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TEACHING MATERIALS DEVELOPMENT VOLUME OBJECTS TO PLAY THE VALID BLOG

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Abstract

The research purposes produces teaching materials rotary volume objects on valid blog. The research method used is the method used is research development (development research) with the planning stages of design, production, and validation. Documentation in the form of data analysis. The results form the product rotate objects with volume blog mediaharja.blogspot.com valid address reflected on the assessment results validator (expert review) and a good one-one based on the content (content), structure and navigation (construct), and visual design (interface / lay out). Based on this it can be concluded that the volume of the teaching materials developed turn on blogs researchers apparently valid and ready for use in the study of mathematics

Keywords: *teaching materials, Blogs, research development*

I. INTRODUCTION

A. Background

The development of rapid information technology in today's global era inevitable influential in the world of education. Global demands for constantly demanding world educational uses of information and communication technologies in the process of learning mathematics with computer and internet use.

Trend of change and innovation in education will continue to occur and evolve into the 21st century now. Rusman (2012) Changes include: easier to find learning resources, more choices to use and exploit ICT, media and the growing role of multimedia in learning, flexible learning time, the use of computer-based instructional (CBI), the use of media television / video, mobile learning, e-learning, learning management system, curriculum on-line, e-library, learning models with individual learning system. This opinion is in line with the planned curriculum changes in 2013, it is dikemukakan by the Minister of Education and Culture in the daily newspaper Ekspres Sumatra on 11 September 2012. He said: "The new curriculum will be different that the additional or polish ICT. Will also be a lot of feedback about the culture in every subject".

The results public test curriculum in 2013 with the theme of curriculum development in 2013 was able to produce a productive Indonesian people, creative, innovative, and through strengthening affective attitude (know why), skills (know how), and knowledge (know what) are integrated. According to the Ministry of Education (2012) embodies these ideals is not easy because the characteristics of 21st century learning, among others: (1) information (available anywhere, anytime), (2) computing (faster engine wear), (3) Automation (reaching all the work), (4) communication (from anywhere, anywhere). Overcoming these challenges should be

anticipated in the 2013 curriculum changes, including teaching models directed to: (1) encourage students to find out from various sources of observations, not told, (2) to formulate the problem (asking), not only to solve the problem (answer), (3) exercise analytical thinking (decision-making) is not thinking mechanistic (routine), (4) emphasized the importance of cooperation and collaboration in solving problems.

The changes will make the demands of the curriculum on the education world requires innovation and creativity in the learning process, especially the learning of mathematics. Rusman (2012:2) Solution of problem-solving learning and teaching process in accordance with the demands of 21st century global current-based learning is the development of information and communication technology are integrated in the learning activities. Based on some of the results showed that the effectiveness of learning by using technology and better information than the traditional and conventional learning.

Here are some of the results showed that the effectiveness of learning by using technology and better information than the traditional and conventional learning. Research Muhammad Yusuf (2009), the use of computer-based interactive media that produces instructional CD shows improved learning outcomes by using a computer-based interactive learning at SMA Muhammadiyah 1 Palembang. Then Ardiliansyah research (2012) shows the development of mobile based learning teaching materials on mobile learning mathematics class X material trigonometry in high school have any potential effect on the ability of learners.

Researchers interested in using technology and information to develop teaching materials on mathematics learning blog. Development of this blog can be used as a learning resource in overcoming difficulties learners who do not understand the concept of volume integral rotary objects, and can also be used as a medium of learning by educators to convey abstract or imaginative on the matter.

The reason for the selection of materials for the review and analysis of TIM Mapping and Development of Education Quality (PPMP) Sriwijaya University in 2011 on the National Exam for South Sumatra province in the last three years most of the material objects integral rotary volume including troubled. This blog uses the web development domain blogspot.com blog as a sub domain addresses that are free and relatively easier than the website (Madcoms, 2010:9). This opinion is in line with the results of Richardson (2010:8) regarding the use of the web blog:

"Thousands of educators and learners have implemented classroom-based learning and practicing web blog. They think blogs are easy to make, and easy to update at any time by the owner of the blog to publish ideas directly to the Internet via an Internet connection. This blog is also interactive, as it enables educators and learners to initiate communications or add to the information already published there. So's blog is the tool most widely used by readers and writers web so far".

Based on the description above, researchers develop mathematics teaching material on the media blog containing material in the form of power point presentations, interactive questions, and discussion material objects integral rotary volume. In this case I took the title "Development of teaching materials on a rotary volume objects valid blog".

B. Problem Formulation

Based on the above, the formulation of the research problem is: How to develop interactive teaching materials the volume of the rotary on the blog for high school students are valid and practical?

C. Research Objectives

Of the issues that have been formulated, the study aims: Generate interactive teaching material objects turn the volume on the blog for high school students is a valid and practical

D. Development of Instructional Materials In Blog

This research resulted in mathematics teaching material on the blog as media and learning resources to address the www.mediaharja.blogspot.com blog. In general, this development blog focused on material objects integral rotary volume that has been developed according to the formative study design flow Tessmer (1998) and Zulkardi (2010). Research development is defined as a systematic study on a pendesaianan, development and evaluation of programs, processes and learning products that must meet the criteria of validity, practicalities and effectiveness (Van den Akker, in Zukardi 2010). The type of research used in this study is a type of formative research, where the activities performed at each process of development (development weblog) with the aim to improve the quality of the product results. In general, the stages are carried out in this study is based on the type of formative evaluation by Tessmer (1998:16) as follows:

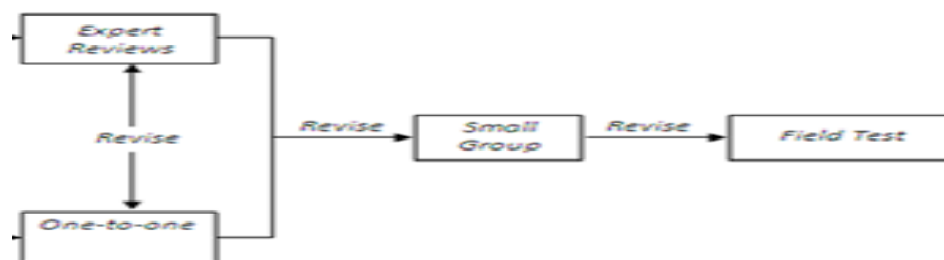


Figure 1. Flow design formative study

The first step taken by the development of teaching materials on the blog, which is used to determine the model development. This study uses the process of developing Mallon's Model (1995). According to Winarno, et al (2009:22) mentions the stages Adrian Mallon model development process is divided into four phases: 1) planning, 2) design, 3) production and 4) validation. In the last stage (validation) product development researchers use this blog formative evaluation stage Tessmer.

II. DISCUSSION

Here are the stages of development of teaching materials on the blog:

1. Planning Phase

This phase includes the identification of problems, formulating objectives, learning resources needs analysis, analysis of user characteristics, plan and develop content that is displayed on the blog.

2. Stage Design

This phase is divided into three stages, namely:

a. Designing the cover design blog content (content), and the appearance (layout). Designing stage contains about designing materials and designing blogs which starts from drawing sketches on paper, known as base paper. This phase aims to obtain an overview of the content of the material, and shape appearance (layout) and what is displayed on the blog. Here is an overview display design (layout) is:

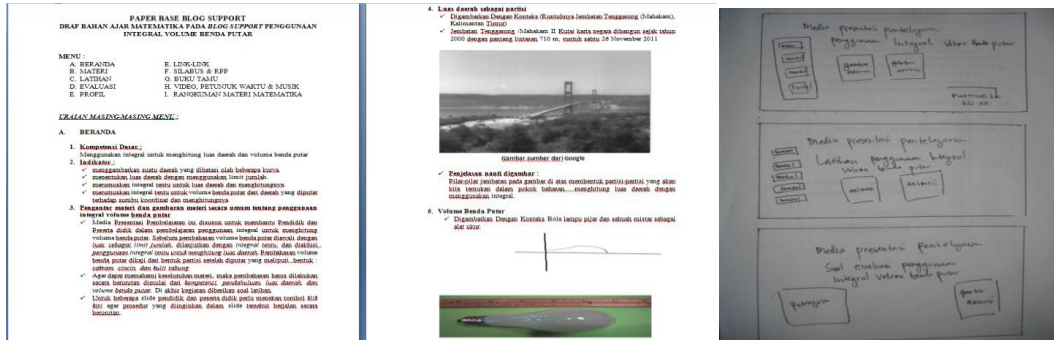


Figure 2. Display paperbase lay out the materials and design blog

b. Developed a flow chart to compose blog support mathematics learning. Stage of development of a flow chart to compile a blog done in order to develop content that will be displayed on each icon on the blog. The following is an overview flow chart:

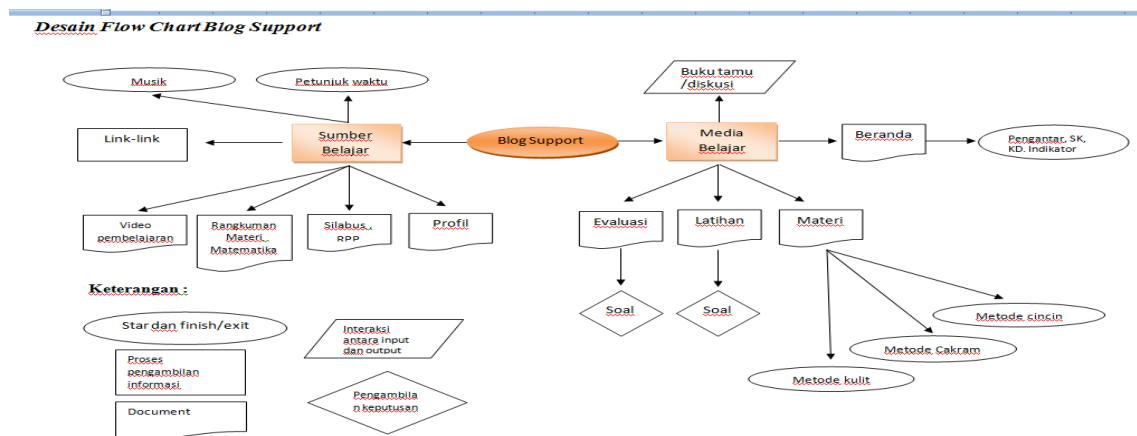


Figure 3. The results of the development of flow charts blog

c. Phase computer base

This stage is pouring from the idea stage and flow chart base paper to computer, this stage also starts with the idea of casting material that has been designed into a computer with the following steps:

1. The materials needed and have made further poured into slide shows using software microsoft office power point. The software is already installed in the computer, this software is used because it can be a file in a web format (html) that this program appears to be a browser that can display internet. This is supported by a power point facilities to publishing the results of work to the web. Such materials include slides integral rotary volume objects are equipped with menus: 1) a user guide blog, 2) contains the syllabus, SKL and RPP, 3) contains introductory material objects integral rotary volume, method of discs, rings method, and skin tube, 4) exercises, 5) evaluation and follow-up the form, 6) remedial and 7) enrichment, then 8) menu interactive discussion and 9) resume high school mathematics in general.

- After assembling all the materials that have been prepared subsequently storing the material on the website to save (upload) the material is moved to the next www.docstoc.com these materials into the blog with addresses turn the volume integral domain objects weblog mediaharja.blogspot.com

3. Stage Production

Furthermore, the results of this so-called prototype computer base. This content authoring using Microsoft office power point software aims to create learning materials that entered into the blog has a different look and appeal with the blogs that already exist today. Based on the explanatory material that would be obtained by a collection of objects integral rotary volume called the prototype material, whereas for the blog that has been developed based on the flow chart above is called a prototype blog. Here are pictures of the prototype display:

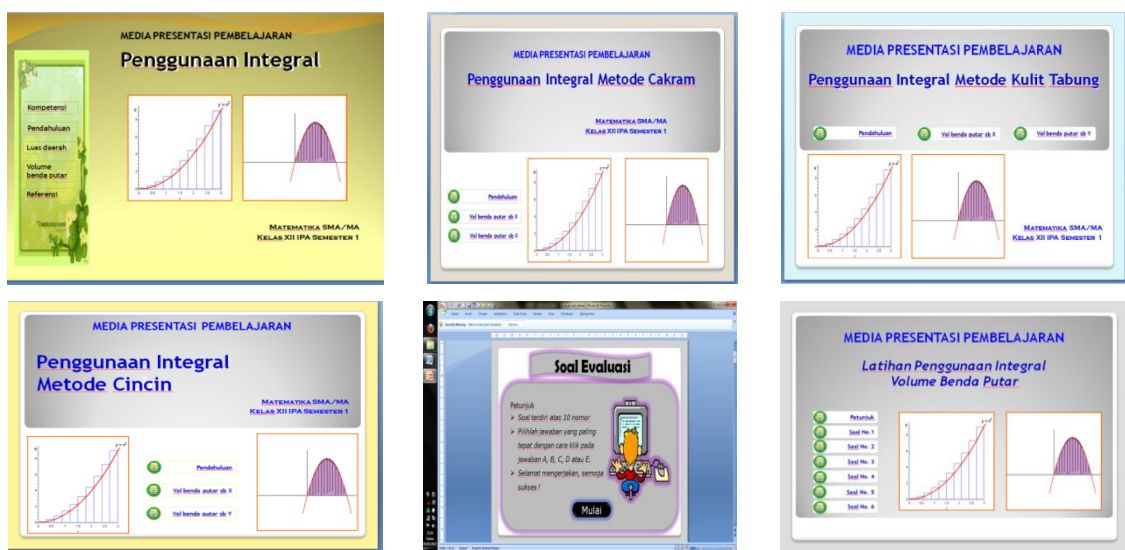


Figure 4. Design results of designing materials (computer base)

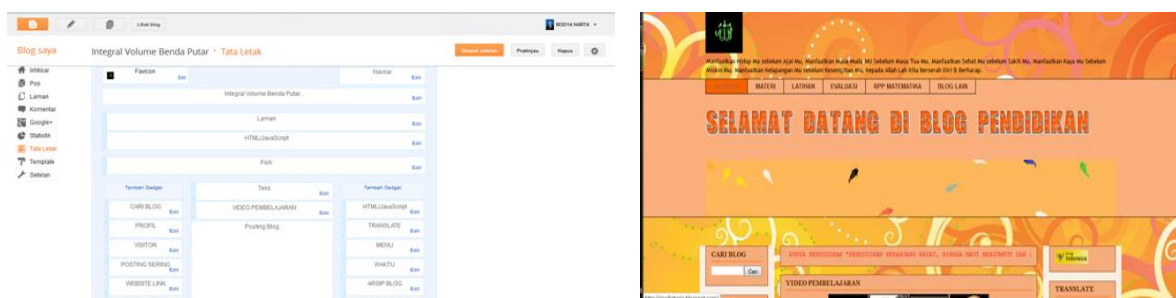


Figure 5. Design blog design results (computer base)

4. Validation Prototyping Phase

Prototype shown is focused on three main characteristics of the content (content), structure and navigation (construct), and visual design (interface / layout). Content that more emphasis to the introduction of the problem according to the situation (contextual problem) material objects integral rotary volume conformity with the purpose of learning. Structure (structure) must be reasonable and flow, as well as systematic (language) more emphasis on conformity EYD. Visual design provides

visual aspects such as the display of text and images, visual design in accordance with the objectives and not excessively and every menu works well in which there is a granularity (icons) / hyperlink associated with the free and structured to divide the text.

a. Expert Review (expert evaluation).

This phase aims to obtain teaching materials based on valid blog content and form. This stage begins with content validity and construct validity. Test the validity of the content (the content) and construct (design) done by validation by experts, both expert material for prototype validation material and media experts for validation prototype blog. As for suggestions and comments from experts in the table 1 below:

Name	Validator	Position	Suggestions
Muhammad Yusuf, M.Pd	material	Sriwijaya University Lecturer in Mathematics Education	<ul style="list-style-type: none"> • The materials focus on volume integral swivel objects. • Material added animation as limit the number of broad areas • Exercises focus on issues integral rotary volume objects. • Display menu on the blog added to the menu of remedial and enrichment menu. • The composition of the menu is very good blog just needs to be changed starting with the menu: devices, materials, training, evaluation, remedial and enrichment.
Darsono, M.Kom. CCNA.	<i>Blog</i>	Teachers in Pemulutan in Ogan Ilir regency / Lecturer Computer IAIN Raden Fatah.	<ul style="list-style-type: none"> • Staining the background (background) adapted to the type of blog / needs. • The menus on the blog should be general / general (known users)
Julian Supardi, S.Pd, MT.	Material	Lecturer of Computer Science, University of Sriwijaya	<ul style="list-style-type: none"> • Slide propagated to every meeting, so according to the time available.
Dr. Reza Firsandaya Malik, MT	<i>Blog</i>	Lecturer of Computer Science, University of Sriwijaya	<ul style="list-style-type: none"> • Changing the font type that is easy to read • Create a site map is easy to navigate so users • Create a post in the web is not out of the frame (frame) web. • Eliminate coding / source code that appears on the website • Create a link to each download any material.

Table 1. Name Validator teaching material on the blog and Advice For Prototype

Based on the results of the validation test experts, it can be concluded that the teaching materials on the blog (prototype) has been classified as either developed based on comments from the questionnaire given at the end of the process of validation research, although there is still a lack of teaching materials and estimated in this blog can be used by learners . Existing deficiencies as in Table 1 will be a reference for revision and improvement - improvements to further develop the prototype further.

b. One-to-one

At the time of one to one observations on learners, based on the observation during learning activities can be summarized:

1. Learners are able to understand how to access teaching material objects matter volume integral swivel on the blog using a computer / laptop
2. Learners are able mengoperasian materials integral material objects turn the volume on the blog using a computer / laptop
3. Learners follow the instructions contained in the instructional materials and listening to educators.
4. Learners have been able to do the exercises responsibility and evaluation of existing.

Based on the test one to one, generally speaking, that the prototype is already good, but there are many shortcomings in the blog. This is evident from the content of the comments from the students were given a questionnaire by the researchers at the end of the one to one above that learners feel happy and attractive to use the blog for the reason:

1. Is a new media in learning than books
2. Utilizing learning blog will be more attractive
3. Find a new place in the learning
4. An attractive media
5. Increased insight and more up to date than reading a book
6. The material presented on the blog is more compact and thus easy to understand detailed
7. Look of the blog a little trimming would certainly make the material and looks to be very interesting.
8. Comments and suggestions from the one to one will emerge as the input for researchers to further revision.

5. Revised Prototype

Based on suggestions from the validator and test results one-to-one against the teaching materials developed on the blog, then the product of this prototype design was revised in order to obtain better teaching materials. As a result of the change before and after revisions based on the results of the expert review and expert validation testing one-to-one as in the following table:

Suggestions	On Revision	After Revision
<ul style="list-style-type: none"> • The materials focus on volume integral swivel objects. 	<ul style="list-style-type: none"> • The indicator on the material there are 4 	<ul style="list-style-type: none"> • Indicators on the existing material 3, for the 3 indicators that formulate definite integral to calculate the area and removed.
<ul style="list-style-type: none"> • Material added animation 	<ul style="list-style-type: none"> • There has been no 	<ul style="list-style-type: none"> • Animation added

<p>(as limit the number of regions) before entering the rotary volume objects.</p> <ul style="list-style-type: none"> • Problem exercises focus on matters integral rotary volume objects. • The composition of the menu is very good blog just needs to be changed starting with the menu: devices, materials, exercises, evaluations. • Display menu on the blog added to the menu of remedial and enrichment menu. • Slide propagated to every meeting, so according to the time available 	<ul style="list-style-type: none"> • There is still a widespread problem area, to question no. 1 to no. 4 • The composition of the menu: not regularly • There is no menu remedial and enrichment menu • Slide still slightly 	<ul style="list-style-type: none"> • Problem no.1 to no exercise. 4 fixed • improved menu structure as recommended by the expert • Added menu remedial and enrichment yng menu contains questions. • Slide coupled primarily to slide about in the menu remedial and enrichment slide about on the menu
<ul style="list-style-type: none"> • Staining the background (background) adapted to the type of blog / needs • The menus on the blog should be general / general (known users) 	<ul style="list-style-type: none"> • The background color on a blog, bright orange repaired • There are some menu 	<ul style="list-style-type: none"> • The background color on a blog fixed with a soft pink color. • Some of the "word on the" corrected and eliminated
<ul style="list-style-type: none"> • Slide propagated to every meeting, so according to the time available. 	<ul style="list-style-type: none"> • Slide still slightly 	<ul style="list-style-type: none"> • Slide coupled primarily to slide about in the menu remedial and enrichment slide about on the menu
<ul style="list-style-type: none"> • Change the font type that is easy to read • Create a site map is easy to navigate so users • Create a web writing in text / image does not come out of the frame (frame) web. • Eliminate coding / source code that appears on the website 	<ul style="list-style-type: none"> • Type 14 point Verdana font • Not There • Some of the text / image out of the frame (frame) web • In the menu there are material coding / source code appears 	<ul style="list-style-type: none"> • Type the letter in accordance with the web font font cherry cream soda 14 • Addition map situ • It has been repaired and there are some images omitted. • It is fixed

• Create a link to each download any material.	• No "word link" for every download	• It has been repaired and raised "link" at the end of each slide so that learners can download.
• View blog material and trimmed in order to look more attractive	• Impressed less attractive	• It has been corrected.

Table 2. Changes Before and After Revision To Prototype

6. Mathematics teaching material on the blog is valid

This research resulted in mathematics teaching material on the blog as media and learning resources to address the paradigm of learning that will take place in accordance with the demands of curriculum 2013. This blog focuses on the development of materials integral to the volume of the rotary stage of the model development process combination Adrian Mallon and groove design Tessmer formative study. According to Winarno, et al (2009:22) Stages of development models Mallon is divided into four phases: 1) planning, 2) design, 3) production and 4) validation. In the last stage (validation) product development researchers use this blog formative evaluation stage Tessmer. Early stage of development of this blog has noted previously posted on this, the next step is to validate the prototype materials. a prototype material and prototype blog. This prototype validation performed expert review and test one to one. Riview expert validation focuses on three main characteristics of the content (content), structure and navigation (construct), and visual design (interface / layout).

According Akker (1999:95-96) Each - each prototyping should focus on three main characteristics of the content (content), structure and navigation (construct), and visual design (interface / layout). Contents in accordance with the syllabus material objects turn the volume integral to the learning objectives. Structure (structure) must be reasonable and flow, as well as systematic (language) more emphasis on conformity EYD. Visual design provides visual aspects such as appearance and inside there are posts granularity (icons) are associated with a hyperlink that is free and structured to divide the text into chapters and sections.

According Ilma (2011:244) Validation of the prototype development of teaching materials in include: 1) validation of the contents of the teaching materials that have been designed in accordance with the syllabus, 2) construct validation components, namely suitability indicator set. This validation can be done in consultation with experts who are experts in the field. Validation is done in the form of validation and discussion to fill in until obtaining a valid teaching materials and fit for use. In this case the validation is also conducted on all instruments that have been designed to support the teaching materials, such as lesson plan validation, validation of test, validation questionnaire, observation validation activities of learners and educators, and a validation interview. Researchers have conducted appropriate stage validation process as mentioned above. Validate the contents of the draft instrument includes material on teaching materials such as: device (syllabus, skl, and curriculum 2013), material validation, and validation issues. Further validation and navigation structure (construct), and visual design (interface / layout) has also been commented upon by the expert review and test one to one. Results of the expert review and validation trials will serve a one-to-one improvement that has developed instructional materials that meet the criteria for a valid instructional materials

Based on these results, it can be concluded that the mathematics instructional materials integral to the volume of material objects play with the address on the blog generated www.mediaharja.blogspot.com that it meets criteria valid by the expert (expert review) and trials one to one. However, from the results of this penelitian has some drawbacks due to the limited time and expenses. Shortage of teaching materials have not met as a full teaching materials that say valid teaching materials and practical, as well as having a potential effect which the whole development process of the research. For it is expected that further research to develop/continue this prototype, in order to become teaching material on the blog that meets the criteria that are practical as well as having a potential effect primarily on the learning outcomes of students.

REFERENCES

- Akker, J., *et al.* (1999). *Design Approaches and Tools in Education and Training*. Netherlands : Kluwer Academic Publishers.
- Ardiliansyah. (2012). Pengembangan Bahan Ajar Matematika Pada Mobile Learning Materi Trigonometri Kelas X Di Sekolah Menengah Atas. Tesis pada PPS UNSRI : Perpustakaan UNSRI.
- Depdiknas. (2012). "Perubahan Kurikulum 2013". Sumatera Ekspres (11 September 2012).
- _____. (2012). *Uji Publik Kurikulum 2013*. [On Line]. [Http ://www.kemdiknas.go.id/kemdikbud/uji-publik-kurikulum-2013-2](http://www.kemdiknas.go.id/kemdikbud/uji-publik-kurikulum-2013-2). [27 Desember 2012]
- Ilma, R.IP., dkk. (2011). *Assessment in Mathematics Education*. Palembang : Perpustakaan PPS Universitas Sriwijaya.
- Madcoms, M. (2010). *Membuat Blog dengan Blogger untuk Pemula*. Yogyakarta: CV. Andi Offset.
- Richardson, W. (2010). *Blogs, wikis, podcasts, and other powerful Web tools for classroom*. California : corwin Press. Tersedia http://books.google.co.id/books?id=6PFjF9BQe2AC&printsec=frontcover&hl=id&source=gbs_ge_summary_r&cad, [23 november 2012].
- Rusman. Deni K. & Cepi R. (2012). *Pembelajaran Berbasis Teknologi Informasi dan Komunikasi*. Jakarta: PT. Raja Grafindo Persada.
- Tessmer, M. (1998). *Planning and Conducting Formative Evaluations*. Philadelphia London: Kogan Page
- Yusuf, M. (2010). Peningkatan Hasil Belajar Matematika Peserta didik melalui lembar Kerja Peserta didik (LKS) Interaktif Berbasis Komputer Di SMA Muhammadiyah 1 Palembang. *Jurnal Pendidikan Matematika* Vol. 4 No.2 hal.34-44. Palembang: PPS Prodi Matematika UNSRI & IndoMS Sumsel.
- Winarno, dkk. (2009). *Teknik Evaluasi Multimedia Pembelajaran*. Yogyakarta : Genius Prima Media
- Zulkardi, & Ilma, R. (2010). Pengembangan Blog Support Untuk Membantu Siswa Dengan Guru Matematika Indonesia Belajar PMRI. *JIPP Volume 2* (agustus 2010)