motivate students to read

5. Font size

Select the font size that is appropriate to the characteristics of the students and avoid using a capital letter for the entire text

6. Space (blank space)

Use the blank space does not contain text or images to give the opportunity to students to rest on certain points. Adjust spacing glosses to enhance the look and readability level and add a space to antarparagraf increase the level of readability

D. The Means of Explosion Box Media

1. The Definition of Explosion Box Media

Explosion Box is a graphic medium in this type of visual. Not yet known from where the media, but the Explosion Box already found his video tutorials on Youtube. How it works and how it looks almost the same as Pop-Up. This media is still not ever developed for use as a medium of learning as a complementary learning process.

Explosion Box is commonly used as an alternative prize, such as a birthday gift, mother's day gifts, graduation gifts, gifts of separation, and so on. Its main function is to save the image. But it could be if contented with writings, drawings, and more. Ways of

making relative easy and does not take a long time. Just need a little bit of outlines, slashing with a cutter, and attach with double-tape.

2. The Characteristic of *Explosion Box*

As the name implies, the Explosion Box (box of explosive) represented as an explosion. At the time of close box was opened, the four sides of the box will be open-mesh nets resembling a cube and display writings, drawings, or more according to the theme.

Handmade process in making this box makes it unique and different from other boxes. The media Explosion Box can be made (handmade) in accordance with the level of creativity, the cost and the desired theme.

Characteristics of Explosion Box is made of paper (cardboard) box-shaped, composed of four layers. When it opened that box will bring up content in the form of pictures or text according to the theme. There is no provision or measure specific material selection. The media can be made in accordance with the creativity and the desire of the maker.

3. Advantages and Disadvantages of Explosion Box

Learning Media Explosion Box it had a advantages, among others:

a. Raises curiousity passion with fill in the box and as such gets a surprise after opening it.

b. There are drawings and concise writing on a layer (sheet) that can be opened and pulled so it gives the impression of life and draw on the box.

c. Can be filled with various things in the form of pictures or writings (messages) in accordance with the want.

While the disadvantages of learning media Explosion Box include:

a. Views of the manufacturing process, the media has its own complexity at the manufacturing process because it requires thought, computation and creativity to be able to make a box that can be opened and pulled.

b. Media is relatively expensive, depending on the materials used.

c. Easily damaged and broke, because it is made from paper (cardboard).

E. **The Means of IPA Learning**

1. The Definition of IPA Learning

   IPA is simply defined as the science of the phenomena of the universe. In the curriculum of primary education (1994) described a previous understanding of IPA (Science) as a result of human activity in the form of knowledge, ideas, and concepts that are organized about the nature around, gained from experience through a series of process among other scientific investigations, drafting and testing ideas. While in 2004 the science curriculum (IPA) was interpreted as a way to

systematically find out about the universe. According to Florence and Jenny[25] the utterances of Einstein: Science is the atempt to make the chaotic diversity of our sense experience correspond to a logically uniform system of thought, reaffirms that the IPA is a form of efforts that make a wide range of experience into a particular pattern of logical thinking system, which is known by the term scientific thinking patterns.

To discuss the nature of the IPA, there are a few things to note, the teachers understand IPA in a broader perspective. According to them, there are at least 7 scope of understanding IPA as follows:

a. IPA as a collection of knowledge

The IPA as a collection of knowledge refers to a collection of various concepts in the IPA. IPA considered as the accumulation of a variety of knowledge have been discovered since ancient times until the discovery of new knowledge. The knowledge in the form of facts, theories, and generalizations that describe nature.

b. IPA as a search process (investigation)

IPA search as a process generally is a view which links the image of IPA which is closely related to the activities of the laboratory together with the device. In this category the IPA is seen as something that has a strict discipline, objective, and a process that is free of value.

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[25] Darmodjo Hendro dan Jenny R.E. Kaligis, *Pendidikan IPA I, Depdikbud, Proyek Pembinaan Tenaga Kependidikan*, (Jakarta: Depdikbud RI, 1993), hlm. 3.

c. IPA as a collection of values

IPA as a collection of value is closely connected with the emphasis of the IPA as a process. However, this view is emphasized in the scientific aspect of the value attached to the IPA. This includes the value of honesty, curiosity, and openness.

d. IPA as a way to get to know the world

IPA process is influenced by the way in which people understand life and the world around it. IPA is considered as a way in which humans understand and give meaning to the world around them, as well is one way to tell the world and its contents with all of its limitations.

e. IPA as a social institution

This means that the IPA should be viewed in that sense as a collection of professionals, who through their IPA is funded, trained and will be awarded the work. These scientists are very tied to the interests of the institution, Government, politics, even the military.

f. IPA as a result of human construction

This view point to the notion that SCIENCE is actually a discovery of a scientific truth about the nature of the universe. This scientific knowledge is accumulated no other truth. It a staple in this view is the IPA is a construction of human thought. Therefore, it can be just what the IPA generated has the nature of bias and temporary.

g. IPA as part of everyday life

People realize that what is worn and used to fulfill the necessities of life are strongly influenced by the IPA. Not only was the use of different kinds of technology products as a result of the investigation and knowledge, but also the way how people think about everyday situations very strongly influenced by the scientific approach.

2. The Scope (Dimensions) of IPA Subjects

The scope of the Science subjects (IPA) in the year 2004, according to SD KBK (forerunner of the Curriculum 2006) includes two dimensions: (1) Scientific Work and (2) understanding of the concept and its application. Learning activities in both dimensions is implemented in synergy and integrated. The scientific work of science in the elementary school curriculum consists of scientific investigations, communicating, development of creativity and problem solving, scientific attitudes and values. The following is a description of the scientific work:

a. Investigation/Research

Students dig up knowledge related to natural and technological products through reflection and analysis for planning, collecting, processing and interpreting data, communicate the conclusions, as well as assessing the plan of procedures and results.

b. Communicating Scientific

Students communicate scientific knowledge and its results to the various target groups for a variety of purposes.

c. The development of creativity and problem solving

Students are able to berkreatifitas and solve problems and make decisions with the use of the scientific method.

d. Scientific attitudes and Values

Students develop an inquisitive, don't believe in superstition, honest in presenting factual data, open minds and new ideas, creative in generating scientific works, care about the living things and the environment, diligent and conscientious.

As for the dimensions of the understanding of the concept and its application includes:

a. Living things and life process, namely, humans, animals, plants and their interaction with the environment, and health.

b. Objects/materials, properties and their uses include: liquid, solid and gas.

c. Energy and changes include: the style, sound, heat, magnetic, electric, cahayadan plane simple.

d. Earth and universe include: soil, Earth, solar system, and other objects of the sky.

e. Science, the environment, technology, and society is the application of the concept of the IPA and interrelating with the

environment, technology and society through the creation of a work of simple technology including design and make.

In this case the material components of the ecosystem are included in living beings and the process of life.

3. The Material Ecosystems 5th Grade Elementary School

a. The Understanding of Ecosystems

The ecosystem is a process which is formed due to the reciprocal relations between living things with their environment, as we know that there are components of biotic (living) and abiotic component component (not live) involved in an ecosystem. The second component is certainly influence each other, for example only the animal's relationship with water. The interaction between living beings and not living this will form a unity and order. Each component involved have their respective functions, and as long as there is no terngganggu function then the balance of the ecosystem will continue to be maintained.

b. The components in the ecosystem

Based on functions and aspects of its compilation, the ecosystem can be distinguished into two components, namely the following:

1) Component of the abiotic component, that component is made up of ingredients do not live, which includes physical and chemical components, such as land, water, Sun, air, and energy.

2) Biotic Components, i.e. components that consist of material life, which include producers, consumers and pengurai.

   a. Producers

      The manufacturer is a living creature that could produce organic materials from inorganic materials. This process can only be done by plants which have chlorophyll. All organisms are classified into the berklorofil manufacturers. For examples algae, mosses, and green plants.

   b. Consumer

      Consumer means eaters. All animals and plants is not berklorofil, such as ropes, including into the consumer. Consumers consuming organic material produced by the manufacturer. So, consumers rely heavily on manufacturers. Because the consumer is not able to turn organic matter into inorganic substances. In the body of consumers, organic matter was overhauled for rearranged into organic substances as appropriate.

   c. Pengurai

      Garbage or rotting carcasses due to decay and decomposition by this species. This species is included into the pembusuk bacteria and fungi. Pembusuk bacteria and fungi to elaborate on organic matter into inorganic materials,

water, and gas. Furthermore the decomposition results are exploited by the manufacturers.

F. **The Characteristic of 5ᵗʰ Grade Elementary School Students**

Age past the primary school 5ᵗʰ grade as childhood end of which took place from 10 years to roughly age 11 or 12 years old. The main characteristics of elementary school students of 5ᵗʰ grade are those showing the individual differences in the many facets and fields, among other things, differences in intelligence, the capabilities in cognitive and language development, personality and the physical development of the child.

According to Suyati the child's age characteristic 10-13 or 5-6 grade are as follows:[26]

1. Physical characteristics

   a. The muscles of the hands and arms more developed.

   b. The children become aware of his physical state.

   c. Boys love to match the rough and tough.

   d. Children at this time improvement speed to react.

   e. Children this age will enjoy the kind of sports matches.

   f. Coordination of children this age either, since it can already be taught these kinds of activities are rather difficult, meaning that activities that require joint movement.

   g. Physical circumstances look strong, sturdy and healthy.

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[26] *Suyati*, *Pelajaran Senam*, (Jakarta: Alpha Beta, 1992), hlm. 14-16.

2. Social and emotional Characteristics

    a. Along with the process of physical maturity, his emotions at the time was unstable.

    b. Because of the desire to join and the existence of a difference the way cause misunderstanding between the older one and the other.

    c. This age children easily arise in wonderment.

    d. Children of this age is the usual emotion rebelled.

    e. Have a positive response towards the appreciation and praises.

    f. Children of this time had critical of the actions of adults.

    g. Developing a sense of pride.

    h. Every thing done, want the existence of reward or recognition.

    i. Want an introduction or an award from the group.

    j. Children this time easily gained a friend. Prefer to perform activities in a group of activities that are individuals.

3. Mental Characteristics

    a. Children of this time more fond of playing with use the ball.

    b. More kids interested in the game's team or group.

    c. Children greatly affected when there is a group that stands out or reach high achievements.

    d. While the easy despair, therefore try to wake up again or bounce back if it does not succeed in achieving something.

    e. Efforts in doing something, always trying to get the approval of the teacher in advance.

f. Children of this period generally pay attention to a matter of time, because it's trying to work on time.

According to Suyati besides characteristics, to note is also the needs of the learners. The needs of the learners, among others:[27]

1. Characteristics of elementary school children are happy playing. This character according to elementary school teachers to carry out lessons-charged learning model allows game elements in it. Teachers should develop model teaching serious but relaxed.

2. Characteristics of elementary school children are happy to move. Adults can sit for hours while the elementary school children can sit quietly around 30 minutes. Therefore the teacher should devise a learning model that lets children move or moves. Sent to sit neatly in a long period of time, the child perceived as torture.

3. Characteristics of elementary school children is pleased to work in groups. From his intercourse with your peer group, children learn the important aspects in the process of socialization, such as: learning to meet the group's rules, a loyal friend of learning, learning to take responsibility, learn to compete with others are healthy. This characteristic is carries the implication that the teacher should devise a learning model that allows children to learn and work in groups. Teachers can ask students to form small groups with a member of the 3-4 people to learn or accomplish tasks in groups.

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[27] Suyati, *Pelajaran Senam*, (Jakarta: Alpha Beta, 1992), hlm. 14-16.

4. Characteristics of elementary school children are happy to feel or do or act directly. Review of the theory of progression kognitiv elementary school children entered the stage of concrete operations. For elementary school children, the teacher's explanation about the subject matter would be better understood if children carry out itself, just as with adults. Thus the teacher should devise a learning model that allows the child was directly involved in the learning process.

As a teacher, needs to understand the development of learners. The development of the learners include: physical development, emotional development, and intellectual development. Physical development and social development have a strong contribution to the development of intellectual or mental development or cognitive development of the students.

Understanding of the development of the learners in the above, it is very necessary to design appropriate learning media development with the characteristics of 5th grade elementary school students. The innovative media will be able to increase the motivation of learning so that students are able to improve the process and the desired learning outcomes. The media Explosion Box that developed in this study refers to several characteristics of 5th grade elementary school students is easily arises a sense of wonderment, prefer to perform activities in a group and likes to play.

CHAPTER III

RESEARCH METHOD

A. Type of the Research

The type of this research is the Research and Development. Research and Development is a process or series of steps in order to develop a new products or refine existing products in order to be accounted for.[28] Research development according to Borg & Gall (1983) is a process used to develop and validate product education.[29] Products that will be developed is a media researcher learning Explosion Box material about Component of Ecosystems in 5th grade SD/MI.

B. Model of the Development

Development of learning media in this study refers to the type of development according to Borg & Gall (1983). These models are descriptive by following these general steps to produce a product. According to Borg & Gall (1983) steps of research and development are as follows[30]:

1. Research and assemble of preliminary information

Includes a literature review, observation or observation class and the preparation of the preliminary report.

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[28]Trianto, *Pengantar Penelitian Pendidikan bagi Pengembangan Profesi Pendidikan & Tenaga Kependidikan* (Jakarta: Kencana Prenada Media, 2010), hlm. 206.

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

[30]Punaji Setyosari, *Metode Penelitian Pendidikan dan Pengembangan* (Jakarta: Prenada Media, 2015), hlm. 292.

2. Planning

    Include activities which are: formulating ability, formulating a specific purpose, to determine the sequence of materials and test small skal.

3. Development format of preliminary product

    The purpose is the development format of preliminary product or first draft which includes the preparation of learning materials, and evaluation tools handbook.

4. Preliminary test

    This test is performed for the format program developed whether in accordance with a special purpose. The results of the analysis of these early trials became the input to perform preliminary product revisions.

5. Product revisions

    Product revisions, which is carried out on the basis of this initial trial results to gain information and input to make improvements repairs in accordance with input obtained at the time of trial.

6. Field trials

    Products that was revised based on the results of the initial test, then tested again to subject larger try again.

7. Product revisions

    The revision of the product based on the results of field trials.

8. Field test

    After the revised product, if the developers want products that are more feasible and adequate field test is required.

9. Final product revisions

Revision of this product be the size that the product really is said to be valid because it has gone through a series of tests gradually.

10. Dissemination and implementation

Delivering the results of development (process, procedures, program or product) to the users through a forum and professional meeting or write a journal title, or in the form of a book or handbook.

Based on the steps and development of Borg & Gall above, can be described as follows:
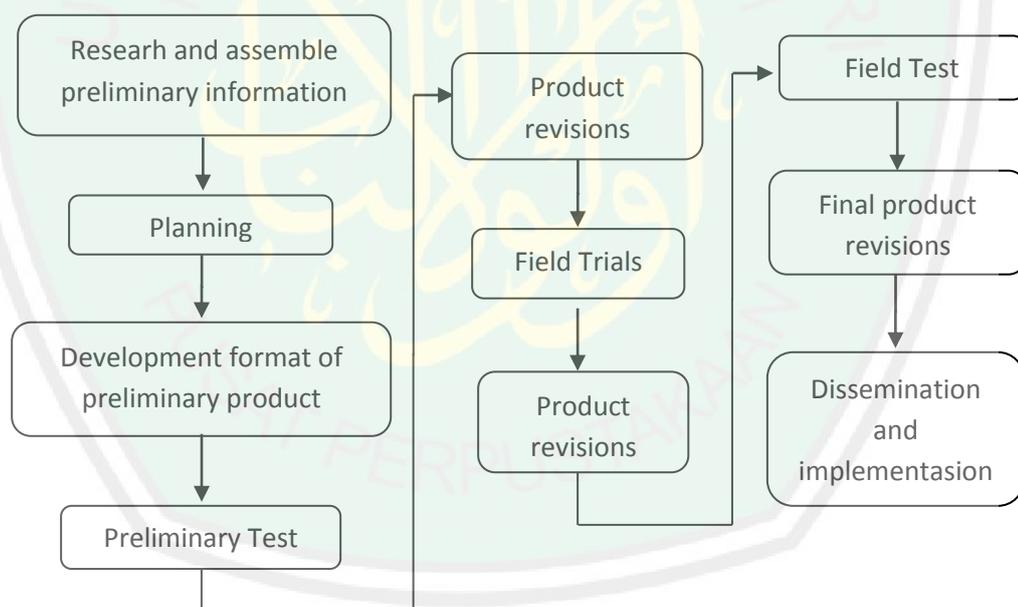
Figure 3.1 Borg & Gall Development Model

However, to simplify research and development, the researchers divided some procedures that became 6 main steps, namely: 1) preliminary research and information assemble, 2) planning, 3) the development format of the preliminary product, 4) field test and

revision product, 5) revision of the final product, 6) dissemination and implementation.

C. Prosedure Development

Research procedures that are used in the development of researcher is adapted from the development measures developed Borg & Gall, its applications appropriated to the needs of researchers. Given the limited time and the cost of belonging to a researcher, outline the measures of research and development that have been put forward earlier, simplified according to needs of research.

Taking major steps Borg & Gall, procedure learning materials development researchis divided into six steps, which are: 1) the preliminary information assemble, 2) planning, 3) development format of preliminary product (product design), 4) field test and product revisions, 5) the final product, 6) desiminasi and implementation. Learning media development procedures include:

1. The assemble of preliminary information

This assemble of preliminary information were conducted to determine the needs within thelearning will take place. Things that must be considered in determining learning need is the suitability of the curriculum with learning needs and stage of developing the students. The steps undertaken in this stage is the study of the literature and the study of the field:

a. A study of the literature done by collecting the theories associated with the development of learning media Explosion Box material Components of Ecosystem at 5ᵗʰ grade SD/MI. This stage aims to figure out a general overview about development will be carried out. Based on the study of the literature will note the characteristic form of learning media Explosion Box.

b. Field Study, researchers did some stage analysis is analys is textbook and existing learning media, analysis of the needs of students and analysis of the material.

    1) Researchers analyzed the textbook and the learning media to an existing at school. Based on these steps obtained information that teachers rarely use learning media as supporting the learning process.

    2) Researchers analyzed the needs and characteristics of students with regard to the characteristics, capabilities and experiences of students, both as a group and as individuals.

    3) Researchers analyze material with the aim to determine the content of the material in the learning media Explosion Box material Components of Ecosystem at 5ᵗʰ grade SD/MI.

2. Planning

At this stage the researchers analyze material that will be arranged in the learning media Explosion Box material Components of Ecosystem at 5th grade SD/MI, steps undertaken include: analysis of the Competence Standard and Basic Competence; analysis of learning material; compiling the needs of students; developing indicators based on Competence Standard and Basic Competence.

3. Development format of preliminary product

Product development through several steps, including:

a. Determine the title

Learning media developed titled learning media Explosion Box material Components of Ecosystem at 5th grade SD/MI.

b. Standard Contents

The content will be delivered in the learning media Explosion Box material Components of Ecosystem will be adjusted to the Competence Standard and Basic Competence main book 5th grade SD/MI.

4. Field test and revision product

At this stage of the product development the product format early results validated by steps:

1) The validation phase is carried out by experts of the material and media expert

2) Analysis stage I

3) Revision stage I

4) Stage of validation carried out by classroom teacher

5) Analysis stage II

6) Revision stage II

7) Test the product on the students.

5. Revision of final product

At this stage the researcher doing revision of final product, based on the advice and input in the implementation of the test field.

6. Desiminasi and implementation

This desiminasi stage takes place when there is no revision again, and then reported the results of development for later printing.

D. Trials

Product trial aims to find out whether the product that made decent used or not and to what extent the product is made can reach target.[31]

1. Design Trials

A test was conducted to find out the level of validity and effectiveness of the product. Products in the form of learning media Explosion Box was tested level interestness, validity and their effectiveness through several stages:

1) Validation of expert material by Ahmad Abtokhi, M.Pd.

2) Validation of expert product by Maryam Faizah, M.PdI.

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[31]Zainal Arifin, *Penelitian Pendidikan Metode dan Paradigma Baru* (Bandung: Remaja Rosdakarya, 2011), hlm. 132.

3) Validation of expert learning proses by Faridhatun Nikamah, S.H.

4) Small scale field trials and large scale field trials.

2. Trial Subjects

The subject of assessment in learning media Explosion Box is material experts, expert product design and expert learning. While the target user is a test subject 5th Ilyas class MI Perwanida Blitar amounted to 32 students.

Feasibility test subjects or validator on this research is determined based on the following criteria:

b. Expert content or material of thematic learning

Lecturer who is expert in the thematic field of learning is lecturer who has did learning at least S-2 in college. Last 2 years experienced teaching in basic science thematic learning.

c. Expert product design

Expert product design as a validator media design learning is a product design and development learning media at least D3 field, experienced teaching in the field of product design and development of learning media.

d. Experts Learning

Expert learning as learning media Explosion Box validator is a master class with minimal education is Undergraduate (S-1) and had teaching experience. Expert the selected learning is master class 5th Ilyas MI perwanida Bitar.

e. The subject target test

The subject of target testing product learning media Explosion Box material Component of Ecosystems is students 5th grade of MI Perwanida Blitar, 8 students selection randomly for small scale field trials and 32 students of 5th Ilyas for large scale field trials.

E. Types of Data

Data is defined as information or materials that can be relied upon real studies (analysis or conclusion).[32]

The type of data in the development learning media Explosion Box material Components of Ecosystem this is qualitative and quantitative data.

1. Qualitative Data

At this stage of validation expert, qualitative data obtain from criticism, comments and suggestions of the experts to media Box Explosion. While the field trials, the qualitative data get from data when students answers to the activity of the students.

2. Quantitative Data

Quantitative data in the form of a point the assessment by the experts and students about learning media Explosion Box material Components of Ecosystem.

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[32] Wahidmurni, *Cara Mudah Menulis Proposal dan Laporan Penelitian Lapangan: Pendekatan Kualitatif dan Kuantitatif* (Skripsi, Thesis, dan Disertasi) (Malang: UM Press, 2008), hlm. 41

F. Data Collection Instruments

The instruments used in the collection of data on the development learning media Explosion Box material Components of Ecosystem are as follows:

1. Questionnaire

    The questionnaire is a number of written questions to obtain information from the respondent of what he naturally.[33] Question form is used to obtain data more complete data about the validation experts material, expert product design and validation master class, as well as the opinions of the students about his experience of learning to use media Explosion Box.

2. Observations

    Observations is a method of data collection in which the researcher orhis collaborators noted information as they watch during the study. Observations that can be made by looking, listening, feeling, which would be recorded objectively possible.[34] Researchers can find out and obtain information about the situations in the field to analyze the needs of the starting material used to develop the learning media Explosion Box. Researchers are also using observation as a way to monitor student learning activities during the use of develop products to know students on understanding aspects of affective and psychomotor.

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[33]Trianto, *Pengantar Penelitian bagi Pengembangan Profesi Pendidikan & Tenaga Kependidikan* (Jakarta: Kencana Prenada Media, 2010), hlm. 265.
[34]W. Gulo, *Metodologi Penelitian*, (Jakarta: Grasindo, 2010), hlm. 116.

3. Pre-test dan Post-test

   Collecting data test is pre-test and post-test for the students to know the comparative effectiveness of learning between before and after using the learning media Explosion Box material components of the ecosystem. The question of pre-test and post-test consists of 10 multiple choice question.

G. Data Analysis Techniques

   Researchers collect data that has obtain for later analyzed. Data analysis techniques used in the development of this research there are two kinds, the first is qualitative data analysis technique which is the verbal data is in the form of notes, comments, criticisms and suggestions of expert material and expert media. The second is is quantitative data analysis technique which is used to measure the results data from the questionnaire and test (pre test and post test). Data analysis questionnaire according to Arikunto to measure quessionare there are two kinds, measure data per-item and measure data overall.[35]

1. Measure data per-item

$$P = \frac{X}{X_1} \times 100\%$$

Description
P   : Percent
X   : Answer for 1 item
X_1 : Ideal answer for 1 item
100% : Konstanta

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[35] Arikunto, S. *Dasar-dasar Evaluasi Pendidikan* (Jakarta: Bumi Aksara, 2012), hlm. 216

2. Measure data overall

$$P = \frac{\sum X}{\sum X_1} \times 100\%$$

Description
P   : Percent
X   : Respondents answer
X_1 : Respondents ideal answer
100%   : Konstanta

After obtained questionnaire data, then do analysis to obtain answers about data validated. By using the standard created by Arikunto as follows:[36]

Table 3.1 The Eligibility Criteria of the Learning Media

Presentage	Qualification	Criteria	
76% - 100 %	Valid	Not Revision	
51% - 75,99 %	Valid Enough	Little Revision	
26% - 50,99 %	Less Valid	Revision of some	
0% - 25,99%	Not Valid	Revised	

The test results used to analyze the effectiveness the product, is about test results (pre-test and post-test) of the material components of the ecosystem at the time before and after using the product learning media Explosion Box. The researchers calculated the average results of pre-test and post-test then calculated the difference.

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[36] Arikunto, S. *Dasar-dasar Evaluasi Pendidikan* (Jakarta: Bumi Aksara, 2012), hlm. 312

CHAPTER IV

DEVELOPMENT RESULTS

A. Product Design

Media developed in this research is a form of learning media Explosion Box to support learning materials on the level of Ecosystem Components SD/MI, Media of learning developed in the form of Box-based Explosion as a means to help facilitate the process of learning at grade 5 MI Perwanida Blitar, besides learning media can also be used as a means of learning motivation of students and helps students understand the material with the immediacy and fun. The following explanation of the product design has been created by researchers.

On the outside (close box) there is the text "Open me and say Surprise". The meaning of the text as supporting the concept of a media Explosion Box that is a box of surprises. By reading the sentences students will imagine opening the box as a gift (surprise). The text using the font style: Comic Sans MS with the colors white and light green base color.

Figure 4.1 Outside box (cover box)

Then when the box was opened there will be 4 parts. The first part is about the understanding of ecosystems and of the term in the ecosystem. On the cover of this section there is the text "Pengertian & Istilah dalam Ekosistem ". The text using the font style: Mister Vampire with 27.72 pt. The size box of this first part is 15x15 cm.

Figure 4.2 Cover of the first box

Then when the cover is opened, there are posts about the meaning of ecosystem. The words "Ekosistem" using font style: Playtime with font size 39.55 pt. After words "Ekosistem" writing about the meaning of ecosystems with font style: Comic Sans MS and font size 18.8 pt.

Figure 4.3 The meaning of Ecosystem

After the meaning of ecosystem, there is the text "Contoh-Contoh Ekosistem" with font style: Playtime and font size 26.26 pt. There are 5 pictures examples of ecosystems with the font style: Comic Sans MS and font size 10.21 pt.
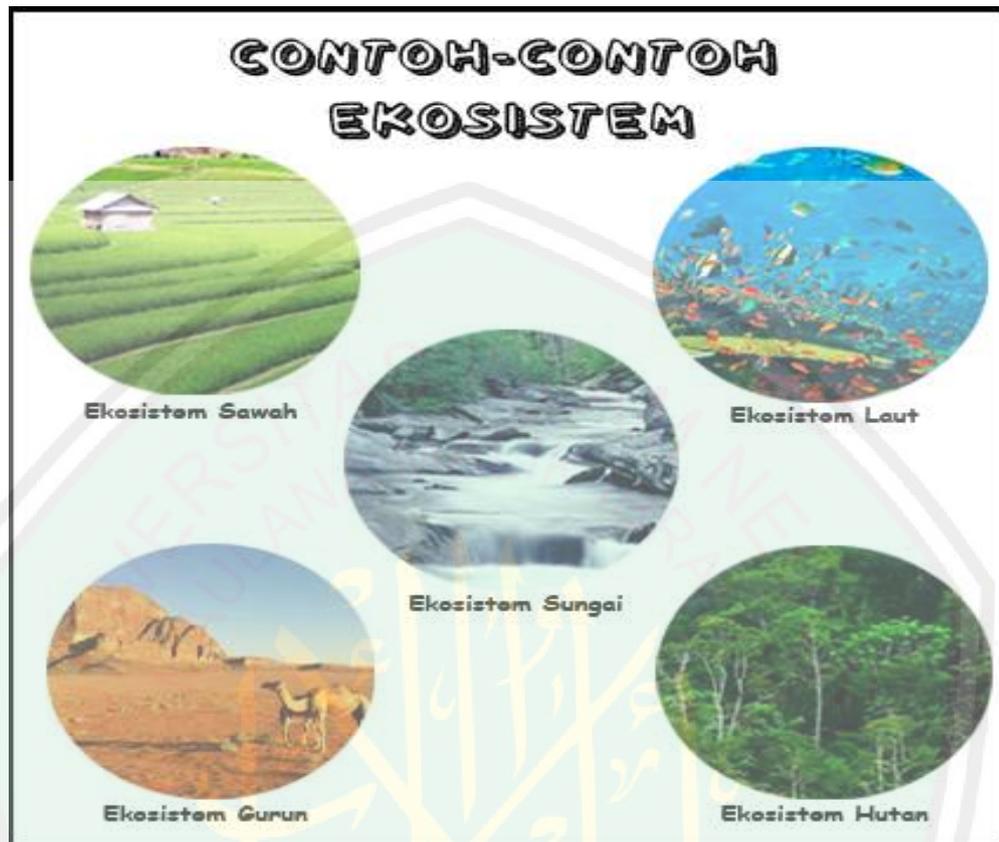
Figure 4.4 Example of ecosystem

Then there is the meanings of the terms in ecosystem are ecology, population, organisms, habitats and communities. Writing the terms found use font style: Playtime with font size 65.66 pt. For writing the meanings of the terms using the font style: Comic Sans MS with font size 24.98 pt, and there are also the source of the sense in which it is taken.

EKOLOGI

Ilmu yang mempelajari bagaimana organisme berinteraksi dengan lingkungan.

Sumber: Buku Tematik 5 Mengenal Ekosistem untuk kelas V SD dan MI oleh Sujoko 2017

POPULASI

Sekelompok individu tunggal yang menempati daerah tertentu, misalnya :
- Populasi ikan
- Populasi burung
- Populasi tanaman padi

Sumber: Buku Tematik 5 Mengenal Ekosistem untuk kelas V SD dan MI oleh Sujoko 2017

ORGANISME

Makhluk hidup baik hewan maupun tumbuhan.

HABITAT

Tempat hidup suatu organisme.

Sumber: Buku Tematik 5 Mengenal Ekosistem untuk kelas V SD dan MI oleh Sujoko 2017

KOMUNITAS

Organisme yang hidup dalam wilayah tertentu. Komunitas dapat terdiri dari beberapa populasi. Contohnya: Komunitas sawah meliputi belalang, tanaman padi, katak, cacing dan ulat.

Sumber: Buku Tematik 5 Mengenal Ekosistem untuk kelas V SD dan MI oleh Sujoko 2017

Figure 4.5 The term of ecosystem

Then in the second part contains about ecosystem components with a size of the box is 15x15 cm. At the box cover, there is an text "Komponen Ekosistem" with font style: Mister Vampire and font size 37.5 pt. Design on the cover of this Ecosystem Components the same as design the meaning and the term ecosystem.

Figure 4.6 The cover of the second box

Then there is the understanding biotic and abiotic component. On text "Komponen Abiotik" and "Komonen Biotik" using the font style: Playtime and font size 31.86 pt, and also there is the source which that meaning is taken.

KOMPONEN ABIOTIK

adalah komponen lingkungan yang terdiri atas sesuatu yang tidak hidup. Misalnya air, udara, cahaya matahari dan tanah.

Sumber: Buku Tematik 5 Mengenal Ekosistem untuk kelas V SD dan MI oleh Sujoko 2017

KOMPONEN BIOTIK

adalah komponen lingkungan yang terdiri atas makhluk hidup. Misalnya manusia, hewan dan tumbuhan.

Sumber: Buku Tematik 5 Mengenal Ekosistem untuk kelas V SD dan MI oleh Sujoko 2017

Figure 4.7Abiotic and biotic component

Then there is the example of biotic and abiotic component with component image concrete so the students can imagine examples that clearly. "Contoh-Contoh Komponen Biotik" and "-Contoh Komponen Abiotik" uses a font style: Playtime with font size 26.63 pt.

Figure 4.8 The examples of biotic and abiotic component

Then in the third part (the pockets) contains the rules of the game and answer keys. The words "Aturan Permainan & Kunci Jawaban" using the font style: Mister Vampire and font size 33.04 pt and also there is the words "Eco Fun Game" which is the name of the game in this learning media uses font style: Mister Vampire and Playtime with the font size 20.59 pt.

Figure 4.9 The cover of the third box

Inside the bag there is words "Eco Fun Games" with the font style: Mister Vampire and Playtime with the font size 20.59 pt, and there are rules of the game and answer keys by using the font style: Comic Science MS 13.89 size pt.

ATURAN PERMAINAN ECO FUN GAME

1. Permainan dilakukan oleh 10 orang
2. Tunjuk 1 orang sebagai pemandu permainan.
   Tugas pemandu permainan adalah untuk memandu belajar,
   memandu jalannya permainan dan mencatat skor masing-masing pemain.
3. Pelajari terlebih dahulu materi yang telah disediakan sebelum
   memulai permainan.
4. Tentukan urutan bermain. masing-masing pemain mendapatkan 2x
   kesempatan bermain.

Cara Bermain:
1. Kocok dadu untuk menentukan nomor soal dan bonus poin di papan
   permainan.
2. Tulis jawaban di balik kertas soal.
3. Jika jawaban benar, akan mendapatkan skor sesuai nomor soal
   yang didapatkan. Jika jawaban salah, skor akan dikurangi 1.

Keterangan:

+1 = Tambahan 1 poin   = Boleh lempar soal kepada teman

+2 = Tambahan 2 poin   ZONK! = Tidak dapat tambahan poin

KUNCI JAWABAN ECO FUN GAME

1A. b. Ekosistem
 B. c. Populasi
 C. a. Abiotik

2A. Benar
 B. Salah
 C. Benar

3A. Abiotik
 B. Habitat
 C. Sawah

4A. Hutan, sawah, laut, sungai
   dan gurun
 B. - Populasi ikan,
    - Populasi burung
    - Populasi tanaman padi
 C. Manusia, hewan dan
   tumbuhan

5A. Ekologi adalah ilmu yang mempelajari
   bagaimana organisme berinteraksi
   dengan lingkungannya.
 B. Komponen abiotik merupakan komponen
   lingkungan terdiri atas sesuatu yang
   tak hidup.
 C. Komunitas adalah organisme yang hidup
   dalam wilayah tertentu.

6A. Makhluk hidup harus saling berinteraksi
   karena setiap makhluk hidup
   membutuhkan makhluk hidup lainnya
   untuk bertahan hidup dan memenuhi
   kebutuhannya.
 B. Hewan dan tumbuhan dapat bertahan
   hidup dengan cara beradaptasi atau
   menyesuaikan diri dengan lingkungan
   tempat tinggalnya untuk mendapatkan
   makanan.
 C. Peristiwa tersebut akan merusak
   keseimbangan ekosistem dan populasi
   makhluk hidup akan berkurang karena
   tidak dapat menyesuaikan diri dengan
   lingkungannya.

Figure 4.10 The rules and keys answer of the game

Then in the fourth part contains 6 small pockets as place the questions of Eco Games Fun Games. There are the numbers 1, 2, 3, 4, 5 and 6 in the each box with the size 5x5 cm and has a different color.

Figure 4.11 The small pockets

On the last part there is the board of Eco Fun Games with the words "Eco Fun Game" using the font style: Mister Vampire and Playtime with the font size 99.18 pt. Board games are 20x20 cm. Design of the board games is supplied with colorful so that the game becomes more interesting and not boring.

Figure 4.12 The board of Eco Fun Game

Figure 4.13 Display the learning media Explosion Box

Figure 4.14 Display the learning media Explosion Box before opened

Figure 4.15 Display the learning media Explosion Box after opened

Figure 4.16 Display the learning media Explosion Box ready to use

B. Presentation of Data

This chapter will show the data results of the research and development of learning media products which consist of data validation test results and test results of the learning media products. Data validation test results are presented form of data validation results questionnaire comprising the questionnaire of expert material, expert design and expert learning. Product trial results data that is presented form of the results of the pre-test and post-test and the results of the students experimental subject questionnaire.

Validator material in this research and development is Mr. Ahmad Abtokhi, M.Pd., lecture Department of Phisycs, Faculty of Science and Technology in the State Islamic University of Malang. Validator design in this research and development is the Mrs. Maryam Faizah, M.PdI., who is also a lecture in the Department of Islamic Elementary Education, Faculty of Tarbiyah and Teaching Training in the State Islamic University of Malang. And learning expert validator is the Mrs. Faridhatun Nikamah, S.H.,

Learning media products test performed to grade 5 MI Perwanida Blitar. Product test consists of two phases, namely testing a small group and large group. A small group of trial performed by spreading the questionnaire assessment of learning media products to 8 students from grade 5 are selected randomly. A large group of trial performed by giving the pre-test and post-test and the questionnaire assessment of learning media products to 32 grade 5 Ilyas MI Perwanida Blitar.

Below will be presented the results of the material validation, design validation, learning validation and assessment questionnaire of respondents test small groups and large groups and the results of pre-test and post -test. As for the presentation of data as follows:

1. **Data of Material Expert Validation Result**

    Material validation done on the 28th February 2018 by Mr. Ahmad Abtokhi M.Pd., lecture Department of Phisycs, Faculty of Science and Technology in the State Islamic University of Malang. Validators fill the questionnaire appropriate instructions, and answer 6 items questions and give advice to the researchers in order to be better at learning media again. Presented data research results from the validator expert material can be seen in the table below.

<div align="center">

Table 4.1 Data of Material Expert Validation Result

</div>

No	Unsur Penilaian	X	Xi	HU (%)	Keterangan
1	Apakah komponen media pembelajaran *Explosion Box* sudah memadai sebagai media pembelajaran?	5	5	100	Sangat Valid
2	Bagaimana kesesuaian Kompetensi Inti, Kompetensi Dasar dengan Indikator pada pengembangan media pembelajaran *Explosion Box*?	5	5	100	Sangat Valid
3	Bagaimana kesesuaian materi yang disajikan pada pengembangan media pembelajaran *Explosion Box*?	5	5	100	Sangat Valid
4	Apakah media pembelajaran *Explosion Box* menuntun siswa untuk berpikir tingkat rendah sampai tingkat tinggi?	5	5	100	Sangat Valid
5	Apakah media pembelajaran *Explosion Box* mampu meningkatkan minat belajar siswa?	4	5	80	Cukup Valid
6	Apakah media pembelajaran *Explosion Box* mampu meningkatkan hasil belajar siswa?	4	5	80	Sangat Valid
	Jumlah	28	30	93.3	Sangat Valid

Keterangan

X   : Jawaban Responden dalam satu item pertanyaan

Xi   : Nilai ideal dalam satu item pertanyaan

HU : Hasil Uji Validasi dalam bentuk persen (%)

Based on the presented the material expert validation result on the table above shows the percentage 93.3%. This shows that the product of learning media Explosion Box has of the appropriate material and can be used in the process of learning the material Components of Ecosystem on the 5th grade SD/MI.

2. **Data of Design Expert Validation Result**

Design validation done on the 6th March 2018 by Mrs. Maryam Faizah M.PdI., who is also a lecture in the Department of Islamic Elementary Education, Faculty of Tarbiyah and Teaching Training in the State Islamic University of Malang. Validators fill the questionnaire appropriate instructions, and answer 6 items questions and give advice to the researchers in order to be better at learning media again. Presented data research results from the validator expert material can be seen in the table below.

Table 4.2 Data of Design Expert Validation Result

No	Unsur Penilaian	X	Xi	HU (%)	Keterangan
1	Apakah komponen media pembelajaran *Explosion Box* sudah memadai sebagai media pembelajaran?	5	5	100	Sangat Valid
2	Bagaimana kesesuaian Kompetensi Inti, Kompetensi Dasar dengan Indikator pada pengembangan media pembelajaran *Explosion Box* ?	5	5	100	Sangat Valid
3	Bagaimana kesesuaian materi yang disajikan pada pengembangan media pembelajaran *Explosion Box?*	5	5	100	Sangat Valid
4	Apakah media pembelajaran *Explosion Box* menuntun siswa untuk berpikir tingkat rendah sampai tingkat tinggi?	5	5	100	Sangat Valid
5	Apakah media pembelajaran *Explosion Box* mampu meningkatkan minat belajar siswa?	4	5	80	Sangat Valid
6	Apakah media pembelajaran *Explosion Box* mampu meningkatkan hasil belajar siswa?	4	5	80	Sangat Valid
	Jumlah	28	30	93.3	Sangat Valid

Keterangan

X : Jawaban responden dalam satu item

Xi : Nilai ideal dalam satu item pertanyaan

HU : Hasil Uji Validasi dalam bentuk persen (%)

Based on the presented the design expert validation result on the table above shows the percentage 90%. This shows that the product of learning media Explosion Box has of the appropriate design and can be used in the process of learning the material Components of Ecosystem on the 5th grade SD/MI.

3. Data of Learning Expert Validation Result

Learning validation done on the 19th March 2018 by Mrs. Faridhatun Nikamah, S.H., who is the classroom teacher of 5 Ilyas Class MI Perwanida Blitar. Validators fill the questionnaire appropriate instructions, and answer 6 items questions and give advice to the

researchers in order to be better at learning media again. Presented data research results from the validator expert material can be seen in the table below.

Table 4.3 Data of Learning Expert Validation Result

No	Unsur Penilaian	X	Xi	HU (%)	Keterangan
1	Apakah komponen media pembelajaran *Explosion Box* sudah memadai sebagai media pembelajaran?	5	5	100	Sangat Valid
2	Bagaimana kesesuaian Kompetensi Inti, Kompetensi Dasar dengan Indikator pada pengembangan media pembelajaran *Explosion Box*?	4	5	80	Sangat Valid
3	Bagaimana kesesuaian materi yang disajikan pada pengembangan media pembelajaran *Explosion Box?*	4	5	80	Sangat Valid
4	Apakah media pembelajaran *Explosion Box* menuntun siswa untuk berpikir tingkat rendah sampai tingkat tinggi?	5	5	100	Sangat Valid
5	Apakah media pembelajaran *Explosion Box* mampu meningkatkan kreativitas siswa?	5	5	100	Sangat Valid
6	Apakah media pembelajaran *Explosion Box* mengembangkan karakter sosial dan spiritual?	5	5	100	Sangat Valid
	Jumlah	28	30	93.3	Sangat Valid

Keterangan

X : Jawaban responden dalam satu item

Xi : Nilai ideal dalam satu item pertanyaan

HU : Hasil Uji Validasi dalam bentuk persen (%)

Based on the presented the learning expert validation result on the table above shows the percentage 90%. This shows that the product of learning media Explosion Box has of the appropriate learning and can be used in the process of learning the material Components of Ecosystem on the 5th grade SD/MI.

4. **Data of Product Trial Result**

   a. Data of Small Group Trial Result

   The trial of small group performed to grade 5 MI Perwanida with total of 8 students randomly selected from four classes. Any class taken two students to perform the trial test in small groups. A small group carried out trials on Saturday 10th March 2018. The trial of small group using the instrument the form of questionnaire which contains 6 questions. The instrument of large group trial is questionnaire fill the given score criteria i.e. 1, 2, 3, 4, and 5 with a score of 1 if the criteria are very unfavourable, score 2 if less well, score 3 if quite well, score 4 if good and score 5 if very good. A result of large group trial against development learning media Explosion Box product can be seen in the table below.

Table 4.4 Data of Small Group Trial

No	Nama	Skor Item Pertanyaan					
		1	2	3	4	5	6
1	Wulida Ulinuha El Maghfiroh	5	4	5	4	4	4
2	Naila Nasywa Kirana	5	5	5	5	5	4
3	Javiera Heidi Abqadja	5	5	5	5	5	4
4	Fardhan Nova Juliano Exella	5	5	5	5	5	5
5	Aliya Cinta Qaumi	5	4	5	5	5	5
6	Nasywa Faza Arrachmad	4	5	5	4	4	5
7	Wahyuningtyas Marimbi Wijaya	5	5	5	5	5	4
8	M. Khoirul Khadiq	5	5	5	5	5	5

Elaboration of small group trial result can be seen in the table below.

Table 4.5 Elaboration of Small Group Trial Result

No	Unsur Penilaian	X	Xi	HU (%)	Keterangan
1	Dengan menggunakan media pembelajaran *Explosion Box*, saya menjadi lebih termotivasi untuk belajar materi tema 5 subtema 1 tentang Komponen Ekosistem.	39	40	97.5	Sangat Valid
2	Dengan menggunakan media pembelajaran *Explosion Box*, saya menjadi lebih mudah memahami materi tema 5 subtema 1 tentang Komponen Ekosistem.	38	40	95	Sangat Valid
3	Dengan menggunakan media pembelajaran *Explosion Box*, proses pembelajaran menjadi menyenangkan.	40	40	100	Sangat Valid
4	Media pembelajaran *Explosion Box* membuat saya menjadi lebih aktif dan kreatif.	38	40	95	Sangat Valid
5	Saya merasa mudah belajar dengan menggunakan media pembelajaran *Explosion Box*.	38	40	95	Sangat Valid
6	Gambar dalam media pembelajaran *Explosion Box* memiliki warna yang menarik.	36	40	90	Sangat Valid
	Jumlah	229	240	95.4	Sangat Valid

Keterangan

X   : Jawaban responden dalam satu item

Xi   : Nilai ideal dalam satu item pertanyaan

HU   : Hasil Uji Validasi dalam bentuk persen (%)

Based on the elaboration data of validation result on the table above shows the percentage 95,4%. This shows that the product of learning media Explosion Box has of the appropriate and can be used in the process of learning the material Components of Ecosystem on the 5th grade SD/MI. Based on that criteria can conclusion the Explosion Box product is valid as learning media.

b. Data of Large Group Trial Result

The trial of large group performed to 5 Ilyas class MI Perwanida Blitar with total of 32 students. A large group carried out

trials on Monday 19th March 2018. The trial of large group using the instrument the form of questionnaire which contains 6 questions. The instrument of large group trial is questionnaire fill the given score criteria i.e. 1, 2, 3, 4, and 5 with a score of 1 if the criteria are very unfavourable, score 2 if less well, score 3 if quite well, score 4 if good and score 5 if very good. A result of large group trial against development learning media Explosion Box product can be seen in the table below.

Table 4.6 Data of Large Group Trial

No	Nama	Skor Item Pertanyaan					
		1	2	3	4	5	6
1	Cinta Farrahalma Islamy	5	5	5	4	4	5
2	Mazella Febiaro	5	5	5	5	4	5
3	Ma'rifatu Leyla Nabila	5	4	5	4	5	5
4	Queen Aisyah Kartika Yasmine	4	5	5	5	5	5
5	Vatwa Maharani	5	4	5	5	5	5
6	Rhiyeta Faiza Anwar	4	5	5	4	5	4
7	Bintang Mahadewi Marella	5	5	5	5	5	5
8	Nasywa Permata P.	5	5	5	4	5	4
9	Queena Roya A.	5	5	5	5	5	5
10	Natasya Mecha Nadine	5	4	5	5	5	5
11	Adiba Kansa Az-zahra	4	5	4	4	5	4
12	Javier Thorieq	5	5	5	5	5	5
13	M. Prawira H.	5	5	5	5	5	5
14	Namira Fadilah	5	5	5	5	5	5
15	Riefky Hafidz	5	5	5	5	4	5
16	Rr. Jasmine K.A.C	5	5	5	5	5	5
17	Rheka Abidha Khanzaz Zahra	4	4	4	4	5	5
18	M. Haqqi A.L	5	5	5	4	4	5
19	Safahara Najwa Az-zahra	5	5	5	5	5	5
20	M. Fawwaz Bakhrul Na'im	4	5	5	3	5	3
21	Raffy Ahmad	3	3	3	4	5	3
22	Nabila Salsabila	5	4	5	5	5	4
23	Ihza Amalia Putri Fanani	5	5	5	5	5	4
24	Nindi Zulfa Hidayati	4	5	5	5	5	4
25	Einaya Aleisya Maurinindita A.	5	5	5	5	5	5
26	Sonya Tasya Aluna	5	5	5	5	5	5
27	Luklu'il Aini	5	3	4	4	3	3
28	M. Zinedine Zidane	5	5	5	5	5	5
29	Briliant Ahmad Arifa Putra	5	5	5	5	5	5
30	Calfatra Anky Armyda	4	5	5	4	5	5
31	Maheswara Manggala Adinata	5	5	5	5	5	5
32	Rena Putri Anindita	4	5	5	5	5	5

Elaboration of large group trial result can be seen in the table below.

Table 4.7 Elaboration of Large Group Trial Result

No	Unsur Penilaian	X	Xi	HU (%)	Keterangan
1	Dengan menggunakan media pembelajaran *Explosion Box*, saya menjadi lebih termotivasi untuk belajar materi tema 5 subtema 1 tentang Komponen Ekosistem.	150	160	93.8	Sangat Valid
2	Dengan menggunakan media pembelajaran *Explosion Box*, saya menjadi lebih mudah memahami materi tema 5 subtema 1 tentang Komponen Ekosistem.	151	160	94.4	Sangat Valid
3	Dengan menggunakan media pembelajaran *Explosion Box*, proses pembelajaran menjadi menyenangkan.	155	160	96.9	Sangat Valid
4	Media pembelajaran *Explosion Box* membuat saya menjadi lebih aktif dan kreatif.	148	160	92.5	Sangat Valid
5	Saya merasa mudah belajar dengan menggunakan media pembelajaran *Explosion Box*.	154	160	96.3	Sangat Valid
6	Gambar dalam media pembelajaran *Explosion Box* memiliki warna yang menarik.	148	160	92.5	Sangat Valid
Jumlah		906	960	94.4	Sangat Valid

Keterangan

X   : Jawaban responden dalam satu item

Xi   : Nilai ideal dalam satu item pertanyaan

HU   : Hasil Uji Validasi dalam bentuk persen (%)

Based on the elaboration data of validation result on the table above shows the percentage 94,4%. This shows that the product of learning media Explosion Box has of the appropriate and can be used in the process of learning the material Components of Ecosystem on the 5th grade SD/MI. Based on that criteria can conclusion the Explosion Box product is valid as learning media.

5. Data of The Pre-Test and Post-Test Result

Table 4.8 Pre-Test and Post-Test Result

No	Nama	Nilai		Keterangan
		Pre-test	*Post-test*	
1	Cinta Farrahalma Islamy	80	100	Meningkat
2	Mazella Febiara	90	100	Meningkat
3	Ma'rifatu Leyla Nabila	100	100	Meningkat
4	Queen Aisyah Kartika Yasmine	70	80	Meningkat
5	Vatwa Maharani	60	70	Meningkat
6	Rhigeta Faiza Anwar	70	90	Meningkat
7	Bintang Mahadewi Marella	70	70	Meningkat
8	Nasywa Permata P.	90	90	Meningkat
9	Queena Roya A.	70	90	Meningkat
10	Natasya Mecha Nadine	70	80	Meningkat
11	Adiba Kansa Az-zahra	50	60	Meningkat
12	Javier Thorieq	60	90	Meningkat
13	M. Prawira H.	90	100	Meningkat
14	Namira Fadilah	60	80	Meningkat
15	Riefky Hafidz	70	90	Meningkat
16	Rr. Jasmine Kusuma A.C	60	70	Meningkat
17	Rheka Abidha Khanzaz Zahra	80	100	Meningkat
18	M. Haqqi Alfaqih	80	100	Meningkat
19	Safahara Najwa Az-zahra	70	100	Meningkat
20	M. Fawwaz Bakhrul Na'im	80	90	Meningkat
21	Raffy Ahmad	60	80	Meningkat
22	Nabila Salsabila	90	100	Meningkat
23	Ihza Amalia Putri Fanani	50	60	Meningkat
24	Nindi Zulfa Hidayati	70	90	Meningkat
25	Einaya Aleisya Maurinindita A.	80	90	Meningkat
26	Sonya Tasya Aluna	70	90	Meningkat
27	Luklu'il Aini	50	90	Meningkat
28	M. Zinedine Zidane	50	60	Meningkat
29	Briliant Ahmad Arifa Putra	70	90	Meningkat
30	Calfatra Anky Armyda	60	80	Meningkat
31	Maheswara Manggala Adinata	60	90	Meningkat
32	Rena Putri Anindita	70	80	Meningkat

The researchers compared the results of pre-test and post-test before and after the use of the learning media Explosion Box. The question of pre-test and post-test contains 10 multiple choice question. Pre-test results show that there are 22 students who do not achieve the value of the KKM

(Minimum Graduation Criteria) that is 80. The results of the post-test shows there are 6 students who do not achieve the value of KKM. However, from the results of pre-test and post-test showed that the presence of increased significantly after using the learning media Explosion Box. This suggests that the learning media Explosion Box material Components of ecosystems effectively used as a learning media.

C. Data Analysis

That will be presented the analysis of data obtained from expert validation and trial of the products, including the data of evaluation results from material experts, design expert and learning expert, trial to 5th grade students MI Perwanida Blitar as the subject of a test small group and large group, and pre-test and post -test.

1. Data Analysis of Validation Expert

a. Result of Data Analysis Material Expert

According to Latuheru the learning media is tools, methods or techniques used in teaching and learning activities, with a view in order to make the process of educational communication interaction between educators and students can take appropriate and useful.[37]

Based on the calculation of recapitulation material validation test by material experts, it can be noted that the total of answer score by responder ($\sum x$) is 28 and the total of the maximum score ($\sum xi$) is

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[37] Latuheru J, *Media Pembelajaran dalam Proses Belajar Mengajar Masa Kini*, (Jakarta: APTIK,1998), Hlm. 14

30, so see the resul of the validation test percentage of material expert is of 93.3%. Based on the total of the material expert result percentage of the learning media Explosion Box categorized very valid and and appropriateness as learning media. These learning media products worthy of use for learning in school. There are a few points on the questionnaire rated with good score so that the media shows worthy of use in learning. Data validation results of material expert, then retrieved the data results of the review the product developed as follows:

1. Assessment of lecture as material validator agreed either "very good" on the questionnaire instrument.

    a) Component of the learning media Explosion Box is adequate as a learning media.

    b) Suitability of the core competency, base competency with indicators on the development of the learning media Explosion Box.

    c) Suitability of the material presented on the development of the learning media Explosion Box.

    d) Learning media Explosion Box lead students to think low level to a high level.

2. Assessment of lecture as material validator agreed either "good" on the questionnaire instrument.

a) Learning media Explosion Box is able to enhance the learning interest of students.

b) Learning media Explosion Box is able to increase student learning outcomes.

b. **Result of Data Analysis Desain Expert**

According to Degeng criteria of selection learning media is:[38]

1. The purpose of intruksional, the media should be selected to support achievement of the objectives that have been set intruksional before.

2. Effectiveness, of any selected alternative which is considered the most effective (appropriate) to achieve the goals that have been set.

3. The selected media is in compliance with the ability, pembendaharaan, experiences and attract the attention of students.

4. Availability, the media is already available or not yet.

5. The cost of procurement, costs incurred for the creation of media balance with the benefit of the results of its use.

6. Technical quality, the quality of the media should be qualified as a learning media.

Existing criteria above is underlying the researcher in determining the research and product development of learning media Explosion Box.

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[38] Degeng, *Buku Pegangan Teknologi Pendidikan Pusat Antar Universitas untuk Peningkatan dan Pengembangan Aktivitas Instruksional Universitas Terbuk, (*Jakarta: Depdikbud RI, 1993), hlm. 26-27.

Based on the calculation of recapitulation media validation test by design experts, it can be noted that the total of answer score by responder ($\sum x$) is 27 and the total of the maximum score ($\sum xi$) is 30, so see the resul of the validation test percentage of design expert is of 90%. Based on the total of the design expert result percentage of the learning media Explosion Box categorized very valid and appropriateness as learning media. These learning media products worthy of use for learning in school. There are a few points on the questionnaire rated with good score so that the media shows worthy of use in learning. Data validation results of design expert, then retrieved the data results of the review the product developed as follows:

1. Assessment of lecture as design validator agreed either "very good" on the questionnaire instrument.

    a) Interest the presentation of media design learning Explosion Box.

    b) Suitability of the use of color variations in learning media Explosion Box.

    c) Interest the design layout on the learning media Explosion Box.

2. Assessment of lecture as design validator agreed either "good" on the questionnaire instrument.

    a) Suitability of the picture on learning media Explosion Box.

b) Suitability of the pictures with the material presented at the learning media Explosion Box.

c) Suitability of the font size used on the learning media Explosion Box.

c. **Result of Data Analysis Learning Expert**

Based on the calculation of recapitulation media validation test by learning experts, it can be noted that the total of answer score by responder ($\sum x$) is 28 and the total of the maximum score ($\sum xi$) is 30, so see the resul of the validation test percentage of design expert is of 93.3%. Based on the total of the learning expert result percentage of the learning media Explosion Box categorized very valid and appropriateness as learning media. These learning media products worthy of use for learning in school. There are a few points on the questionnaire rated with good score so that the media shows worthy of use in learning. Data validation results of learning expert, then retrieved the data results of the review the product developed as follows:

1. Assessment of teacher as learning validator agreed either "very good" on the questionnaire instrument.

   a) The component of learning media Explosion Box are already adequate as a learning media.

   b) Learning media Explosion Box lead students to think low level to a high level.

c) Learning media Explosion Box able to improve creativity of students.

d) Learning media Explosion Box develop social and spiritual character.

2. Assessment of teacher as learning validator agreed either "good" on the questionnaire instrument.

a) Suitability of the core competency, base competency with indicators on the development of the learning media Explosion Box.

b) Suitability of the material presented on the development of the learning media Explosion Box.

Based on the assessment of material experts, design expert and learning expert be get the conclusion that the media is worthy of being used as a learning media in schools to support the learning process. According to Susilana & Riyana explains the usefulness of the media in general are as follows:[39]

1. Clarify the messages so as not to be too verbalistis.

2. Overcoming the limitations of space, time, energy, and the power of the senses.

3. Cause passion to learn, more direct interaction between the student and learning resources.

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[39] Susila, R & Cepi R, *Media Pembelajaran: Hakikat, Pengembangan, Pemanfaatan, dan Penilaian*, (Bandung: Wacana Prima, 2009), hlm. 9.

4. Allow children learn independently in accordance with the talents and capabilities of visual, auditory, and kinesthetic.

5. Give the same stimuli, likened the experience and give rise to the same perception.

Learning media do with improvements based on aspects that have been assessed by the material expert, design experts or learning expert based on various considerations. This improvement aims so that the learning media can better for use in the learning process and are expected to make it easier for students to better understand the learning material.

2. **Data Analisys of Field Trials**

Based on the results of field trials conducted in MI Perwanida Blitar as sample school, retrieved the results data from the trials of small groups and large groups, as follows:

a. Result of Data Analisys Small Group Trial

The trial of small group performed to grade 5 MI Perwanida with total of 8 students randomly selected from four classes. Any class taken two students to perform the trial test in small groups. A small group carried out trials on Saturday 10th March 2018. The trial of small group using the instrument the form of questionnaire which contains 6 questions. The instrument of small group trial is questionnaire fill the given score criteria i.e. 1, 2, 3, 4, and 5 with a

score of 1 if the criteria are very unfavourable, score 2 if less well, score 3 if quite well, score 4 if good and score 5 if very good. The purpose of the granting of this questionnaire is to find out the feasibility and measuring the learning media Explosion Box in the learning process.

Based on the calculation of recapitulation trials product test by small group, it can be noted that the total of answer score by responder which is 8 students ($\sum x$) is 229 and the total of the maximum score ($\sum xi$) is 240, so see the resul of the validation test percentage of small group is of 95.4%. Based on the total of the material expert result percentage of the learning media Explosion Box categorized very valid.

The following will be elaborated results percentage per item questions. The first question had a total score of respondents ($\sum x$) is 39 and the amount of the maximum score ($\sum xi$) is 40, the percentage is 97.5% and entered the very valid category. The second question had a total score of respondents ($\sum x$) is 38 and the amount of the maximum score ($\sum xi$) is 40, the result of the percentage is 95% and entered the very valid category. The third question had a total score of respondents ($\sum x$) is 40 and the amount of the maximum score ($\sum xi$) is 40, the result of the percentage is 100% and entered the very valid category. The fourth question had a total score of respondents ($\sum x$) is 38 and the amount of the maximum score ($\sum xi$) is 40, the

result of the percentage is 95% and entered the very valid category. The fifth question had a total score of respondents ($\sum$x) is 38 and the amount of the maximum score ($\sum$xi) is 40, the result of the percentage is 95% and entered the very valid category. The sixth question had a total score of respondents ($\sum$x) is 36 and the amount of the maximum score ($\sum$xi) is 40, the result of the percentage is 90% and entered the very valid category.

Based on the results of the recapitulation score the answers of respondents per item can be known the lowest score is the sixth question that is about the picture in the learning media Explosion Box has an interesting color with a percentage 90% belongs to the category very valid. As for the highest score is the third question that is about to use learning media Explosion Box, the learning process becomes fun with percentage 100% belongs to the category very valid.

According to the results of the analysis show that the learning media Explosion Box developed entered to very valid category. It shows that the learning media Explosion Box can be well received by students for use as a learning media.

b. Result of Data Analisys Large Group Trial

The trial of large group performed to 5 Ilyas class MI Perwanida Blitar with total of 32 students. A large group carried out trials on Monday 19th March 2018. Testing in a large group took

several stages, among others, by giving pre-test, then trial the learning media products and giving the questionnaire, and last is giving the post-test. Giving the pre-and post test-test was conducted to assess the effectiveness of the learning media Explosion Box by way of comparing the test results of the pre-test and post-test before and after using the learning media Explosion Box.

The trial of large group using the instrument the form of questionnaire which contains 6 questions. The instrument of large group trial is questionnaire fill the given score criteria i.e. 1, 2, 3, 4, and 5 with a score of 1 if the criteria are very unfavourable, score 2 if less well, score 3 if quite well, score 4 if good and score 5 if very good. The purpose of the granting of this questionnaire is to find out the feasibility and measuring the learning media Explosion Box in the learning process.

Based on the calculation of recapitulation trials product test by large group, it can be noted that the total of answer score by responder which is 32 students ($\sum$x) is 906 and the total of the maximum score ($\sum$xi) is 960, so see the resul of the validation test percentage of large group is of 94.4%. Based on the total of the material expert result percentage of the learning media Explosion Box categorized very valid.

The following will be elaborated results percentage per item questions. The first question had a total score of respondents ($\sum$x) is

150 and the amount of the maximum score ($\sum$xi) is 160, the percentage is 93.8% and entered the very valid category. The second question had a total score of respondents ($\sum$x) is 151 and the amount of the maximum score ($\sum$xi) is 160, the result of the percentage is 94.4% and entered the very valid category. The third question had a total score of respondents ($\sum$x) is 155 and the amount of the maximum score ($\sum$xi) is 160, the result of the percentage is 96.9% and entered the very valid category. The fourth question had a total score of respondents ($\sum$x) is 148 and the amount of the maximum score ($\sum$xi) is 160, the result of the percentage is 92.5% and entered the very valid category. The fifth question had a total score of respondents ($\sum$x) is 154 and the amount of the maximum score ($\sum$xi) is 160, the result of the percentage is 96.3% and entered the very valid category. The sixth question had a total score of respondents ($\sum$x) is 148 and the amount of the maximum score ($\sum$xi) is 160, the result of the percentage is 92.5% and entered the very valid category.

Based on the results of the recapitulation score the answers of respondents per item can be known the lowest score is the fourth question that is about learning media Explosion Box make students more active and creative, and the sixth question that is about pictures in the learning media Explosion Box has an interesting color with a percentage 92.5% entered to the category very valid. As for the highest score is the third question that is about to use learning media

Explosion Box, the learning process becomes fun with percentage 96.9% and entered to the category very valid.

According to the results of the analysis show that the learning media Explosion Box developed entered to very valid category. It shows that the learning media Explosion Box can be well received by students for use as a learning media.

The results of the test by small group and large group experienced a decreased percentage results is 95.4% become 94.4%. Although the result percentage large group trial decreased from the small group trial, large group test results are still very valid categorized based on predetermined criteria. The existence decrease of product trial results from small group and large grup are affected by different conditions. Testing the product to small group carried out early in the morning when all the students are in focus, moreover because in classroom there are only 8 students to the subject of the small grup trial, so class atmosphere more conducive so that the use of the media learning Explosion Box is very efficient. As for the large group of trials carried out during the day, after the time of UTS (Midterm) in 11.30 pm. The student is not already visible focus to receive information and to the conditions of the class containing the 32 students can't conducive like when testing small groups of 8 students only. So from some of the things that influenced the

decreased in the percentage of trial results in large groups than a small group.

The main function of the learning media according to Arsyad are as teaching tools, that also affect the climate, conditions, learning environments that are styled and created by teachers.[40] Based on testing the product in small group and large group, it can be concluded that the developed of learning media Explosion Box can be used as a learning media for learning process in schools, in accordance with the base competencies in learning media Explosion Box can be used to grade 5 SD/MI in the material Components of Ecosystem.

3. **Analisys of Pre-Test and Post-Test Score**

The questions of pre-test and post-test amounted to 10 multiple choice with score each question is 10, so the maximum score is 100. Pre-test results it is known that the lowest score is 50 and the highest score is 100. The elaboration of the pre-test result, obtaining the lowest score 50 retrieved four students, obtaining the score 60 retrieved seven students, obtaining the score 70 retrieved eleven students, obtaining the score 80 retrieved five students, obtaining the score 90 retrieved four students, and obtaining the highest score 100 retrieved one student.

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[40] Arsyad, A., *Media Pembelajaran*, (Jakarta: Raja Grafindo Persada, 2005), hlm. 15.

Post-test results it is known that the lowest score is 60 and the highest score is 100. The elaboration of the pre-test result, obtaining the lowest score 60 retrieved tiga students, obtaining the score 70 retrieved tiga students, obtaining the score 80 retrieved six students, obtaining the score 90 retrieved twelve students, and obtaining the highest score 100 retrieved eight student.

Minimum Graduation Criteria (KKM) in MI Perwanida Blitar is 80. Pre-test results of 32 students there are 10 students who achieve values of KKM, whereas post-test results of 32 students there are 26 students who achieve values of KKM. Based on the results of these data, it can be noted that there is a significant increase on the results of pre-test and post-test. The results of the post-test showed that after learning to use media Explosion Box is known to significant increase a learning outcome. This proves that learning media Explosion Box can help students in the learning process and are effective for use as the learning media in the classroom.

To measure the data of pre-test and post-test as a whole is calculated using the following formula:

∑Ideal Score = Highest Score x ∑Score Aspect x ∑Students
$$= 100 \text{ x } 1 \text{ x } 32$$
$$= 3.200$$

Average of pre-test score
$$\textbf{N} = \frac{\textbf{∑Pre-Test Score}}{\textbf{∑Ideal Score}}$$
$$= \underline{2.250}$$

3.200

= 70,3

Average of post-test score

$$N = \frac{\sum \textbf{Post-Test Score}}{\sum \textbf{Ideal Score}}$$

$$= \frac{2.750}{3.200}$$

= 85,9

Based on calculation the recapitulation of the pre-test results noted that the total of answers by the respondents as a whole from 32 students is 2.250 and the total of the maximum score from 32 students is 3.200, so that the average score of the pre-test result is 70,3.

Whereas the calculation recapitulation of the post-test results noted that the total of answers by the respondents as a whole from 32 students is 2.750 and the total of the maximum score from 32 students is 3.200, so that the average score of the post-test result is 85,9.

Based on the results of the recapitulation the pre-test and post-test score can be known that there was a significant increase in student learning results before and after using the learning media Explosion Box. The results of the pre-test shows the average score of 70,3 while the score results of the post-test increase to 85,9. The results showed that the learning media Explosion Box for effective use in the learning process.

D. Product Revision

Product revision was done to fix the deficiency of the learning media Explosion Box, carried out the base on comments and suggestions submitted by validator material expert and design expert in sheet validation. Revision of the product which were based on:

1. **Material Expert**

Material expert lecture as a validator of the material gives comments and suggestions towards the learning media Explosion Box include:

a. Addition of games in learning media

Before the revised researchers make a simple game about grouping bioti components and abiotic components. After the revised researchers make Eco Fun Games at learning media Explosion Box.

Figure 4.17 Eco Fun Game

b. Size of learning media Explosion Box product is enlarged.

Before the revised size the learning media Explosion Box is
15x15 cm. After the revised researchers develop learning media
Explosion Box to 20x20 cm.

c. The inclusion of source material

Before the revised researchers do not include source material
in the learning media Explosion Box. After the revised material
sources include researchers learning media Explosion Box.

Sumber: Buku Tematik 5 Mengenal Ekosistem untuk kelas V SD dan MI oleh Sujoko 2017

Figure 4.18 The source material

2. Design Expert

Design expert lecture as a validator of the design gives comments

and suggestions towards the learning media Explosion Box include:

a. Full color on the board of Eco Fun Games.

Before the revised grid on the board Eco Fun Games are

white. After the revised grid on the board Eco Fun Games to be full

color.

Figure 4.19 The board of Eco Fun Game full color

b. The sheet of rules and answer keys of the game directly printed on Art-Paper.

Before the revised researchers taped the s sheet of rules and answer keys on Linen Paper. After the revised researchers print the sheet of rules and answer keys of the game in Art-Paper direct.

c. Full color on writing numbers in the pockets questions

Figure 4.20 The pockets of question

d. Addition ribbons at questions

Before the revised researchers do not give the ribbons on questions of Eco Fun Games. After the revised researchers gave ribbons on questions of Eco Fun Games.
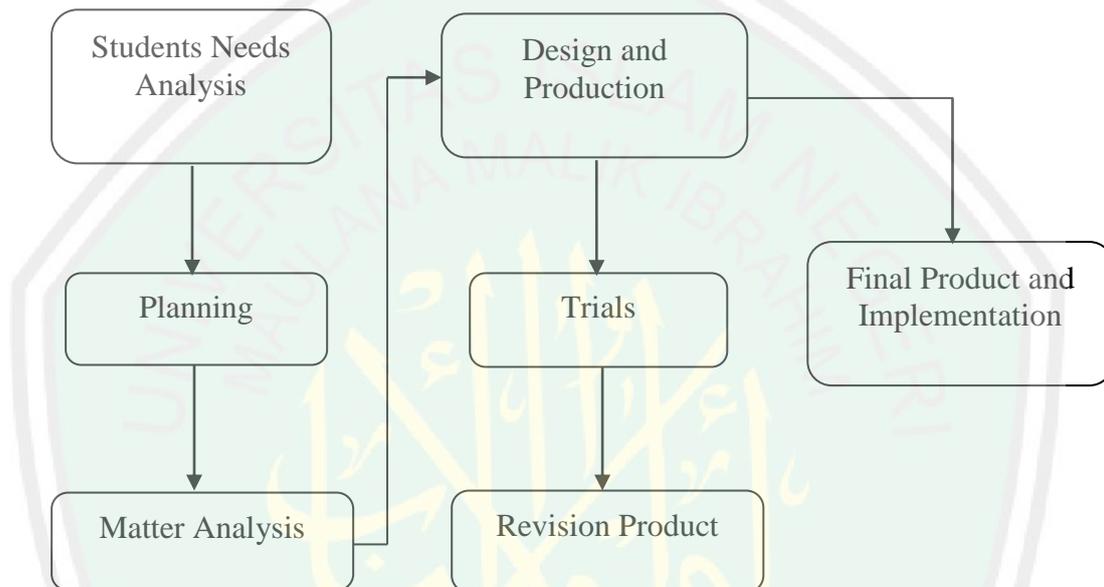
Figure 4.21 Development Explosion Box Stages Discovery of Researcher

1. Student Needs Analysis

A developer of learning mediashould analyze the learning needs of students primarily analyze the characteristics of the students, so that it can be known how the media that suit the characteristics of the students.

2. Planning

Plan how the learning media model was developed and what are needed in developing a learning media. This stage is very important so that no error occurs when the production process.

3. Matter Analysis

Analyzing the material to be applied to the learning media, whether these media in accordance with the material.

4. Design and Production

A developer must design the learning media with interesting but still efficient. It is by observing the characteristics of the students and the suitability of the lesson material. Then developers do the learning media production in accordance with the planning, analysis and design of material that has been designed.

5. Trials

After the production process, product instructional media tested simply to measure how effective the learning media.

6. Revision Product

Revision of the product on the need to improve the learning media that have been developed. If there are deficiencies and discrepancies to be tested when the media needed revision in order to created a good learning media.

7. Final Product and Implementation

After the revised created a learning media that is ready to be used as a complementary learning process and facilitate the delivery of material to the students.

BAB V

CLOSING

A. The Study of the Revised Product

In this research and development researchers develop learning media Explosion Box. Material in the learning media Explosion Box has been in customize with 2013 curriculum used in MI Perwanida Blitar and compiled based on the needs of grade 5 students. The material used is a Component of Ecosystem for grade 5 students are discussed in terms of ecosystems, ecosystem components, the rantai makanan and ecosystem types. Because the material is too large, a discussion of selected is terms in ecosystems and ecosystem components and customized to the needs of the media for a one time meeting (pembelajaran 1). Products that have been produced in this research and development is the media graphics are included in the visual media. This media was created in handmade with materials linen paper, manila paper and cardboard paper. On the outside (lid box) there is the text "Open me and say Surprise". The meaning of the text as supporting the concept of a media Explosion Box that is a box of surprises. By reading the text students will imagine opening the box as a gift (surprise) so that students will be curious with the contents of the box. Then when the box was opened there will be 4 parts.

Based on test validation material expert and desain expert, overall this product is included in this category are very valid and appropriateness as

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learning media. Based on the Quesstionnaire of students this media is interestness as learning media. And based on the results of pre-test and post-test, this media is effective and can be used as a learning media in the classroom, as seen from the improvement of student learning outcomes before and after using the learning media Explosion Box.

B. Suggestions Utilization, Dissemination and Product Development

As for the advantages and disadvantages of learning media Explosion Box is as follows:

1. The advantages

   a. The learning media Explosion Box gives the impression that appeal to students because it is packaged as gifts/gifts that make a person curious and want to open it.

   b. It is the first time developed Explosion Box as a learning media.

2. The disadvantages

   a. The made of the learning media Explosion Box it takes creativity and persistence because it is created by handmade.

   b. The learning media Explosion Box limited in contains the material.

Based on the results of the research and development of learning media Explosion Box on the materials of the Components of Ecosystem there is some advice that is as follows:

1. Utilization Advice

   a. For students

      Learning media Explosion Box that has been developed can be used as an learning media alternative to student and interest of students towards the games. In addition, learning media can also be used to overcome the difficulties of the students in understanding the material Components of the Ecosystem.

   b. For teachers

      Suggested teachers may use learning media Explosion Box as an alternative solution to overcome the difficulties of the students in understanding the material Components of Ecosystem and the problem of a lack enthusiasm and interest to read books and work sheet (LKS). So the use of the learning media Explosion Box is also able to enhance the creativity of teachers in developing other innovative learning media.

   c. For MI Perwanida Blitar

      The school is expected to provide better facilities for teachers to develop learning media in order to facilitate students in the learning process.

2. Dissemination

   The introduction of the product can be through SD/MI teacher forum in the town of Blitar, deployment of the product can be through education and research journal. In addition, the publication is done via

social media to introduce the product so that teachers, students, or the general public interested to develop learning media Explosion Box further.

3. Further Product Development

Learning media Explosion Box that is presented is still simple and there is still a lot of disadvantages. In order to make the learning media Explosion Box it became better tha anything developed at this time to do the research and further development with emphasis on the selection of appropriate materials and design more interesting media anymore correspond needs and increasing age.

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APPENDIX

Appendix I

Thesis Consultasion

KEMENTERIAN AGAMA REPUBLIK INDONESIA
UNIVERSITAS ISLAM NEGERI MAULANA MALIK IBRAHIM MALANG
FAKULTAS ILMU TARBIYAH DAN KEGURUAN
JalanGajayana 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 : TSALATS ZAIDATUL NASRIYA

NIM : 14140031

Judul : THE DEVELOPMENT OF EXPLOSION BOX AS LEARNING MEDIA FOR TEACHING COMPONENTS OF ECOSYSTEM AT 5TH GRADE MI PERWANIDA BLITAR

Dosen Pembimbing : DR. H. MULYONO, MA.

No.	Tgl/ Bln/ Thn	Materi Konsultasi	Tanda Tangan Pembimbing Skripsi
1.	23 /10 /2017	Konsultasi bahasa Inggris Bab 1-3	
2.	27 / 11 / 2017	Revisi Bab 1-3	
3.	5 /12 /2017	Konsultasi Bab 1-3	
4.	12 /02/ 2018	Konsultasi dari lapangan	
5.	28 /02/2018	Konsultasi Angket	
6.	22/03/2018	Konsultasi hasil uji coba	
7.	26 /03/2018	Konsultasi penulisan Bab 4-5	
8.	6 / 04 /2018	Konsultasi Bab 4-5	
9.	12 / 04 /2018	Revisi Bab 4-5	
10.	23 / 04 /2018	Konsultasi Bab 4-5 + lampiran	
11.	27 / 04 /2018	Revisi Full draft	
12.			

Malang, ... 20......
Mengetahui
Ketua Jurusan PGMI,

H. Ahmad Sholeh, M.Ag
NIP. 19760803006041001

Certificate No. ID08/1219

Appendix II

Certificate of Research from Faculty

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	: 333 /Un.03.1/TL.00.1/02/2018	28 Februari 2018
Sifat	: Penting	
Lampiran	: -	
Hal	: **Izin Penelitian**	

Kepada

Yth. Kepala MI Perwanida Blitar

di

Blitar

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	:	Tsalats Zaidatul Nasriya
NIM	:	14140031
Jurusan	:	Pendidikan Guru Madrasah Ibtidaiyah (PGMI)
Semester - Tahun Akademik	:	Genap - 2017/1018
Judul Skripsi	:	**The Development of Explosion Box as Learning Media for Teaching Components of Ecosystem for Elementary School Level**
Lama Penelitian	:	**Februari 2018** sampai dengan **April 2018** (3 bulan)

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

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

Wassalamu'alaikum Wr. Wb.

Dekan,
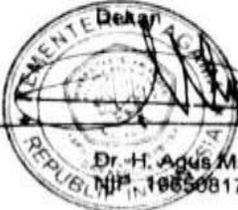
Dr. H. Agus Maimun, M Pd
NIP. 196650817 199803 1 003

Tembusan :

1   Yth. Ketua Jurusan PGMI
2   Arsip

Appendix III

Certificate of Research from MI Perwanida Blitar

YAYASAN "BAKTI PERWANIDA"
MADRASAH IBTIDAIYAH "PERWANIDA" BLITAR

Pengesahan Pendirian Badan Hukum : SK Kemenkumham No. AHU-0028824.AH.01.04 Tahun 2015
Jl. Sultan Agung No.92 Blitar Telp.: (0342) 801104 Fax.: (0342) 808571
Http : www.miperwanida.com Email : admin@miperwanida.com

SURAT KETERANGAN PENELITIAN
Nomor : 109/K/MI/422.111.8/III/2018

Yang bertanda tangan di bawah ini

Nama	:	H. Ni`mad Arifa, M.Pd.I.
NIMIDA	:	47.10.2005
Jabatan	:	Kepala Madrasah,
Unit kerja	:	MI "Perwanida" Blitar,

menerangkan dengan sesungguhnya bahwa

Nama	:	Tsalats Zaidatul Nasriya,
NIM	:	14140031,
Jurusan	:	Pendidikan Guru Madrasah Ibtidaiyah (PGMI)
Fakultas	:	Ilmu Tarbiyah dan Keguruan,
Perguruan Tinggi	:	UIN Maulana Malik Ibrahim Malang,

Yang bersangkutan benar-benar telah mengadakan penelitian di MI "Perwanida" Blitar dalam rangka menyusun skripsi dengan judul *"The Development of Explosion Box as Learning Media for Teaching Components of Ecosystem for Elementary School Level"*, mulai Februari – April 2018.

Demikian surat keterangan ini dibuat, untuk dapat dipergunakan sebagaimana mestinya.

Blitar, 19 Maret 2018

H. Ni`mad Arifa, M.Pd.I
NIMIDA 47.10.2005

Appendix IV

Questionnaire of Matter Expert

INSTRUMEN VALIDASI AHLI MATERI

"MEDIA PEMBELAJARAN *EXPLOSION BOX* TEMA 5 SUBTEMA 1 (KOMPONEN EKOSISTEM) PADA SISWA KELAS V"

A. Pengantar

Berkaitan dengan pelaksanaan pengembangan Media Pembelajaran *Explosion Box* Tema 5 Subtema 1 (Komponen Ekosistem) Pada Siswa Kelas V, maka peneliti bermaksud mengadakan validasi media pembelajaran yang telah diproduksi sebagai salah satu bahan pembelajaran. Oleh sebab itu, peneliti mohon kesediaan Bapak/Ibu untuk mengisi angket di bawah ini sebagai ahli isi/materi. Hasil dari pengukuran melalui angket akan digunakan untuk menyempurnakan media pembelajaran *Explosion Box* agar dapat bermanfaat dalam pembelajaran. Sebelumnya saya sampaikan terima kasih atas kesdiaan Bapak/Ibu.

Nama   : ....
NIP   : ....
Instansi   : ....
Pendidikan : ....
Alamat   : ....
                 ....

B. Petunjuk Penilaian

1. Jawablah pertanyaan di bawah ini dengan memberi centang pada alternative jawaban yang dianggap paling sesuai.
2. Jika diperlukan kritik dan saran Bapak/Ibu dapat dituliskan pada lembar yang telah disediakan.

C. Keterangan

Skala Penilaian/Tanggapan				
1	2	3	4	5
Sangat tidak baik	Kurang baik	Cukup Baik	Baik	Sangat Baik

D. Lembar Penilaian

No	Butir Pertanyaan	Nilai				
		1	2	3	4	5
1.	Apakah komponen media pembelajaran *Explosion Box* sudah memadai sebagai media pembelajaran?					

No.						
2.	Bagaimana kesuaian Kompetensi Inti, kompetensi Dasar, dengan Indikator pada pengembangan media pembelajaran *Explosion Box* ini?					
3.	Bagaimana kesesuaian materi yang disajikan pada pengembangan media pembelajaran *Explosion Box* ini?					
4.	Apakah media pembelajaran *Explosion Box* menuntun siswa untuk berfikir tingkat rendah sampai tingkat tinggi?					
5.	Apakah media pembelajaran *Explosion Box* mampu meningkatkan minat siswa dalam belajar?					
6.	Apakah media pembelajaran *Explosion Box* mampu meningkatkan hasil belajar siswa?					

E. Mohon ahli materi memberikan komentar dan saran tentang isi media pembelajaran *Explosion Box* yang telah dikembangkan.

No.	Komentar Terhadap Isi media pembelajaran *Explosion Box*	Saran kepada Peneliti

Malang, ……….. 2017

(……….…………….)

INSTRUMEN VALIDASI AHLI PEMBELAJARAN

"MEDIA PEMBELAJARAN *EXPLOSION BOX* TEMA 5 SUBTEMA 1 (KOMPONEN EKOSISTEM) PADA SISWA KELAS V"

K. Pengantar

Berkaitan dengan pelaksanaan pengembangan Media Pembelajaran *Explosion Box* Tema 5 Subtema 1 (Komponen Ekosistem) Pada Siswa Kelas V, maka peneliti bermaksud mengadakan validasi media pembelajaran yang telah diproduksi sebagai salah satu bahan pembelajaran. Oleh sebab itu, peneliti mohon kesediaan Bapak/Ibu untuk mengisi angket di bawah ini sebagai ahli pembelajaran. Hasil dari pengukuran melalui angket akan digunakan untuk menyempurnakan media pembelajaran *Explosion Box* agar dapat bermanfaat dalam pembelajaran. Sebelumnya saya sampaikan terima kasih atas kesediaan Bapak/Ibu.

Nama : Ahmad Abtokhi

NIP : 197 6 1003 2003 12 1004

Instansi : UIN Mlg

Pendidikan : S2 UNESA / SAINS

Alamat : Jl. Sumpil 2 Barat A5 Blimbing

L. Petunjuk Penilaian

5. Jawablah pertanyaan di bawah ini dengan memberi centang pada alternative jawaban yang dianggap paling sesuai.
6. Jika diperlukan kritik dan saran Bapak/Ibu dapat dituliskan pada lembar yang telah disediakan.

Keterangan

Skala Penilaian/Tanggapan				
1	2	3	4	5
Sangat tidak baik	Kurang baik	Cukup Baik	Baik	Sangat Baik

B. Lembar Penilaian

No	Butir Pertanyaan	Nilai				
		1	2	3	4	5
1.	Apakah komponen media pembelajaran *Explosion Box* sudah memadai sebagai media pembelajaran?					V
2.	Bagaimana kesuaian Kompetensi Inti, kompetensi Dasar, dengan Indikator pada pengembangan media pembelajaran *Explosion Box* ini?					V
3.	Bagaimana kesesuaian materi yang disajikan pada pengembangan media pembelajaran *Explosion Box* ini?					V
4.	Apakah media pembelajaran *Explosion Box* menuntun siswa untuk berfikir tingkat rendah sampai tingkat tinggi?					V
5.	Apakah media pembelajaran *Explosion Box* mampu meningkatkan minat siswa dalam belajar?				V	
6.	Apakah media pembelajaran *Explosion Box* mampu meningkatkan hasil belajar siswa?				V	

C. Mohon ahli materi memberikan komentar dan saran tentang isi media pembelajaran *Explosion Box* yang telah dikembangkan.

No.	Komentar Terhadap Isi media pembelajaran *Explosion Box*	Saran kepada Peneliti
	- Ada/perlu permainan dalam media - Rancangan + konten diperdalam - Sumber materi - Diperbesar	

Malang, 28/2 2017

(..............................)

Appendix V

Questionnaire of Design Expert

<div align="center">

INSTRUMEN VALIDASI AHLI DESAIN

"MEDIA PEMBELAJARAN *EXPLOSION BOX* TEMA 5 SUBTEMA 1 (KOMPONEN EKOSISTEM) PADA SISWA KELAS V"

</div>

A. Pengantar

Berkaitan dengan pelaksanaan pengembangan Media Pembelajaran *Explosion Box* Tema 5 Subtema 1 (Komponen Ekosistem) Pada Siswa Kelas V, maka peneliti bermaksud mengadakan validasi media pembelajaran yang telah diproduksi sebagai salah satu bahan pembelajaran. Oleh sebab itu, peneliti mohon kesediaan Bapak/Ibu untuk mengisi angket di bawah ini sebagai ahli desain. Hasil dari pengukuran melalui angket akan digunakan untuk menyempurnakan media pembelajaran *Explosion Box* agar dapat bermanfaat dalam pembelajaran. Sebelumnya saya sampaikan terima kasih atas kesdiaan Bapak/Ibu.

Nama   : ……………………………………………………………………..
NIP   : ……………………………………………………………………..
Instansi   : ……………………………………………………………………..
Pendidikan : ……………………………………………………………………..
Alamat   : ……………………………………………………………………..
       ……………………………………………………………………..

B. Petunjuk Penilaian
 a. Jawablah pertanyaan di bawah ini dengan memberi centang pada alternative jawaban yang dianggap paling sesuai.
 b. Jika diperlukan kritik dan saran Bapak/Ibu dapat dituliskan pada lembar yang telah disediakan.

C. Keterangan

Skala Penilaian/Tanggapan				
1	2	3	4	5
Sangat tidak baik	Kurang baik	Cukup Baik	Baik	Sangat Baik

D. Lembar Penilaian

No	Butir Pertanyaan	Nilai				
		1	2	3	4	5
1.	Bagaimana ketertarikan penyajian desain media pembelajaran *Explosion Box* ini?					
2.	Bagaimana kesuaian gambar pada media					

	pembelajaran *Explosion Box* ini?					
3.	Bagaimana kesesuaian gambar dengan materi yang disajikan pada media pembelajaran *Explosion Box* ini?					
4.	Bagaimana kesesuaian pemakaian jenis huruf yang digunakan pada media pembelajaran *Explosion Box* ini?					
5.	Bagaimana kesesuai penggunaan variasi warna pada media pembelajaran *Explosion Box* ini?					
6.	Bagaimana ketertarikan desain layout pada media pembelajaran *Explosion Box* ini?					

E. **Mohon ahli materi memberikan komentar dan saran tentang desain media pembelajaran** *Explosion Box* **yang telah dikembangkan.**

No.	Komentar terhadap desain media pembelajaran *Explosion Box*	Saran kepada Peneliti

Malang, ……….. 2017

(…………...………….)

INSTRUMEN VALIDASI AHLI DESAIN

"MEDIA PEMBELAJARAN *EXPLOSION BOX* TEMA 5 SUBTEMA 1 (KOMPONEN EKOSISTEM) PADA SISWA KELAS V"

I. Pengantar

Berkaitan dengan pelaksanaan pengembangan Media Pembelajaran *Explosion Box* Tema 5 Subtema 1 (Komponen Ekosistem) Pada Siswa Kelas V, maka peneliti bermaksud mengadakan validasi media pembelajaran yang telah diproduksi sebagai salah satu bahan pembelajaran. Oleh sebab itu, peneliti mohon kesediaan Bapak/Ibu untuk mengisi angket di bawah ini sebagai ahli desain. Hasil dari pengukuran melalui angket akan digunakan untuk menyempurnakan media pembelajaran *Explosion Box* agar dapat bermanfaat dalam pembelajaran. Sebelumnya saya sampaikan terima kasih atas kesdiaan Bapak/Ibu.

Nama : Maryam Faizah

NIP : 19901225 20160801 2 015

Instansi : UIN MALANG

Pendidikan : S2 - PGMI UIN MALANG

Alamat : Jl. Tirto Taruno XII Malang

J. Petunjuk Penilaian

3. Jawablah pertanyaan di bawah ini dengan memberi centang pada alternative jawaban yang dianggap paling sesuai.
4. Jika diperlukan kritik dan saran Bapak/Ibu dapat dituliskan pada lembar yang telah disediakan.

4. Keterangan

Skala Penilaian/Tanggapan				
1	2	3	4	5
Sangat tidak baik	Kurang baik	Cukup Baik	Baik	Sangat Baik

D. Lembar Penilaian

No	Butir Pertanyaan	Nilai				
		1	2	3	4	5
1.	Bagaimana ketertarikan penyajian desain media pembelajaran *Explosion Box* ini?					✓
2.	Bagaimana kesuaian gambar pada media pembelajaran *Explosion Box* ini?				✓	
3.	Bagaimana kesesuaian gambar dengan materi yang disajikan pada media pembelajaran *Explosion Box* ini?				✓	
4.	Bagaimana kesesuaian pemakaian jenis huruf yang digunakan pada media pembelajaran *Explosion Box* ini?				✓	
5.	Bagaimana kesesuai penggunaan variasi warna pada media pembelajaran *Explosion Box* ini?					✓
6.	Bagaimana ketertarikan desain layout pada media pembelajaran *Explosion Box* ini?					✓

E. Mohon ahli materi memberikan komentar dan saran tentang Desain media pembelajaran *Explosion Box* yang telah dikembangkan.

No.	Komentar Terhadap Desain media pembelajaran *Explosion Box*	Saran kepada Peneliti
-	Kertas soal diberi pita	
-	Warna tulisan kantong kurang jelas /cerah	
-	Lembar Aturan + kunci jawaban	

langsung print out di Art - Paper

- Papan permainan full color

Malang, 06 - 03 2017

(. Maryam Faizoh)

Appendix VI

Questionnaire of Learning Expert

<div align="center">

INSTRUMEN VALIDASI AHLI PEMBELAJARAN

"MEDIA PEMBELAJARAN *EXPLOSION BOX* TEMA 5 SUBTEMA 1 (KOMPONEN EKOSISTEM)
PADA SISWA KELAS V"

</div>

A. Pengantar

      Berkaitan dengan pelaksanaan pengembangan Media Pembelajaran *Explosion Box* Tema 5 Subtema 1 (Komponen Ekosistem) Pada Siswa Kelas V, maka peneliti bermaksud mengadakan validasi media pembelajaran yang telah diproduksi sebagai salah satu bahan pembelajaran. Oleh sebab itu, peneliti mohon kesediaan Bapak/Ibu untuk mengisi angket di bawah ini sebagai ahli pembelajaran. Hasil dari pengukuran melalui angket akan digunakan untuk menyempurnakan media pembelajaran *Explosion Box* agar dapat bermanfaat dalam pembelajaran. Sebelumnya saya sampaikan terima kasih atas kesediaan Bapak/Ibu.

Nama   : …………………………………………………………………..

NIP   : …………………………………………………………………..

Instansi   : …………………………………………………………………..

Pendidikan : ……………………………………………………………..

Alamat   : …………………………………………………………………..

                  …………………………………………………………………..

B. Petunjuk Penilaian

a. Jawablah pertanyaan di bawah ini dengan memberi centang pada alternative jawaban yang dianggap paling sesuai.

b. Jika diperlukan kritik dan saran Bapak/Ibu dapat dituliskan pada lembar yang telah disediakan.

C. Keterangan

Skala Penilaian/Tanggapan				
1	2	3	4	5
Sangat tidak baik	Kurang baik	Cukup Baik	Baik	Sangat Baik

D. Lembar Penilaian

No	Butir Pertanyaan	Nilai				
		1	2	3	4	5
1.	Apakah komponen media pembelajaran					

	Explosion Box sudah memadai sebagai media pembeajaran?					
2.	Bagaimana kesuaian Kompetensi Inti, kompetensi Dasar, dengan Indikator pada pengembangan media pembelajaran *Explosion Box* ini?					
3.	Bagaimana kesesuaian materi yang disajikan pada pengembangan media pembelajaran *Explosion Box* ini?					
4.	Apakah media pembelajaran *Explosion Box* menuntun siswa untuk berfikir tingkat rendah sampai tingkat tinggi?					
5.	Apakah media pembelajaran *Explosion Box* mampu meningkatkan kreatifitas siswa?					
6.	Apakah media pembelajaran *Explosion Box* mengembangka karakter social dan spiritual?					

E. **Mohon ahli materi memberikan komentar dan saran tentang isi media pembelajaran *Explosion Box* yang telah dikembangkan.**

No.	Komentar terhadap isi media pembelajaran *Explosion Box*	Saran kepada Peneliti

Blitar, ……….. 2017

(…………………….)

INSTRUMEN VALIDASI AHLI MATERI

"MEDIA PEMBELAJARAN *EXPLOSION BOX* TEMA 5 SUBTEMA 1 (KOMPONEN EKOSISTEM) PADA SISWA KELAS V"

G. Pengantar

Berkaitan dengan pelaksanaan pengembangan Media Pembelajaran *Explosion Box* Tema 5 Subtema 1 (Komponen Ekosistem) Pada Siswa Kelas V, maka peneliti bermaksud mengadakan validasi media pembelajaran yang telah diproduksi sebagai salah satu bahan pembelajaran. Oleh sebab itu, peneliti mohon kesediaan Bapak/Ibu untuk mengisi angket di bawah ini sebagai ahli isi/materi. Hasil dari pengukuran melalui angket akan digunakan untuk menyempurnakan media pembelajaran *Explosion Box* agar dapat bermanfaat dalam pembelajaran. Sebelumnya saya sampaikan terima kasih atas kesdiaan Bapak/Ibu.

Nama   : FARIDHATUN NIKAMAH
NIP   : –
Instansi   : MI PERWANIDA
Pendidikan   : S1
Alamat   : DS. SANANKULON

H. Petunjuk Penilaian

1. Jawablah pertanyaan di bawah ini dengan memberi centang pada alternative jawaban yang dianggap paling sesuai.
2. Jika diperlukan kritik dan saran Bapak/Ibu dapat dituliskan pada lembar yang telah disediakan.

3. Keterangan

Skala Penilaian/Tanggapan				
1	2	3	4	5
Sangat tidak baik	Kurang baik	Cukup Baik	Baik	Sangat Baik

F. Lembar Penilaian

No	Butir Pertanyaan	Nilai				
		1	2	3	4	5
1.	Apakah komponen media pembelajaran *Explosion Box* sudah memadai sebagai media pembeajaran?					✓
2.	Bagaimana kesuaian Kompetensi Inti, kompetensi Dasar, dengan Indikator pada pengembangan media pembelajaran *Explosion Box* ini?				✓	
3.	Bagaimana kesesuaian materi yang disajikan pada pengembangan media pembelajaran *Explosion Box* ini?				✓	
4.	Apakah media pembelajaran *Explosion Box* menuntun siswa untuk berfikir tingkat rendah sampai tingkat tinggi?					✓
5.	Apakah media pembelajaran *Explosion Box* mampu meningkatkan kreatifitas siswa?					✓
6.	Apakah media pembelajaran *Explosion Box* mengembangka karakter social dan spiritual?					✓

G. Mohon ahli materi memberikan komentar dan saran tentang isi media pembelajaran *Explosion Box* yang telah dikembangkan.

No.	Komentar Terhadap isi media pembelajaran *Explosion Box*	Saran kepada Peneliti
1.	Dalam pembelajaran Tematik, terdapat beberapa mapel yg seharusnya bisa masuk dlm media, tidak hanya fokus pada 1 mapel saja.	Masukkan beberapa mapel yg sesuai dg KI/KD dlm 1 PB/subtema dlm 1 media explosion box.

Blitar, 17-3- 2017

(faridhotun N)

Appendix VII

Questionnaire of Student

LEMBAR PENILAIAN MEDIA PEMBELAJARAN *EXPLOSION BOX* PADA MATERI TEMA 5 SUBTEMA 1 TENTANG KOMPONEN EKOSISTEM

OLEH SISWA

Identitas Validator

Nama   :

Kelas   :

Sekolah   :

Validator   : Siswa

Petunjuk Pengisian

1. Lembar penilaian ini untuk diisi oleh siswa. Penilaian ini digunakan untuk menilai kualitas media pembelajaran *explosion box*. Hasil penilaian ini akan digunakan untuk merevisi atau menyempurnakan media pembelajaran *explosion box* yang telah dikembangkan sehingga menjadi lebih baik.
2. Penilaian terdiri dari beberapa komponen yang telah disediakan dalam tabel.
3. Penilaian dilakukan dengan cara memberikan tanda centang (√) pada kolom sesuai dengan ketentuan sebagai berikut:
   - 1 = Sangat kurang baik
   - 2 = Kurang baik
   - 3 = Cukup baik
   - 4 = Baik
   - 5 = Sangat baik

Atas kesediaan Anda untuk mengisi angket penilaian ini, diucapkan terimakasih.

Tabel Angket Respon Siswa

No	Pernyataan	Jawaban				
		1	2	3	4	5
1	Dengan menggunakan media pembelajaran *explosion box,* saya menjadi lebih termotivasi untuk belajar materi tema 5 subtema 1 tentang Komponen Ekosistem.					
2	Dengan menggunakan media pembelajaran *Explosion Box,* saya menjadi lebih mudah memahami materi tema 5 subtema 1 tentang					

	Komponen Ekosistem.					
3	Dengan menggunakan media pembelajaran *Explosion Box,* proses pembelajaran menjadi menyenangkan.					
4	Media pembelajaran *Explosion Box* membuat saya menjadi lebih aktif dan kreatif.					
5	Saya merasa mudah belajar dengan menggunakan media pembelajaran *Explosion Box.*					
6	Gambar dalam media pembelajaran *Explosion Box* memiliki warna yang menarik.					

KOMENTAR:

Blitar, 2018

_____

LEMBAR PENILAIAN MEDIA PEMBELAJARAN *EXPLOSION BOX* PADA MATERI TEMA 5 SUBTEMA 1 TENTANG KOMPONEN EKOSISTEM

OLEH SISWA

Identitas Validator

Nama	:	Mojeto febioro
Kelas	:	VII 40s
Sekolah	:	MiPerwonipo
Validator	:	Siswa

Petunjuk Pengisian

1. Lembar penilaian ini untuk diisi oleh siswa. Penilaian ini digunakan untuk menilai kualitas media pembelajaran *explosion box*. Hasil penilaian ini akan digunakan untuk merevisi atau menyempurnakan media pembelajaran *explosion box* yang telah dikembangkan sehingga menjadi lebih baik.
2. Penilaian terdiri dari beberapa komponen yang telah disediakan dalam tabel.
3. Penilaian dilakukan dengan cara memberikan tanda centang (√) pada kolom sesuai dengan ketentuan sebagai berikut:
   - 1 = Sangat kurang baik
   - 2 = Kurang baik
   - 3 = Cukup baik
   - 4 = Baik
   - 5 = Sangat baik

Atas kesediaan Anda untuk mengisi angket penilaian ini, diucapkan terimakasih.

Tabel Angket Respon Siswa

No	Pernyataan	Jawaban				
		1	2	3	4	5
1	Dengan menggunakan media pembelajaran *explosion box*, saya menjadi lebih termotivasi untuk belajar materi tema 5 subtema 1 tentang Komponen Ekosistem.					√
2	Dengan menggunakan media pembelajaran *Explosion Box*, saya menjadi lebih mudah memahami materi tema 5 subtema 1 tentang Komponen Ekosistem.					√
3	Dengan menggunakan media pembelajaran *Explosion Box*, proses pembelajaran menjadi menyenangkan.					√
4	Media pembelajaran *Explosion Box* membuat saya menjadi lebih aktif dan kreatif.					√
5	Saya merasa mudah belajar dengan menggunakan media pembelajaran *Explosion Box*.				√	
6	Gambar dalam media pembelajaran *Explosion Box* memiliki warna yang menarik.					√

KOMENTAR:

Saya sangat suka dalam pelajaran menggunakan explosion box
saya mengati lebih paham dan membuat saya mengasi
kreatif dalam berimajinasi dan warnanya sangat menarik
Sekali . thank you kak aib semoga kakak fhurnia bermanfaat
Amin

Blitar,   2018
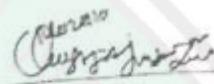
Morello FeBrozo

LEMBAR PENILAIAN MEDIA PEMBELAJARAN *EXPLOSION BOX* PADA MATERI TEMA 5 SUBTEMA 1 TENTANG KOMPONEN EKOSISTEM

OLEH SISWA

Identitas Validator

Nama : RIEFKY HAFIDZ

Kelas : 5 Ilyas

Sekolah : MI perwanida

Validator : Siswa

Petunjuk Pengisian

1. Lembar penilaian ini untuk diisi oleh siswa. Penilaian ini digunakan untuk menilai kualitas media pembelajaran *explosion box*. Hasil penilaian ini akan digunakan untuk merevisi atau menyempurnakan media pembelajaran *explosion box* yang telah dikembangkan sehingga menjadi lebih baik.
2. Penilaian terdiri dari beberapa komponen yang telah disediakan dalam tabel.
3. Penilaian dilakukan dengan cara memberikan tanda centang (√) pada kolom sesuai dengan ketentuan sebagai berikut:

   1 = Sangat kurang baik

   2 = Kurang baik

   3 = Cukup baik

   4 = Baik

   5 = Sangat baik

Atas kesediaan Anda untuk mengisi angket penilaian ini, diucapkan terimakasih.

Tabel Angket Respon Siswa

No	Pernyataan	Jawaban				
		1	2	3	4	5
1	Dengan menggunakan media pembelajaran *explosion box*, saya menjadi lebih termotivasi untuk belajar materi tema 5 subtema 1 tentang Komponen Ekosistem.					√
2	Dengan menggunakan media pembelajaran *Explosion Box*, saya menjadi lebih mudah memahami materi tema 5 subtema 1 tentang Komponen Ekosistem.					√
3	Dengan menggunakan media pembelajaran *Explosion Box*, proses pembelajaran menjadi menyenangkan.					√
4	Media pembelajaran *Explosion Box* membuat saya menjadi lebih aktif dan kreatif.					√
5	Saya merasa mudah belajar dengan menggunakan media pembelajaran *Explosion Box*.				√	
6	Gambar dalam media pembelajaran *Explosion Box* memiliki warna yang menarik.					√

KOMENTAR:

baik, lebih di kembangkan lagi

Blitar,   2018

RLEFKI

LEMBAR PENILAIAN MEDIA PEMBELAJARAN *EXPLOSION BOX* PADA MATERI TEMA 5 SUBTEMA 1 TENTANG KOMPONEN EKOSISTEM

OLEH SISWA

Identitas Validator

Nama : Ihza amalia putri Farani
Kelas : 5 Ilyas
Sekolah : MI peruanda
Validator : Siswa

Petunjuk Pengisian

1. Lembar penilaian ini untuk diisi oleh siswa. Penilaian ini digunakan untuk menilai kualitas media pembelajaran *explosion box*. Hasil penilaian ini akan digunakan untuk merevisi atau menyempurnakan media pembelajaran *explosion box* yang telah dikembangkan sehingga menjadi lebih baik.
2. Penilaian terdiri dari beberapa komponen yang telah disediakan dalam tabel.
3. Penilaian dilakukan dengan cara memberikan tanda centang (√) pada kolom sesuai dengan ketentuan sebagai berikut:
   - 1 = Sangat kurang baik
   - 2 = Kurang baik
   - 3 = Cukup baik
   - 4 = Baik
   - 5 = Sangat baik

Atas kesediaan Anda untuk mengisi angket penilaian ini, diucapkan terimakasih.

Tabel Angket Respon Siswa

No	Pernyataan	Jawaban				
		1	2	3	4	5
1	Dengan menggunakan media pembelajaran *explosion box*, saya menjadi lebih termotivasi untuk belajar materi tema 5 subtema 1 tentang Komponen Ekosistem.					√
2	Dengan menggunakan media pembelajaran *Explosion Box*, saya menjadi lebih mudah memahami materi tema 5 subtema 1 tentang Komponen Ekosistem.					√
3	Dengan menggunakan media pembelajaran *Explosion Box*, proses pembelajaran menjadi menyenangkan.					√
4	Media pembelajaran *Explosion Box* membuat saya menjadi lebih aktif dan kreatif.					√
5	Saya merasa mudah belajar dengan menggunakan media pembelajaran *Explosion Box*.					√
6	Gambar dalam media pembelajaran *Explosion Box* memiliki warna yang menarik.				√	

KOMENTAR:

Belajar dengan explosion box saya menjadi paham dengan apa yg saya pelajari

Blitar, 19 maret 2018
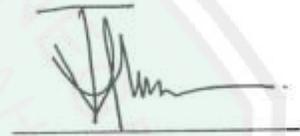
Pre-Test

LEMBAR *PRE-TEST* MEDIA PEMBELAJARAN *EXPLOSION BOX* PADA MATERI KOMPONEN EKOSISTEM

Nama   :
Kelas   :
Sekolah   :

1. Ilmu yang mempelajari bagaimana organisme berinteraksi dengan lingkungannya disebut….
    a. Ekologi   b. Ekosistem   c. Populasi   d. Organisme

2. Interaksi semua organisme yang hidup di dalam wilayah tertentu beserta semua komponen abiotik di lingkungan tersebut disebut ….
    a. Ekologi   b. Ekosistem   c. Populasi   d. Organisme

3. Sekelompok individu tunggal yang menempati daerah tertentu disebut ….
    a. Organisme   b. Ekologi   c. Populasi   d. Komunitas

4. Belalang, tanaman padi, katak, cacing dan ulat termasuk dalam komunitas ….
    a. Sawah   b. Hutan   c. Kebun   d. Kolam

5. Makhluk hidup baik tumbuhan maupun hewan disebut ….
    a. Organisme   b. Ekologi   c. Populasi   d. Komunitas

6. Tempat hidup suatu organisme disebut ….
    a. Biotik   b. Abiotik   c. Populasi   d. Habitat

7. Komponen lingkungan yang terdiri atas sesuatu yang tak hidup disebut ….
    a. Biotik   b. Abiotik   c. Populasi   d. Organisme

8. Komponen lingkungan yang terdiri atas makhluk hidup disebut ….
    a. Biotik   b. Abiotik   c. Populasi   d. Organisme

9. Yang tidak termasuk dalam contoh komponen biotik adalah ….
    a. Manusia   b. Tanaman padi   c. Suhu   d. Belalang

10. Air, udara, tanah dan suhu matahari termasuk contoh komponen ….
    a. Biotik   b. Abiotik   c. Populasi   d. Komunitas

Appendix IX

Post-Test

LEMBAR *POST-TEST* MEDIA PEMBELAJARAN *EXPLOSION BOX* PADA MATERI KOMPONEN EKOSISTEM

Nama   :
Kelas   :
Sekolah   :

1. Interaksi semua organisme yang hidup di dalam wilayah tertentu beserta semua komponen abiotik di lingkungan tersebut disebut ….
   a. Ekologi   b. Ekosistem   c. Populasi   d. Organisme

2. Ilmu yang mempelajari bagaimana organisme berinteraksi dengan lingkungannya disebut….
   a. Ekologi   b. Ekosistem   c. Populasi   d. Organisme

3. Yang tidak termasuk dalam contoh komponen biotik adalah ….
   a. Manusia   b. Tanaman padi   c. Suhu   d. Belalang

4. Tempat hidup suatu organisme disebut ….
   a. Biotik   b. Abiotik   c. Populasi   d. Habitat

5. Makhluk hidup baik tumbuhan maupun hewan disebut ….
   a. Organisme   b. Ekologi   c. Populasi   d. Komunitas

6. Air, udara, tanah dan suhu matahari termasuk contoh komponen ….
   a. Biotik   b. Abiotik   c. Populasi   d. Komunitas

7. Sekelompok individu tunggal yang menempati daerah tertentu disebut ….
   a. Organisme   b. Ekologi   c. Populasi   d. Komunitas

8. Komponen lingkungan yang terdiri atas makhluk hidup disebut ….
   a. Biotik   b. Abiotik   c. Populasi   d. Organisme

9. Belalang, tanaman padi, katak, cacing dan ulat termasuk dalam komunitas ….
   a. Sawah   b. Hutan   c. Kebun   d. Kolam

10. Komponen lingkungan yang terdiri atas sesuatu yang tak hidup disebut ….
    a. Biotik   b. Abiotik   c. Populasi   d. Organisme

Appendix X

Daftar Nilai *Pre-test* dan *Post-test*

No	Nama	Nilai		Keterangan
		Pre-test	*Post-test*	
1	Cinta Farrahalma Islamy	80	100	Meningkat
2	Mazella Febiara	90	100	Meningkat
3	Ma'rifatu Leyla Nabila	100	100	Meningkat
4	Queen Aisyah Kartika Yasmine	70	80	Meningkat
5	Vatwa Maharani	60	70	Meningkat
6	Rhigeta Faiza Anwar	70	90	Meningkat
7	Bintang Mahadewi Marella	70	70	Meningkat
8	Nasywa Permata P.	90	90	Meningkat
9	Queena Roya A.	70	90	Meningkat
10	Natasya Mecha Nadine	70	80	Meningkat
11	Adiba Kansa Az-zahra	50	60	Meningkat
12	Javier Thorieq	60	90	Meningkat
13	M. Prawira H.	90	100	Meningkat
14	Namira Fadilah	60	80	Meningkat
15	Riefky Hafidz	70	90	Meningkat
16	Rr. Jasmine Kusuma A.C	60	70	Meningkat
17	Rheka Abidha Khanzaz Zahra	80	100	Meningkat
18	M. Haqqi Alfaqih	80	100	Meningkat
19	Safahara Najwa Az-zahra	70	100	Meningkat
20	M. Fawwaz Bakhrul Na'im	80	90	Meningkat
21	Raffy Ahmad	60	80	Meningkat
22	Nabila Salsabila	90	100	Meningkat
23	Ihza Amalia Putri Fanani	50	60	Meningkat
24	Nindi Zulfa Hidayati	70	90	Meningkat
25	Einaya Aleisya Maurinindita A.	80	90	Meningkat
26	Sonya Tasya Aluna	70	90	Meningkat
27	Luklu'il Aini	50	90	Meningkat
28	M. Zinedine Zidane	50	60	Meningkat
29	Briliant Ahmad Arifa Putra	70	90	Meningkat
30	Calfatra Anky Armyda	60	80	Meningkat
31	Maheswara Manggala Adinata	60	90	Meningkat
32	Rena Putri Anindita	70	80	Meningkat

Appendix XI

Documentation

1. Field trial of small group

2. Field trial of large group

Student Biodata

BIODATA

Name	: Tsalats Zaidatul Nasriya
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