

**THE DEVELOPMENT OF INTERACTIVE TEACHING
MATERIALS BASED ON OFFLINE WEB IN THE TOPIC OF
SIMPLE MACHINE FOR FIFTH GRADE STUDENTS
IN MIN KANIGORO KEDIRI**

THESIS

BY

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**TEACHER EDUCATION OF ISLAMIC ELEMENTARY SCHOOL
FACULTY OF TARBIYAH AND TEACHING SCIENCES
THE STATE ISLAMIC UNIVERSITY MAULANA MALIK IBRAHIM OF
MALANG**

2015

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THESIS

Presented to Faculty of Tarbiyah and Teaching Science of State Islamic
University of Maulana Malik Ibrahim Malang in partial fulfillment of the
requirement for the degree of Sarjana Pendidikan (S.Pd)

BY

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**INTERNATIONAL CLASS PROGRAM
TEACHER EDUCATION OF ISLAMIC ELEMENTARY SCHOOL
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MALANG**

2015

APPROVAL SHEET
THE DEVELOPMENT OF INTERACTIVE TEACHING
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**THE DEVELOPMENT OF INTERACTIVE TEACHING
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THESIS

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DEDICATION

This Thesis Is Dedicated To My Beloved Father And Mother

(Luluk Sunarko and Sunarti)

“You are the persons who have been becoming my worldly angels. Every good things I do in this world is always dedicated to both of you”

I LOVE YOU SO MUCH

&

ALL OF MY BEST FAMILY

My best brother

(Riza Nasrulloh dan Moh. Nazri Adzlani)

My beloved sister

(Firda Inayah)

They always motivate me with their love, patient and prayer.

MOTTO

قُلْ أَنْظِرُوا مَاذَا فِي السَّمَوَاتِ وَالْأَرْضِ وَمَا تُغْنِي الْآيَاتُ وَالنُّذُرُ عَنْ
قَوْمٍ لَا يُؤْمِنُونَ

(Yunus (10): 101)

Say: "Look at what is in the heavens and the earth. It is not useful evidence of God's power and Messengers who gave a warning to people who do not believe".



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Matter : Thesis of Elfadiany Mufida

Appendixes : 4 (four) Exemplar

Dear,

Dean of Tarbiyah and Teaching Science Faculty

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Malang

Assalamu'alaikum Wr. Wb

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

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

Thus please tolerate presence.

Wassalamu'alaikum Wr. Wb

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STATEMENT LETTER

I hereby declare, that in this paper there is no work that has proposed to acquire a degree at a university, and the best of my knowledge, there is also no work ever written or opinions of others, except that in writing referred in this manuscript and mentioned in the bibliography.

Malang, 15 June 2015

Elfadiany Mufida

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Bismillahirrahmanirrahim,

Alhamdulillah robbil alamin, all praises be to Allah SWT who has already given the mercies and blessing during my thesis writing process. Peace and salutation may always be given to our Prophet Muhammad SAW. I would like to thank to several contributive people in finishing my thesis entitled **The Development of Interactive Teaching Materials Based on Offline Web in The Topic of Simple Machine for Fifth Grade Students in MIN Kanigoro Kediri.**

I convey my indisputable to:

First of all, I would like to express my gratitude and thank to my beloved parents, Bapak Luluk Sunarko and Ibu Sunarti, for their prayer, support and love. You are the most motivated people for me. My beloved brothers and sisters, Mas Risa, Ida, Anas and Intan, thanks for your kindness, cheerful and support. I am happy being your sister.

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Finally, may Allah always gives His blesses and mercies. The researcher do really realize that this thesis still needs some critics and suggestion from the reader in order to make it perfect and hopefully the arranging thesis can provide benefits, especially for researcher herself and readers in general.

Malang, June 2015

The Researcher

TRANSLATION GUIDELINES OF ARAB LATIN

Translation of Arab Latin in this thesis utilize the translation guidelines based on the agreement between Religion Minister and Educational and Culture Minister of Indonesia number 158/1987 and number 0543b/ U/ 1987. Those are:

A. Letter

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

B. Long Vowel

Vocal (a) panjang = â

Vocal (i) panjang = î

Vocal (u) panjang = û

C. Diphthong Vowel

أو = Aw

أي = Ay

أو = û

إئي = î

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ABSTRACT

Mufida, Elfadiany. 2015. *The Development of Interactive Teaching Materials Based on Offline Web for The Fifth Grade Students in MIN Kanigoro Kediri*. Thesis, Teacher Education of Islamic Elementary School Program, Faculty of Tarbiyah and Teaching Sciences, The State Islamic University of Maulana Malik Ibrahim Malang. Advisor, Dr. Like Raskova Oktaberlina, M. Ed

The use of interactive teaching materials in the process of teaching and learning can generate new interest and desire, motivation and stimulation of learning activities, and psychological influences on students. Interactive teaching material is urgently needed by the students as it can motivate students in learning optimally at school. However, condition in field it is not based on theory. Many students are not understood about simple machine material. The lack of students interest in learning science, this is because the use of learning strategy is still conventionally less creative, and utilization of instructional media is insufficient, they have limited facilities in media board, student's worksheets and textbooks of schools. In addition, the students assume that the learning was boring. It can solve by using of the facilities at schools such as computer laboratory. But the facility has not been used full potential because there is no software or interactive teaching material.

The purpose of this research is knowing the attractiveness of interactive teaching materials were developed, and knowing the effectiveness interactive teaching materials based on offline web for improving learning outcomes student for the fifth grade students in MIN Kanigoro Kediri.

To achieve the objectives above used the methods of research and development R&D (Research and Development) by adapting the ADDIE model which includes five stages in the development procedure: 1) Analyze, 2) Design, 3) Develop, 4) Implement, and 5) Evaluate. Developer uses this model will be more targeted, more time saving, and can produce a good product. The instruments used to collect the data in this research are questionnaires for material expert, design experts, learning experts, students and achievement test sheet.

Based on the results of research obtained are 1) the results from the analysis of questionnaire data according to content expert has high validity score that is 98,2% with the criteria are very valid; 2) according to instructional media design experts reached 97,9% with very valid criteria; 3) according to the science teacher as learning experts reached 93,7% with the criteria are very valid and the value of attractiveness product according to the students reached 90%; 4) finally, the product of interactive teaching materials based on offline web is effective to increase students' learning outcomes.

Key Words: development, interactive teaching materials, offline webx

ملخص

مفيدة، أيألفدياني. 2015. المدة الدراسية التفاعلية بأسس المواقع دون شبكة دولية في مادة الطائرة البسيطة للصف الخامس في المدرسة الابتدائية الحكومية كانغورو كاديري. البحث العلمي، قسم تربية المعلم للمدرسة الابتدائية الإسلامية، كلية علوم التربية والتعليم، جامعة مولانا مالك إبراهيم مالنج. مؤدب، دوكتورة ليكي راسكوكا أوكنابرلينا الماجيستيرة.

استخدام المدة الدراسية التفاعلية في عملية الدراسة تستطيع أن يظهر مؤثر الفكر و العتف و الاهتمام و العزم حتى تقوم العملية الدراسية. أحد خصائصها هي العمل، و بذلك يحدث علاقة الوجهين بين المدة الدراسية والتلاميذ حتى يدفع التلاميذ نشاط. المدة الدراسية التفاعلية محتاج لأنها يدرسها التلاميذ مترتباً في المدرسة. لكن الحال في التطبيق متفرق بالنظر. يدرس التلاميذ في العلوم الطابعية بقليل العزم بسبب استخدام الاستراتيجية الدراسية بصفة التقليدي و قليل استغلال وسائل الدراسة، تحديد بسبورة و كتب السعاب و كتب المدخل المدرسة. هذه مشكلة بتقرير استغلال وسائل في المدرسة كمثال المعلم الحاسب. لكن استخدمه بغير جيد لأن دراسة العلوم الطابعية في الفصل الخامس لم تستخدم المدة الدراسية الإنترنتي.

لهدف من هذا البحث نتيجة انتج المدة الدراسية التفاعلية بأسس المواقع دون شبكة دولية يعرف أن راجح المدة الدراسية الإنترنتي و يعرف الفاعل استخدم المدة الدراسية التفاعلية بأسس المواقع دون شبكة دولية ارتفع نتائج الدراسة التلاميذ في الفصل الخامس بمدرسة الابتدائية الإسلامية الحكومية كانغورو كاديري.

استخدام منهج البحث تنمية **Research and Development (R & D)** بتنسيب من الأسلوب **ADDIE** لديه خمس الخطوات في عملية تنميته منها تحليلية و سكلية و تنمية و عملية و القيمة. وجمع البيانات بالورقة البحثية لأهل المدة أو الضمن وأهل التصميم أو الوسيلة وأهل التعليم. التلاميذ وورقة الاختبار من نتيجة التعليم.

تنمية المدة الدراسية التفاعلية بأسس المواقع دون شبكة دولية في مادة الطائرة البسيطة للصف الخامس يمكن أن يستخدم في التعليم في الفصل لحسب حصول في التعليم في الفصل لحسب حصول الصحة والقيمة من الأهل والاختبار في المكان. والنتيجة هي : 1. نتيجة تحليل البيانات والورقة البحثية من أهل الضمن يحصل نسبة مئوية 98,2 فرسين. وبالمعيار صحة جدا. 2. عند أهل التصميم المدة الدراسية تحصل نتيجة نسبة مئوية 97,9 فرسين. وبالمعيار صحة جدا. 3. عند معلم علم الحياة كأهل التعليم يحصل نسبة مئوية 93,7 فرسين ولتجرب وسيم الانتاج بحسب القيمة وتجاب التلاميذ يحصل نسبة مئوية 90 فرسين. 4. كان فرق نتيجة التلاميذ في الصف الخامس قبل أن يستخدم المدة الدراسية التفاعلية بأسس المواقع دون شبكة دولية وبعد. وحصل التلاميذ س ك م يحصل نسبة مئوية 90% والتلاميذ الذي لم يحصل س ك م يحصل نسبة مئوية 84% يترتب نتيجة الاختبار القبلي 56%. هذا يدل على أن المدة الدراسية التفاعلية بأسس المواقع دون شبكة دولية في مادة الطائرة البسيطة للصف الخامس في المدرسة الابتدائية الحكومية كانغورو كاديري صحة ووسيم ومؤثر ليستخدم في التعليم.

الكلمة المفتاحية : المدة الدراسية التفاعلية بأسس المواقع دون شبكة دولية

ABSTRAK

Mufida, Elfadiany. 2015. *Pengembangan Bahan Ajar Interaktif Berbasis Web Offline Pada Materi Pesawat Sederhana Siswa Kelas V Di MIN Kanigoro Kediri*. Skripsi, Jurusan Pendidikan Guru Madrasah Ibtidaiyah, Fakultas Ilmu Tarbiyah dan Keguruan. Universitas Islam Negeri Maulana Malik Ibrahim Malang. Pembimbing: Dr. Like Raskova Oktaberlina, M. Ed

Penggunaan bahan ajar interaktif pada proses pembelajaran dapat menimbulkan rangsangan pikiran, perasaan, perhatian dan minat serta perhatian siswa sedemikian rupa sehingga proses belajar dapat terjadi. Bahan ajar interaktif sangat dibutuhkan oleh siswa karena dapat memotivasi siswa belajar dengan optimal di sekolah. Namun, kondisi di lapangan berbeda dengan teori. Kurangnya minat siswa dalam belajar IPA, dikarenakan penggunaan strategi pembelajaran yang masih bersifat konvensional dan pemanfaatan media pembelajaran yang masih kurang, terbatas pada media papan tulis, buku kerja siswa dan buku pengantar sekolah. Hal ini bisa diatasi dengan memanfaatkan fasilitas yang ada di sekolah seperti laboratorium komputer. Tetapi fasilitas yang ada tidak digunakan dengan maksimal karena selama ini pada pembelajaran IPA kelas V belum menggunakan perangkat lunak atau bahan ajar interaktif.

Tujuan dari penelitian ini untuk mengetahui kemenarikan bahan ajar interaktif yang dikembangkan, dan mengetahui keefektifan penggunaan bahan ajar interaktif berbasis web offline dalam meningkatkan hasil belajar siswa kelas V di MIN Kanigoro Kediri.

Untuk mencapai tujuan di atas, digunakan metode penelitian pengembangan Research and Development (R & D), dengan mengadaptasi dari model ADDIE yang memiliki lima langkah dalam prosedurnya diantaranya yaitu Analyze (menganalisis), Design (mendesain), Develop (mengembangkan), Implement (melaksanakan), dan Evaluate (menilai). Pengumpulan datanya meliputi instrument angket untuk ahli materi/isi, ahli media/design, ahli pembelajaran, siswa dan lembar tes hasil belajar.

Berdasarkan hasil penelitian. Hasilnya terdiri dari 1) hasil analisis data angket dari ahli isi mendapatkan presentase 98,2% dengan kriteria sangat valid. 2) menurut ahli desain media pembelajaran mendapatkan nilai persentase 97,9% dengan kriteria sangat valid. 3) menurut guru IPA sebagai ahli pembelajaran diperoleh persentase 93,7% dan untuk uji coba kemenarikan produk berdasarkan penilaian dan tanggapan siswa diperoleh persentase sebesar 90%. 4) terdapat perbedaan hasil belajar siswa kelas V sesudah dan sebelum menggunakan bahan ajar interaktif berbasis web offline. Siswa yang memenuhi SKM diperoleh persentase 90% sedangkan siswa yang belum memenuhi SKM diperoleh persentase 10% dengan rata-rata hasil belajar siswa pada post-tes 84% dibandingkan nilai pre-tes 56%. Hal ini menunjukkan bahwa pengembangan bahan ajar interaktif berbasis web offline materi pesawat sederhana kelas 5 MIN Kanigoro Kediri valid, menarik dan efektif digunakan dalam pembelajaran.

Kata Kunci: pengembangan, bahan ajar interaktif, web offline

CHAPTER I

INTRODUCTION

A. Background of Study

Teaching materials in learning is one of the factors that influence the quality of education because teaching material is an important medium to stimulate student learning activities. Interaction with this media is actually a real form of learning action.¹

According to the Guidelines for Bibliographic Description of Interactive Multimedia in the General Guidelines for Development of Teaching Material, Interactive teaching material is a combination of two or more media (audio, text, graphics, images, and video) that by its users manipulated for controlling the commands and or natural behavior of a presentation.²

Interactive in the Big Indonesian Dictionary the word "interactive" means mutually action or interrelationships or reciprocally active. Thus, interactive teaching materials can be defined as teaching materials that are active. This means it is designed to do the reverse command to the user to conduct an activity. So, this teaching material is not like printed teaching materials or models (mockups) which were only passive and cannot do the control over its users. In this

¹ I Nyoman Sudana Degeng, *Ilmu Pengajaran Taksonomi Variabel*, (Jakarta: Depdikbud Dirjen Perguruan tinggi Proyek Pengembangan Lembaga Pendidikan tenaga kependidikan, 2007), page. 150.

² Andi Prastowo, *Panduan Kreatif Membuat Bahan Ajar Inovatif* (Yogyakarta: Diva Press, 2013), page. 329

interactive teaching material, users (students) involved two-way interaction with the teaching material being learned.³

Interactive teaching material is a component in a system of learning that is important helps students achieve the purpose of learning. This interactive teaching material to help students understand the concepts and the learning materials are delivered optimally. Interactive teaching materials developed with different variations will make learning activities more interesting. Interesting teaching materials are expected to increase student's interest in learning.

Science learning is a learning associated with how to seek out knowledge of the nature in systematic way to master the knowledge, facts, concepts, principles, discovery process. Thus, it and has a scientific attitude. Science education in elementary school is beneficial for students to learn about themselves and their surroundings. Science education emphasizes on direct experiences and practical activities to develop competencies so that the students are able to understand the natural environment scientifically. Science education is directed to "curiosity" and "act" so that can be help students to gain a deep understanding of the nature around.⁴

Natural science (IPA) is a collection of systematic theory and its application. In general it is, limited to natural phenomena, and developing through scientific methods such as observation and experimentation. Natural sciences demands

³ Asnawir dan Basyirudin Usman, *Media Pembelajaran* (Jakarta: ciputat press, 2002), page. 47

⁴ Trianto, *Model Pembelajaran Terpadu Teori dan Praktek* (Jakarta: Prestasi Pustaka, 2007), page.97

scientific attitudes such as open curiosity, honesty, and so on⁵. Considering the types and uses this, is one of the studies of Natural Sciences, then every student must know the types and uses of simple machines. Simple machine is one of the materials that are learned in subjects of Natural Sciences. All types of tools are used to facilitate human's work which is called machine. Simplicity in its use causes this tool known as a simple machine.

Based on the observations and interviews conducted by researcher with the science teachers in MIN Kanigoro Kediri, it is stated that there is a problem that occurred in the classroom learning, one of the problem in learning Natural Sciences (IPA). Problems that occurred in the learning of natural science is the lack of students interest in learning science. This is because the use of learning strategy is still conventionally less creative, and utilization of instructional media is insufficient, they have limited facilities in media board, student's worksheets and textbooks of schools. In addition, the students assume that the learning was boring.⁶ Similarly, the teaching materials use computer is rarely applied in learning process. Though the facilities owned by this school is sufficient enough, such as the availability of the computer laboratory, projector and LCD in the school. Based on the problems that have been described, one of the solutions that can be applied is the development of interactive teaching materials.

One way to produce interesting interactive teaching materials is applying the web-based teaching materials. Application of website-based teaching materials is

⁵ *Ibid*, page.136

⁶ Interview with Bu Sriyanti, science teacher class V in MIN Kanigoro Kediri on 5 April 2014

interesting because it is easier to access a variety of learning resources in the form of visual or audio-visual.

Learning with Web-based interactive teaching materials, according to Moore and Taylor, can stimulate the exchange of ideas, participation, the desire to try, and increase cooperation. Christine Steeples added that communication with the web-based interactive teaching materials in learning can improve flexibility in the information exchange activities.⁷

Web-based teaching materials are often called Internet-based teaching materials, teaching materials on line or e-learning. Web based teaching material is a teaching material that utilized media website that can be accessed through the internet.⁸ On the other side of internet advantages, it is still an expensive technology, especially in communication channel cost. Therefore it is useful to think to develop interactive teaching materials based on offline web.

Offline web program is also called HTML (Hyper Text Markup Language). This website is designed by offline, so that the result of products can be directly viewed without any connection to the internet.⁹ Offline web is an application or a facility which enables people to open web without having an online site. This application can be opened at any time without having to wear a modem or other

⁷ Moore, David M. & C. David Taylor, 1996, *Student Participation, Interaction, and Regulation in A Computer Mediated Communication Environment*, as quoted by I Made Candisa. 2004. "Pembelajaran Dengan Modul Berbasis Web". (Journal of Education and Teaching IKIP Singaraja No.3 Th.XXXVII). Page. 4

⁸ Rusman. 2012. *Belajar dan Pembelajaran Berbasis Komputer*. Bandung: Alfabeta.

⁹ Akhdiyati Syabril Ulum. *Pembuatan Website almultazam.org*, This Papers Presented in Creation Training of Website almultazam.org, Malang, Januari 2015

LAN network. In the offline web applications, the users can obtain data, and also can store the data.¹⁰

Development of offline web-based interactive teaching material will give several advantages which are stated as follows. 1) Interactive teaching materials is capable not only in presenting a text but also combining text with the pictures, graphics, video or audio resources¹¹ that can enrich the learning information that will be presented and also can build a good network in the topic of simple machine. 2) Animation, text, and pictures are helpful to create a long term memory of the student by creating such kind of good impression of the subject. Besides, the student will enjoy the learning process that will also influence the results of their study. 3) Furthermore, this kind of product will give student experience in learning offline web-based information 4) Finally, in this case, the utilization of computer in the world of education is very popular.¹²

The development of offline web-based interactive teaching materials is necessary to maximize the learning process of the students and the utilization of school facilities, so that the students will enjoy the learning process. The development of offline web-based interactive teaching materials in the topic of simple machine is one of media used in proving the theories of science associated with the natural environment. This theory aims to encourage students to be able to develop their potential. This is because the students will not get bored and will be more motivated in activities learning. The use of interactive teaching materials

¹⁰ Bahrudin, *Pengertian Website*. (<http://pilihbaik.blogspot.com/pengertian-website-2-jenis-web-unsur.html>, diakses pada 19 februari 2015 pukul 16.06)

¹¹ Andi Prastowo, *Panduan Kreatif membuat Bahan Ajar inovatif* (Yogyakarta: Diva Press, 2013), page. 329

¹² I Made Candisa, *op.cit.*, page. 5

based on offline web allows students to learn independently without any guidance. Besides, students can learn in flexible time.

Based on the above explanation, researcher is interested in conducting research and development by the title **“The Development of Interactive Teaching Materials Based on Offline Web in the Topic of Simple Machine for Fifth Grade Students in MIN Kanigoro Kediri”**.

B. Problem of The Study

Based on the background of the study above, then the problem can be formulated as follows:

1. How is the attractiveness of interactive teaching material based on offline web?
2. How is the effectiveness of interactive teaching materials based on offline web in improving students' learning outcome in the topic of simple machine for fifth grade students in MIN Kanigoro Kediri?

C. Objectives of The Development

Based on the background of the study, the research objectives are:

1. Knowing the attractiveness of the interactive teaching materials based on offline web.
2. Knowing the effectiveness of interactive teaching materials based on offline web for improving learning outcomes students for fifth grade students in the topic of simple machine in Min Kanigoro Kediri.

D. Specifications Projection of Developed Product

The development product resulted is the interactive teaching materials in the topic of simple machine for class V SD/MI, detailed specifications are stated as follows:

1. Physical manifestation of the products produced in this development is in the form of offline website.
2. The developed material is a simple machine material class V SD/MI.
3. The design of this product uses variations of layout, color choice, animation picture, and font types according to the characteristics of elementary school students, so that students will be interested in learning about simple machine material.
4. Offline web in the topic of simple machine material is produced by combining the text, images, animations and video.

E. The Importance of Research and Development

The presence of technology is no longer a luxury. The price now can be reached by the middle class, so that making it easier for everyone to be able to have and enjoy it. That means schools as educational institutions must be able to have the technology and make it as active learning, interactive, creative, effective, and fun.

Development of interactive teaching materials based on offline web is expected to be an alternative source of learning for students of class V in elementary school. From the description above it can be concluded that the

importance of research and development of interactive teaching materials in the topic of simple machine include:

1. Help teachers in supporting the students' learning outcomes easily.
2. Stimulate students to understand more about the process of ICT-based learning.
3. Help students to understand more about the material, by using media technology during the learning process.
4. Motivate students in learning because this teaching material is more interesting and interactive
5. Create an education web to gain the student's interesting in accessing internet.

F. Assumptions and Limitations of Development

1. Assumptions

Some of the assumptions underlying the study are as follows:

- a. The main purpose of the science learning is to develop knowledge and understanding of the concepts of natural science that is useful and can be applied in everyday life.
- b. The use of this web offline is expected to help students to be more active in study, providing a learning experience that cannot be separated from the context of the real world and help students to think more critically.

- c. Unavailability of interactive teaching materials based on offline web in the topic of simple machine for fifth grade students' in elementary school.
- d. Teachers of science get difficulty in developing the interactive teaching materials based on offline web.
- e. Interactive teaching materials based on offline web can improve the effectiveness of the learning process and improve learning outcomes of students'.

2. Limitations of Development

a. Subject matter

Development of interactive teaching materials based on offline web is only limited in science subjects 2nd semester class V, which consists of the following subjects:

- 1) Definition of a simple machine
- 2) The types of simple machine is:
 - a) Lever
 - b) Inclined machine
 - c) Tackle
 - d) Wheel

b. Subjects of the study

Subjects were students of class V in MIN Kanigoro Kediri.

c. Place of research

Madrasah Ibtidaiyah Negeri (MIN) Kanigoro Kediri.

- d. Assessment on the validity of interactive teaching materials based on offline web is done by some expert validator, the contents experts validator, media experts validator, and sciences teacher in MIN Kanigoro Kediri as learning experts.
- e. Assessment on the validity of interactive teaching materials based on offline web is done with the field trials in Class V in MIN Kanigoro Kediri.

G. Operational Definitions

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

1. Development

Development is the process of translating or describing the design specifications into physical form.¹³ In this study, the development is a systematic process of developing interactive teaching materials based on offline web in the topic of simple machine for fifth grade students' of elementary school.

2. Teaching materials

This is a set of teaching materials arranged in a systematic matter whether written or not so as to create the environment or atmosphere that allows students to learn. Teaching materials aimed at research and

¹³ Punaji Setyosari, *Metode Penelitian Pendidikan dan Pengembangan*. (Jakarta: Kencana, 2010), page. 197.

development is in the form of media used by teachers and students as a tool in the process of science learning class V Elementary School.¹⁴

3. Interactive teaching materials

Interactive teaching material is the teaching material that combines multiple learning media (audio, video, text, or graphics) that are interactive for a command or control the natural behavior of a presentation.¹⁵

4. Offline Web

Offline web program is also called HTML (Hyper Text Markup Language). This website is designed by offline, so that the result of products can be directly viewed without any connection to the internet.¹⁶ Offline web is an application or a facility that ease people to open web without having an online site. This application can be opened at any time without having to wear a modem or other LAN network. In offline web applications the users can obtain data, and also can store the data.¹⁷

4. Learning outcomes

Learning outcomes is the result obtained in the form of impressions which led to changes within the individual as a result of learning activities¹⁸

¹⁴ Andi Prastowo, *Panduan Kreatif Membuat Bahan Ajar Inovatif* (Jogjakarta: Diva Press, 2011), page. 16.

¹⁵ *Ibid.*, page 330

¹⁶ Akhdiyati Syabril Ulum. *Loc.cit*

¹⁷ Bahrudin, *Loc.cit*

¹⁸ Syaiful Bahri Djamarah, *Prestasi belajar dan kompetensi guru* (Surabaya: Usaha Nasional. 2006), page. 23

H. Writing Organization

The writing organization of this thesis is formed of six chapters, namely chapters I, II, III, IV, V and up to chapter VI, each chapter has several sub-chapter discussion, bibliography and appendices.

Chapter I contain an introduction that describes: (a) background of study (b) problem of the study (c) objectives of the development (d) specifications projection of developed product (e) the importance of research and development (f) assumptions and limitations of development (g) operational definitions (h) writing organization.

Chapter II contains the literature review that discusses, (a) development of teaching material, (b) interactive teaching materials, (c) offline website, (d) students' learning outcomes, (e) overview of simple machine material class V (f) previous study.

Chapter III contains the research method that contains, (a) development method, (b) model of development, (c) procedure of development, (d) product trials, (e) data type, (f) the instruments of data collection, and (g) data analysis.

Chapter IV contains the results of development of interactive teaching materials based on offline web that describe, (a) the results of product development, (b) presentation of data validation.

Chapter V contains a discussion that describes (a) the analysis of product development of interactive teaching materials based on offline web, (b) analysis of the attractiveness of the interactive teaching materials based on offline web, (c)

analysis of the effectiveness of interactive teaching materials based on offline web for improving students' learning outcomes.

Chapter VI namely closing; include (a) conclusion of development (b) Suggestion.

Bibliography is a list that includes the book title, author, and publisher, and so on, that are arranged alphabetically. Bibliography is used to reference the theory or for repeated checking of the paper concerned.

On the latter, namely the attachment that contains the needed documents by writers or readers in support of the development process of interactive learning materials.



CHAPTER II

REVIEW OF THE RELATED LITERATURE

A. Previous Study

Related to this study, the researcher tried to find previous studies conducted with related topic. The first study was a thesis in Elementary School Teacher Education department of UIN Malang, written by Prima Aryshanty entitled “Development of Textbook based on Offline Website (HTML) to Improve Student Achievement for Class V on The Subject of Light Properties Light in Sukoharjo 1 Malang”.²¹ This study stated that, there are significant differences in the students achievement in science subject of fifth grade after using offline website-based science textbook and before using offline website-based science textbook at SDN 1 Malang Sukoharjo the post-test value is higher than the pre-test.

The second study found was a thesis in Elementary School Teacher Education department of UIN Malang entitled “Development of Science Learning Evaluation Based on Web Offline (On Living Things and The Processes of Life Subject) Based on SKL 2013 in MI IMAMI Kepanjen Malang”.²² This study stated that, the development of information technology was growing rapidly, especially in the areas of education, so this research produced learning evaluation

²¹ Prima Aryshanty, “*Pengembangan Buku Ajar Sains Berbasis Website Offline (HTML) untuk Meningkatkan Prestasi Belajar Siswa Kelas V pada Materi Sifat-Sifat Cahaya di SD Negeri Sukoharjo 1 Malang*”. Skripsi. Jurusan Pendidikan Guru Madrasah Ibtidaiyah. Fakultas Tarbiyah. Universitas Islam Negeri Maulana Malik Ibrahim Malang, 2013.

²²Nur Ainul Badi’ah, 2014. “*Pengembangan Evaluasi Belajar Ilmu Pengetahuan Alam (Pada Pokok Bahasan Makhluk Hidup dan Proses Kehidupan) Berdasarkan SKL 2013 Berbasis Web Offline di MI IMAMI Kepanjen Malang*.” Skripsi. Jurusan Pendidikan Guru Madrasah Ibtidaiyah. Fakultas Ilmu Tarbiyah dan Keguruan. Universitas Islam Negeri Maulana Malik Ibrahim Malang.

media based on offline web in science subjects based on competency standards in 2013. This indicates that the products developed by Badi'ah, have a high qualification the level of validity and attractiveness, so that the evaluation products developed feasible used in supporting teaching and learning activities.

The third study found was I Made Candiasa's journal entitled "Web-Based Learning Module".²³ This research is trying to develop educational software, such as web based module by using hypertext facility of Hypertext Markup Language (HTML). This kind of module will give several advantages. First, this module will give experience in looking for the information at internet environment. Furthermore, this kind of module will give experience to design hypertext based information. Thus, this kind of module will give more flexible instructional process, such as anonym, private, context free, less influenced by social conventions, and can be adapted to the individual student capability.

The fourth study found was a journal by Nozi Opra Agustin and friends entitled "Physics Learning Material Based on Website in Concept of Thermodynamics for Second Grade Students of Senior High School."²⁴ This study stated that, the purpose of this research is to produce good description, validity, practicality, and effectivity of physics learning material based on Website in concept of Thermodynamics. The object of this research is physics learning material based on website in concept of Thermodynamics and second grade

²³ I Made Candiasa, "*Pembelajaran Dengan Modul Berbasis Web*" Jurnal Pendidikan dan Pengajaran IKIP Singaraja No.3 Th.XXXVII Jurusan Pendidikan Matematika Fakultas Pendidikan MIPA, 2004

²⁴ Nozi Opra Agustin, Asrizal, dan Zulhendri Kamus, "*Pembuatan Bahan Ajar Fisika berbasis Web Pada Konsep Termodinamika Untuk Pembelajaran Menurut Standar Proses Siswa Kelas XI SMA*" Jurusan Fisika Universitas Negeri Padang. Jurnal PILLAR OF PHYSICS EDUCATION, Vol. 2. Oktober 2013, 09 - 16

students of Senior High School. The instruments used to collect the data in this research are: validity sheet, practicality sheet, and learning outcome test sheet. There are four results of this research based on the data analysis. First, Physics learning materials based on website has high validity score that is 83.54. Second, the design of Physics learning material based on website consist of introduction, competence, objectives, contents, competence test, evaluation, reference, chat and forum. Third, the value of practicality of Physics learning material based on website according to teacher and students each other 89,51 and 75,89. Finally, Physics learning material based on website in concept of Thermodynamics is effective to increase learning outcomes of students.

Those previous studies above show that the existence of the thesis and journal of research about development of web-based products, both offline and online is important to improve student learning outcomes. As a result, it can support and provide references for researchers to develop interactive teaching material products, but as far as the eye can see, based on the previous studies that have been tracked by researchers, no study has developed interactive teaching materials based on offline web in the topic of simple machine. Besides that, the differences of this study with the previous studies are the object and the teaching materials in the study.

There are several studies on this concern. The detailed explanation is described as follows:

Table 2.1 Similarities, Differences, and Research Originality

No	The researchers name, year and title research	Similarity	Differences	Research Originality
1	Development of Textbook based on offline website to Improve Student Achievement for Class V on the subject of properties Light in Sukoharjo 1 Malang (By: Prima Aryshanty, 2013)	The Methods R & D In Science subject For Class V Based on offline website (HTML)	The resulting product is the subject of properties Light	In facing progress information technology for education especially computer technology this research will try to develop interactive teaching materials based on offline web to provide facilities for students in learning, to
2.	The Development of Science Learning Evaluation Based on Web Offline (On Living Things and the Processes of Life Subject) Based on SKL 2013 in MI IMAMI Kepanjen Malang (By: Nur Ainul Badi'ah, 2014)	The Methods R & D In Science subject Based on offline website (HTML)	Development of Learning media and the resulting product is Living Things and the Processes of Life Subject	increase learning outcomes in science learning. The product material is simple machine for class V elementary school. This product is capable not only in presenting a text but also
3.	Web-Based Learning Module (By: I Made Candisa, 2004)	The Methods R&D for	Development of modules based on online web	combining text with the pictures, graphics, video or audio that can

		increasing learning achievement		enrich the learning information that will be presented and also
4.	Physics learning material based on Website in concept of Thermodynamics for second grade students of Senior High School (By: Nozi Opra Agustin dkk, 2013)	The Methods R& D Development of teaching materials	Based on online web in the subjects Physics and the resulting product is the material on the concept of Thermodynamics	build a good network in the topic simple machine. This will create an interactive, inspiring, fun learning, and can improve students' learning outcomes in science learning.

B. Development of Teaching Material

This section explained about understanding the development of teaching materials, the function of teaching materials, the purpose of teaching materials, the benefits of teaching materials, and forms of teaching materials.

1. Understanding the Development of Teaching Materials

Teaching materials is a set of materials systematically and attractively arranged used as the primary source of teaching material for students or teachers to teach the material to students. Along with that Abdul Majid stated that the teaching materials are all kinds of materials, information, text and tools are used

to help teachers/instructors in implementing teaching and learning activities. The material can be written or unwritten material.²⁵

Based on the opinions of the experts, can be concluded that the material is a set of teaching materials systematically arranged to create the environment/ atmosphere that allows students to learn well.

As for the development of teaching materials is a systematic approach in designing, evaluating, utilizing connectedness facts, materials, principles, or theories contained in the subject or the subject material with reference to the learning objectives.²⁶

2. The Functions of Teaching Materials

This section explained about the function of teaching materials according to the participants who use teaching materials and the function of teaching materials according to the learning strategies used.

- a. The function of teaching materials according to the participants who use teaching materials.²⁷

Based on participants who use the teaching materials, the function of teaching materials can be divided into two kinds, function for educators and function for students.

- 1) The function of teaching materials for educators, among others:
 - (a) Saves time educators in teaching

²⁵ Abdul Majid, *Perencanaan Pembelajaran* (Bandung: PT. Remaja Rosda Karya, 2007), page. 173-174

²⁶ Nova Kristian, “*Pengembangan Bahan Ajar Membaca Dongeng Berbentuk Komik untuk Siswa kelas III SD*”, *Skripsi*, (Malang: Program Studi Pendidikan Bahasa dan Sastra Indonesia Universitas Negeri Malang, 2011), page. 22-23.

²⁷ Andi Prastowo, *op.cit*, page 24.

- (b) Change the role of a teacher from educator becomes a facilitator
 - (c) Enhance the learning process becomes more effective and interactive.
 - (d) As a guide for educators who will direct all activities in the learning process and a substance of competencies should be taught to students.
 - (e) As well a tool of achievement evaluation of or mastery of learning outcomes.
- 2) The function of teaching materials for learners, among others:
- (a) Learners can learn without any educator or other learner's friend.
 - (b) Learners can learn anytime and anywhere he wants.
 - (c) Learners can learn in the order of their own choosing.
 - (d) Assist potential students to be learners/students independently.
 - (e) And as a guide for students who will direct all activities in the learning process and the substance of competencies that should be learned or mastered.
- b. The function of teaching materials according to the learning strategies used.²⁸

Based on the learning strategy used, the function of teaching materials can be divided into three kinds, functions in classical learning, function in individual learning, and functions in group learning

²⁸ *Ibid.*, page. 25-26.

- 1) The function of teaching materials in classical learning, among others:
 - (a) As the only source of information as well as supervisory and control the learning process (in this case, passive learners and learning pace educators in teaching).
 - (b) As a support material organized learning process.
- 2) The function of teaching materials in individual learning, among others:
 - (a) As the main media in the learning process.
 - (b) As a tools that used to develop and oversee the process of learners in obtaining information
 - (c) As a support to individual learning other media.
- 3) The function of teaching materials in groups learning, among others:²⁹
 - (a) As a material is integrated with the process of group learning, by providing background information on the material, information about the role of the people involved in the study group, as well as instructions on the learning process of their own group.
 - (b) As the main supporting materials learning materials, and if they are designed in such a way, it can increase students' motivation.

²⁹ Tian Belawati. *Materi Pokok Pengembangan Buku Ajar edisi ke satu*. Jakarta: Universitas Terbuka. 2003 page. 13-15

3. The Purpose of Teaching Materials

For the purpose of making teaching materials, there are four main things that are enclosing them include:³⁰

- a. Helped students in learning something.
- b. Providing various types of teaching materials choice, thus preventing boredom in students.
- c. Facilitates students in performing learning.
- d. Learning activities become more attractive.

4. The Benefits of Teaching Material

The benefits or usefulness of making teaching materials can be divided into two kinds, usability for the educators and usability for learners.³¹

- a. Usability for educators

At least, there are three purposes of making teaching materials for educators, including the following:

- 1) Educators will have the teaching materials that can assist in the implementation of learning activities.
- 2) Teaching materials can be submitted as assessed work to increase the number of educator's credit for purposes of promotion.
- 3) Increase income for educators if their work were published.

³⁰ *Ibid.*,page.24-26

³¹ *Ibid.*,page.27-28

b. Usability for learners

If the available teaching materials are varied, innovative, and attractive, then at least three uses of teaching materials for students, including the following:

- 1) Learning activities become more attractive
- 2) Learners get more opportunity to learn independently with the guidance of educators.
- 3) Learners get the ease in studying any competencies that must be mastered.

5. The Components of Teaching Materials

Teaching material is a composition of materials collected and derived from a variety of learning resources that are systematically made. The components in the teaching materials include:

a. Instructions learning

The first component includes guidance for educators and students. It described about how educators should teach the material to learners and about how students should learn the material contained in such materials.

b. Competence that will be achieved

The purpose of this second component is the competence to be achieved by students. As educators, we must clarify and specify the teaching materials that we arrange with the standards of competence, basic competence, as well as indicators of achievement of learning

outcomes that should be mastered learners. Thus, it is clear the goal to be achieved by learners.

c. Supporting information

Supporting information is a variety of additional information that can complete teaching materials, so the students will be easier to master the knowledge that they will get. In addition, the learners' obtained knowledge will be more comprehensive.

d. The exercises

The fourth component is a structure assignment given to the students to practice their skills after learning teaching materials. Thus, the skills they learn will be more refined and thoroughly overwhelmed.

e. Work instructions or worksheets

Work instructions or worksheet is the one sheet or several sheets of paper that containing a number of procedural steps for the implementation of activities or specific activities that must be carried out by learners with regard to practices and so forth.

f. This last component is one part of the assessment process. Therefore, the evaluation component indicated there are a number of questions for learners to measure how far they succeeded in mastering the competencies mastered after attending the learning process. Thus we can determine the effectiveness of the teaching materials that we make and the process of learning that we conduct in general. If still many

students who have not mastered, then needed to repairs and improvements in learning activities.³²

6. The Form of Teaching Material

According to its shape, materials can be divided into four kinds, namely printed materials, hearing teaching materials, teaching materials of view heard, and interactive teaching materials.³³

- a. Printed materials, the amount of material prepared in the paper, which can serve for learning purposes or delivery of information. For example, handouts, books, student worksheets modules, brochures, leaflets, wall chart, photos or pictures, and models or mockups.
- b. Audio teaching material or audio programs, all systems that use radio signals directly, which can be played or heard by a person or group of people. For example, tapes, radio, phonograph records, compact discs and audio.
- c. Teaching materials of view heard (audio-visual), which is everything that allows the audio signal can be combined with moving images sequentially. For example, video compact discs and movies.
- d. Interactive teaching materials, which is a combination of two or more media (audio, text, graphics, images, and video) that by its user manipulated controlling the command and or the natural behavior of a presentation. For example, compack disk interactive.

³² *Ibid.*,page. 28-30

³³ *Ibid.*,page. 41-42

C. Interactive Teaching Materials

This section explained about the definition of interactive teaching materials, interactive teaching materials for learning, and the techniques of interactive teaching materials preparation.

1. The Definition of Interactive Teaching Materials

Interactive is something related to the interaction or relationship. Interactive in the Big Indonesian Dictionary the word "interactive" means mutually action or interrelationships or reciprocally active. Thus, interactive teaching materials can be defined as teaching materials that are active. This means it is designed to do the reverse command to the user to conduct an activity. So, this teaching material is not like printed teaching materials or models (mockups) which were only passive and cannot do the control over its users. In this interactive teaching material, users (students) involved two-way interaction with the teaching material being learned.³⁴

Meanwhile, according to the Guidelines for Bibliographic Description of Interactive Multimedia in the General Guidelines for Development of Teaching Material, Interactive teaching material is a combination of two or more media (audio, text, graphics, images, and video) that by its users manipulated for controlling the commands and or natural behavior of a presentation.³⁵

Preparing interactive teaching material, needs adequate knowledge and skills, especially in operating equipment, such as computer, camera, video, and

³⁴ Asnawir dan Basyirudin Usman, *loc.cit.*

³⁵ Andi Prastowo, *loc.cit.*

photographs. Interactive teaching materials are usually presented in the form of a compact disc.

Based on the description above we can understand that the interactive teaching materials are teaching materials that combine some learning media (audio, video, text, or graphics) that are interactive for a command or control the natural behavior of a presentation. Thus, there is a two-way relationship between the teaching materials and users. Thus, if the learning process is conducted by using those teaching materials, students can be encouraged to be active.³⁶

2. Interactive Teaching Materials For Learning

Lately, the use of computers for learning programs is expected to increase. The usage of computers for learning program can be conducted by the students directly or connected with another computer. According to Anderson, progress computer ability quickly interact with individual, store and process large amounts of information, and join with other media to display a large series of audiovisual stimulation, making the computer as the dominant media for learning.³⁷

3. The Techniques of Interactive Teaching Materials Preparation

According to the Department of Education, interactive teaching materials preparation techniques are stated as follow:³⁸

- a. The preparation of interactive teaching materials, needs adequate knowledge and skills, especially in operating equipment, such as computers, video cameras, and photographic camera.

³⁶ *Ibid.*,page. 329

³⁷ *Ibid.*,page. 331

³⁸ *Ibid.*,page. 76

- b. Interactive teaching materials are usually served in the form a compact disk.
- c. Lowering the title of basic competencies or subject matter in accordance with the size of the material.
- d. Writing learning instructions.
- e. Explaining the supporting information in a clear, solid, and interesting in the form of written or picture or animation.
- f. Writing the duties in an interactive program.
- g. Conducting an assessment from assigned duties, in which, in the end of learning it can be seen by educators through computer.
- h. Using various learning resources that can enrich the material, for example books, magazines, Internet, and journals of research results as an ingredient in making the interactive teaching materials program.

D. Offline Website

In this section explained about understanding website, website history, and website design.

1. Definition of Website

According Yuhefizar, websites or world wide web (www) is a collection of web pages containing information. According to Jovan, website is a media conveys information on the internet.³⁹

By clicking on a hyperlink, we can move from one document to another document. Through web, we can access information which is not only in the form

³⁹ Akhdiyati Syabril Ulum. *Pembuatan Website almultazam.org*, This Papers Presented in Creation Training of Website almultazam.org, Malang, Oktober 2014

of the text but also images, audio, video, sounds, programs, films and animations. This document will be integrated to a URL.

2. Website History

Web history began in 1980, when an Englishman named Tim Berners-Lee working at CERN (the European Atomic Energy Agency) made ENQUIRE, a personal database and software models. Berners-Lee also introduced the concept of hypertext, in which each pages of new information ENQUIRE will be directly connected to the existing page.⁴⁰

In 1984, Tim Berners-Lee returned to CERN and suggested the idea that all physicists in the world needs to share data. However, there is no hardware and software that allows it happened. Tim's boss, Mike Sendall, asked Tim to implement his ideas in the NeXT Workstation Machine that had just received by CERN. At that time, there were a few names that were prepared for Berners-Lee's ideas, including the Information Mesh, The Information Mine or Mine of Information, and World Wide Web is finally selected.

Then in December 1990, Tim Berners-Lee succeeded to make all tools that were needed to make web can work, first is web browser, WorldWideWeb (which is also a Web editor), the first Web server (info.cern.ch), and the first Web page that describes the project. The browser developed can access the USENET discussion groups and also access the FTP files. However, this is still in the development stage and can be used with access on Local Area Network.

⁴⁰ Ahmad Ridwan, *Pengertian WWW menurut Ahli dan Buku* (<http://www.mediablogger.com/2013/06/pengertian-www-menurut-ahli-dan-buku.html>, accessed 13 September 2014 jam 08.30 WIB)

On August 6, 1991, Tim Berners-Lee was writing a brief resume of the project World Wide Web at discussion group of alt.hypertext. Then this date was marked as the date of occurrence of the first website on the Internet.

3. Website Design

Designing website can be in the form a variety of programs, such as: HTML, Java Programming Language, JavaScript Programming Language, Programming Languages DHTML, and FrontPage 98/2000. Websites design in this research is using the HTML program (Hyper Text MarkUp Language). This is because basis of all Internet Programming Language is HTML.

HTML used to build web pages. Although many people called it as a programming language, HTML is actually not a programming language, because the result can directly be seen without need connection to the internet.

E. Students' Learning Outcomes

This section explained the definition of student learning outcomes, and the evaluation of learning outcomes.

1. The Definition of Students' Learning Outcomes

Student learning outcomes is something that is obtained by the student after the learning process that can be measured in the evaluation process. Hamalik concluded that “the results of learning are the patterns of actions, values, concepts, attitudes, appreciation, abilities, and skills.”⁴¹ The results of the study indicated by scores which are obtained from the test results of students' learning and observing students' activities held after the completion of a learning program

⁴¹ Oemar Hamalik. *Proses Belajar Mengajar*. (Bandung: PT Remaja Rosdakarya, 2008), page. 250-251)

followed. This is in accordance with the opinion of Arikunto that is “to achieve the learning outcomes in the form of learning achievement was the result of teaching and learning activities.”⁴²

While the evaluation process to determine the value of student learning through assessment, measurement and comparisons the students learning outcomes with the learning objectives. The main purpose of an evaluation is not only to know the results of student learning but also to determine the level of success achieved by students after participating in a learning activity, where the success rate is marked with a scale value of letters or words and also symbols. If the main purpose of evaluating learning outcomes has been realized, then the result can be functioned and intended for various purposes.⁴³

Learning outcomes are functioned and intended for the following purposes;

- a. For diagnosis and development, the use of learning outcomes becomes a tool to diagnose weaknesses and advantages of the students with its causes. Based on this diagnosis, teachers conduct the development of learning activities to improve students' learning outcomes.
- b. For selection, learning outcomes obtained by the students used as a basis for determining students to lead their path in further education.
- c. Achieving learning outcomes will be important to determine whether the students could be the next grade, whether the result of learning

⁴² Suharsimi Arikunto. *Dasar-dasar evaluasi pendidikan (edisi revisi)*. (Jakarta: PT Bumi Aksara, 2009), page. 4

⁴³ Dimiyati dan Mudjiono, *Belajar dan Pembelajaran* (Jakarta: Rineka Cipta, 2006), page. 200

under Complete Minimal Criteria/KKM (*Kriteria Ketuntasan Minimal*) or above the standard KKM.

- d. For placement, students' learning outcomes are used to determine the grade students according to their ability and potential. This is done to make students able to develop their ability in more optimal way.⁴⁴

From the previous opinions it can be concluded that learning outcome is a conscious continuous, as a result of the interaction of teaching and learning. Individual learning outcomes in the form of knowledge can be measured from the daily tests, homework assignments, and oral tests conducted during the learning process.

Learning outcomes on student progress which is concerning knowledge or skills learned in school are declared after the assessment process. The assessment of students' learning outcomes aims to determine the level of student progress, give student learning motivation, help the growth of student learning and provide services of guidance learning. Assessment of students' learning outcomes includes the results sheets of group activities and evaluation of test results.

The factors that cause differences in learning outcomes include internal factors and external factors. Internal factors include intelligence, motivation, social, talent, interests, economic, and physical health. The external factors include curriculum, school discipline, learning facilities, student grouping and social conditions of the school, including the school system, social status, and the interaction of teachers and students.

⁴⁴ Ibid., page. 201

b. The Evaluation of Learning Outcomes

To measure the students' learning outcomes, it requires assessment or evaluation process. The evaluation means assessment of the success rate of students achieving the goals that has been set in the program. Evaluation according to Tardif is, the process of assessment to describe the achievements of the students according to established criteria. In addition to the evaluation and assessment, there are also other words that synonymic and relatively better known in our education world namely test, examination, and remedial.⁴⁵

The purposes of an evaluation in the learning process, are:

1. Knowing the level of progress that has been achieved by the students in a certain period of the learning process. This means, by having evaluation the teacher can determine the progress changes of the student's behavior as the result of the teaching and learning process which involve the teacher as the tutor in their students' learning activity.
2. Knowing the position of student in the group class. Thus, the evaluation results can serve as an instrument for the teacher to determine whether the students are fast, medium, or slow level in terms of quality in learning abilities.
3. Knowing the level effort of the student in learning. This means that the evaluation, the teacher will be able to know the description of the level of student's effort.

⁴⁵ Muhibbin Syah, *Psikologi Belajar* (Jakarta: Raja Grafindo Persada, 2004), page. 195

4. Knowing how far students have used their cognitive capacity for learning purposes. Thus, the evaluation results can be used by teacher as a description of the student intelligence.
5. Planning continuous improvement. Therefore, there are a lot of variations, from the simplest to the most complex. Such as the Pretest and Posttest, Prerequisites Evaluation, Diagnostic Evaluation, Formative Evaluation, Summative Evaluative and School Final Examination/*Ujian Akhir Sekolah (UAN)*.⁴⁶

F. Overview of Simple Machine Material Class V

Written in the appropriate level curriculum of education, science learning in elementary school Class V includes study materials that contain aspects of “organism and living process”, “things and their characteristics”, “energy and its transformation” and “earth and universe” which are divided into several competence standards and basic competency presented in 2 semesters.⁴⁷

Science learning for fifth grade in the second semester includes several standard of competency which is stated as follows. (a) understanding the relationship between force, motion, energy, and their function (b) applying the properties of light through making a model (c) understanding the changing that occur in nature and relation to the use of natural resources.

The scope of competence standard in science learning for the fifth grade, and second semester of elementary school is stated in the 2006 curriculum and

⁴⁶ Ibid., page. 199

⁴⁷ Naskah Kurikulum Mata Pelajaran Satuan Pendidikan SD/MI, page. 496

this research used one of them as the material on the basis of competence that is “Explains the simple machine that can make the job easier and faster”

Simple machine is a tool which has function to help and make easy the work. Existences of simple machine do not reduce the work but only to make it easier or more venial. The purpose of using simple machine, are: 1) to multiply the force or our capability, 2) to change the force direction which is done 3) to through farther distance or reared the velocity.

The principle of simple machine can be explained through the analysis of mathematical physics to determine how large force must be spent doing the work. How difficult it is to cleave a large and hard wood without using an ax? How difficult it is to pull out nails embedded deep enough on a hard wood without using a lever. How weighs mechanic remove the engine from the engine room without using the double pulley. How hard it is to picks up a drum full of oil without the use of a thick board that is tilted (inclined plane), rolling on it and push it.

Axes, lever, double pulley, and inclined plane are used to facilitate or ease the work with the basic physical concept that is still simple so called simple machine. Basic of simple machine was used as the foundation for the creation of more complex tools such as lifting heavy loads (forklifts), cars, bicycle, and airplanes. Such a machine is called the complex machine. There are two kinds of machine to facilitate the work of man, the complex machine and simple machine. For a discussion on this, offline web product describes the types of simple machine is often used in daily life, such as:

1. Lever,
2. Inclined plane,
3. Pulleys and
4. Wheel pivots.⁴⁸



⁴⁸<http://www.pustakafisika.com/2013/04/belajar-jenis-jenis-pesawat-sederhana.html>.
3/03/2015

CHAPTER III

RESEARCH METHODS

A. Development Method

The method used this research is Research and Development method. Research and Development is a research method that is used to produce a particular product and to verify the effectiveness, efficiency, and attractiveness of the product.⁴⁴

To produce certain products, research and analysis are needed to examine the effectiveness of the products. Thus, it can give advantages in the society later. However, it is necessary to examine the effectiveness of research and development of products. Furthermore, this research is longitudinal or gradual.⁴⁵

The development research objective is to assess the changes that occur within a certain time. In addition, this research and development is aimed at improving the quality of education, both in the terms of process and education outcomes.⁴⁶ This research is conducted to develop products in the form of interactive teaching materials based on offline web, in order to make students understand easily the material and not get bored in the following study.

This product is expected to utilize computers that are still rarely used in the learning process and to be a right media as intermediaries in delivering course material. Therefore, the research proposes the "product-oriented development" in

⁴⁴Sugiyono, *Metode Penelitian Kuantitatif, Kualitatif, dan R&D* (Bandung: Alfabeta, cv. 2011), page 297

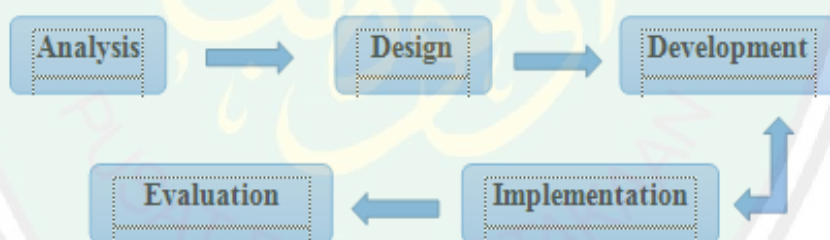
⁴⁵*Ibid.*, 297

⁴⁶ Punaji Setyosari, *Metode Penelitian Pengembangan*. (Jakarta: Kencana. 2010). page. 196

the form of interactive teaching materials based on offline web in the topic simple machine for the 5th grade students in MIN Kanigoro Kediri.

B. Development Model

Development model used in this research is the ADDIE model developed by Reiser and Mollenda. This development model is chosen because it has several advantages: (1) more appropriately used as a basis for developing learning systems, (2) more complete and systematic description, (3) the development involves the assessment of the experts, so that the revised based on the expert advice is done before the trial. ADDIE development model consists of five main steps, namely: (1) analysis, (2) design, (3) development, (4) implementation, and (5) evaluation.⁴⁷



Picture 3.1 ADDIE Development Model

C. Development Procedure

The steps in the development of interactive teaching materials based on offline web are as follows:

1. Needs Analysis

This section explained about the need analysis from students and teacher.

⁴⁷ Dewi Salma Prawiradiraga, *Prinsip Desain Pembelajaran*, (Jakarta: kencana, 2008), page: 21

1) Students

In science, learning material of simple machine, resource that can show the materials are not just text or image but students need interactive teaching materials because it can combine two or more media (audio, text, images and video).

Therefore, it needs interactive teaching materials based on offline web, which can display text, video and pictures on simple machine materials so that students get explanation from the content of the material which is fun and easy to understand.

2) Teachers

Teachers need teaching material that can help students get the examples directly from the material of simple machine. The use of image animation, videos, and practicum are the solutions to fulfill the needs of teachers. Because of the presence of animated images, videos and practicum, students can clearly understand about the material of simple machine.

2. Design

The following are the stages of design:

- a. Determining and collecting data related to the implementation of the development of interactive teaching materials, includes specific subject matter and purpose of learning. The subject matter is obtained from the learners who mentions the subject theme through

guidebooks. While the specific learning purpose is obtained from the development of standards competency contained in the syllabus.

- b. Drafting interactive teaching materials, this stage will be the development of product, as a collection of various kinds of books in class V to be the guidance in the process of development.

3. Development

Creating interactive teaching materials based on offline web according to the design draft that has been made, need several steps which are stated as follows:

- a. Development of Materials

In relation to the format of the present materials in interactive teaching materials based on offline web, there are concise matter about subject matter, summaries, practicum and also exercises that can be used as a learning evaluation of the students both at home and school. This interactive teaching material also presents a variety of articles such as *Cakrawala IPA* “Do You Know” contains science materials for students. The material contained in this interactive teaching material is presented by the editorial, layout, and attractive coloring. Designed using a font and color selection is clear and suitable for students of elementary school. Designing offline web using Adobe InDesign CS3 software.

b. Packaging Products

After the interactive teaching material production process is completed, it will be stored in the form of a CD which will be designed to look attractive.

4. Implementation

Implementation stage is the implementation activities in using interactive teaching materials that has been developed in accordance with the planned design. The implementation is conducted at the fifth grade as the subject of development product trials and conducted in a computer lab in order to get an easy access and easy product test.

The purpose of this implementation is the concrete action of the development products that makes students become more interested in learning in order to improve students' learning outcomes.

The implementation should also consider things such as conditioning of student and laboratory. Computers that can be accessed is used to test the product, and for conditioning the students is by randomly selecting the students as test subjects because of time, place, and inadequate conditions of the computer so that not all students can participate using the interactive teaching material that has been developed.

5. Evaluation

The evaluation is conducted to measure the level of validity and attractiveness of the offline product to students of elementary school. At this stage, there is also the improvement activities based on the data analysis or

information from some experts and respondents. If there are things that need to be fixed, then the revisions will be done as an improvement.

This evaluation stage is used to measure the level of student's understanding about the material that has been studied. The evaluation tool is in the form of written post-test. This activity is expected to find out the students' learning outcomes after using interactive teaching materials based on offline web.

D. Product Trials

The product trial is the process of collecting data that can be used as a basis to establish the level of validity, and the attractiveness of the product. This section is related to the trial design and the trials subjects. The activities conducted for trial in this development research include:

1. Trial Design

The stage of trial conducted in this development is stage of consultation, stage of expert validation, and stage of field trials. All of these stages are explained as follows:

1) Consultation Stage

At this consultation stage, the developers do several activities, including:

- 1) Advisor namely Mrs. Like check the developed interactive teaching materials. Lecturer gives some guidance and suggestions for improving the interactive teaching materials.
- 2) Developers make improvements of the interactive teaching materials based on the consultation that has been conducted.

2) Validation Expert Stage

In the stage of validation experts, the developers do several activities, those are:

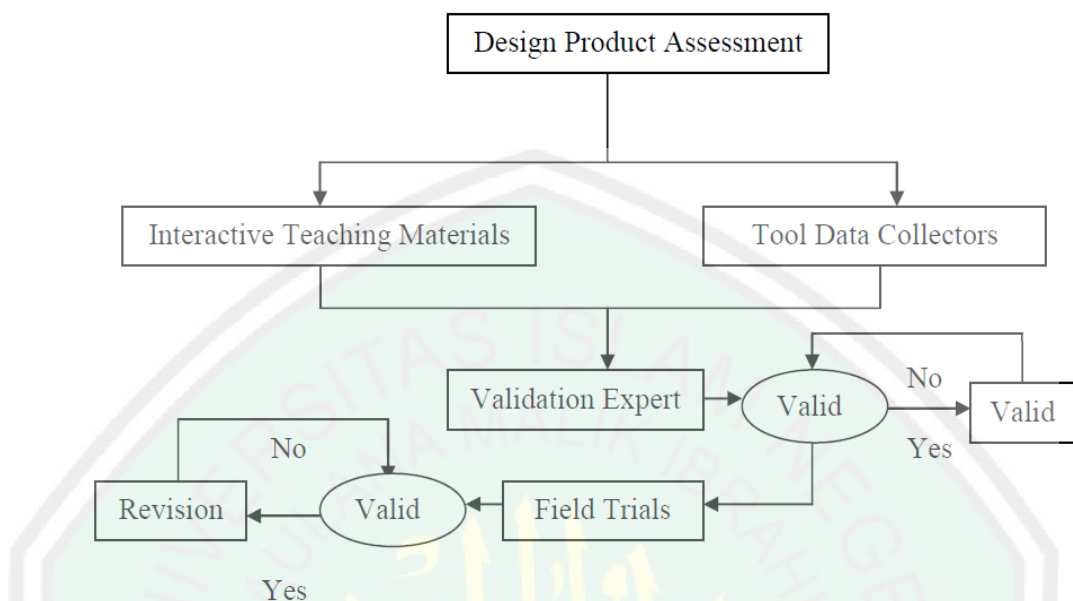
- 1) Providing the results of the products that have been developed to some experts like content expert, design experts and science teacher. Then, they give their responses, comments and assessment to the results of interactive teaching materials that have been developed.
- 2) Developer conduct analysis of response and assessment, then make improvements based on the responses and assessment of some experts.

Validation results are obtained from the assessment and responses of the experts by completing a questionnaire and providing response or suggestions used to determine the validity and the attractiveness of product used in the learning process.

3) Field Trial Stage

Field trials is is conducted in once stage of the trials. This interactive teaching materials based offline web is tested by taking a sample of 20 students from the fifth grade which have different characteristics (gender, age, level of ability, skills of students and the level of intelligence).

Furthermore, the design of the product assessment in general can be described in picture 3.2



Picture 3.2 Design of Trial Product⁴⁸

2. Trial Subject

Trials subject in the development of interactive teaching materials based on offline web include:

1) Content Expert

Before testing the students, the interactive teaching material based on offline web is tested to expert of the material/content. This was done to know the completeness and suitability of the material presented in the interactive teaching materials based on offline web with the content standards set by the government. The content experts are lecturers who are experts in that the subject matter.

⁴⁸ Yulia Ilfa Rachmania, 2009, "Pengembangan Bahan Ajar dengan Pendekatan Realistik Pokok Bahasan Segiempat untuk Siswa SMP kelas VII", Skripsi, (Malang:Program Sarjana UM), page. 45.

The criteria validators of the content expert in this study are stated as follows:

- (1) They have competence in the field of science education of Elementary School.
 - (2) They understand about science material at the elementary school especially in the topic simple machine.
 - (3) They know the elementary school science curriculum.
 - (4) They have attended education up to the level of master degree.
 - (5) They have written a book about science or the other.
- 2) Media/Design Expert

The purpose of the assessment test to the media/design expert is to measure the level of validity and attractiveness of the interactive teaching materials based on offline web from the font shape, colors, and layout of writing to fulfill the criteria for elementary school students.

The criteria validators of the design expert in this study are stated as follows:

- (1) They have competence in the field of designing learning media.
- (2) They have experience in graphic design and designing book or learning media.
- (3) They have attended education up to the level of master degree.
- (4) They have written textbooks and other.

3) Science Teacher

After this interactive teaching materials based on offline web have been tested to material expert and media experts, the trial is continued to subject teachers in order to determine the validity of this interactive teaching materials. Science teacher assesses the content of the material in the product and the attractiveness of the product according to the characteristics of elementary school students.

The criteria validators of the science teacher in this study are stated as follows:

- (1) An experienced teacher who has taught science at least 5 years.
- (2) Understanding the science materials for elementary school.

4) Students

Respondents who became the subject of the trial are fifth grade students of MIN Kanigoro Kediri with a total of 20 students. The selection of MIN Kanigoro Kediri based on several reasons, those are: (a) students have difficulty in understanding the simple machine material, (b) the unavailability of instructional media on simple machine material, (c) this school does not have interactive teaching materials on the subjects of Natural Sciences, (d) the availability of computer lab is not used maximally.

E. Data Type

The type of data on research and development is in the form of qualitative and quantitative data.

- 1) Qualitative data such as information on the results of field observations are obtained through interviews of teachers and students. The qualitative data are also obtained from the some experts about the product that have been developed in the form of responses, criticism, suggestions and comments.
- 2) Quantitative data is obtained from the questionnaire and the results of students' learning outcome before and after using the products of interactive teaching materials. Quantitative data are collected through questionnaires and tests are stated as follows:
 - a) The assessment by content expert, media experts, and learning experts.
 - b) The assessment of students about the attractiveness of the teaching materials.
 - c) The results of student learning tests before and after using the teaching materials (pre-test and post-test).

F. Data Collection Instrument

The collecting data in this study is using several instruments such as questionnaires, achievement test, interview guidelines, and observation guidelines.

The purpose of the data collection instruments are:

1. Questionnaire

Questionnaire is the technique or the way of collecting data indirectly. The questionnaire contains a number of questions to be answered or responded by the

respondent.⁴⁹ Questionnaire is used to collect data about the validity and the level of attractiveness of the interactive teaching materials based on offline web.

The questionnaire being used is the type of rating scale questionnaire. Questionnaire of the rating scale is a questionnaire containing questions that equipped the columns that show the levels. Questionnaires used to collect data based on criticism, suggestions and comments from the trial subject then analyzed and used as a revision.

The questionnaire used is as stated as follows:

- a) Questionnaire of assessment or responses of material/content expert
- b) Questionnaire of assessment or responses of media/design expert
- c) Questionnaire of assessment or student responses through field trials
- d) Questionnaire of assessment or responses of science teachers class V
MIN Kanigoro Kediri

2. Achievement Test

Achievement test is used to determine the achievement of the results students' understanding that is conducted by comparing the results of pre-test and post-test to indicate the effectiveness of student learning after using a web-based interactive teaching materials offline.⁵⁰

3. Interview guidelines

The interview guidelines was made as a guide in conducting interviews with teachers or students to know their responses to interactive teaching materials

⁴⁹ Nana Syaodih Sukmadinata, *Metode Penelitian Pendidikan* {Bandung: Remaja Rosdakarya, 2007}, page. 219

⁵⁰ Arief, *Pengantar Penelitian dalam Pendidikan* (Yogyakarta: Pustaka Pelajar, 2007), page. 483

based on offline web directly. Interviews were conducted orally in meetings face to face individually.

Interview guide contained questions that include facts, data, knowledge, concepts, opinions, perceptions or evaluations of respondents associated with focusing issues or variables studied in the study.⁵¹

4. Observation Guidelines

The observation guidelines was made as a guide to determine the process of learning developed by using an interactive teaching material based on offline web developed. Observations are also conducted to determine the initial condition of the school and student characteristics.

G. Data analysis techniques

The analysis used this development research has two techniques, those are: descriptive analysis, and analysis of test results.

1. Descriptive Analysis

This analysis is conducted at the time of the trial. The data are collected from the assessment of questionnaire to provide criticism, suggestions and comments.

The result of this descriptive analysis is used to determine the level of attractiveness of the development product results in the form of interactive teaching materials based on offline web. The formulas are used to analyze the results of the response from validator are stated as follows:⁵²

⁵¹ Nana Syaodih Sukmadinata, *op.cit.*, page. 216

⁵² Arikunto, *Dasar-dasar Evaluasi pendidikan* (Jakarta; Bumi Aksara, 2003). page. 113

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

Specification:

P : Percentage

$\sum X$: The total number of scores answers validator (real value)

$\sum X_i$: Total number of highest value (expected value)

100 : Number constants

After the data were analyzed using the formula above, the result of the descriptive analysis will be matched with the Likert scale which is used to measure attitudes, opinion, and perceptions of person or group.⁵³ Scoring that is conducted with Likert scale, is converted into value and described by the method of graph. Likert scale arranged in the form of a statement consists of four responses that indicate levels.

The criteria is used to determine the validity of interactive teaching materials contained in Table 3.1

Table 3.1 Criteria Level Validity⁵⁴

Category	Percentage (%)	Validitay Level	Description
4	80-100	Very Valid	No Revision
3	60-79	Valid	No Revision
2	40-59	Quite Valid	Most Revisions
1	0-39	Less Valid	Revision Total

⁵³ Sugiyono, *Medote Penelitian Kuantitatif, Kualitatif, dan R & D* (Bandung: CV. Alfabeta, 2008). Hlm. 134

⁵⁴ Riduwan, *Belajar mudah Penelitian untuk Guru Karyawan dan Peneliti Pemula*. (Bandung; Alfabeta, 2004). page. 31

Based on the table above, the assessment will be accepted if it meets the criteria of score above 60 from all the elements contained in the assessment questionnaire of validation. In this development, the assessment should fulfil the criteria. If the criteria are not valid then revisions will be done, until it achieves valid criteria.

2. Analysis of Test Achievement

Data analysis of test achievement is used to measure the ratio of student learning outcomes. In the field trial, data testing using the design of experiments were carried out by comparing the situation before and after using the product development (before-after).⁵⁵

Here is an explanation associated with experimental models (before-after):



Picture 3.3 Designs of Experiments (Before-After)

Specification:

O_1 : The value before treatment

O_2 : Value after treatment

X: Treatment

⁵⁵ Sugiyono, *Metode Penelitian Pendidikan*, (Bandung: Alfabeta, 2013), page. 414

In the field test results of data collected using questionnaires and learning achievement tests. Field trial data collected using the initial test (pre-test) and final test (post-test) in order to know the comparison of the results students' learning outcomes before and after using the product. Effect of treatment is $(O_2 - O_1)$.

For data processing test results (post-test), data analysis techniques used are:

- 1) Using reference Complete Standard Minimum or SKM (*Standar Ketuntasan Minimum*) science subjects in MIN Kanigoro Kediri is ≥ 75
- 2) Counting the number of students who meet and do not meet the SKM.

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

Specification:

P : Percentage

$\sum X$: The total number of students who do not meet the maximum

$\sum X_i$: The total number of students

100 : Number constants

The result of the data analysis calculation of achievement test (post-test) was used to determine the effectiveness of the learning activities using interactive teaching materials based on offline web. Learning activities is effective, if learning using interactive teaching materials percentage of students who meet the SKM is bigger than the percentage of students who do not meet the SKM, while learning with interactive teaching material will not be effective if the percentage of students who meet the SKM is smaller than the percentage the number of students who do not meet the SKM.

CHAPTER IV

THE RESULT OF RESEARCH AND DEVELOPMENT

A. The Result of Product Development

This interactive teaching materials based on offline web consists of several components. The further descriptions are stated are stated as follows:

1. Front Page

Front page interactive teaching materials contains the identity of the product, user guide and developer profile.

a. The identity of the product

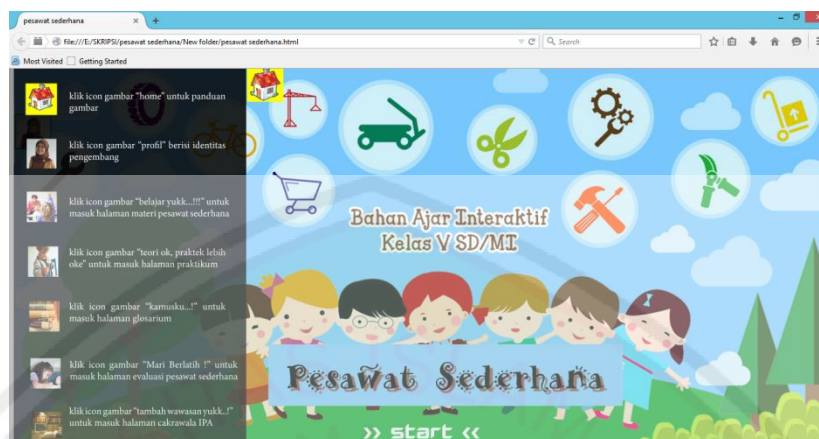
The initial view of the identity of the product is using the title “Bahan Ajar Interaktif kelas V SD/MI Pesawat Sederhana”. This title is shown with musical instrument.



Picture 4.1 Front page of interactive teaching materials

b. User guides

User guides contain explanations of icon images found on the offline web.



Picture 4.2 User guides of interactive teaching materials

c. Developer profile

Developer profile consists of the name of the developer, the place and date of birth, educational history, address and email or contact developer.



Picture 4.3 Developer profile of interactive teaching material

2. Display Menu (Home Page)

In this display menu, click the button of "start" which contains menu sections of interactive teaching materials displayed on the icon image.

Icon images include Standard of competence, concept maps, bibliography, materials, prakticum, quiz, science horizon, glossary and summary of the material.

a. Standard of Competence

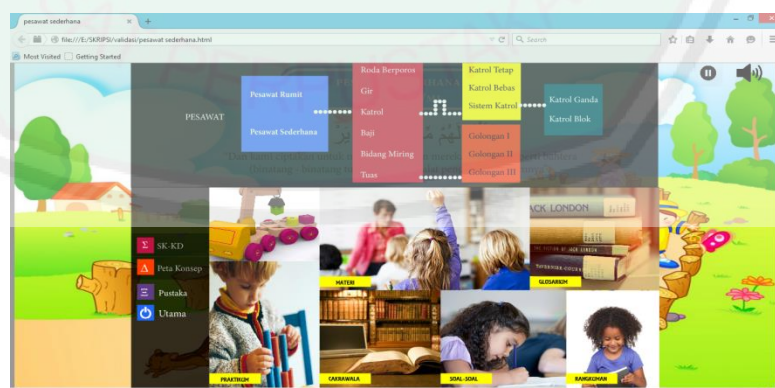
This menu contains the standard of competence, basic competencies and indicators to be achieved in the use of interactive teaching materials in the topic of simple machine.



Picture 4.4 Standard of Competence of interactive teaching material

b. Concept maps

Concept map in interactive teaching materials, contains a summary of the simple machine material presented in the form of a chart that aim to help students understand the lesson.



Picture 4.5 Concept maps of interactive teaching material

c. Bibliography

Bibliography which contains all sources of simple machine material is used as a reference in the development of interactive teaching materials.



Picture 4.6 Bibliography of interactive teaching material

d. Materials

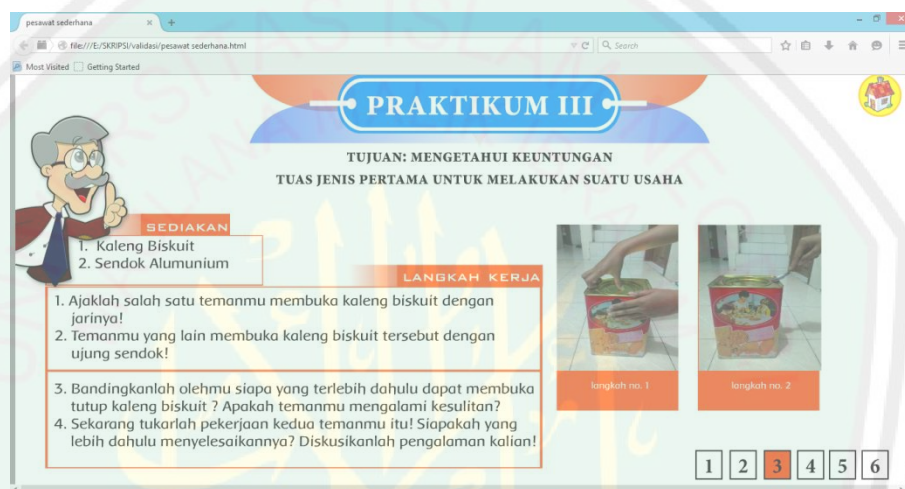
This section contains material of simple machine. Learning material presented in this interactive teaching material is in the form of a combination of images, text, animation and video.



Picture 4.7 Simple Machine Materials on interactive teaching material

e. Practicum

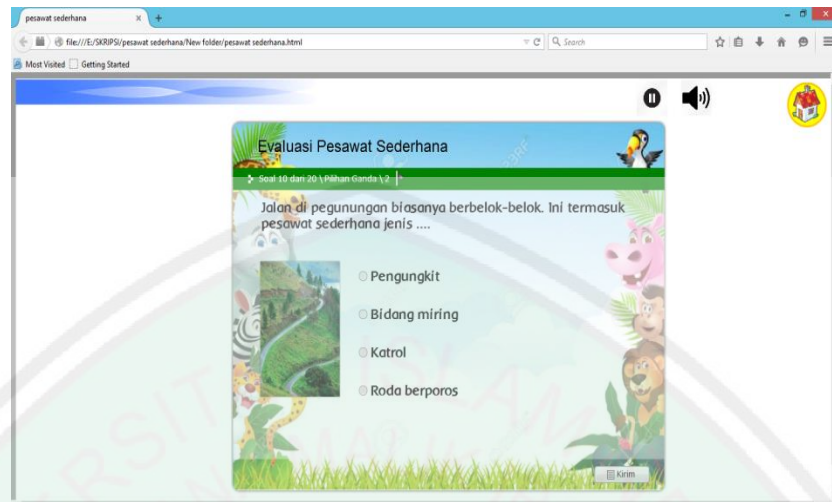
Practicum menu contains simple experiment activities which are supported by pictures and practical guidance to facilitate the activities of the experiment. This activity serves to support the students' understanding in the topic of simple machine and will develop the skill of experimentation.



Picture 4.8 Practicum of interactive teaching material

f. Quiz

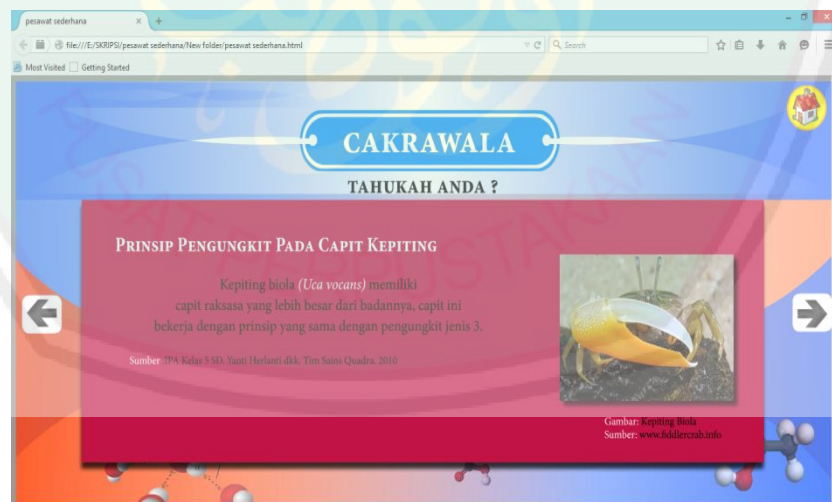
The quiz menu (evaluation) will provide adequate practice and review of what students have learned. This quiz consists of various types of questions such as, multiple choices, true/false, multiple responses, matching, and clic map. Activity based various types of questions has been included through a number of innovative exercises. Questions have been formed in such a way so as to stimulate students to observe and think beyond the book.



Picture 4.9 Quiz of interactive teaching material

g. Do You Know

“Do You Know” or Science Horizon (*Cakrawala IPA*) aims to provide more awareness and information or new insights related with the material to the students.



Picture 4.10 Science Horizon of interactive teaching material

h. Glossary

The glossary menu provides difficult words related to the material being studied and is equipped with an explanation. This glossary is useful to give

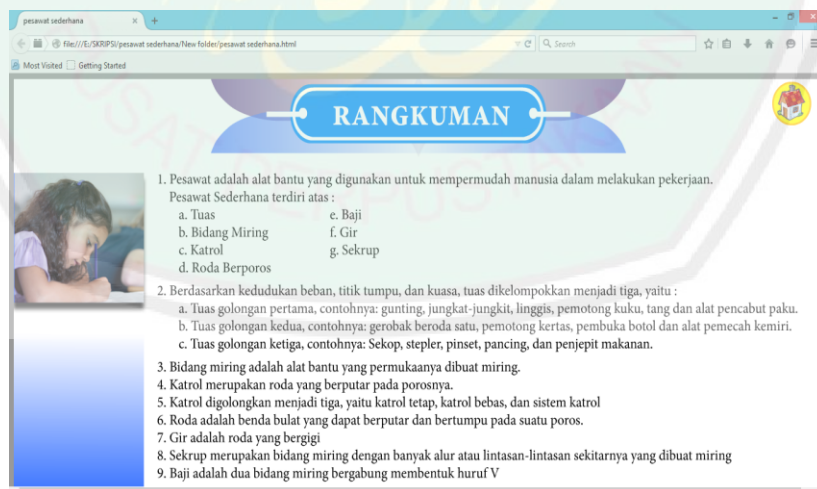
an explanation when readers find difficult words in the interactive teaching material.



Picture 4.11 Glossary of interactive teaching material

i. Points to Remember

Points to remember will enable students to recapitulate the concepts they have grasped during learning.



Picture 4.12 Points to Remember of interactive teaching material

B. Presentation of Data Validation

Data from the validation of interactive teaching materials based on offline web began on March 16 and ended on April 13 2015, by collecting data through the results of the validation experts and field trials.

Data validation of interactive teaching material is obtained from the results of the evaluation conducted by the validator, such as expert of validation content/material, expert of validator design/media, and validator science teachers teaching in MIN Kanigoro Kediri.

The data obtained is quantitative data and qualitative data. Quantitative data derived from assessment questionnaire with Likert scale, while the qualitative data is in the form of criticism and suggestions validator. Criteria values scoring that is used in the validation process stated as follows:

Table 4.1
Qualification Validity Level Based on Percentage

Percentage (%)	Validity level	Explanation
85-100	Very Valid	No Revision
69-84	Valid	No Revision
53-68	Quite Valid	Minor Revision
37-52	Less Valid	Major Revision
20-36	Very less valid	Total Revision

Table 4.2
Scoring Criteria by Expert Content/Material, Expert Design/Media and Expert Learning

Score	Explanation
4	Excellent
3	Good
2	Ok
1	Poor

Here is the presentation of data and data analysis questionnaire assessment by expert material/content, expert media/design, and expert science learning with their criticism, suggestions and comments.

1. The Results of Validation Expert Content

a. Quantitative Data

Quantitative data is the results of validation expert contents can be seen in Table 4.3

Table 4.3

The Results of Validation Expert Content against Interactive Teaching Material based on Offline Web in The Topic of Simple machine

No.	Statements	$\sum x$	$\sum x_i$	P (%)	Level of validity	Explanation
1.	The material in this interactive teaching materials is in accordance with the purpose of learning	3	4	75	Valid	No Revision
2.	The material is presented in an interactive teaching materials in science subjects for the fifth grade students according to Standard of Competence	3	4	75	Valid	No Revision
3.	The material is presented in an interactive teaching materials in science subjects	3	4	75	Valid	No Revision

	for the fifth grade students accordance to Basic Competence					
4.	The material is presented in an interactive teaching materials in science subjects for the fifth grade students accordance with the learning Indicators	3	4	75	Valid	No Revision
5.	Completeness of the materials in an interactive teaching materials in science subjects in the fifth grade Elementary school/Islamic Elementary School	2	4	50	Less Valid	Major Revision
6.	Arrangement of sentence used in providing the material in an interactive teaching material easy to understand	2	4	50	Less Valid	Major Revision
7.	Pictures and videos are presented in an interactive teaching materials can help to remember information/material studied	2	4	50	Less Valid	Major Revision
8.	Contents of the material contained in interactive teaching materials are relatively clear	3	4	75	Valid	No Revision
9.	Selection of colors, text, images, and animations are relatively clear	2	4	50	Less Valid	Major Revision
10.	The language used in interactive teaching materials easy to understand and not rigid, and also according to the characteristic fifth grade students of elementary school	3	4	75	Valid	No Revision
11.	The material presented on the interactive teaching materials can be used for independent study guide	3	4	75	Valid	No Revision
12.	Device of evaluation in accordance with the material presented	3	4	75	Valid	No Revision
13.	Arrangement of sentences on	3	4	75	Valid	No

	the quiz questions easily understood by students					Revision
14.	Display design according to the characteristics fifth grade students of elementary School	3	4	75	Valid	No Revision
Total		38	56	68	Quite Valid	Minor Revision

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

$$= \frac{38}{56} \times 100\%$$

$$= 68\%$$

Explanation:

P = Percentage level of validity

$\sum x$ = Assessment scores by validator Ahmad Abtokhi, M. Pd as content experts

$\sum x_i$ = The highest number of answers

100 = Numbers constants

Based on the calculation above, the assessment conducted by the content experts is summed up 68%. If it matches the validity criteria table, then the score included in criteria is quite valid, and there should be minor revisions to fixed the product.

Because there are still quite valid values in some components of the questionnaire, it is necessary to do revision and the revision will be submitted to the content expert for being tested again about its validity.

The results of the validation of interactive teaching materials based on offline web in the topic of simple machine after revision can be seen in Table 4.4

Table 4.4
The First Revision Results of Validation Expert Content against Interactive Teaching Material based on Offline Web in The Topic of Simple Machine

No.	Statements	$\sum x$	$\sum x_i$	P (%)	Level of validity	Explanation
1.	The material in this interactive teaching materials is in accordance with the purpose of learning	3	4	75	Valid	No Revision
2.	The material is presented in an interactive teaching materials in science subjects for the fifth grade students according to Standard of Competence	3	4	75	Valid	No Revision
3.	The material is presented in an interactive teaching materials in science subjects for the fifth grade students accordance to Basic Competence	4	4	100	Very Valid	No Revision
4.	The material is presented in an interactive teaching materials in science subjects for the fifth grade students accordance with the learning Indicators	4	4	100	Very Valid	No Revision
5.	Completeness of the materials in an interactive teaching materials in science subjects in the fifth grade Elementary school/Islamic Elementary School	3	4	75	Valid	No Revision
6.	Arrangement of sentence used in providing the material in an interactive teaching material easy to understand	3	4	75	Valid	No Revision
7.	Pictures and videos are presented in an interactive teaching materials can help to remember information/material studied	3	4	75	Valid	No Revision
8.	Contents of the material	3	4	75	Valid	No

	contained in interactive teaching materials are relatively clear					Revision
9.	Selection of colors, text, images, and animations are relatively clear	3	4	75	Valid	No Revision
10.	The language used in interactive teaching materials easy to understand and not rigid, and also according to the characteristic fifth grade students of elementary school	3	4	75	Valid	No Revision
11.	The material presented on the interactive teaching materials can be used for independent study guide	3	4	75	Valid	No Revision
12.	Device of evaluation in accordance with the material presented	3	4	75	Valid	No Revision
13.	Arrangement of sentences on the quiz questions easily understood by students	3	4	75	Valid	No Revision
14.	Display design according to the characteristics fifth grade students of elementary School	3	4	75	Valid	No Revision
Total		44	56	78,5	Valid	No Revision

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

$$= \frac{44}{56} \times 100\%$$

$$= 78,5\%$$

Based on the calculation above, the assessment conducted by materials/contents experts is summed up 78,5%. If it matches with the validity criteria table, then the score is included in the criteria are valid.

All components are getting valid, but validator asks to revise it back for further improvements in order to develop more attractive products, and in

accordance with the characteristics of students' age level in elementary school. After revision, the result of the revision will be submitted to contents expert to test its validity.

The results of the validity of the content experts after the second revisions are presented in table 4.5

Table 4.5

The Second Revision Results of Validation Expert Content against Interactive Teaching Material based on Offline Web in The Topic of Simple Machine

No.	Statements	$\sum x$	$\sum x_i$	P (%)	Level of validity	Explanation
1.	The material in this interactive teaching materials is in accordance with the purpose of learning	4	4	100	Very Valid	No Revision
2.	The material is presented in an interactive teaching materials in science subjects for the fifth grade students according to Standard of Competence	4	4	100	Very Valid	No Revision
3.	The material is presented in an interactive teaching materials in science subjects for the fifth grade students accordance to Basic Competence	4	4	100	Very Valid	No Revision
4.	The material is presented in an interactive teaching materials in science subjects for the fifth grade students accordance with the learning Indicators	4	4	100	Very Valid	No Revision
5.	Completeness of the materials in an interactive teaching materials in science subjects in the fifth grade Elementary school/Islamic Elementary School	4	4	100	Very Valid	No Revision
6.	Arrangements of sentence	4	4	100	Very	No

	used in providing the material in an interactive teaching material easy to understand				Valid	Revision
7.	Pictures and videos are presented in an interactive teaching materials can help to remember information/material studied	3	4	75	Valid	No Revision
8.	Contents of the material contained in interactive teaching materials are relatively clear	4	4	100	Very Valid	No Revision
9.	Selection of colors, text, images, and animations are relatively clear	4	4	100	Very Valid	No Revision
10.	The language used in interactive teaching materials easy to understand and not rigid, and also according to the characteristic fifth grade students of elementary school	4	4	100	Very Valid	No Revision
11.	The material presented on the interactive teaching materials can be used for independent study guide	4	4	100	Very Valid	No Revision
12.	Device of evaluation in accordance with the material presented	4	4	100	Very Valid	No Revision
13.	Arrangement of sentences on the quiz questions easily understood by students	4	4	100	Very Valid	No Revision
14.	Display design according to the characteristics fifth grade students of elementary School	4	4	100	Very Valid	No Revision
Total		55	56	98,2	Very Valid	No Revision

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

$$= \frac{55}{56} \times 100\%$$

$$= 98,2\%$$

The assessment response of material or content expert to the interactive teaching materials is very valid criteria with the percentage of validity score 98,2%.

b. Qualitative Data

Qualitative data the results of validation expert contents obtained from criticism and suggestions can be seen in Table 4.6

Table 4.6
The Criticism and Suggestions of Content Expert against Interactive Teaching Materials Based on Offline Web

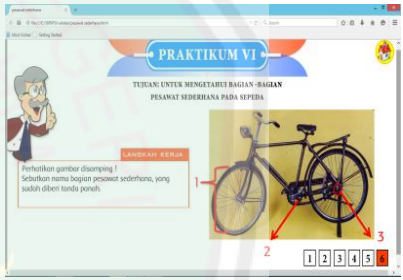
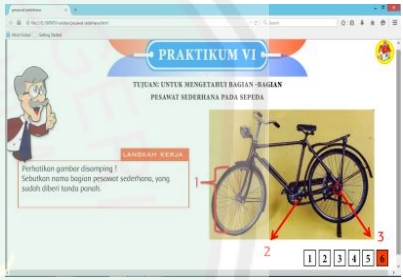
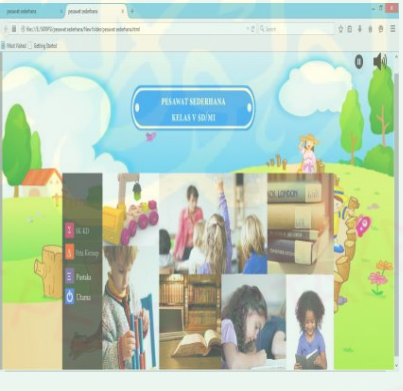
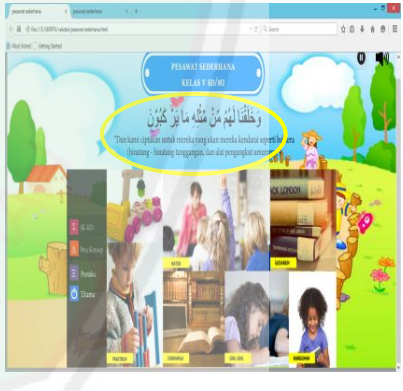
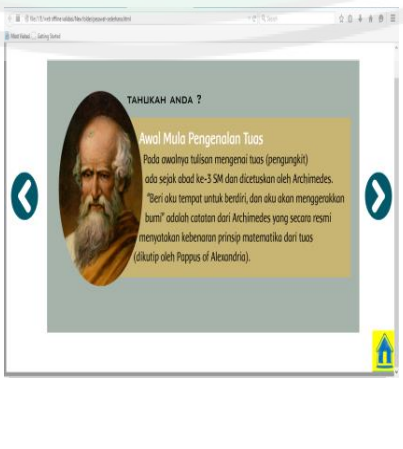
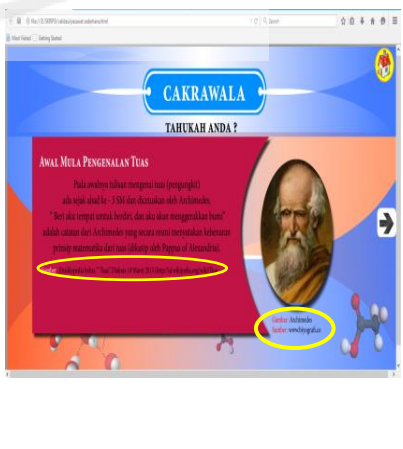
Name Subject Expert	Criticism and Suggestions
Ahmad Abtokhi, M. Pd	<ol style="list-style-type: none"> 1. In general this offline web is good, the material is appropriate with the indicator. 2. Practicum section should be given additional observation activities about parts of simple plane on the bike. 3. Front page should be given operational instructions of use. 4. Each image should be given description image and its source. 5. There is additional to the menu bibliography. 6. Font color needs to be fixed on the material "Do You Know" for more clearly and contrast.

Based on the criticism and suggestions above, there are some aspects that need to be revised as the improvement of product so it can be more qualified.

c. Product revision

Revision of the products interactive teaching materials based on offline web by criticism and suggestions from the validator in Table 4.6, can be seen in the explanation of table 4.7

Table 4.7
The Revision Interactive Teaching Materials Based on Validation Expert Content

No.	Revised points	Before Revision	After Revision
1.	In practicum there is additional observation activities parts of the simple machine on the bike		
2.	The addition of the arguments from Quran or hadith as the integration of science-islam		
3.	Description of name image and its source		

<p>4.</p>	<p>Video screw replaced video application in daily activities.</p>		
<p>5.</p>	<p>Font color is less clear</p>		
<p>6.</p>	<p>The addition of the purpose of the practicum and the picture is zoomed</p>		

2. The Results of Validation Expert Design/Media

a. Quantitative Data

Quantitative data the results of validation expert design/media can be seen in Table 4.8

Table 4.8
The Results of Validation Expert Design/Media against Interactive Teaching Material based on Offline Web in The Topic of Simple Machine

No.	Statements	$\sum x$	$\sum x_i$	P (%)	Level of validity	Explanation
1.	Display used in this interactive teaching materials is attractive	2	4	50	Less Valid	Major Revision
2.	The layout of the placement of menus in this interactive teaching materials is appropriate	2	4	50	Less Valid	Major Revision
3.	Font usage in interactive teaching materials in accordance with the characteristics of students elementary school	4	4	100	Very Valid	No Revision
4.	Text and writings can be read properly	4	4	100	Very Valid	No Revision
5.	Images presented can be clarify the material presented	3	4	75	Valid	No Revision
6.	The animation used in interactive teaching materials relatively clear and can be understood	4	4	100	Very Valid	No Revision
7.	Video is presented in an interactive teaching materials are in accordance	2	4	50	Less Valid	Major Revision
8.	Music is used interesting and fun	2	4	50	Less Valid	Major Revision
9.	The color variation is used appropriate	3	4	75	Valid	No Revision
10.	The background color on offline web appropriate	3	4	50	Valid	No Revision
11.	Layout on the offline web interesting	2	4	50	Less Valid	Major Revision
12.	Evaluation of the interactive teaching materials in accordance	4	4	100	Very Valid	No Revision
Total		35	48	72,9	Valid	No Revision

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

$$= \frac{35}{48} \times 100\%$$

$$= 72,9 \%$$

Explanation:

P = Percentage level of validity

$\sum x$ = Assessment scores by validator Shalih Husni, as design experts

$\sum x_i$ = The highest number of answers

100 = Numbers constants

Based on the calculation above, the assessment conducted by the design experts reached overall 72,9%. If it matches the criteria table validity, then the score included in the valid criteria.

Because there are still less valid values in some components of the questionnaire, it is necessary to do revision and the revision will be submitted to the design expert for being tested again about its validity.

The validity result of design expert and media after the first revisions is presented in Table 4.9

Tabel 4.9

The First Revision Results of the Validation with Expert Design/Media Interactive Teaching Materials Based on Offline Web

No.	Statements	$\sum x$	$\sum x_i$	P (%)	Level of validity	Explanation
1.	Display used in this interactive teaching materials is attractive	4	4	100	Very Valid	No Revision
2.	The layout of the placement of menus in this interactive teaching materials is appropriate	4	4	100	Very Valid	No Revision

3.	Font usage in interactive teaching materials in accordance with the characteristics of students elementary school	4	4	100	Very Valid	No Revision
4.	Text and writings can be read properly	4	4	100	Very Valid	No Revision
5.	Images presented can be clarify the material presented	4	4	100	Very Valid	No Revision
6.	The animation used in interactive teaching materials relatively clear and can be understood	4	4	100	Very Valid	No Revision
7.	Video is presented in an interactive teaching materials are in accordance	3	4	75	Valid	No Revision
8.	Music is used interesting and fun	4	4	100	Very Valid	No Revision
9.	The color variation is used appropriate	4	4	100	Very Valid	No Revision
10.	The background color on offline web appropriate	4	4	100	Very Valid	No Revision
11.	Layout on the offline web interesting	4	4	100	Very Valid	No Revision
12.	Evaluation of the interactive teaching materials in accordance	4	4	100	Very Valid	No Revision
Total		47	48	97,9	Very Valid	No Revision

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

$$= \frac{47}{48} \times 100\%$$

$$= 97,9\%$$

Explanation:

P = Percentage level of validity

$\sum x$ = Assessment scores by validator Shalih Husni, as design experts

$\sum x_i$ = The highest number of answers

100 = Numbers constants

The assessment results of design expert to the interactive teaching materials is very valid criteria with the percentage of validity reaches 97,9%.

b. Qualitative Data

Qualitative data as the results of validation expert design/media obtained from criticism and suggestions can be seen in Table 4.10

Table 4.10
The Criticism and Suggestions of Design Expert and Media against Interactive Teaching Materials Based on Offline web

Name Subject Expert	Criticism and suggestions
Shalih Husni	<ol style="list-style-type: none"> 1. Font on the content of the material still looks stiff 2. Background on the main menu is changed brighter 3. On the main menu font title and image made more attractive 4. Placement of concept maps, basic competence and indicator separated 5. Language on each menu is replaced with the language of children 6. The sound of music is given an automatic button (play and pause) 7. In the quiz layout is replaced with a more cheerful theme 8. Writing "Do you know" is made to look like header 9. Language in the quiz is replaced by Indonesian language.

Based on the comments, criticism and suggestions in the table above, there are several aspects that need to be revised as enhancements to the product so that it can be more qualified. The improvement product of interactive teaching materials based on offline web requires one revision.

Validation of the design experts was conducted on March 16, 2015 until April 13, 2015.

All data from the assessment, criticisms and suggestions from experts design as a material used as a basis for revision. This is in order to improve the products of interactive teaching materials based on offline web.

c. Product revision

Revision of the products interactive teaching materials based on offline web by criticism and suggestions from the validator in Table 4.10, it can be seen in the explanation of table 4.11

Table 4.11
The Revision Interactive Teaching Materials Based On Validation Expert Design

No.	Revised points	Before Revision	After Revision
1.	<p>a. Background on the main menu is changed brighter</p> <p>b. On the main menu font title and image made more attractive</p>		
2.	<p>a. Placement of concept maps, basic competence and indicator separated</p> <p>b. Language on each menu is replaced with the language of children</p>		

3.	The sound of music is given an automatic button (play and pause)		
4.	<p>a. In the quiz layout is replaced with a more cheerful theme</p> <p>b. Language in the quiz is replaced by Indonesian language.</p>		
5.	Writing "Do you know" is made to look like header		

3. Results Validation Expert Learning of Science Teachers

a. Quantitative Data

Quantitative data the results of validation expert learning of science teacher can be seen in Table 4.12

Table 4.12
The Results of Validation Expert Learning Science against Interactive Teaching Material based on Offline web in The Topic of Simple Machine

No.	Statements	$\sum x$	$\sum x_i$	P (%)	Level of validity	Explanation
1.	The material in this interactive teaching materials in accordance with the purpose of learning	4	4	80	Very Valid	No Revision
2.	The material is presented in an interactive teaching materials on science subjects for the fifth grade according to Standard Competency Basic Competency and Learning Indicators	4	4	80	Very Valid	No Revision
3.	The completeness of the materials in an interactive teaching materials on science subjects for the fifth grade in the elementary school	3	4	80	Valid	No Revision
4.	The sentence structure used in presenting the material in an interactive teaching materials easy to understand	4	4	100	Very Valid	No Revision
5.	Images and videos are presented in an interactive teaching materials can help remember the information or materials studied	4	4	100	Very Valid	No Revision
6.	Interactive teaching materials in the topic of simple machine can facilitate the delivery of learning materials	4	4	100	Very Valid	No Revision
7.	The effectiveness of teaching by using interactive teaching materials in the topic of simple machine in the perception of students	3	4	80	Valid	No Revision
8.	The attractiveness of learning by using interactive teaching materials material simple machine	4	4	100	Very Valid	No Revision

9.	The language used in interactive teaching materials easy to understand and not rigid. according to the characteristics of elementary school for the fifth grade students	4	4	80	Very Valid	No Revision
10.	Display design according to the characteristics Elementary School for the fifth grade students	4	4	80	Very Valid	No Revision
11.	The level of difficulty of exercises provided adequate	3	4		Valid	No Revision
12.	Overall the product is feasible for use in the learning material simple machine	4	4		Very Valid	No Revision
Total		45	48	93,7	Very Valid	No Revision

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

$$= \frac{45}{48} \times 100\%$$

$$= 93,7\%$$

Explanation:

P = Percentage level of validity

$\sum x$ = Assessment scores by validator Sriyanti, as learning science experts

$\sum x_i$ = The highest number of answers

100 = Numbers constants

The assessment response of learning expert as a science teacher at MIN Kanigoro Kediri to the interactive teaching materials based on offline web is very valid criteria with the percentage of validity reaches 93,7%.

b. Qualitative Data

Qualitative data the results of validation expert learning of science teacher obtained from criticism and suggestions can be seen in Table 4.13

Table 4.13
The Criticism and Suggestions Expert learning of science against
Interactive Teaching Materials Based on Offline web

Name Subject Expert	Criticism and suggestions
Sriyanti, S.Pd.I	<ol style="list-style-type: none"> 1. At the material needs to be given many examples of images 2. The resulting product is good and can motivate students in learning

c. Product revision

From the results of expert assessment of teacher learning science subjects, then this product does not need revision. There are little criticisms and suggestions that the material needs to be given many examples of images.

Criticisms and suggestions of science teachers can be used to enhance the product in order to become better.

4. Validation Results Field Trial

Validation results are obtained from tests on interactive teaching material for the fifth grade students in MIN Kanigoro Kediri. Quantitative data on the results of field trials can be seen in Table 4.14

Table 4.14

The Results Assessment of the Field Trial against Interactive Teaching Materials in The Topic Simple Machine

No.	Statements	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16	X17	X18	X19	X20	$\sum x$	$\sum x_i$	P (%)	Level of validity	Explanation
1.	I easily understand the material of simple machine in this interactive teaching materials	4	4	4	3	3	4	3	3	4	3	3	3	3	4	4	3	3	3	4	3	68	80	85	Very Valid	No Revision
2.	I happy to learn interactive teaching materials because the display interesting	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	4	77	80	96,25	Very Valid	No Revision
3.	The questions contained in this interactive teaching materials accordance with the material that I learned	4	4	4	4	4	4	3	3	4	3	3	4	3	3	4	4	4	3	4	3	72	80	90	Very Valid	No Revision
4.	I can understand the material with a given image, video and animation	4	4	4	4	4	4	3	3	3	4	3	4	3	3	4	4	4	4	4	4	74	80	92,5	Very Valid	No Revision
5.	I can easily understand the language in an interactive teaching materials	3	4	3	3	4	4	3	3	3	4	3	3	3	4	4	4	4	4	3	4	70	80	87,5	Very Valid	No Revision

No.	Statements	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16	X17	X18	X19	X20	$\sum x$	$\sum x_i$	P (%)	Level of validity	Explanation
6.	I am glad to learn to use this interactive teaching materials	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4	4	4	3	4	4	78	80	97,5	Very Valid	No Revision
7.	The music is on interactive teaching materials made my passion to learn	4	4	3	4	3	4	3	3	4	4	3	4	3	3	4	3	4	4	4	3	71	80	88,75	Very Valid	No Revision
8.	I can use this interactive teaching material without the help of others	3	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4	3	3	63	80	78,75	Valid	No Revision
9.	Instructions for using interactive teaching material is easy for me to understand	4	3	4	3	4	4	3	3	3	3	4	3	4	4	4	4	4	4	3	4	72	80	90	Very Valid	No Revision
10.	Learning activities in an interactive teaching materials makes me to cooperate with friends	3	4	4	4	4	4	3	4	4	4	4	4	4	3	4	3	4	3	4	4	75	80	93,75	Very Valid	No Revision
	Total	36	38	38	36	37	39	31	36	36	36	34	36	34	35	39	36	37	36	37	36	720	800	90	Very Valid	No Revision

Keterangan:

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

P = Percentage
 $\sum x$ = The total number of student's answer
 $\sum x_i$ = The highest number of answers at the level of validity
x1-21 = Respondents 1-20 is students of class V at MIN Kanigoro Kediri

Based on the questionnaire assessment of product trials conducted in class V above, the overall results reached 90%. If it matches the validity criteria table, then the score is included in the criteria are very valid.

5. Field Trial Pre-Test and Post-Test

To know the difference and the progress of student understanding, through tests are conducted in the form of pre-test and post-test. Pre-test and post-test are conducted on students in class V MIN Kanigoro Kediri.

The results of the assessment of data pre-test and post-test obtained from field trials of products can be seen in the following table:

Table 4.15
Results Assessment of the Field Trial in Pre-test and Post-test

No.	Students name	Pre-test value	Pos-test value
1	Sinta Ika Wulandari	50	80
2	Binti Rosidah	50	80
3	Alma Rozita Kurnaini	60	80
4	Dennisa Nasrulia Septhiani	50	90
5	Imelda Sindy Nabila	60	90
6	Mohamad Ahsin Maulana Hidayat	40	80
7	Mezaluna Ratu Brevista	60	100
8	Reza Dwi Resnanda	40	80
9	Rio Adi Saputro	70	90
10	Rizki Ayu Rahmawati	60	90
11	Sika Rahma Wulandari	60	90
12	Aulya Rahma Adelia	60	80
13	Badar Nawawi	50	60
14	Eka Lutfi Lestari	70	80
15	Mochammad Alief Fauzan	70	90
16	Moh. Rozi Badrus	60	80
17	Nanda Rizki Nurkholifah	60	90
18	Tsalisa Candra Kirana	60	90
19	Zakiah Diah Zulfiani	50	90
20	Anisak Nur Khamidah	40	70

CHAPTER V

DISCUSSION

A. The Analysis of Product Development of Interactive Teaching Materials Based on Offline Web

The potential being found at MIN Kanigoro Kediri is the sufficient facilities and infrastructure appropriate, such as computer laboratory. Besides the potential, there are some problems appear. Problems found in this study were the unavailability of interactive teaching materials based on offline web and the utilization of computer lab which is not optimal in learning activities. Thus, the students' interest in learning and creativity cannot develop optimally.

The development of this product is based on the fact that the unavailability of teaching materials is supported by IT-based. Thus, the result of product development is aimed to fulfilling the availability of teaching materials based on website that is expected to increase the effectiveness and the attractiveness of the learning science in elementary school/Islamic elementary school.

The development procedure of this product is conducted through several stages that include:

1. Need analysis from students and teachers.
2. Identifying the materials of science subjects for fifth grade students in the simple machine materials.
3. Analysis of school situation.

4. Collecting information or data as the materials used in product development.
5. Designing the draft of the products that will be developed.
6. Development of product by conducting the preparation of interactive teaching materials based on offline web.
7. Conducting validation of product designs.
8. Revising the product design based on the results of the validation that has been conducted.
9. The implementation of the product trial activity that has been developed accordance with the planned design.
10. Evaluation by validating the product to the some experts to obtain a good product in terms of material, and design. Conducting revision by reviewing the data from the results of the evaluation and then be improved gradually.
11. This evaluation stage is used to measure the level of students' understanding after using the product developed. This evaluation tool in the form of written post-test.

Designing products of interactive teaching materials based on offline web in the simple machine topic is validated by some experts to determine whether the products are valid or not. The weakness of interactive teaching materials is found out after product validation. The weakness of interactive teaching materials is reduced by improving the product. After being validated and corrected then product trials were

conducted. The product trial is conducted to determine the effectiveness, attractiveness and practicality of the products are developed. Product trials were conducted limited on fifth grade students MIN Kanigoro Kediri.

The instrument used to collect the data consists of three parts which are stated as follows; First, the instrument validation test by experts are used to determine the validity and attractiveness on the product of interactive teaching materials based on offline web. Second, the test instruments of practicality according to teachers and students are used to determine the attractiveness of interactive teaching materials based on offline web. Third, the test instrument of the effectiveness through achievement test used to determine the effectiveness of students' learning outcomes before and after using the product of interactive teaching materials based on offline web.

The results of product development in the form of website in packaged in the learning CD and equipped instructions for using the product. Interactive teaching materials based on offline web are intended to help students to learn easily and interestingly, because the website can be accessed anywhere and anytime, even without internet connection.

The development of interactive teaching materials based on offline web has good descriptions according to the characteristics of elementary school students. The main menu of the interactive teaching materials based on offline web contains the identity of the product, user guide, and developer profile. The main page or home page contains the competencies, learning objectives, concept maps, learning

materials, evaluation exercises, practicum and provided with menu science horizon (Cakrawala IPA), glossary, point to remember, picture and video animation which helps the process and the students' learning outcome in simple machine material.

Development of offline web-based interactive teaching material will give several advantages which are stated as follows:

1. Interactive teaching materials is capable not only in presenting a text but also combining text with the pictures, graphics, video or audio resources, that can enrich the learning information that will be presented and also can build a good network in the topic of simple machine.
2. Animation, text, and pictures are helpful to create a long term memory of the student by creating such kind of good impression of the subject. Besides, the student will enjoy the learning process that will also influence the results of their study.
3. Furthermore, this kind of product will give student experience in learning offline web-based information.
4. The product development aims to improve students' learning outcomes, increasing the sense of critical thinking in understanding the concept of simple machine material
5. Finally, in this case, the utilization of computer in the world of education is very popular.

B. The Analysis of The Attractiveness of The Product Development of Interactive Teaching Materials Based on Offline Web

This section explained about the analysis of the results validation expert and analysis of the results subject trial.

1. Analysis of The Results Validation Expert

The development of this product has passed the process of analysis from three experts that material/content expert, instructional media experts and science learning experts. Validation was conducted to assess the products that have been developed, and then it was analyzed by quantitative data in the form of total score on the questionnaire and qualitative data in the form of suggestions, criticisms, comments and responses from the some experts.

The results of the validation of materials experts has achieved very valid criteria with a total percentage of 98,2%. Validity of instructional media design experts reached very valid criteria with a total percentage of 97,9%. The results of the validation learning experts with science teachers achieved very valid criteria on the percentage of 93,7%. This means, the products being developed is feasible to be tested because of interactive teaching materials based on offline web is in accordance with the validation some experts and the design is also in accordance with the character of student in elementary school.

2. Analysis of The Results Subject Trial

The first activity in the trials of this product is the introduction between the developer with the students, then the developer asks how learning science activities in the classroom, and what they have ever used the facilities of computer lab to study science subjects. Core activity in this product experiment that teachers select students who will conduct trials in a way put the number at random so that the character on the selected student is different. Then the students are invited to get into the computer room and students are welcome to access the products that have been developed. Based on the observations, the students are very enthusiastic and spirit in understanding the material on the website with a combination of text, video, animations and images. They are also spirit working on the quiz that exist in this offline web until forget time for a break. This is indicated by the response of students in the completed questionnaires to assess the attractiveness levels achieve very valid criteria with the total percentage of 90%.

Implementation of interactive teaching materials based on offline web in the topic simple machine for the fifth grade students in MIN Kanigoro Kediri requires patience, because this product is a new media that students need guidance in their use. Even though the process of using this offline web product quite smoothly and the students are very enthusiastic and very interested during using the product. Students asked parts that still not understood and ask for guidance using the offline web. Here is an open interview developers with the one of the subjects' field trials.

“Web offlinenya keren Bu, enak kalau mengerjakan soal langsung tau jawabannya”

“Video pada web offline bagus Bu, pembelajarannya jadi menyenangkan”

“Besok kesini lagi ya Bu, kita belajar menggunakan web offline lagi”

The conversation above is the result of interviews with some of the students as users about the opinion the use of interactive teaching materials in the computer lab MIN Kanigoro Kediri. From the above opinion indicate that the student responses in using interactive teaching materials based on offline web, students wants repeat the learning activities because they are interested and enthusiastic about this products that have been developed.

C. The Analysis of The Effectiveness of Interactive Teaching Material Based on Offline Web for Improving Students’ Learning Outcomes

Implementation of the pre-test which was held on 10 April 2015 and the post-test was held on 13 April 2015 in Class V at MIN Kanigoro Kediri.

The execution of the pre-test and post-test for the fifth grade students on field trials can be presented in the following table:

Table 5.1
Results of research on Field Trial using Pre-Test and Post-Test

No.	Name	Value Pre-Test	Value Post-Test (X)	Complete (Xi)	Uncomplete
1.	Sinta Ika Wulandari	50	80	√	
2.	Binti Rosidah	50	80	√	
3.	Alma Rozita Kurnaini	60	80	√	

4.	Dennisa Nasrulia Sephthiani	50	90	√	
5.	Imelda Sindy Nabila	60	90	√	
6.	Mohamad Ahsin Maulana Hidayat	40	80	√	
7.	Mezaluna Ratu Brevista	60	100	√	
8.	Reza Dwi Resnanda	40	80	√	
9.	Rio Adi Saputro	70	90	√	
10.	Rizki Ayu Rahmawati	60	90	√	
11.	Sika Rahma Wulandari	60	90	√	
12.	Aulya Rahma Adelia	60	80	√	
13.	Badar Nawawi	50	60		√
14.	Eka Lutfi Lestari	70	80	√	
15.	Mochammad Alief Fauzan	70	90	√	
16.	Moh. Rozi Badrus	60	80	√	
17.	Nanda Rizki Nurkholifah	60	90	√	
18.	Tsalisa Candra Kirana	60	90	√	
19.	Zakiah Diah Zulfiani	50	90	√	
20.	Anisak Nur Khamidah	40	70		√
Total		1120	1.680	18	2
Average		56	84		
P (%)				90%	10%

Specification:

P (%) : Percentage

ΣX : The total number of students who do not meet the SKM

ΣX_i : The total number of students

100 : Number constants

Complete Standard Minimum or SKM (*Standar Ketuntasan Minimum*): ≥ 75

From the data table above explains that, the students after learn by using the product interactive teaching materials based on offline web implemented by teachers teaching science, students who meet the SKM there are 18 students with percentage of 90%, while students who do not meet the SKM there are 2 students with percentage of 10%. With the results of students' learning outcomes, the results of field trials can be concluded that this product has positive influence, effectively and efficiently if used in learning activities.

CHAPTER VI

CONCLUSION

A. Conclusion of Development

The development process and the results of the assessment of interactive teaching materials for the fifth grade students of elementary school were stated as follows:

1. This development has produced the product in the form of interactive teaching materials based on offline web in the topic of simple machine for fifth grade students in elementary school. The development of interactive teaching materials based on offline web has high validity score. The value of the attractiveness product based on the assessment some experts and the response of the trials subject were stated as follows:
 - a) The assessment response of material or content expert to the interactive teaching materials is very valid criteria with the percentage of validity score 98,2%
 - b) The assessment results of design expert to the interactive teaching materials is very good the percentage of validity reaches 97,9%
 - c) The assessment response of learning expert as a science teacher at MIN Kanigoro Kediri to the interactive teaching materials based on offline web was very good with the percentage of the attractiveness reaches 93,7%

- d) The assessment response from the fifth grade students at MIN Kanigoro Kediri to the interactive teaching materials based on offline web was very good with the percentage of the attractiveness reaches 90%.
2. The students' learning outcomes based on field trials that measured using achievement tests (post-test) were stated as follows:
 - a) The average value of learning outcomes in post-test reached 84% compared to pre-test average value reached 56%. It indicated that there was increasing in the students' learning outcomes before and after using the product interactive teaching materials based on offline web.
 - b) After using this product, the students' values that complete the SKM is 18 students with the percentage reached 90%, while the students' values who did not complete the SKM is 2 students with the percentage reached 10%.

Thus, the results of the development of interactive teaching materials based on offline web in the topic simple machine for the fifth grade students in MIN Kediri Kanigoro have a good quality. This is because the use of interactive teaching materials can enhance the effectiveness of learning and the attractiveness of this product. Thus, it can provide the positive influence in improving students' learning outcomes.

B. Suggestion

The product development of interactive teaching materials based on offline is expected to support science learning in fifth grade students at elementary schools and Islamic elementary school.

The suggestions will be presented relating to the development of this product is which is divided into two parts, such as suggestions of product utilization and suggestions of further product development.

1. Suggestions of product utilization

Some suggestions related to the purposes of product utilization are:

- a) Interactive teaching materials based on offline web should be used as an alternative process teaching and learning
- b) Interactive teaching material is organized according to the characteristics of students, so that students are expected to be able use it independently.
- c) This interactive teaching material can be utilized by science teachers in presenting materials by using the facilities of computer laboratory.

2. Suggestions of further product development

- a) The product of interactive teaching materials need to more develop, not only one material, but also includes one semester of the class.
- b) The development of this product should be developed further with the other multimedia approach in accordance with the characteristics of students and material so that it can motivate the students in science learning.

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APPENDIXS

1st Appendix : Research Licence



2nd Appendix : Research Certificate



3rd Appendix : Evidence of Consultation



4th Appendix : Validator Identity**Identity of Validator Subjects**

No.	Name	Position	Evaluators
1.	Ahmad Abtokhi, M.Pd	Science Lecturer of Physics at the Faculty of Science and Technology UIN MALIKI MALANG	Content Expert of Simple Machine Materials
2.	Shalih Husni	Owner eldzikri@mediaEdu The Employee at the faculty of Tarbiyah and Teaching Sciences in UIN MALIKI MALANG	Expert Design and Learning Media
3.	Sriyanti, S.Pd.I	Science Teacher in MIN Kanigoro Kediri	Learning Expert

5th Appendix : Student Identity**Identity of Subject Field Trial**

No.	Name	Explanations
1.	Sinta Ika Wulandari	Fifth Grade Students in MIN Kanigoro Kediri
2.	Binti Rosidah	Fifth Grade Students in MIN Kanigoro Kediri
3.	Alma Rozita Kurnaini	Fifth Grade Students in MIN Kanigoro Kediri
4.	Dennisa Nasrulia Septhiani	Fifth Grade Students in MIN Kanigoro Kediri
5.	Imelda Sindy Nabila	Fifth Grade Students in MIN Kanigoro Kediri
6.	Mohamad Ahsin Maulana	Fifth Grade Students in MIN Kanigoro Kediri

	Hidayat	
7.	Mezaluna Ratu Brevista	Fifth Grade Students in MIN Kanigoro Kediri
8.	Reza Dwi Resnanda	Fifth Grade Students in MIN Kanigoro Kediri
9.	Rio Adi Saputro	Fifth Grade Students in MIN Kanigoro Kediri
10.	Rizki Ayu Rahmawati	Fifth Grade Students in MIN Kanigoro Kediri
11.	Sika Rahma Wulandari	Fifth Grade Students in MIN Kanigoro Kediri
12.	Aulya Rahma Adelia	Fifth Grade Students in MIN Kanigoro Kediri
13.	Badar Nawawi	Fifth Grade Students in MIN Kanigoro Kediri
14.	Eka Lutfi Lestari	Fifth Grade Students in MIN Kanigoro Kediri
15.	Mochammad Alief Fauzan	Fifth Grade Students in MIN Kanigoro Kediri
16.	Moh. Rozi Badrus	Fifth Grade Students in MIN Kanigoro Kediri
17.	Nanda Rizki Nurkholifah	Fifth Grade Students in MIN Kanigoro Kediri
18.	Tsalisa Candra Kirana	Fifth Grade Students in MIN Kanigoro Kediri
19.	Zakiah Diah Zulfiani	Fifth Grade Students in MIN Kanigoro Kediri
20.	Anisak Nur Khamidah	Fifth Grade Students in MIN Kanigoro Kediri

6rd Appendix : Instrument Validation of Interactive Teaching Material by Material Expert

No	Criteria	Score			
		4	3	2	1
1.	The material in this interactive teaching materials is in accordance with the purpose of learning				
2.	The material is presented in an interactive teaching materials in science subjects for the fifth grade students according to Standard of Competence				
3.	The material is presented in an interactive teaching materials in science subjects for the fifth grade students accordance to Basic Competence				
4.	The material is presented in an interactive teaching materials in science subjects for the fifth grade students accordance with the learning Indicators				
5.	Completeness of the materials in an interactive teaching materials in science subjects in the fifth grade Elementary school/Islamic Elementary School				
6.	Arrangements of sentence used in providing the material in an interactive teaching material easy to understand				
7.	Pictures and videos are presented in an interactive teaching materials can help to remember information/material studied				
8.	Contents of the material contained in interactive teaching materials are relatively clear				
9.	Selection of colors, text, images, and animations are relatively clear				
10.	The language used in interactive teaching materials easy to understand and not rigid, and also according to the characteristic fifth grade students of elementary school				
11.	The material presented on the interactive teaching materials can be used for independent study guide				
12.	Device of evaluation in accordance with the material presented				
13.	Arrangement of sentences on the quiz questions easily understood by students				
14.	Display design according to the characteristics fifth grade students of elementary School				

**ANGKET PENILAIAN AHLI MATERI/ISI
PENGEMBANGAN BAHAN AJAR INTERAKTIF BERBASIS WEB
OFFLINE PADA MATERI PESAWAT SEDERHANA
SISWA KELAS V MIN KANIGORO KEDIRI**

Kepada Yth.

Ahli Materi/Isi Bahan Ajar Interaktif Berbasis Web Offline Untuk SD/MI
Di Universitas Islam Negeri Maulana Malik Ibrahim
Malang

Assalamualaikum Wr. Wb

Dengan hormat,

Dalam rangka penulisan skripsi untuk memperoleh gelar Sarjana Pendidikan di Prodi Pendidikan Guru Madrasah Ibtida'iyah Universitas Islam Negeri Maulana Malik Ibrahim Malang, saya melakukan penelitian yang berjudul "Pengembangan Bahan Ajar Interaktif Berbasis Web Offline Pada Materi Pesawat Sederhana Siswa Kelas V MIN Kanigoro Kediri". Bahan ajar interaktif ini dikembangkan dengan mengacu pada KTSP 2006.

Berkaitan dengan penelitian tersebut, saya bermaksud mengadakan uji coba produk Bahan ajar interaktif yang sudah saya kembangkan. Hal ini bertujuan untuk mengetahui kelebihan dan kekurangan produk sehingga dapat dilakukan perbaikan sebelum digunakan dalam pembelajaran di kelas. Oleh karena itu, saya mohon kesediaan Bapak/Ibu untuk mengisi angket berikut ini. Atas bantuan Bapak/ Ibu, saya sampaikan terima kasih.

Malang, 23 Maret 2015

Hormat kami

A. Identitas Ahli

Nama :
Jabatan :
Instansi :
Pangkat/golongan :
Pendidikan terakhir :
Bidang Keahlian :
Masa Kerja dalam Bidang tersebut :

B. Petunjuk Pengisian Angket

Sebelum mengisi angket silahkan Bapak/Ibu membaca petunjuk pengisian berikut ini.

1. Mengamati tampilan dan materi secara keseluruhan pada bahan ajar interaktif berbasis web offline yang dikembangkan, kemudian isikan nilai pada lembar penilaian dengan memberikan tanda (√) pada angka 4,3,2,1 dengan penilaian Bapak/Ibu yang dianggap sesuai.
2. Pedoman penilaian
 - a. Angka 4 berarti sangat baik/ sangat layak/ sangat menarik/ sangat jelas/ sangat tepat/sangat sesuai/sangat mudah/ sangat efektif.
 - b. Angka 3 berarti baik/ layak/ menarik/ jelas/ tepat/ sesuai/mudah/ efektif.
 - c. Angka 2 berarti cukup baik/ cukup layak/ cukup menarik/ cukup jelas/ cukup tepat/ cukup sesuai/ cukup mudah/ cukup efektif.
 - d. Angka 1 berarti kurang baik/ kurang layak/ kurang menarik/ kurang jelas/ kurang tepat/ kurang sesuai/ kurang mudah (sulit)/ kurang efektif.
3. Selain memberikan skor, mohon Bapak/Ibu juga menuliskan saran-saran pada tempat yang telah disediakan.

4. Instrument Validasi

Berilah tanda silang (√) pada alternatif jawaban yang dianggap paling sesuai.

No	Kriteria	Skor			
		4	3	2	1
1.	Materi dalam bahan ajar interaktif ini sesuai dengan tujuan pembelajaran				
2.	Materi yang disajikan dalam bahan ajar interaktif pada mata pelajaran IPA kelas V sesuai Standar Kompetensi				
3.	Materi yang disajikan dalam bahan ajar interaktif pada mata pelajaran IPA kelas V sesuai Kompetensi Dasar				
4.	Materi yang disajikan dalam bahan ajar interaktif pada mata pelajaran IPA kelas V sesuai dengan Indikator Pembelajaran				
5.	Kelengkapan materi dalam bahan ajar interaktif pada mata pelajaran IPA kelas V di SD/ MI				
6.	Susunan kalimat yang digunakan dalam menyajikan materi pada bahan ajar interaktif mudah dipahami				
7.	Gambar dan video yang disajikan dalam bahan ajar interaktif dapat membantu mengingat informasi/ materi yang dipelajari				
8.	Isi materi yang terdapat dalam bahan ajar interaktif relatif jelas				
9.	Pemilihan warna, teks, gambar, dan animasi relatif jelas				
10.	Bahasa yang digunakan dalam bahan ajar interaktif mudah dipahami dan tidak kaku sesuai dengan karakteristik siswa sekolah dasar kelas V SD/ MI				
11.	Materi yang disajikan pada bahan ajar interaktif dapat digunakan untuk panduan belajar mandiri				
12.	Perangkat evaluasi sesuai dengan materi yang disajikan				

13.	Susunan kalimat pada soal mudah dipahami oleh siswa				
14.	Desain tampilan sesuai dengan karakteristik siswa Sekolah Dasar kelas V SD/ MI				

5. Mohon berikan komentar dan saran secara keseluruhan tentang bahan ajar interaktif ini!

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Terimakasih atas jawaban, komentar dan saran Bapak/Ibu yang telah diberikan kepada peneliti Pengembangan Bahan Ajar Interaktif Berbasis Web Offline Pada Materi Pesawat Sederhana Siswa Kelas V MIN Kanigoro Kediri.

Wassalamualaikum Wr. Wb

Malang, 23 Maret 2015

Penguji

(.....)

NIP.....

7th Appendix : Instrument Validation of Interactive Teaching Material by Design Expert

No	Criteria	Score			
		4	3	2	1
1.	Display used in this interactive teaching materials is attractive				
2.	The layout of the placement of menus in this interactive teaching materials is appropriate				
3.	Font usage in interactive teaching materials in accordance with the characteristics of students elementary school				
4.	Text and writings can be read properly				
5.	Images presented can be clarify the material presented				
6.	The animation used in interactive teaching materials relatively clear and can be understood				
7.	Video is presented in an interactive teaching materials are in accordance				
8.	Music is used interesting and fun				
9.	The color variation is used appropriate				
10.	The background color on offline web appropriate				
11.	Layout on the offline web interesting				
12.	Evaluation of the interactive teaching materials in accordance				

**ANGKET PENILAIAN AHLI DESAIN
PENGEMBANGAN BAHAN AJAR INTERAKTIF BERBASIS WEB
OFFLINE PADA MATERI PESAWAT SEDERHANA
SISWA KELAS V MIN KANIGORO KEDIRI**

Kepada Yth.....

Ahli Desain Bahan Ajar Interaktif Berbasis Web Offline Untuk SD/MI
Di Universitas Islam Negeri Maulana Malik Ibrahim
Malang

Assalamualaikum Wr. Wb

Dengan hormat,

Dalam rangka penulisan skripsi untuk memperoleh gelar Sarjana Pendidikan di Prodi Pendidikan Guru Madrasah Ibtida'iyah Universitas Islam Negeri Maulana Malik Ibrahim Malang, saya melakukan penelitian yang berjudul "Pengembangan Bahan Ajar Interaktif Berbasis Web Offline Pada Materi Pesawat Sederhana Siswa Kelas V MIN Kanigoro Kediri". Bahan ajar interaktif ini dikembangkan dengan mengacu pada KTSP 2006.

Berkaitan dengan penelitian tersebut, saya bermaksud mengadakan uji coba produk Bahan ajar interaktif yang sudah saya kembangkan. Hal ini bertujuan untuk mengetahui kelebihan dan kekurangan produk sehingga dapat dilakukan perbaikan sebelum digunakan dalam pembelajaran di kelas. Oleh karena itu, saya mohon kesediaan Bapak/Ibu untuk mengisi angket berikut ini. Atas bantuan Bapak/ Ibu, saya sampaikan terima kasih.

Malang, 23 Maret 2015

Hormat kami

A. Identitas Ahli

Nama :
Jabatan :
Instansi :
Pangkat/golongan :
Pendidikan terakhir :
Bidang Keahlian :
Masa Kerja dalam Bidang tersebut :

B. Petunjuk Pengisian Angket

Sebelum mengisi angket silahkan Bapak/Ibu membaca petunjuk pengisian berikut ini.

1. Mengamati tampilan dan materi secara keseluruhan pada bahan ajar interaktif berbasis web offline yang dikembangkan, kemudian isikan nilai pada lembar penilaian dengan memberikan tanda (√) pada angka 4,3,2,1 dengan penilaian Bapak/Ibu yang dianggap sesuai.
2. Pedoman penilaian
 - a. Angka 4 berarti sangat baik/ sangat layak/ sangat menarik/ sangat jelas/ sangat tepat/sangat sesuai/sangat mudah/ sangat efektif.
 - b. Angka 3 berarti baik/ layak/ menarik/ jelas/ tepat/ sesuai/mudah/ efektif.
 - c. Angka 2 berarti cukup baik/ cukup layak/ cukup menarik/ cukup jelas/ cukup tepat/ cukup sesuai/ cukup mudah/ cukup efektif.
 - d. Angka 1 berarti kurang baik/ kurang layak/ kurang menarik/ kurang jelas/ kurang tepat/ kurang sesuai/ kurang mudah (sulit)/ kurang efektif.
3. Selain memberikan skor, mohon Bapak/Ibu juga menuliskan saran-saran pada tempat yang telah disediakan.

C. Instrument Validasi

Berilah tanda silang (√) pada alternatif jawaban yang dianggap paling sesuai.

No	Kriteria	Skor			
		4	3	2	1
1.	Tampilan yang digunakan dalam bahan ajar interaktif ini menarik				
2.	Tata letak penempatan menu-menu dalam bahan ajar interaktif ini tepat				
3.	Penggunaan font dalam bahan ajar interaktif yang digunakan sudah sesuai				
4.	Teks dan tulisan dapat terbaca dengan baik				
5.	Gambar yang disajikan dapat memperjelas materi yang disajikan				
6.	Gambar yang disajikan sesuai dengan materi				
7.	Tata letak penempatan gambar tepat				
8.	Video atau animasi yang disajikan dalam bahan ajar interaktif sudah sesuai				
9.	Penggunaan variasi warna sesuai				
10.	Warna pada background web offline sesuai				
11.	Layout pada web offline menarik				
12.	Evaluasi dalam bahan ajar interaktif sesuai				

D. Mohon berikan komentar dan saran secara keseluruhan tentang bahan interakti ini!

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Terimakasih atas jawaban, komentar dan saran Bapak/Ibu yang telah diberikan kepada peneliti Pengembangan Bahan Ajar Interaktif Berbasis Web Offline Pada Materi Pesawat Sederhana Siswa Kelas V MIN Kanigoro Kediri.

Wassalamualaikum Wr. Wb

Malang, 23 Maret 2015

Penguji

(.....)

NIP.....

8th Appendix : Instrument Validation of Interactive Teaching Material by Teacher

No	Criteria	Score			
		4	3	2	1
1.	The material in this interactive teaching materials in accordance with the purpose of learning				
2.	The material is presented in an interactive teaching materials on science subjects for the fifth grade according to Standard Competency Basic Competency and Learning Indicators				
3.	The completeness of the materials in an interactive teaching materials on science subjects for the fifth grade in the elementary school				
4.	The sentence structure used in presenting the material in an interactive teaching materials easy to understand				
5.	Images and videos are presented in an interactive teaching materials can help remember the information or materials studied				
6.	Interactive teaching materials in the topic simple machine can facilitate the delivery of learning materials				
7.	The effectiveness of teaching by using interactive teaching materials in the topic simple machine in the perception of students				
8.	The attractiveness of learning by using interactive teaching materials material simple machine				
9.	The language used in interactive teaching materials easy to understand and not rigid. according to the characteristics of elementary school for the fifth grade students				
10.	Display design according to the characteristics Elementary School for the fifth grade students				
11.	The level of difficulty of exercises provided adequate				
12.	Overall the product is feasible for use in the learning material simple machine				

**ANGKET PENILAIAN SUBJEK UJI COBA GURU
PENGEMBANGAN BAHAN AJAR INTERAKTIF BERBASIS WEB
OFFLINE PADA MATERI PESAWAT SEDERHANA
SISWA KELAS V MIN KANIGORO KEDIRI**

Assalamualaikum Wr. Wb

Dengan hormat,

Dalam rangka penulisan skripsi untuk memperoleh gelar Sarjana Pendidikan di Prodi Pendidikan Guru Madrasah Ibtida'iyah Universitas Islam Negeri Maulana Malik Ibrahim Malang, saya melakukan penelitian yang berjudul "Pengembangan Bahan Ajar Interaktif Berbasis Web Offline Pada Materi Pesawat Sederhana Siswa Kelas V MIN Kanigoro Kediri". Bahan ajar interaktif ini dikembangkan dengan mengacu pada KTSP 2006.

Berkaitan dengan penelitian tersebut, saya bermaksud mengadakan uji coba produk Bahan ajar interaktif yang sudah saya kembangkan. Hal ini bertujuan untuk mengetahui kelebihan dan kekurangan produk sehingga dapat dilakukan perbaikan sebelum digunakan dalam pembelajaran di kelas. Oleh karena itu, saya mohon kesediaan Bapak/Ibu untuk mengisi angket berikut ini. Atas bantuan Bapak/ Ibu, saya sampaikan terima kasih.

Malang, 26 Maret 2015

Hormat kami

A. Identitas Ahli

Nama :
 Jabatan :
 Pangkat/golongan :
 Pendidikan terakhir :

B. Petunjuk Pengisian Angket

Sebelum mengisi angket silahkan Bapak/Ibu membaca petunjuk pengisian berikut ini.

1. Mengamati tampilan dan materi secara keseluruhan pada bahan ajar interaktif berbasis web offline yang dikembangkan, kemudian isikan nilai pada lembar penilaian dengan memberikan tanda (√) pada angka 4,3,2,1 dengan penilaian Bapak/Ibu yang dianggap sesuai.
2. Pedoman penilaian
 - a. Angka 4 berarti sangat baik/ sangat layak/ sangat menarik/ sangat jelas/ sangat tepat/sangat sesuai/sangat mudah/ sangat efektif.
 - b. Angka 3 berarti baik/ layak/ menarik/ jelas/ tepat/ sesuai/mudah/ efektif.
 - c. Angka 2 berarti cukup baik/ cukup layak/ cukup menarik/ cukup jelas/ cukup tepat/ cukup sesuai/ cukup mudah/ cukup efektif.
 - d. Angka 1 berarti kurang baik/ kurang layak/ kurang menarik/ kurang jelas/ kurang tepat/ kurang sesuai/ kurang mudah (sulit)/ kurang efektif.
3. Selain memberikan skor, mohon Bapak/Ibu juga menuliskan saran-saran pada tempat yang telah disediakan.

C. Instrument Validasi

Berilah tanda silang (√) pada alternatif jawaban yang dianggap paling sesuai.

No	Kriteria	Skor			
		4	3	2	1
1.	Materi dalam bahan ajar interaktif ini sesuai dengan tujuan pembelajaran				

2.	Materi yang disajikan dalam bahan ajar interaktif pada mata pelajaran IPA kelas V sesuai SK, KD, dan Indikator Pembelajaran				
3.	Kelengkapan materi dalam bahan ajar interaktif pada mata pelajaran IPA kelas V di SD/ MI				
4.	Susunan kalimat yang digunakan dalam menyajikan materi pada bahan ajar interaktif mudah dipahami				
5.	Gambar dan video yang disajikan dalam bahan ajar interaktif dapat membantu mengingat informasi/materi yang dipelajari				
6.	Bahan ajar interaktif materi pesawat sederhana dapat memudahkan dalam hal penyampaian materi pembelajaran				
7.	Keefektifan mengajar dengan menggunakan bahan ajar interaktif materi pesawat sederhana dalam menyamakan persepsi siswa				
8.	Kemenarikan pembelajaran dengan menggunakan bahan ajar interaktif materi pesawat sederhana				
9.	Bahasa yang digunakan dalam bahan ajar interaktif mudah dipahami dan tidak kaku sesuai dengan karakteristik siswa sekolah dasar kelas V SD/ MI				
10.	Desain tampilan sesuai dengan karakteristik siswa Sekolah Dasar kelas V SD/ MI				
11,	Tingkat kesulitan latihan soal memadai				
12.	Secara keseluruhan bahan ajar interaktif ini layak digunakan pada pembelajaran materi pesawat sederhana				

D. Mohon berikan komentar dan saran secara keseluruhan tentang bahan ajar interaktif ini!

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Terimakasih atas jawaban, komentar dan saran Bapak/Ibu yang telah diberikan kepada peneliti Pengembangan Bahan Ajar Interaktif Berbasis Web Offline Pada Materi Pesawat Sederhana Siswa Kelas V MIN Kanigoro Kediri.

Wassalamualaikum Wr. Wb

Malang, 26 Maret 2015

Penguji

(.....)

NIP.....

9th Appendix : Instrument Validation of Interactive Teaching Material by Student

No	Criteria	Score			
		4	3	2	1
1.	I easily understand the material of simple machine in this interactive teaching materials				
2.	I happy to learn interactive teaching materials because the display interesting				
3.	The questions contained in this interactive teaching materials accordance with the material that I learned				
4.	I can understand the material with a given image, video and animation				
5.	I can easily understand the language in an interactive teaching materials				
6.	I am glad to learn to use this interactive teaching materials				
7.	The music is on interactive teaching materials made my passion to learn				
8.	I can use this interactive teaching material without the help of others				
9.	Instructions for using interactive teaching material is easy for me to understand				
10.	Learning activities in an interactive teaching materials makes me to cooperate with friends				

**ANGKET PENILAIAN SISWA TERHADAP
PENGEMBANGAN BAHAN AJAR INTERAKTIF BERBASIS WEB
OFFLINE PADA MATERI PESAWAT SEDERHANA
SISWA KELAS V MIN KANIGORO KEDIRI**

A. Identitas Ahli

Nama Lengkap :
Sekolah :
Kelas :
No. Absen :

B. Petunjuk Pengisian Angket

Sebelum mengisi angket silahkan membaca petunjuk pengisian berikut ini.

1. Berilah tanda (√) pada kolom skor penilaian yang sesuai dengan pilihan kalian:
 - a. Angka 4 berarti sangat baik/ sangat menarik/ sangat jelas/ sangat tepat/sangat sesuai/sangat mudah.
 - b. Angka 3 berarti baik/ layak/ menarik/ jelas/ tepat/ sesuai/mudah/ efektif.
 - c. Angka 2 berarti cukup baik/ cukup layak/ cukup menarik/ cukup jelas/ cukup tepat/ cukup sesuai/ cukup mudah/ cukup efektif.
 - d. Angka 1 berarti kurang baik/ kurang layak/ kurang menarik/ kurang jelas/ kurang tepat/ kurang sesuai/ kurang mudah (sulit)/ kurang efektif.
2. Selain memberikan skor, mohon komentar/saran ditulis pada tempat yang telah disediakan.

C. Berilah tanda silang (√) pada alternatif jawaban yang dianggap paling sesuai.

No	Kriteria	Skor			
		4	3	2	1
1.	Saya mudah memahami materi pesawat sederhana pada bahan ajar interaktif ini				
2.	Saya senang mempelajari bahan ajar interaktif				

	karena tampilannya menarik				
3.	Soal-soal yang ada bahan ajar interaktif ini sesuai dengan materi yang saya pelajari				
4.	Saya bisa memahami materi dengan diberikannya gambar, video dan animasi				
5.	Saya dapat dengan mudah memahami bahasa yang ada pada bahan ajar interaktif				
6.	Saya senang belajar menggunakan bahan ajar interaktif ini				
7.	Musik yang ada pada bahan ajar interaktif membuat saya semangat untuk mempelajarinya				
8.	Saya bisa menggunakan bahan ajar interaktif ini tanpa dibantu orang lain				
9.	Petunjuk untuk menggunakan bahan ajar interaktif ini mudah untuk saya pahami				
10.	Kegiatan belajar pada bahan ajar interaktif membuat saya untuk bekerjasama dengan teman				

D. Lembar Komentar/Saran untuk Bahan Ajar Interaktif

Malang, 6 April 2015

(.....)

10th Appendix : Pre-Test Sheets

Pre-Test

Pesawat Sederhana

Nama :
Kelas :
No. Absen :
Sekolah :



Ayo Kerjakan!

NILAI

Berilah tanda (X) pada huruf a, b, c, atau d pada jawaban yang benar!

- Berikut ini yang merupakan kegunaan pesawat sederhana adalah....

 - memperingan pekerjaan manusia
 - menggantikan pekerjaan manusia
 - mempermudah pekerjaan manusia
 - menambah pekerjaan manusia

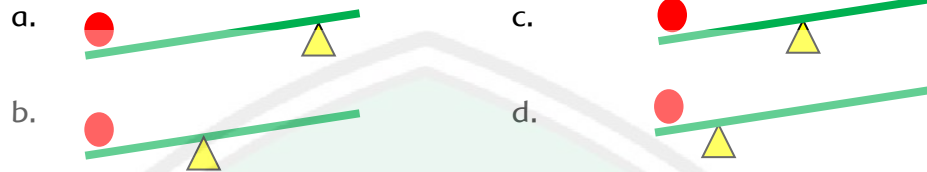
a. 1 dan 2 c. 1 dan 3
b. 2 dan 4 d. 1 dan 4
- Yang bukan termasuk pesawat sederhana adalah....

 - obeng
 - sekrup
 - penjepit makanan
 - mesin pembersih debu
- Kerekan bendera yang ada di sekolah bekerja dengan menggunakan....

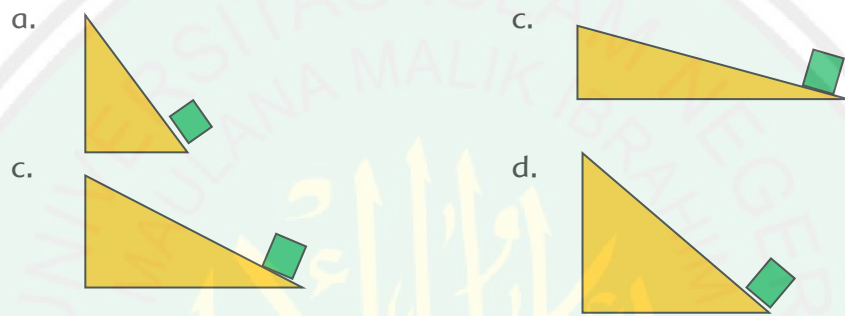
 - katrol tetap
 - katrol bebas
 - katrol ganda
 - tuas
- Benda berikut yang menggunakan prinsip kerja bidang miring adalah....

- a. Sekop
- b. Linggis
- c. gunting
- d. kapak

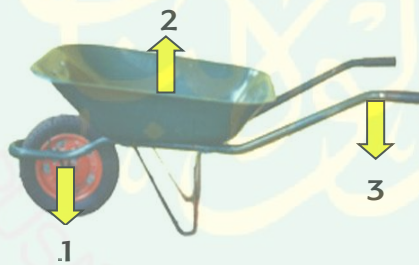
5. Tuas yang memerlukan gaya paling kecil adalah....



6. Bidang miring yang memerlukan gaya paling besar adalah....



7. Perhatikan gambar gerobak roda satu di bawah ini!



Titik kuasa pada gerobak dorong ditunjukkan oleh nomor

- a. 1
- b. 2
- c. 3
- d. tidak ada

8. Pengungkit yang titik bebannya terletak diantara titik tumpu dan titik kuasa adalah



9. Posisi titik tumpu, beban, dan kuasa pada alat pembuka botol yaitu....

- a. titik tumpu berada di antara beban dan kuasa
- b. beban berada di antara titik tumpu dan kuasa
- c. kuasa berada di antara titik tumpu dan beban
- d. titik tumpu, beban, dan kuasa berada pada satu tempat

10. Pernyataan dari empat siswa setelah mengikuti praktikum adalah sebagai berikut.

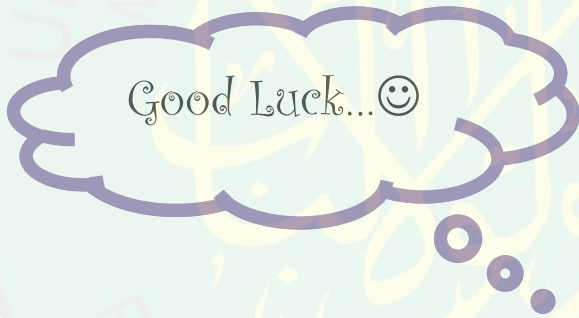
Mugi : Gaya yang dibutuhkan untuk mengangkat beban tidak lebih kecil.

Sani : Gaya yang dibutuhkan untuk menarik beban lebih kecil dari berat beban.

Hana: Walaupun hanya mengubah arah gaya, pekerjaan menjadi lebih ringan.

Irhas : Kuasa yang dibutuhkan hanya 5 kg untuk mengangkat beban 10 kg.

	Katrol Tetap	Katrol Bebas
a.	Mugi, Sani	Hana, Irhas
b.	Mugi, Hana	Sani, Irhas
c.	Sani, Irhas	Mugi, Hana
d.	Hana, Irhas	Mugi, Sani



11st Appendix : Post-Test Sheet

Post-Tes

Pesawat Sederhana

Nama :

Kelas :

No. Absen :

Sekolah :



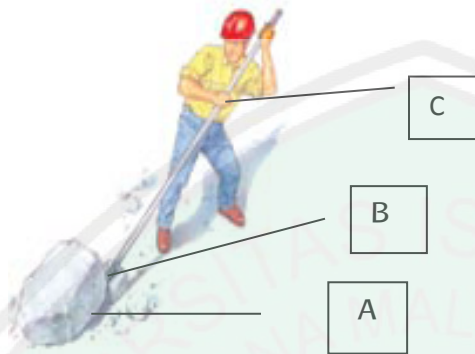
Ayo Kerjakan!

NILAI





1. Alat yang menggunakan prinsip kerja pengungkit yaitu
 - a. derek
 - b. timba sumur
 - c. pembuka botol
 - d. kursi roda
2. Paku yang menancap di tembok lebih mudah dicabut menggunakan pesawat sederhana berupa
 - a. pengungkit
 - b. katrol
 - c. bidang miring
 - d. roda
3. Posisi titik tumpu, beban, dan kuasa pada alat kereta sorong yaitu
 - a. titik tumpu berada di antara beban dan kuasa
 - b. beban berada di antara titik tumpu dan kuasa
 - c. kuasa berada di antara titik tumpu dan beban

d. titik tumpu, beban, dan kuasa berada pada satu tempat

4. Perhatikan gambar berikut untuk menjawab soal nomor 4 dan 5.



Panjang jarak BC adalah

- a. Titik Tumpu
- b. Lengan Kuasa
- 5. Bagian yang ditunjuk oleh huruf A adalah
 - a. Titik Tumpu
 - b. Titik Kuasa
- 6. Sumur timba memanfaatkan pesawat sederhana berupa
 - a. katrol tetap
 - b. katrol rangkap
- 7. Pengungkit yang titik bebannya terletak diantara titik tumpu dan titik kuasa adalah
 - a. 
 - b. 
 - c. 
 - d. 

8. Jalan di pegunungan biasanya berbelok-belok. Ini termasuk pesawat sederhana jenis

- b. Pengungkit
- c. Katrol
- c. Bidang miring
- d. Roda berporos

9. Pernyataan dari empat siswa setelah mengikuti praktikum adalah sebagai berikut.

Mugi : Gaya yang dibutuhkan untuk mengangkat beban tidak lebih kecil.

Sani : Gaya yang dibutuhkan untuk menarik beban lebih kecil dari berat beban.

Hana : Walaupun hanya mengubah arah gaya, pekerjaan menjadi lebih ringan.

Irhas : Kuasa yang dibutuhkan hanya 5 kg untuk mengangkat beban 10 kg.

	Katrol Tetap	Katrol Bebas
a.	Mugi, Sani	Hana, Irhas
b.	Mugi, Hana	Sani, Irhas
c.	Sani, Irhas	Mugi, Hana
d.	Hana, Irhas	Mugi, Sani

10. Derek di pelabuhan menggunakan jenis katrol

- a. Tetap
- c. takal
- b. Bebas
- d. majemuk/ganda

12nd Appendix : Answer Key of Pre-Test & Post-Test**Answer Key of Pre-Test****Pilihan Ganda**

1. C
2. D
3. A
4. D
5. B
6. A
7. C
8. B
9. C
10. B

Penilaian

Pilihan ganda

Tiap poin nilainya 1

$$\frac{\text{Skor yang didapat}}{\text{skor maksimal}} \times 100 = N$$

Answer Key of Post-Test

Pilihan Ganda

1. C
2. A
3. B
4. B
5. C
6. A
7. B
8. C
9. B
10. D

Penilaian

Pilihan ganda

Tiap poin nilainya 1

$$\frac{\text{Skor yang didapat}}{\text{skor maksimal}} \times 100 = N$$

13rd Appendix : Activities Photographs






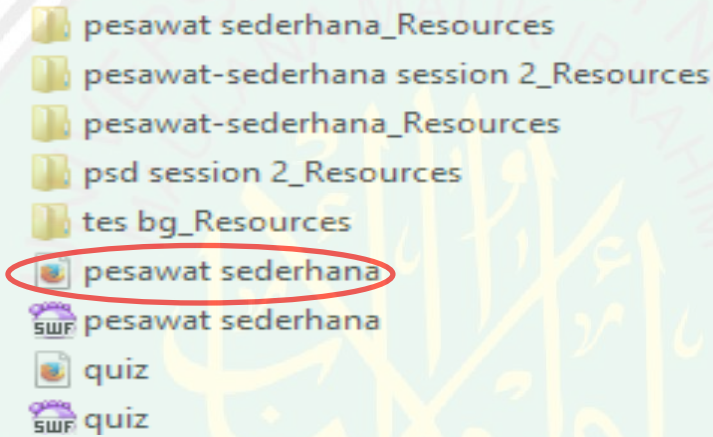
14th Appendix : Procedure Manual of Offline Web

PETUNJUK PENGGUNAAN WEB OFFLINE

1. Pilih folder Pesawat Sederhana

Name	Date	Type	Size	Length
 Pesawat Sederhana	6/13/2015 5:27 PM	File folder		

2. Pilih *icon* pesawat sederhana

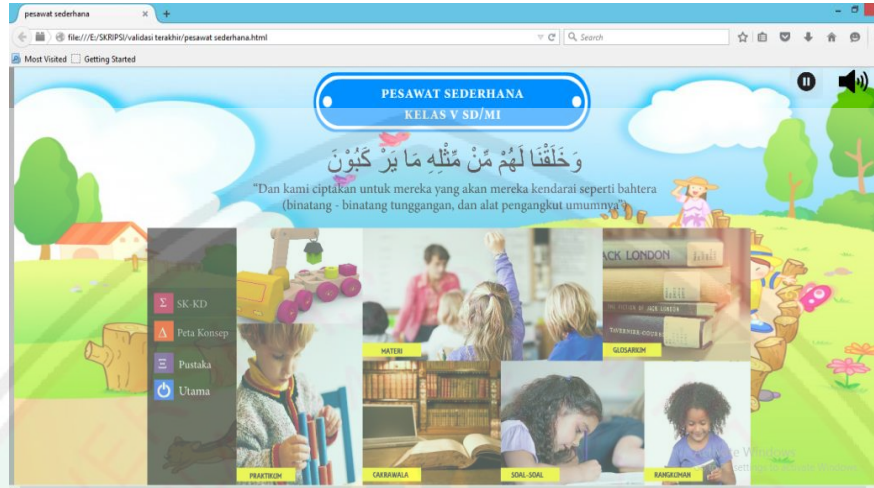


3. Masuk halaman awal

Klik tombol tulisan “START” untuk masuk ke dalam menu utama (Beranda)



4. Pada “Beranda” terdapat bagian-bagian menu dalam bentuk *icon* gambar



5. Pilih *icon* “Belajar yuk”
 Pada *icon* ini terdapat materi pesawat sederhana.



Tuas (Pengungkit)

TUAS adalah jenis pesawat sederhana yang digunakan untuk mengangkat, memindahkan atau menggeser kedudukan benda yang berat atau berukuran besar.

Jenis Tuas :

- Tuas golongan pertama
- Tuas golongan kedua
- Tuas golongan ketiga

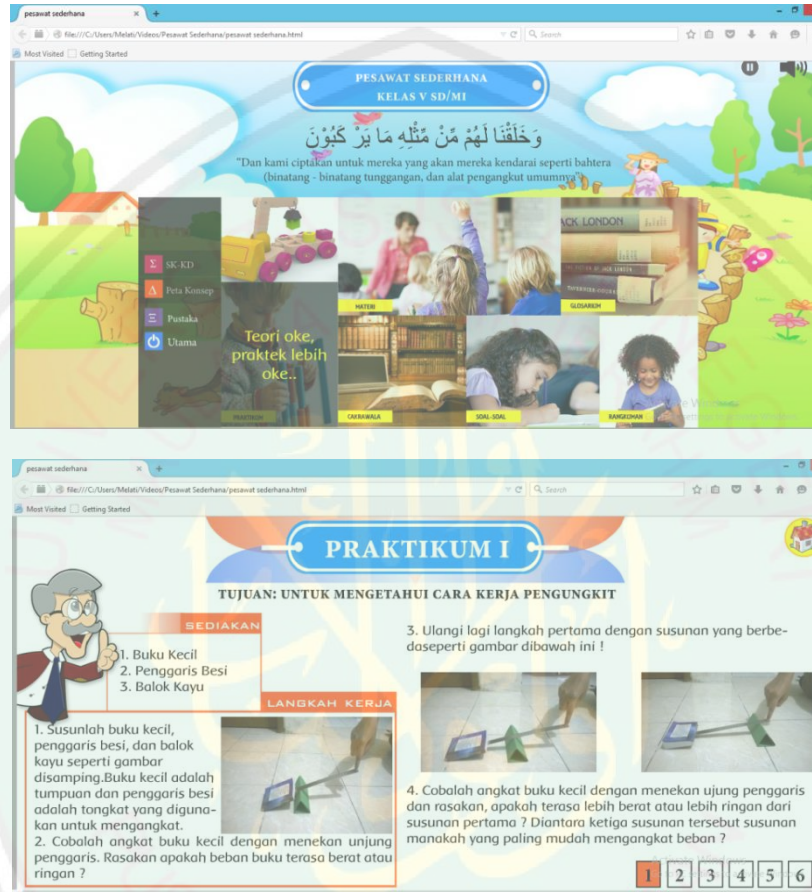
MATERI

- Tuas
- Katrol
- Roda Berpasos
- Bidang Miring
- Sekrup
- Baji
- Gir

TITIK TUMPU (TT) : tempat bertumpunya suatu gaya.
 TITIK KUASA (TK) : tempat dimana tangan kita berada atau gaya yang bekerja pada tuas.
 TITIK BEBAN (TB) : berat benda.

Activate Windows
Go to PC settings to activate Windows.

6. Pilih *icon* “Teori Oke, Praktek lebih Oke”
 Pada *icon* ini berisi tentang menu praktikum yaitu kegiatan percobaan sederhana.



7. Pilih *icon* “Tambah Wawasan Yuk”
 Pada icon ini berisi menu Cakrawala IPAbertujuan untuk memberikan lebih banyak kesadaran dan informasi atau wawasan baru yang berkaitan dengan materi kepada siswa.





8. Pilih icon “Mari Berlatih”.
- Pada menu soal-soal berisi berbagai latihan soal yang akan dikerjakan siswa. Kuis ini terdiri dari bermacam-macam jenis pertanyaan dan dengan poin nilai berbeda sesuai tingkat kesulitan soal.



Klik “Mulai” untuk mengerjakan soal



Akan muncul soal-soal dengan berbagai jenis pertanyaan



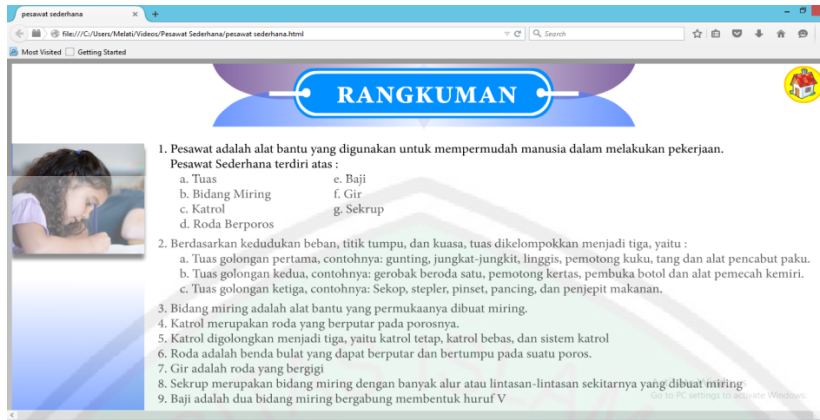
Siswa dapat mengetahui jumlah skor dari hasil pekerjaan pada akhir kegiatan mengerjakan tes evaluasi pesawat sederhana



9. Pilih icon “Mengingat kembali”

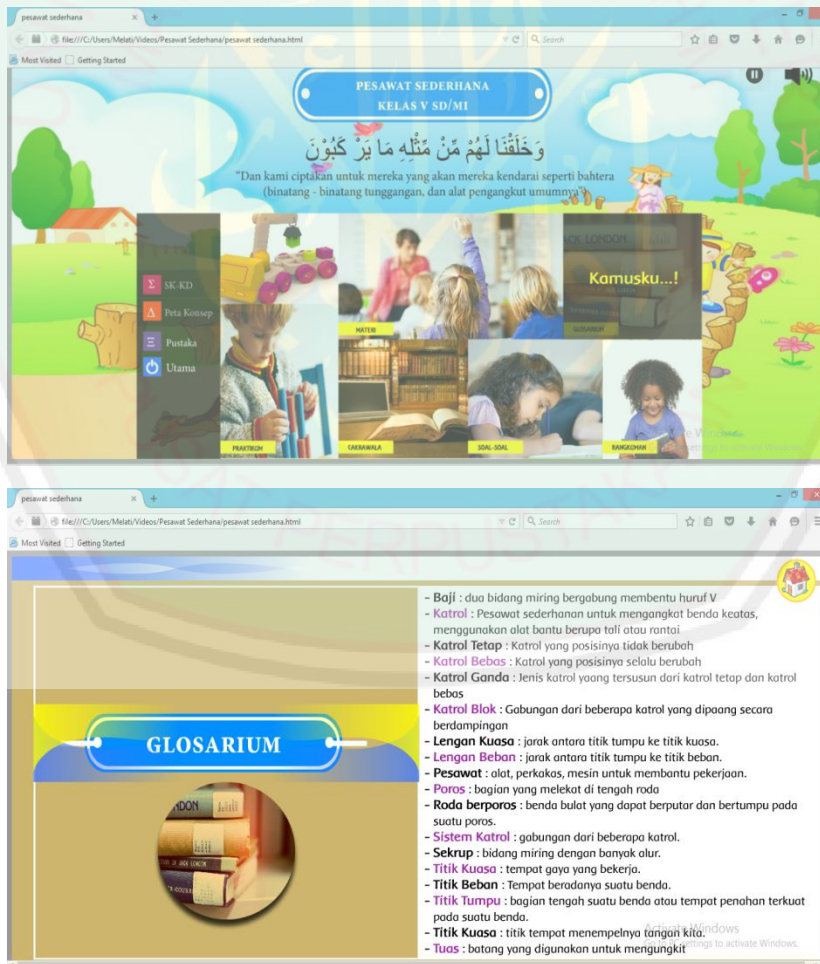
Pada menu ini berisi tentang rangkuman materi yang memungkinkan siswa untuk rekapitulasi konsep yang telah mereka pahami selama pembelajaran.





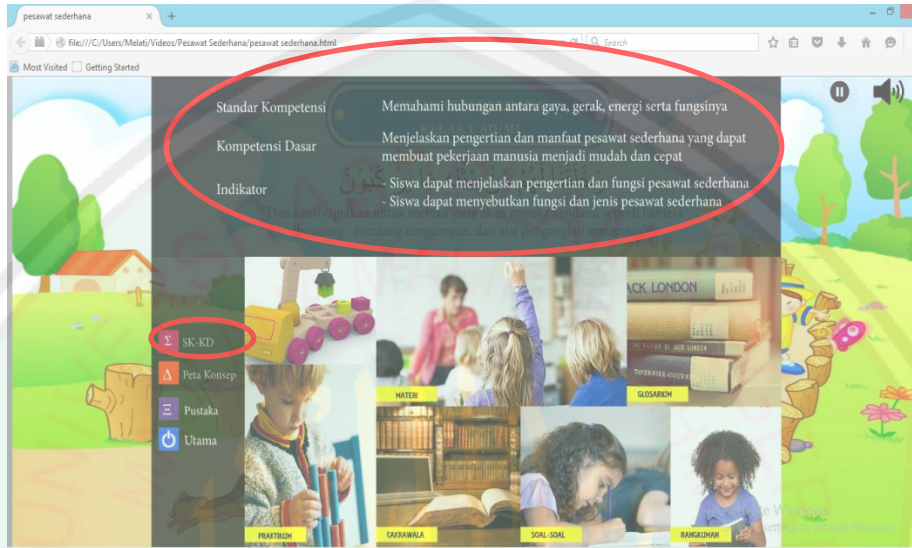
10. Pilih icon “Kamusku”

Pada menu ini berisi tentang glosarium yang berguna untuk memberi penjelasan ketika pembaca menemui kata-kata sulit dalam web offline.



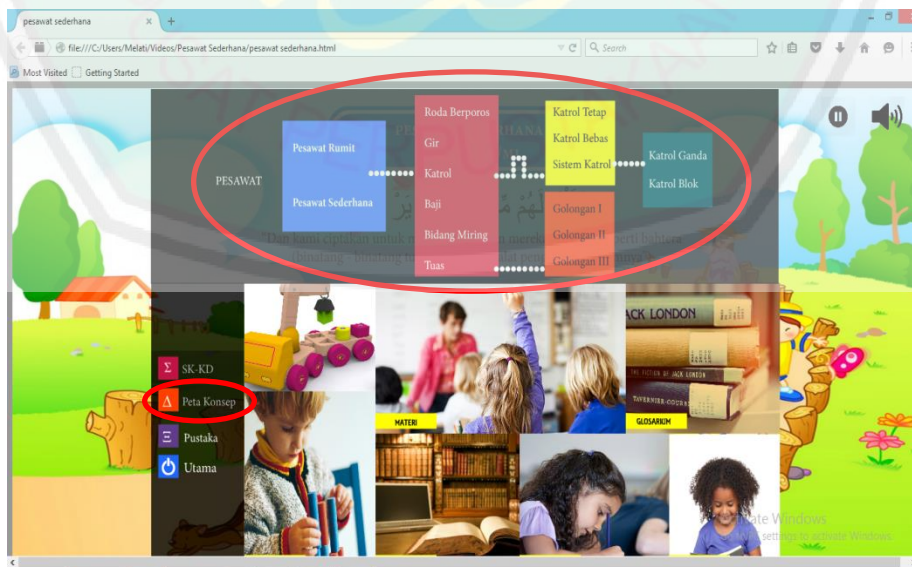
11. Pilih menu “SK-KD”

Pada menu ini berisi tentang standar kompetensi, kompetensi dasar dan indikator yang ingin dicapai dalam penggunaan web offline.



12. Pilih menu “Peta Konsep”

Pada menu peta konsep berisi tentang ringkasan materi pesawat sederhana yang dibuat dalam bentuk bagan yang tujuan untuk memudahkan siswa dalam memahami pelajaran.



13. Pilih menu “Pustaka”

Pada menu daftar pustaka ini berisi semua sumber bacaan yang digunakan sebagai bahan acuan dalam pengembangan web offline.



15th Appendix : Student Personal Information



Name : Elfadiany Mufida
Place & Date of Birth : Kediri, January, 28th, 1990
Address : Ds. Srikaton Kec. Ringinrejo Kab. Kediri
Address at Malang : Wisma Catalonia Summersari Gg. 1
Email : elfamufida90@gmail.com
Education : 1. SDN Sambu II Ringinrejo, Kediri Tahun 1996 s/d 2002.
2. MTsN Kanigoro, Kras, Kediri Tahun 2002 s/d 2005.
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4. S1 Primary School Teacher Education Department, Faculty of Tarbiyah and Teaching Sciences, the State Islamic University of Maulana Malik Ibrahim Malang (2011-now).

Malang, June, 20th 2015

Student

(Elfadiany Mufida)



**KEMENTERIAN AGAMA
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Yang bertanda tangan di bawah ini :

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Pangkat/ Gol. Ruang : Penata Tk. I (III/d)
Jabatan : Kepala MIN Kanigoro Kec. Kras Kab. Kediri

Menerangkan dengan sebenar-benarnya bahwa :

Nama : **ELFADIANY MUFIDA**
NPM : 11140124
Fak./Jur./Prodi. : Pendidikan Guru Madrasah Ibtidaiyah (PGMI)
UIN Maulana Malik Ibrahim Malang

Mahasiswa tersebut di atas telah mengadakan penelitian di MIN Kanigoro Desa Kanigoro Kec. Kras Kab. Kediri, dalam rangka penyusunan skripsi yang berjudul *"The Development of Interactive Teaching Materials Based on Web Offline In The Topic Simple Machine for The 5th Grade Students In MIN Kanigoro Kediri "*.

Demikian surat keterangan ini dibuat dengan sebenarnya dan untuk dipergunakan sebagaimana mestinya.

Kediri, 8 April 2015

Kepala Madrasah



NELY UKHTIANA, M.Pd.I
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Sifat : Penting
Lampiran : -
Hal : Izin Penelitian

17 Maret 2015

Kepada
Yth. Kepala MIN Kanigoro Kediri
di
Kediri

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 : Elfadiany Mufida
NIM : 11140124
Jurusan : Pendidikan Guru Madrasah Ibtidaiyah (PGMI)
Semester – Tahun Akademik : Genap - 2014/2015
Judul Skripsi : *The Development of Interactive Teaching Materials Based on Web Offline In The Topic Simple Machine for The 5th Grade Students In MIN Kanigoro Kediri*

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.



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Tembusan :

1. Yth. Kajar PGMI
2. Arsip



Certificate No. ID08/1219



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Judul : The Development of Interactive Teaching Materials Based On
Offline Web in the Topic Simple Machine for the Fifth Grade
Students in Min Kanigoro Kediri
Dosen Pembimbing : Dr. Like Raskova Oktaberlina, M. Ed

No.	Tanggal	Materi Konsultasi	Tanda Tangan Pembimbing
1.	31 Maret 2015	Konsultasi produk	1.
2.	15 April 2015	Chapter I	2.
3.	23 April 2015	Chapter II	3.
4.	02 Mei 2015	Revisi Chapter I & II	4.
5.	15 Mei 2015	Chapter III	5.
6.	22 Mei 2015	Chapter IV	6.
7.	06 Juni 2015	Revisi Chapter III & IV	7.
8.	08 Juni 2015	Chapter V & VI	8.
9.	14 Juni 2015	Revisi Chapter V & VI	9.
10.	15 Juni 2015	ACC all	10.

Malang, 15 Juni 2015

Mengetahui
Ketua Program Studi PGMI

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