

Bukti Submit Artikel

1. Judul Artikel " SCIENCE WRITING TEST DEVELOPMENT FOR JUNIOR HIGH SCHOOL STUDENTS"

Abstract  



Abdul Haris Odja

Yth Panitia Seminar Internasional Melalui surel ini, saya kirimkan abstrak dari makalah. Terima kasih By Abdul Haris Odja

 7 Jul 2016 17.32




Fitrotul Mufaridah <ieco.fkip.umj.16@gmail.com>

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Sincerely yours,
Fitrotul
082302341004 / 085236302402



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• **Fitrotul Mufaridah** <ieco.fkip.umj.16@gmail.com>

Kepada: litu0711@yahoo.co.id



Min, 24 Jul 2016 jam 16.25



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Fitroh,

082302341004 (WA)



Abdul Haris Odja <abdul.haris.odja@gmail.com>

18 Jul 2016 08.17



kepada fridamaryati_hy ▾



Abdul Haris Odja <abdul.haris.odja@gmail.com>

18 Jul 2016 14.51



kepada Fitrotul ▾

Kepada Yth Panitia

Saya kirimkan kembali abstrak sesuai dengan templet yang dikirimkan.

Mohon konfirmasi jika telah sesuai, terima kasih



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082302341004



Writing in Science Test Development Concept Heat In Junior High School
Abdul Haris Odja ¹⁾

¹⁾ State University of Gorontalo, Indonesia

Correspondence E-mail: litu0711@yahoo.co.id

Research has been conducted development test in science writing on the concepts of science in Junior High School. The research is a part of learning development to improve writing skills in science. Test adapted and adjusted from written expression in science developed by Wang, et al (2011). The components of this written in science consists of understanding science vocabulary, identifying a problem to be investigated, providing evidence in responding to the question, drawing evidence-based explanations. Assessment of the test carried out through expert validation and test the sensitivity of the test. The results of the expert assessment showed decent test used with some revisions. While the overall sensitivity of the tests included in the sensitive category with a value of 0, 57. If the terms of each indicator successive test sensitivity values are 0.40, 0.66, 0.47 and 0.75.

Keywords: writing in science test, Concept Heat, and Junior High School



Writing in Science Test Development Concept Heat In Junior High School

Abdul Haris Odja
State University of Gorontalo
litu0711@yahoo.co.id

Abstract

Research has been conducted development test in science writing on the concepts of science in Junior High School. The research is a part of learning development to improve writing skills in science. Test adapted and adjusted from written expression in science developed by Wang, et al (2011). The components of this written in science consists of understanding science vocabulary, identifying a problem to be investigated, providing evidence in responding to the question, drawing evidence-based explanations. Assessment of the test carried out through expert validation and test the sensitivity of the test. The results of the expert assessment showed decent test used with some revisions. While the overall sensitivity of the tests included in the sensitive category with a value of 0, 57. If the terms of each indicator successive test sensitivity values are 0.40, 0.66, 0.47 and 0.75.

Key words: writing in science test, Concept Heat, and Junior High School

My name is Abdul Haris Odja. My address in Gorontalo province, Indonesia. I am a lecturer in physics and science education at the State University of Gorontalo. Undergraduate education from Gorontalo State University and Masters in education natural science from Indonesia University of Education. The focus of my research related to science education among developing models of integrated science teaching and learning. The few studies that have been done, including: Analisis kemampuan awal literasi sains siswa pada konsep IPA (Prosding, 2014); Model Konseptual Pembelajaran Terpadu di SMP Untuk Meningkatkan Kemampuan Menulis Sains Konsep (Prosding, 2016)

Title should be written in English, not more than 15 words. Font type is Times New Roman, font size 14 pt, bold with capital, center.

Name of Article Writer¹, Name of Article Writer², Name of Article Writer³ (without title)

Name of Affiliation
Address of Affiliation
Email: mufaridah@unmuhjember.ac.id

Abstract

Abstract should be written in English, not more than 250 words, times new roman 11, 10pt, single space. It includes purpose, method, & result.

Key Words: Key Word 1, Key Word 2, Key Word 3, key Word 4, Key Word 5

I. Introduction

Introduction covers background, context, theoretical review, objective of research/article, problems, and significant of the research/article. All parts of introduction are written integratedly in paragraphs.

II. Method

Method describes some aspect about research/article: design, data collecting, and data analysis..

III. Result and Discussion

Result and discussion focuses on the result/data analysis related to the problem of the research/article. It discusses further rather than theoretical review. It also compares to the other theories or research result.



Figure 1. Picture note

Table 1. Information about table

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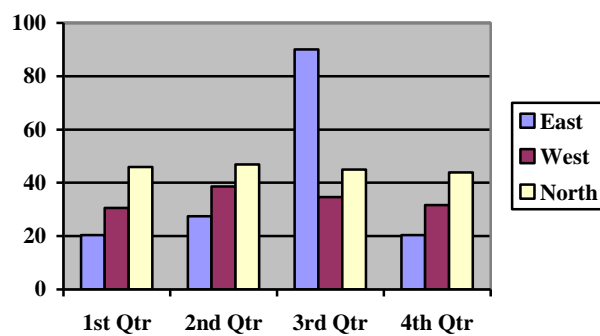


Figure 2. information about graphic

IV. Conclusion

Conclusion tells about reseach/article finding which answers problems. It expresses the main result of the discussion. It is written in paragraph.

V. References

It is only for listing the references used in the article/research.

Book:

Arends, R.I. 1997. *Classroom Instruction and Management*.New York: McGraw-Hill Companies, Inc.

Article in article:

Russel, T. 1998. An Alternative Conception: Representing Representation. Dalam P.J. Black & A. Lucas (Eds.),*Children's Informal Ideas in Science* (hlm. 62-84). London: Routledge.

Article in journal or magazine:

Colley, K. 2008. Project-Based Science Instruction. *The Science Teacher*. 75 (8): 23-28.

Article in Newspaper:

Pitunov, B. 13 Desember, 2002. Sekolah Unggulan atukah Sekolah Pengunggulan? *Majalah Pos*, hlm. 4 & 11.

Legal/formal Document:

Pusat Pembinaan dan Pengembangan Bahasa. 1978. *Pedoman Penulisan Laporan Penelitian*. Jakarta: Depdikbud.

Undang-undang Republik Indonesia Nomor 2 tentang Sistem Pendidikan Nasional. 1990. Jakarta: PT ArmasDuta Jaya.

Translated Book:

Ary, D., Jacobs, L.C., & Razavieh, A. 1976. *Pengantar Penelitian Pendidikan*. Terjemahan oleh Arief Furchan. 1982. Surabaya: Usaha Nasional.

Script, Tesis, Disertation, Research Report:

Suwono, H. 2007. *Pengembangan Model Pelatihan untuk Meningkatkan Kemampuan Guru IPA Menyusun Perangkat Penilaian Berbasis Kelas*. Disertasi tidak diterbitkan. Malang: Pascasarjana Universitas Negeri Malang

Seminar article:

Suwono, H. 2013. *Project-based Instruction Guided Lesson Study Improve the Achievement of Learning Outcomes on Educational Research Methodology Course at Department of Biology*. Makalah disajikan dalam The First International Conference on Education and Language (ICEL), Universitas Bandar Lampung, 28-30 Januari 2013.

Internet (individual writer):

Hitchcock, S., Carr, L., & Hall, W. 1996. *A Survey of STM Online Journals, 1990-1995: The Calm before the Storm*, (Online), (<http://journal.ecs.soton.ac.uk/survey/survey.html>), diakses 12 Juni 1996.

Internet (article in a journal online):

Asan, A. dan Haliloglu, Z. 2005. *Implementing Project Based Learning in Computer Classroom*. *The Turkish Online Journal of Educational Technology*, 4 (3): 68-81, (Online), (<http://www.tojet.net/articles/4310.pdf>, diakses 22 November 2010).

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PROCEEDINGS

International Conference on Education

Faculty of Teacher Training and Education UM Jember

Jember, July 30th – 31st, 2016

“INNOVATIVE TEACHING PRACTICES IN GLOBAL ERA: TEACHER’S CHALLENGE OR CHANCE”

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PREFACE

This book contains the proceedings of the papers presented on International Conference on Education (IECO) by the Theme **Innovative Teaching Practices in Global Era: Teacher's Challenge or Chance**. This International Conference on Education was held in Ahmad Zainuri Hall University of Muhammadiyah Jember on 30th – 31st of July 2016. The conference was organized by Faculty of Teacher Training and Education University of Muhammadiyah Jember.

The theme raised in the conference is due to the important necessity of readiness on facing education practice challenge. Global Era affects both economic and educational practice. With regard to educational practice, it is now common that a number of Indonesians, for instance, set out to become a teacher in Australia, or those from the Philippines come to teach in Indonesia. In other words, what appeared unlikely in the old days has, at the moment, constituted common practice. Insofar educational practice is concerned, every teacher will bring his/her experience and methodological preference into his/her classroom. These experience and methodological preference are not only interconnected but also reasonably and logically grounded. Therefore, all paper presented explore some innovative teaching practices concerning to the theme and sub themes.

On behalf of the organizing committee, I would like to express my deepest gratitude and appreciation to all presenters who are willing to share their expertise and experience in the conference. I honestly believe that the diverse backgrounds of the presenters in the conference could broaden our knowledge on innovative teaching practices and other education issues.

Thank you very much,

Jember, July 30th, 2016

Chairman of Organizing Committee

**WELCOME SPEECH OF
DEAN OF FACULTY OF TEACHER TRAINING AND EDUCATION
UNIVERSITY OF MUHAMMADIYAH JEMBER**

Assalamu 'alaikum wr. wb.

First of all, please say thanks to Allah who always give us healthy and blessings. For our second worship, our prayer shalawat and salam to our prophet Muhammad SAW who has guided all mankind to the lightness. I also would like to express my gratitude to the committees and all participants for handling this program.

Education is key of human empowerment. Discussing about Education can encourage those people who concern in it. The result of discussion can also bring people to raise dream. Because Education is important, so discussing about education is also becoming one of our priority to provide through a conference. This conference on education is hopefully facilitating all participants to share their ideas, opinion, and also experience in education. The result of this conference could enlighten us to be more aware in educating our students through the use of language.

Finally, once again on this occasion I would like to congratulate and acknowledge the committee as my appreciation for organizing this conference. Welcome to the conference, and in particular I thank to the speakers for their contribution. We hope that the participants of the conference can make advantages for this valuable opportunity, and this activity can be beneficial to all parties.

Wassalamu 'alaikum wr. wb.

Jember, July 30th, 2016

Dean,

Dr. Moch. Hatip, M.Pd.

**RUNDOWN OF INTERNATIONAL CONFERENCE ON EDUCATION
FACULTY OF TEACHER TRAINING AND EDUCATION
UNIVERSITY OF MUHAMMADIYAH JEMBER**

Saturday, July 30th 2016

TIME	AGENDA	SPEAKER/DOER
07.00 – 08.30	Registration	All participants
08.30 – 09.15	Opening & performance	Rector of University of Muhammadiyah Jember
09.15 – 09.30	Coffee break	Committees & all participants
09.30 – 12.00	- First Plenary Session - Signing MOU	- Prof. Ocky Karna Radjasa, M.Sc., Ph.D. - Prof. Dr. Sukree Langputeh - Dr. Ir. M. Hazmi, D.E.S.S Cotabato State University, Philippines & Fatoni University, Thailand
12.00 – 13.00	Break	Committees & all participants
13.00 – 15.00	Parallel Presentation	Presenters & participants
15.00 –	Break	-

Sunday, July 31st 2016

TIME	AGENDA	SPEAKER/DOER
08.00 – 10.30	Second Plenary Session	- Dammang S. Bantala, Ph.D. - Dr. Aminullah Elhady - Uum Qomariyah, S.Pd., M.Hum
10.30 – 10.45	Coffee break	Committees & all participants
10.45 – 12.15	Parallel Presentation	Presenters & participants
12.15 – 12.45	Closing	Rector
12.45 – 13.00	Break	Committees & all participants
13.00 – 16.00	Field Trip	Committees & participants

PARALLEL PRESENTATION

Saturday, July 30th, 2016

Room 1.2 (Moderator: Kristi, Notulen: Aulia)

No	Presenter	Institution
1.	Dra. Tri Endang J., M.Si. Dra. Wahyu Dyah Laksmi W., M.Pd.	PG PAUD UM Jember
2.	Nur Lailiyah, M.Pd.	Univ. Nusantara PGRI Kediri
3.	Dra. Khoiriyah, M.Pd.	PG PAUD UM Jember
4.	Angraeny Unedia Rachman, SH., M.Pd.	PG PAUD UM Jember

Room 1.8 (Moderator: Hujjatul Islamiyah, Notulen: Melo)

1	Siti Maryam, SS., MA.	PBSI UM Jember
2	Hasan Suaidi,	PBSI UM Jember
3	Dr. Hanafi, M.Pd.	PBI UM Jember
4	Ageng Soeharno, M.Pd.	PBI UM Jember

Room 1.9 (Moderator: Dwi Mei Sandi, Notulen: Rike)

1.	Astri Widyaruli A., SS., MA.	PBSI UM Jember
2.	Norodin Salam, Ph.D	Cotabato State University, Thailand
3.	Rindi Prastika Wardani, S.Pd. Dwi Mei Sandy H., S.Pd.	PBI UM Jember
4.	Achmad Muchlis	PBI UM Jember
5.	Dr. Lilik Wahyuni, M. Pd	IKIP Budi Utomo Malang

Room 1.6 (Moderator: Kuni Hikmah, Notulen: Balqis)

1.	Nhelbourne K. Mohammad, M.Ed.	Cotabato State University, Philippines
2.	Dr. Yohanes Harsoyo	Sanata Dharma , Yogyakarta
3.	Henri Fatkurochman, S.S. M.Hum.	PBI UM Jember
4.	Nitya Jwalita, S.Pd.	SMAN 2 Jember
5.	Arin Amalia P., S.Pd. Hendra Sri H., S.Pd.	PBI UM Jember

Room 1.7 (Moderator: Muhlas, Notulen: Ichan)

1.	Joni Susanto	STIBA Malang
2.	Widadatul Maftuha, S.Pd.	PBI UM Jember
3.	Sunaryo Nailul Marom, S.Pd.	PBI UM Jember
4.	Mas Samsuri	PBSI UM Jember
5.	Nur Hayati, S.Pd. Yeni Mardiyana D., SS., M.Pd.	PBI UM Jember

Room 2.13 (Moderator: Yoga, Notulen: Nurika)

1.	Chusnul Khotimah G.	Pend. Matematika UM Jember
2.	Abdul Haris Odja	Univ. Negeri Gorontalo
3.	Hana Puspita Eka Firdaus	Pend. Matematika UM Jember
4.	Masra Latjompoh	Universitas Negeri Gorontalo
5.		

Room 2.6 (Moderator: Indri, Notulen: Yusi)

1.	Rayh Sitta Nurmala, M.Pd.	Pend. Biologi UM Jember
2.	Bahtiar Wasis Yuni Sri Rahayu	Pasca UNESA
3.	Abdillah Nugroho	Pasca UMS
4.	Christine Wulandari S., M.Pd.	Pend. Matematika
5.	Frida Maryati Yusuf Soeparman Kardi Yuni Sri Rahayu	Surabaya State University Gorontalo State University

PARALLEL PRESENTATION

Sunday, July 31st, 2016

Room 1.2 (Moderator: Dwi Mei, Notulen: Aulia)

1.	Kristi Nuraini, S.Pd.	PBI UM Jember
2.	Ninuk Indrayani, M.Pd	IAIN Jember
3.	Misyana, M.Pd.	PG PAUD UM Jember
4.	Nurika Mustika, S.Pd.	PBI UM Jember
5.	Hujjatul Islamiyah, S.Pd. Kuni Hikmah Hidayati, S.Pd.	PBI UM Jember

Room 1.8 (Moderator: Aryo, Notulen: Arin)

1.	Yoga Dwi Windy K.N., S.Pd., M.Sc.	Pend. Matematika
2.	Kukuh Munandar Muslimin Ibrahim Leny Yuanita	Pend. Biologi UM Jember Pend. Sain UNESA Pend. Sain UNESA
3.	Novi Eurika, SS., M.Pd. Arief Noor Akhmadi, MP.	Pend. Biologi UM Jember
4.	Ika Priantari, M.Pd.	Pend. Biologi UM Jember
5.	Nurul Imamah, S.Si, M .Si Zulfa Anggraini R M.Pd	Pend. Matematika UM Jember

Room 1.6 (Moderator: Rindi, Notulen: Hendra)

1.	Wiwit Wahyutiningsih	Gresik
2.	Ismael Naewae Dr. Tanzil Huda, M.Pd.	Thailand Student
3.	Wirman Hardi Gunawan Rozali Jauhari Alfani	Universitas Mataram
4.	Dra. Sawitri Komarayanti, MS.	Pend. Biologi UM Jember
5.	Rohmad Wahid Rhomdani	Pend. Matematika UM Jember

Room 1.7 (Moderator: Indri Notulen: Widadatul)

1.	Fitrotul Mufaridah, M.Pd.	PBI UM Jember
2.	Anam Fadlillah, S.Pd. Mochtar Muhtadi Iksan, S.Pd.	PBI UM Jember
3.	Muhlas Febriandi, S.Pd. Anita Fatimatul L., M.Pd.	PBI UM Jember
4.	Yayah Ikhda Nevia, M.Pd	PBI UM Jember

Room 1.9 (Moderator: Ichan Notulen: Anam)

1.	Muhlisin, M.Pd., MA TESOL	Curtin University
2.	Verweny Rochcy Maryati	Universitas Mataram
3.	Lukas Kujawa	Poland (Internship-Indonesia)
4.	Yeni Dwi Rahayu	Informatics Engineering UM Jember

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SCIENCE WRITING TEST DEVELOPMENT FOR JUNIOR HIGH SCHOOL STUDENTS

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Abstract

The study was aimed to develop a writing test in science based on the concepts of science in Junior High School. The research was a part of learning development to improve writing skills in science. Test adapted and adjusted from written expression in science developed by Wang, *et al* (2011). The components of this written test in science consisted understanding science vocabulary, identifying a problem to be investigated, providing evidence in responding to the question, drawing evidence-based explanations. Assessment of the test was carried out through expert validation and test the sensitivity of the test. The results of the expert assessment showed decent test used with some revisions. While the overall sensitivity of the tests included in the sensitive category with average numerical value sensitivity is 0, 57. If the terms of each indicator successive test values numerical sensitivity were 0.40, 0.66, 0.47 and 0,75.

Key Words: *writing in science test, Concept Heat, and Junior High School*

I. Introduction

One of the competencies associated with literacy, science, and problem solving is the ability to write mainly associated with science. It's like being dictated by the Hand, Prain, & Wallace, (2002); Dlugokienski, Amy, & Sampson (2008) that writing is one of the important aspects of scientific literacy. Science Writing is seen as science aspects of teaching science that closely related, for example after an observation activity, learners are required to communicate the results of observations both orally and in writing. Verbal communication has better chance for learners to communicate than in writing.

Writing skills practice of schools charged to one of the subject that both are Indonesian or another foreign languages subject. Meanwhile, on other subjects show that writing isn't a concern. Through giving more attention to communication skills of learners to communicate knowledge through writing, teachers can make the writing skills that relate to a topic of science in evaluating how much understanding and problem solving skills of learners related to specific science concepts.

The enthusiasm and the learners' ability to write scientific in Gorontalo area are low. Based on the data, it was found that (1) at the time of writing

competition scientific organized by APKASI (Association of District Government in Indonesia) for senior high school in Gorontalo only one that meets the requirements of scientific writing (APKASI , 2013); (2) For the activities of scientific writing competition teenager in 2015 by LIPI, followed by junior_and senior high school, the views of the participants, none representative of learners was from Gorontalo (LIPI, 2005) .The low interest of scientific writing skills was not only due to the inability of learners in writing in Indonesian language but also the inability of students to communicate phenomena or issues around it.

To measure the writing skills for students of junior high school especially those related to science writing test is required. Writing tests are used as a selection on the activities of scientific writing competition usually is raw scientific writing. Meanwhile, the writing skills of learners, especially in elementary and junior high school does not include all of scientific writing skills. Some of the writing test that has been developed among others such as writing a refutation of an event, a scientific explanation and scientific expression.

In this study, the writers developed a test measuring the ability to write science by adapting and adjusting the expression of science writing test developed by Wang, *et al* (2011). For that reason, the selection of expression science tests include: (1) test was developed in accordance writing skills of students in elementary and junior high school; (2) test relates to the concept of science.

Writing in Science

The learners must be given a lot of opportunities to practice writing at the time of elementary and junior high school. When the language skills increased their cognitive, usually writing skills also improved. For example, a better understanding of the syntax and grammar will help strengthen writing skills. The students write recount, describe and writing a short poem in elementary level. At the junior high, the students are able to make book combines narrative reports on observations, reflections, and analysis. In high school, they were able to give an explanation that does not depend on the structure of the narrative only (Santrock, 2011).

Writing is also an important aspect of scientific literacy (Hand, Prain, & Wallace, 2002; Dlugokienski, Amy, & Sampson, 2008). Writing for learning is an

activity in which the students produce and clarify understanding of scientific concepts to themselves not only for the evaluation of teachers but also to communicate. Learners can communicate their understanding of a particular concept in the form of some kind of writing. It's something complex cognitive processes. The ability to write follows the sequence of the development of learners (Slavin, 2006). In junior high school, students are engaged in the concrete operational stage to write something never done (concrete). In this study, learners were trained to write those relating to observations made in the laboratory or in the classroom.

Writing science is important for learners because it enables them to clarify the scientific phenomenon observed and to help build scientific knowledge and experience of the investigation. Writing strategies to learn science is seen by many teachers to help students build a deeper understanding of science concepts being studied. The investigation is expected to make learners demonstrate writing skills to explain something like: communicating the event, explained the procedure, to communicate, to explain the observations based on evidence. Science Writing Heuristic is one instill literacy practice in scientific investigation, has helped promote and metacognitive explicit explanation of the conceptual understanding. (Fazio & Gallagher, 2009).

Writing Assessment

Several researches related to writing skills in science were developed by Dlugokienski, Amy, & Sampson (2008); McNeill & Krajcik (2008/2009) and Wang, *et al* (2011). Dlugokienski, Amy, & Sampson developed writing refute. McNeill & Krajcik developed writing scientific explanations since 2006. Then, Wang, *et al.* developed written expression in science in 2011. All three strategies of science writing focused on elementary school students, junior high and senior high schools.

Strategy development and assessment are all three forms of writing have some differences and similarities. The equation of the three writing in science is the three discuss or focus learners in communicating scientific phenomena which exist

in science concepts. There are differences in strategy and assessment of each type of writing.

Assessment of write a refutation, rebuttal is being focused on mistake or error about science concepts. Denial or rebuttal evidence is based on investigations, laboratory experiments for the topic under discussion while it is accompanied by convincing examples. It is also about regulating aspects of literary sentences, paragraphs, and a conclusion. In addition, it discusses the use of the right language, punctuation, spelling errors. Learning and assessment strategies are divided into three main parts: first write an outline or major things; The second and third write a rough draft write the final draft.

Assessment of writing scientific explanations by McNeill and Krajcik consists of three aspects of the assessment that claim, evidence and reasoning. Claims relate to the initial answers on questions or problems. Evidence is scientific data to support claim, the data must be appropriate and sufficient to support the claim. And also the data can be sourced from the lab or the other. Reasoning components is a justification that connects between the claim and the evidence using the scientific principle of adequate and appropriate.

The components of this written expression in science consists of understanding science vocabulary, identifying a problem are to be investigated, providing evidence in responding to the question, drawing evidence-based explanations. Understand the vocabulary of science is to provide a full written explanation with examples and events, the description of what is observed that demonstrate an understanding of the vocabulary of science. The second component is identifying problems i.e., investigating writing scientific-oriented questions, including questions descriptive and rational. The third component provides evidence that in response to questions by identifying, distinguishing and comparing the facts and evidence. The last component is ratings writing expressions that portray the evidence-based explanations which the participants are asked to observe the patterns and relationships; logical descriptive and provide evidence-based explanations. It appears that both instruments show the same thing that convey initial answer according to the problems, provide evidence and give an explanation.

II. Method

The study is part of research learning model development which in some extent resembled to the method of research and development (R & D) using Borg and Gall model (2003). This study employed three main steps: (1) a preliminary study, which consisted of a literature study and survey of spaciousness; preparation of preliminary tests; (2) the development of models, including trial tests on a limited basis; (3) test models, covering widely the test trials. This paper discusses limited test models.

The product developed should fulfill the standard of a good test. A test instrument is said to be good if it meets several criteria such as validity, and sensitivity, reliability. In this study, science writing test was examined in terms of validity testing expression and reliability tests earlier by Wang, *et al* (2011). The test was conducted by the author, namely the validity of the expert and the sensitivity of the items. It was related to the content of material science and the impact of learning developed.

The test is claimed to have a high sensitivity when the test scores after learning greater than the test scores prior learning. An otherwise sensitive items when the price of precious sensitivity positive for $S \geq 0.30$. The equation is used to calculate the sensitivity of the items adapted Mehrens & Lehman and Osuji (Suyono, 2014), namely:

$$S = \frac{U_2 - U_1}{N}$$

.....
Equation (1)

Where : U_2 = Average Post Test Score, U_1 = Average Free Test Score, N = Score maximum.

III. Result and Discussion

Test arrangement was based on a science test expression by Wang, *et al* (2011). Adaptations and adjustments were made based on the test necessity. Some adaptations were made included: the science of expression test using the image as a reference while writing the tests compiled using the results of observations discourse or text. Discourse (text) presents the results of observation laboratory activities, some things that concern learners in science writing test (1) Writing a sentence questions or issues that were investigated in the discourse, the prediction

of the question, as well as other questions that could be investigated in addition to the previous question; (2) write down the steps being taken to make observations along with the materials and equipment used during the observation; (3) organizing data, analyzing the data and concluded the results of observations by the existing discourse.

Expert assessment of tests was done by 6 (six) persons who had expertise on science education and evaluation. Expert assessment of the science writing test was conducted by giving valid and invalid statements. The assessment also provided the final conclusion decent ratings by giving a statement of judgment whether it should be revised or was feasible to use. The expert result of assessment science writing test indicated that the test was valid with a few notes for improvement. Some advices for revision by experts were given, including a revised assessment rubric on indicators of questions or issues that were investigated, discourse or text on the observation made more compact so that learners could develop the ability to write more science, sentences and language was improved by adapting to the learners development.

Sensitivity items were determined after the implementation of learning. At this stage, the experiment was limited to models developed. The items were sensitive when the numerical value of precious sensitivity was positive for $S \geq 0,30$.

Table 1. Numerical Value Sensitivity Test of Each Writing in Science

Indicator writing in science	Average score Pre-Test	Average score Post-Test	Numerical Value Sensitivity Test
Science Vocabulary	46.00	97.00	0.40
Identifying a problem	33.00	118.67	0.66
Responding to the question	54.50	114.50	0.47
Based Explanations	6.25	103.00	0.75
Average			0.57

The table showed that the overall sensitivity of the test writing in science included sensitive, where the numerical values was $S = 0,57$. Similarly in terms of each indicator on writing in science sensitivity the numerical value was above 0, 30. This indicated that the test writing science arranged could measure the impact of learning that has been implemented so that the items in the test writing science functioned well.

The sensitivity of the items was associated with learning activities that have been done before.. Learning was designed with a specific purpose such as to develop a high level thinking skills. Through exercises, the indicators of expected learning objectives could be achieved. The goal achievement of learning could be measured by the ability of learners complete a test.

As noted above, that the development of science writing test was part of the development of the learning model. Learning model was developed directly or indirectly indicator practice to the ability for write scientific phases of learning. The phase of learning was writing science practice indicators including the orientation phase problem, in which in this phase, the learners were trained to ask about matters related to natural phenomena presented teachers. Questions directed into a scientific question could be investigated. Observation phase was to drill to solve the problems based on questions of investigation. Learners were trained to plan in response to questions through observation well on lab activities or observations on a specific object. Explanation phase provided an explanation on the results of observations. Learners were provided with an explanation based on the observation. Observation data was analyzed and the range of interpretation so as to produce a scientific explanation for an observed phenomenon. The last phase was communication in which the learners reported all stages of observations which gave more emphasis on written communication. On the whole phase, the learners were guided to understand the concept that learned comprehensively.

IV. Conclusion

Based on the discussion, the conclusions of the study were drawn as follows:

1. Tests developed science writing was declared as valid by experts in the field of science education and education evaluation.

2. Sensitivity test writing in science was supposed to be sensitive based on the categories with average numerical value sensitivity which indicated 0,57.
3. Sensitivity test related to the learning was done in advance so that necessary attention to the learning objectives developed relationship with tests created.

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