INTERNATIONAL CONFERENCE ON MATHEMATICS, SCIENCES, TECHNOLOGY, EDUCATION AND THEIR APPLICATIONS

Makassar, 20th – 21st August 2014

RECENT RESEARCH AND ISSUES ON MATHEMATICS, SCIENCE, TECHNOLOGY, EDUCATION AND THEIR APPLICATIONS

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State University of Makassar
ICMSTEA 2014: RECENT RESEARCH AND ISSUES ON MATHEMATICS, SCIENCE, TECHNOLOGY, EDUCATION AND THEIR APPLICATIONS

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Assalamu'alaikum Warahmatullahi Wabarakatuh.
Good morning and may God's blessings be upon us all.

Your Excellency the Rector of State University of Makassar (UNM) Prof. Dr. H. Arismunandar, M.Pd. Ladies and gentlemen, on behalf of the conference committee, first, I would like to give our welcome to all the delegates, keynote speakers, invited speakers, parallel speakers and participants coming today. Welcome to the conference, welcome to State University of Makassar, and welcome to Makassar.

This conference entitled "International Conference on Recent Research and Issues in Mathematics, Sciences, Technology, Education and Their Applications (ICMSTEA) 2014". It is assigned to celebrate the 53rd commemoration of State University of Makassar. The conference is organized by the Faculty of Mathematics and Science in conjunction with several committee members from other faculties within State University of Makassar.

Ladies and gentlemen, the conference proudly invites eleven keynote speakers coming from several countries. Therefore, I would like to express my sincere thanks to the keynote speakers, including:

1. Professor Max Warshauer (Texas State University, USA)
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10. Professor Muhammad ArifTiro (State University of Makassar)
11. Dr. SitiNuramaliati Prijono (the Indonesian Institute of Sciences)

I would like also to give sincere thanks and gratitude to the invited speakers, including:

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4. Dr. Nurdin Noni, M.Hum (State University of Makassar)
5. Dr. Yuni Sri Rahayu, M.Si. (State University of Surabaya)
6. Dr. Ayuddin M.T. (State University of Gorontalo)
7. Dr. Usman Pagalay (State Islamic University of Malang)
8. Dr. Suyanta, M.Si. (State University of Yogyakarta)
9. Dr. Elisa Sesa, M.Sc. (Tadulako University, Palu)

Next, I want to thanks and welcome to 149 parallel speakers and totally, 450 participants approximately are registered to participate from many universities in Indonesia from Aceh to Papua, and other countries. All of them have shared their research and theoretical papers presented and discussed in the conference.
Forewords from the Head of Committee

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In this occasion, I would like to thank Deputy of Governor of South Sulawesi Province (Ir. H. Agus Arifin Nu’mang, M.Si), Mayor of Makassar City (Ir. H. Ramdhan Dhany Pomanto), Rector of UNM (Prof. Dr. H. Arismunandar, M.Pd.), and Director of Post Graduate Program of UNM (Prof. H. Jasruddin Daud Malago), who are very kind to be the host of welcoming dinner and lunch during the conference.

I want to thank also to Kalla Group, KIA Kalla, Erlangga Press, Opti Lab, and e-Bimbel Yogyakarta for their contribution as the sponsors of this conference.

Finally, it is my privilege to thank all organizing committee members who have been showing good work and determination for the accomplishment of this conference. I would like to apologize to all of you when there are some inconvenience things during the implementation of this conference.

Thank you and wish you have a meaningful conference.

Assalamu’alaikum Warahmatullahi Wabarakatuh.

Head of Committee,

Suwardi Annas, Ph.D.
Bismillahirrahmanirrahim
Assalamu'alaikum Warahmatullahi Wabarakatuh

First of all, let us praise to the Almighty, Allah SWT, because of his Blessings and Helps, we are able to gather here to attend the International Conference on Recent Research and Issues in Mathematics, Sciences, Technology, Education and Their Applications (ICMSTEA) 2014.

The development of education and technology in recent decades grows very rapidly. In addition, they have been specialized into many specific topics. Indeed, for researchers and lecturers, being qualified of a specific field as well as being aware of the contemporary development of other fields are two crucial things. One of the reasons why we undertake the conference is to fulfill those two things. By attending the conference, researchers and lecturers have a good opportunity to share their research findings and to obtain broader descriptions of the development of other general knowledge.

We convey our deep appreciation and gratitude to all of the committees that work from the beginning to support and organize the conference. We also strongly expect the participants of the conference to be continually productive, increase the capacity in conducting a research, and carry out both national and international scientific publications.

Finally, let me again recite thank you to the all participants of the conference who are receptive to spend their time to be present and entirely involved at this events. I wish the conference advantageous for all of us.

Billahitaufiqwalhidayuh,

Wassalamu'alaikum Warahmatullahi Wabarakatuh.

Dean of Faculty of Mathematics and Science
State University of Makassar

Prof. Dr. H. Hamzah Upu, M.Ed.
Forewords from Rector of UNM

Bismillahirrahmanirrahim
Assalamu’alaikum Warahmatullahi Wabarakatuh

Your respectable, the high officials of State University of Makassar, the committee, the speakers, and the participants of conference.

It gives me a great pleasure to extend to you all a very warm welcome, especially to our keynote speakers who have accepted our invitation to attend the conference. It is an opportune time to convey to you that UNM is celebrating the 53rd Dies Natalis and it commends the faculty of Mathematics and Science (FMIPA) to be in charge of all activity sequences in the Dies Natalis. However, the support of other faculties is also really influential and gives valuable contribution to the success of the event.

In that celebration, we undertake several agendas including educational and sport activities. The conference, ICMSTEA, is one of our educational activities that covers a wide range of very interesting items relating to mathematics, sciences, education, technology and their applications.

By taking participation of this seminar, it is highly expected to all of us to share our research findings to society and continuously develop new ideas and knowledge. Those things are two significant steps in improving the quality of nations around the world, increasing our familiarity to each other, and even avoiding underdevelopment.

On this good occasion, let me quote what Obama said about the education related to this conference and I wish fruitful for all of us:

*Every single one of you has something you’re good at. Every single one of you has something to offer. And you have a responsibility to yourself to discover what that is. That is the opportunity an education can provide.*

Furthermore, I would like to take this opportunity to express my heartfelt gratitude to all organizing committee especially for the Faculty of Mathematics and Science that primarily hosts this conference particularly and other Dies Natalis events generally.

Finally, this is a great time for me to declare the official opening of the International Conference on Recent Research and Issues in Mathematics, Sciences, Technology, Education and Their Applications (ICMSTEA) 2014.

I wish you a very enjoyable stay in Makassar, I warmly welcome you again, as in Makassar, we say “salamakibatturimangkasara”.

Wassalamu’alaikum warahmatullahi wabarakatuh.

Rector of State University of Makassar

Prof. Dr. H. Arismanandar, M.Pd.
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DEVELOPMENT OF MODEL-BASED LEARNING VISUAL MEDIA THROUGH THE MODEL FOUR-D THIAGARAJAN FOR EXPOSITORY WRITING IN JUNIOR HIGH SCHOOL

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Abstract

This research is a development (research and development). The first year of this research aims to develop a model-based learning to write expository visual media. Designed study using 4-D model of development Thiagarajan consisting of four stages, namely the stage of define, design, develop, and disseminate. Subjects were teachers and SMP 21 seventh grade students in Makassar. The data was collected through: observation, interviews, and questionnaires. Based on the results of the experts' validation, the results of the research in the first year produce learning model and learning tools that it appropriates the validity criteria.

Keywords: model development, instructional writing, expository, Indonesian.

1. Introduction

Writing skills is one of the skills of Indonesia language. As one of learning skills, the teachers still complain that the students' writing skills are still at low category. According to Akhadijah (1994:1) found that the students are difficulty in developing the ideas, thinking which are not coherently/erratic, and organizing a logical and systematic way. Relating to the problem, Suandi, Halustini, and Widiarsini (2009) suggested that writing is a skill that most high level in language skills to compare it to speaking skills, reading skills, and listening skills. The students are difficult to master the writing skills because it is the latter language skill to acquire by everyone.

In the results of the study, Halustini, Suandi and Widiarsini (2009) showed that the writing skill of students classified as low. The mean value was obtained only 64, far below the mean value of the score standard criteria of school, i.e. at least 75. The identified factors as a cause of poor writing skills students are: 1) the teacher teaching models are conventional, 2) the lack of students' skills distinguish the type of writing, and 3) the lack of students' understanding about parts of the text.

Based on the research that has been done by Jonah Suparno (in Iskandarwassid and Ristiani, 2010) showed that the most disliked language skill of students and teachers is writing. There are two factors that identified as the cause of. First, internal factor is from the students who feel inadequate or no talent to write. Second, external factor is from the teachers' skill that cannot facilitate the writing learning process itself.

To overcome the lack of students' writing skill, teachers are demanded to act as a mediator, facilitator, and a source of aspiration by utilizing learning media optimally. According to Sudjana (2005: 1), learning media is one of the most outstanding aspects, excluding teaching methods, in teaching methodology. It further asserted that the teaching media can
improve students' learning process and the students' achievement in learning outcomes (Sudjana, 2005:2).

As cited in Hamsa's research (2009), he stated that in examining the utilization media of audio, picture, and environment in junior high school showed that those media are effective in improving students' result in writing learning. Compared them, picture media is the most effective learning media in expository writing learning. That media is encouraging the utilization of creativity thinking and increasing the concentration of students which ultimately impact on the improvement of student learning outcomes.

A research is conducted by Syahril (2008), he showed that visual media affect positively toward achievement/results of student learning. Similarly, Asdam's research (2008) showed that the series picture media is effectively used in writing by signing the improvement average score of students' learning results. In other results of the research, which involves the utilization of visual media in the learning process conducted by Mustafa et all. (2008) showed that the use of the picture media is more effective in improving student learning achievement.

Based on the results of the research above, it suggests that the use of teaching media in the learning process is very important to improve the learning quality and the learning outcomes. Nevertheless, the study of such research is still limited to utilize in learning materials, it has not find a model of a learning system yet.

Writing expository is one of the competencies that are required for students in junior high school. Writing expository plays an important role to convey ideas, information, and opinions. To maximize the results of learning to write expository, teachers need to design writing learning activities with the structured learning. In fact, the draft was implemented based on habits that lasts is static. The use of visual media is not integrated with the structured steps and the structured learning process. Based on that problem, this research is designed to develop a learning model in writing expository based on visual media which is valid, practical, and effective.

2. Method
This type of research is research development (research and development). The research aims to develop a learning model in writing expository based on visual media. The research is designed through using of model 4-D Thiagarajan, consisting of four phases, namely the phase of definition, phase of design, phase of development, and phase of dissemination. The research is conducted in the junior high school to develop a model of learning in writing expository based on visual media, including the devices. The subject of this research is the teacher and students at seventh grade of SMP Negeri 21 Makassar.

The procedures of learning model are in the definition phase, the design phase, and the development phase. The definition phase includes identification the students' characteristic and the students' learning needs before designing the learning model in writing expository based on visual media. Such activities include the following: 1) analysis of beginning-ending, 2) analysis of the students, 3) analysis of the tasks, 4) analysis of the materials, and 5) analysis of the goals. The design phase deals with the learning media selection, the choosing of format, and the first designing of learning model with the draft instrument of assessment and learning tools. The development phase aims to produce a prototype model of learning which has been validated by experts of language
the supporting device, and 4) the possibility of the device to be developed by

Implementation learning component is classified “valid” category with 3.50 as average score. Subcomponents implementation learning consists of: 1) the clarity of the planning tasks, 2) the possibility of planning tasks for teachers, 3) the possibility of implemented interactive tasks for teachers, 4) clarity of tasks students, 5) the possibility of giving the task to be carried out, 6) clarity the role of teacher in assisting and directing activities of the students, and 7) the teacher's role is likely in assisting and directing students to the activity carried out. Each subcomponent should obtain a minimal “valid” category.

Environmental learning component is classified “valid” category with 3.75 as average score. Subcomponent environmental learning consists of: 1) the clarity of the completion of the environment learning, 2) the possibility of establishing a environment learning for teachers, 3) the clarity of management of teaching and learning activities, and 4) the possibility of managing the teaching and learning activities carried out by the teacher. Each subcomponent should obtain a minimal “valid” category.

Evaluation component is classified “very valid” category with 3.70 as average score. Subcomponent evaluation component consists of: 1) clarity how the implementation evaluation, 2) clarity of the learning outcomes, assessment rules 3) aspect of the assessment that is comprehensive, 4) type of assessment vary, and 5) the relevance of the type of assessment with learning models. Each subcomponent should obtain a minimal “valid” category.

the teacher. Each subcomponent should obtain a minimal “valid” category.

Based on the results of the assessment above, the experts, who validate it, also suggested that the assessment should include affective aspects. Therefore, researchers have made revisions and improvements based on suggestions.

3.2 Result of the Development MEBMV Model

Based on the results of the validation, Lesson Plan (RPP) should be classified "very valid" category. Completely, the results of the validation of RPP MEBMV Learning Model are shown in Table2.

Based on Table 2, Lesson Plan (RPP) of MEBMV Learning Models is classified “very valid” category. From the eight components of model, one component is classified “valid” category, while the other components are classified “very valid” category. The identity component obtained 4.00 as average score with “very valid” category. Identity contains aspects of the educational such as unit, subject, class, semester, and the allocation of time.

Goals component obtained 3.60 as average score with “very valid” category. Subcomponent goals consists of: 1) suitability of base competence with indicator, 2) suitability of indicators with the goals of learning, 3) clarity of formulation the objectives of learning, 4) suitability of learning objectives with the allocation of time, and 5) the suitability of learning objectives with the material. Each subcomponent should be minimal obtain “valid” category.

Material component obtained 3.75 as average score with “very valid” category. Subcomponent material consists of: 1) the suitability of the material with the basic competencies and 2) suitability of the material to the media. Each subcomponent should obtain a minimal “valid” category.
The method component obtained 3.50 as average score with “valid” category.
Facility and learning source Component obtained 3.75 as average score with “very valid” category. Subcomponent facility and learning resource consists of: 1) facility of supporting learning to achieve the learning objectives and 2) learning resource relevant to the material to be presented. Each subcomponent should obtain a minimal “valid” category.
Learning steps component obtained 3.67 as average score with “very valid” category. Subcomponent learning steps consists of: 1) sequence learning hierarchy appropriate media, 2) chance of students discover concepts, facts and principles, and 3) chance of students to critiquing and analyzing the media. Each subcomponent should obtain a minimal “valid” category.
Media component obtained 3.63 as average score with “very valid” category. Subcomponent media consists of: 1) conformity with the development/ characteristics of students, 2) conformance with basic competencies, 3) possibility to stir up motivation, and 4) easy to apply. Each subcomponent should obtain a minimal “valid” category.
Evaluation component obtained 3.67 as average score with “very valid” category. Subcomponent evaluation consists of: 1) cognitive aspect, 2) affective aspect, and 3) psychomotor aspect. Each subcomponent should obtain a minimal “valid” category.

3.3 Results the Development of Teacher’s Book
Based on the results of validation, MEBMV Model Learning, Teacher’s Book is classified “very valid” category. Completely, the results of the four components validation of Teacher’s Book, MEBMV Learning Model, is shown in Table 3.

Based on Table 3, the feasibility of content component obtained 3.40 as average score with “valid” category. The subcomponents of feasibility of contents consist of: 1) the students’ book-oriented material, 2) the adequate materials to guide teachers in delivering material, 3) the accuracy of the material, 4) the stages of learning encouraged to develop character, creativity, and innovation, and 5) the implementation assessment clearly illustrated. From overall subcomponents, the implementation assessment illustrated clearly only be classified “valid” category. The other subcomponents are classified “very valid” category.

The feasibility of presentation components obtained 3.70 as average score with “very valid” category. Subcomponent of feasibility of presentation consists of: 1) sequence, systematic, and easy to grasp the materials presented, 2) the material no conflict with SARA, not nuanced pornography, and accommodate diversity and gender, 3) from entanglement, subsections, and the concept, 4) activity-based learning stages, 5) stages of matter is clear and can be applied. Each subcomponent should obtain a minimal “valid” category.

The feasibility of language component obtained 3.75 as average score with “very valid” category. Subcomponent of the feasibility of language consists of: 1) easy to understand language and 2) precision of the use of the term. Each subcomponent should obtain a minimal “valid” category.

The feasibility of graph component obtained 3.50 as average score with “valid” category. Subcomponent of the feasibility of graph consists of: 1) the layout and 2) typography. Each subcomponent should obtain a minimal “valid” category.
3.4 Results the Development of Student’s Book
Based on the results of validation, MEBMV Learning Model Students’ Books is developed "very valid" category. The complete results of the four components validation of the MEBMV Learning Model Students’ Books is shown in Table 4.

Based on Table 4, the feasibility of content component obtained 3.40 as average score with “valid” category. Subcomponents of the feasibility of content consist of: 1) encourages understanding, 2) the accuracy of the material, 3) recently material, 4) encourages curiosity, and 5) not dispute the SARA, not nuanced pornography, and accommodate the diversity and gender. From the subcomponents, recently material obtained “valid” category, while other subcomponents obtained “very valid” category.

Language component obtained 3.50 as average score with “valid” category. Subcomponent of language component consists of: 1) the suitability of the use of language with the ability of learners and 2) the accuracy of the use of the term. Each subcomponent should obtain a minimal “valid” category.

Presentation components obtained 3.50 as average score with “valid” category. Subcomponent of presentation component consists of: 1) encourages the active involvement of learners; 2) relation between sections, 3) integrated every section, 4) harmony in every concept, 5) presentation contextually. Each subcomponent should obtain a minimal “valid” category.

Graph components obtained 3.67 as average score with “very valid” category. Subcomponent of graph component consists of: 1) layout, 2) typography, and 3) illustrations. Each subcomponent should obtain a minimal “valid” category.

3.5 Results the Development of Student’s Activity Sheet
Based on the validation results, MEBMV Learning Model, Students’ Activity Sheet is developed "very valid" category. The complete results of the four components validation of Students’ Activity Sheet (LKS) are shown in Table 5.

Based on Table 5, the feasibility of contents components obtained 3.67 as average score with "very valid" category. Subcomponent the feasibility of contents consists of: 1) compliance with KI and Base Competence, 2) compliance with the students’ needs, 3) compliance with instructional materials, 4) the truth of the substance of the material, 5) the benefits to enhancing the knowledge, and 6) compliance with morality and social values. Each subcomponent should obtain a minimal “valid” category.

Language component obtained 4.00 as average score with “very valid” category. Subcomponent of language component consists of: 1) readability, 2) clarity of information, 3) conformance with Indonesia language rules 4) the use of language effectively and efficiently. Each subcomponent should obtain a minimal “very valid” category.

Presentation component obtained 3.70 as average score with “very valid” category. Subcomponent of presentation component consists of: 1) the clarity of purpose, 2) ordering of presentation, 3) providing motivation, 4) interactivity, and 5) completeness of information. Each subcomponent should obtain a minimal “valid” category.

Graph component obtained 3.63 as average score with “very valid” category. Subcomponent Graph component consists of: 1) use of the font type and size, 2) layout, 3) illustration/graphics/pictures/photos, and 4)
Table 5. Results of Student’s Activity Sheet (LKS)

<table>
<thead>
<tr>
<th>No</th>
<th>Component</th>
<th>Score</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Feasibility of Content</td>
<td>3.67</td>
<td>Very Valid</td>
</tr>
<tr>
<td>2</td>
<td>Language</td>
<td>4.00</td>
<td>Very Valid</td>
</tr>
<tr>
<td>3</td>
<td>Presentation</td>
<td>3.70</td>
<td>Very Valid</td>
</tr>
<tr>
<td>4</td>
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Average Score

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<td>3.70</td>
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5. Conclusion

Based on the development has been done in the seventh grade of Junior High School, it can be summarized as follows. 1) MEBMV learning model has been developed in accordance with the characteristics and students’ needs. Suitability characteristics and students’ needs is done through activities that include: a) analysis of beginning-ending, b) analysis of the student, c) analysis of task, d) analysis of the material, and e) analysis of specification purposes. 2) Through the design stage, it has produced relevant learning tools to support MEBMV Learning Model. At this stage, the researchers designed a device that is used to study the development of expository writing-based learning model of visual media. The device consists of learning designed; a) Book Model, b) lesson plan, c) Student Book, d) Teacher Book, and e) Student Activity Sheet. 3) At this stage of development, it has produced models of learning and supporting devices that follow the criteria of validity, namely: a) the Model book is categorized “very valid”, b) Lesson Plan is categorized “very valid”, c) Teacher Book is categorized “very valid”, d) Book student is categorized “very valid”; and e) Student Activity Sheets is categorized “very valid”.

References


21%3A326?option=com_content.
Diakses pada tanggal 28 Februari 2012.

