

## **IMPLEMENTING MEDIA OF COMPUTER-BASED TEST FOR ENGLISH LANGUAGE PROFICIENCY OF VOCATIONAL HIGH SCHOOL STUDENTS AT THE BORDERLINE BETWEEN INDONESIA AND TIMOR LESTE**

**Yohanes Adio Balan<sup>1</sup> and Djuniadi<sup>2</sup>**

Email: [adiojohan@yahoo.com](mailto:adiojohan@yahoo.com)<sup>1</sup> and [djuniadi@mail.unnes.ac.id](mailto:djuniadi@mail.unnes.ac.id)<sup>2</sup>

<sup>1</sup>Dinas Pendidikan Kabupaten Timor Tengah Utara, NTT, Indonesia

<sup>2</sup>Semarang State University, Central Java, Indonesia

### **Abstract**

Research about “Implementing Media of Computer-Based Test for English Language Proficiency of West Timorese Vocational High School Students” is aimed to answer the question whether or not the use of computer-based test effective and practical as the models of test instrument for English language proficiency test of vocational high school students. It is a research and development (R and D) referred to Borg and Gall model (1989). The research took place at the borderline between Indonesia and Timor Leste, which covers three vocational high schools: SMKN 1 Kefamenanu, SMK Katolik Kefamenanu and SMK Intan Grafika Kefamenanu. Software of Wonder share Quiz creator is used to produce a model of computer-based test. The questions are chosen from standardized questions of national examination based on competency standard of the second grade students of SMK. Each single question appears on computer screen, and the students are to answer by doing a click on the correct options. Validation was done to measure the quality of the computer-based test media, the effectiveness and the practicability of the CBT. The products and instruments are validated by expertise valuator of lecturers and teachers. The first validation came up with an unsatisfactory result, in which the indicators had not met the criteria or standards. After the revision, the second validations was conducted, the indicators had met the criteria or standards. The media of computer-based test and the practicability of the CBT are Valid.

**Key words:** Computer-Based Test; E-learning; English proficiency

### **1. Introduction**

Education is the main key for the progress of a nation. The effort to increase the quality of education should be conducted simultaneously in order that Indonesia is able to compete in regional and global competition. The position of Indonesia’s Education Development Index (EDI) is at the Average level, meaning that the portrait of education in the country is still poor and the position of Indonesia is at the rank of 57 out of 115 countries (UNESCO, 2011), and Human Development Index (HDI) of Indonesia is at the rank of 108 out of 187 countries (UNDP, 2014). While Singapore is at 9, Malaysia is at 62 and Thailand is at the rank of 89. It indicates that educational development should be increased intensively. Vocational education has its characteristics of learning that focuses on the achievement of psychomotor competencies beside the other two domains – affective and cognitive competencies. The aim of vocational education is to produce

graduates who are faithful and devoted to God, intelligent, skilled and have entrepreneurial spirit. Model of vocational education is integrating learning at school and learning at busseness and industry groups through the strategic partnership between schools and the business groups and industry.

Portrait of borderline area is generally illustrated as frontier, outermost, and isolated. However, the front page of the "house Indonesia" especially in the West Timor border, Indonesia and the Democratic Republic of Timor Leste has not been touched by civilization and modernization. North Central Timor regency province of East Nusa Tenggara is one of the country's districts bordering Timor Leste, especially Oecusee, the enclave province of Timor Leste. North Central Timor regency began to build its education sector through the education infrastructure. The opening of the new school of primary education to secondary education is increasing. However, infrastructures and education facilities are

still inadequate to meet the qualifying standard of national education. In addition there is the expansion of access and equitable development of education infrastructure, as well as the lack of professional human resources. The low capacity of knowledge, innovation and creativity of teachers are the most fundamental issues affecting the portrait of poor education and low quality of the society in the border between Indonesia and Timor Leste.

The quality of student competency and school is measured through the activity of test and evaluation. Schank (2002: 211) states: test and evaluation activities occur in all aspects of human life. Not only students or parents who want to know the level of learning achievement was reached, but also school graduates take the exam to obtain a formal job, or someone who wants to obtain a driving license must go through a series of tests - written test and practical driving test. In other words, test and evaluation is an integral component of a school learning activities. The test is an evaluation tool that is commonly used to measure student competency in a particular topic or subject. Test becomes an integral part of the learning process and evaluation. An institution or any educational system can not be run and managed by ignoring the test and evaluation activities.

Next, Rahmlow & Woodley (1979: 4) reveals three test functions in education are: (1) as a decision-making tool, (2) as a learning facilitator, and (3) as a mean to improve motivation. As a decision-making tool, test serves as a discriminator - is a tool to determine who can and who can not demonstrate or show the quality of learning of an object well. A teacher or educator has a responsibility to define and make decisions. Teachers use the test as a tool to identify what the students can, for example: write effectively, showing her math skills, demonstrate knowledge of history, or describe a symptom or phenomenon (nature) in a comprehensive manner, and others. The role of a facilitator of learning means test as students need to realize the value or benefits of learning in conjunction with a test situation. Test is helpful in

learning. Test provides feedback on the accuracy of answers (responses). While the role of the test is as a tool to motivate students means that students are motivated to increase the frequency of learning.

National curriculum of English states that the teaching of English at schools aims to: (1) to improve oral and written competence to achieve the functional literacy; (2) to improve the nation's competitiveness in the global community, and (3) to understand the interrelationships between language and culture. Learning English is generally performed to improve the competence of students at four language skills - listening, speaking, reading, and writing. English test is carried out to measure the level of competence of learners in mastering those four skills of language. In the vocational curriculum, English subjects grouped in adaptive group of subjects. English subjects including the core subjects and in school matters, because it is subject to the authority of the national testing policies of the central government, meaning that this subject is one of the compulsory lessons besides Indonesian Language, Mathematics, and Vocational Competency Test. Learning English is very important in the school curriculum for this subject is also determining students graduation.

The implementation of national examination and series of tests at schools are still generally conventional or paper-based test. The model of paper-based test used in the implementation of the National Examination and school test has many shortcomings, particularly with regard to possible measures diverge among others: cheatings, sharing answers or even teachers or schools provide key answers with consideration of students, teachers or schools are not considered to have failed in the education and teaching activities by government and society. This phenomenon is very common over the years as indicated by the 100% pass rate in most schools during the announcement of the approval.

Globalization is marked by the advances in science and technology, especially information and communication technologies (ICT). The rapid development of ICT has made the world like a global

village because interaction between people in different parts of the earth is unlimited. ICT affects all aspects of life including education. Integrate modern learning the role and function of ICT to facilitate the transfer of information and knowledge has become faster and easier. Paradigm that re-education system are traditional or conventional face-to-face by relying on a limited space and time began to be abandoned, then with information and communication technology, particularly cyberspace, turned into an education system that is not limited by space and time. E-learning through the use of computer technology and the Internet can connect learners and learning resources (databases, experts / teachers / lecturers, library) where interactivity in the relationship can be made directly (synchronous) and indirect (asynchronous). In addition, e-learning can support learning activities include: teaching activities, discussions, reading assignments and presentations.

Indonesian government through the Ministry of National Education has formulated a new policy of implementing computer-based exams which is judged more objectively and can reduce fraudulent practices during the national examination. The implementation of Computer-Based Test has been developed in Indonesia. Regulation of the Minister of Education and Culture No. 144 of 2014, article 20 (1) states that: "The implementation of the National Examination of High School/Vocational School can be done through Paper-Based Test and/or Computer Based Testing."

Glassmeyer, et al, from the University of Northern Colorado in the study entitled: Determining Utility of Formative Assessment through Virtual Community, concluded that online learning in virtual communities is challenging the educators to provide a quality of education. Qualitative data were collected by interviews with schools graduates or educational institutions that provide online education system. Based on the data collected, the phenomenological, activity and formative assessment tests should be structured so that students gain experience in a virtual community. Consider

formative assessment tasks in the virtual community, the online instructor to help promote the benefits and advantages of online learning students.

Lilley, et al (2005) from the University of Hertfordshire, UK with a study entitled: Learners' Perceived Level of Difficulty of A Computer-Adaptive Test: A Case Study concludes: Computer-based test approach Adaptive Test (CAT) is effective and challenges users to do the questions and complete the test in the form of CAT software application properly and on time. Research and data collection was carried out at 113 students majoring in Computer Science. At the end of the exercise test, participants were distributed questionnaires about the difficulty level model Computer-Adaptive Test (CAT) with the scale of assessment of Very Easy (1) to Very Hard (5). The results of statistical analysis showed that the CAT effectively used in the test and evaluation activities.

Siu-yung Jong and Shang (2015) of the Department of Curriculum and Instruction - Centre for the Advancement of IT in Education, University of Hong Kong, in a research titled: Emerging from Impeding Phenomena Students' Constructivist Based Online Learning Process: Implications for the Importance of Teaching Facilitation, submit a new understanding of the use of online computer games in teaching and learning.

Clemens, et al (2015) Texas AM University in a study entitled: The Predictive Validity of Computer-Adaptive Assessment of Kindergarten and First-Grade Reading Skills, test the predictive validity of a model computer-adaptive assessment to measure students' reading skills Kindergarten use STAR Early Literacy test model (SEL).

Tao et al (2008) in a study entitled: A Practical Computer Adaptive Testing Model for Small-Scale Scenarios, CAT concluded that an effective and practical as well as more profitable than paper-pencil model-based testing.

Chang, et al (2009) from Taiwan University in research: Using SP Chart and Bloom's Taxonomy to Develop Intelligent Formative Assessment, said that E-Learning

provides a convenient way to learn and efficient. Formative evaluation and test computer-aided not only guide the students in learning, skills and knowledge gaps mendignosa, but also measure the progress and evaluation. Sato's Student-Problem Chart (SP Chart) applied to integrate online assessment system. With this type of chart analysis, diagnosis, teachers can modify and delete items that are not important

In line with the government policy, introducing the system of Computer-Based Test (CBT) in the test of 2015, the researchers realized that the effort to prepare students and schools to welcome this new model is very important and fundamental computer training and pilot implementation-based test in schools both in exercises (drills), midterm and final exams of the semester. It is intended as an anticipatory action to make students and the schools can be familiar with the systems and mechanisms of computer-based test.

## 2. Method and Limitation

This is a Research and development (R&D). R&D is aimed to develop a particular product and to measure the quality and the practicability of the product to meet the goal/objective. Sugiyono (2010:407) stated that the method of R&D is to develop a product and examining the product. In terms of the research the writer will develop and produced an instrument of computer-based test of English subject for the second grade students of vocational high school at the border between Indonesia and Timor Leste. In this study, the research and development of devices used to produce a Computer Based Test of English subject for Class XI Vocational School. These activities include arranging materials based national standard of English Competence Standard and Basic Competence, and to input such questions in Computer-Based Test format using Wondershare Quiz Creator Software. The application of Computer-Based Test is intended to provide a new paradigm in the implementation of more innovative tests, actual, practical and effective and in accordance with the dynamics and development of information and

communication technology development and its integration in e-learning.

The steps of the research is referred to the development based on Borg and Gall (1989:775) which consists of: (1) collecting information), (2) Planning, (3) Developing/designing product, (4) Prior try-out product, (5) Product revision, (6) Field research, (7) Product revision after field research, (8) Operational try-out product, (9) Final revision (10) Implementation and dissemination. Teams of Policy Innovation Research Centre, the Ministry of National Education (2008:11), simplify the ten steps of Borg and Gall into 5 main steps which are: (a) Product analysis to be developed (First step analysis). Analyzing the basic competencies of English subject; (b) Developing and media of computer-based tes.

This journal article is limited to the validation of the product being developed. Data collection was from observation, documentation, and questionnaires. Observation and documentation were done at three vocational schools at the borderline between Indonesia – Timor Leste. Questionnaires are used to identify ideas or suggestions from multimedia experts, teacher, and supervisors. The questionnaire is used to measure the effectiveness and the practicability of computer-based test media. Data then is analysed using descriptive analysis to determine the usability of the multimedia product.

## 3. Discussion

### *a. Developing software of computer-based test*

Bull and McKenna (2004: 1) defines computer-based test as the use of computers in test and assessment of student learning outcomes. Testing and assessment of student learning outcomes based on standards and classifications as follows: (a) diagnostic assessments, tests were conducted to determine students' prior knowledge of the subject. (b) Individual tests, and (c) summative tests, to measure and evaluate the success rate of students. Furthermore, Bull and McKenna present reasons on implementating computer-based test systems, which are as follows: (a)

increase the frequency of assessment, which includes: 1) motivating students to learn, b) encouraging students to master practical skills. Computer based test can encourage and provides opportunities for students to learn practical skills. (b) Improving feedback, (c) expand the scope of knowledge that is assessed: computer based test provides the opportunity to broaden their knowledge and understanding of the assessment methods.

Carrying out a media of computer-based test teachers can take advantage of software that has the features to create questions. Here are some types of softwares: (1) Free QuizMaker, (2) Quiz faber, (3) Hot Potatoes, and (4) Wondershare Quiz Creator. In this study, software Wondershare Quiz Creator is selected to develop the Computer-Based Test (CBT). Kuswara Hernawati, in her paper on Preparation Training Interactive Math Problem Using Web-Based Software (Jogjakarta, November 13, 2009), suggests that Wondershare Quiz Creator is a software for creating questionnaires, quizzes or tests online (web-based). Using Wondershare Quiz Creator in making the matter very familiar/user friendly, making it very easy to use and does not require difficult programming language skills. The results of questionnaires, quizzes and tests that have been prepared with Wondershare Quiz Creator software can be stored in flash format that can stand alone on the website. With Wondershare Quiz Creator, users can create and organize various forms and levels of different problems, such as true/false, multiple choices, fill in the blank, matching, quiz with the image area and others.

Software Wondershare Quiz Creator provides: (1) feedback facilities based on

the responses/answers, (2) facilities that displays test results (score) and the steps to be followed by the answer that learners are included, (3) facility of changing the text and language facility on the button and label it as their own problem-makers, (4) facilities of sound and color, (5) a hyperlink that is sent outcome (score) test to email or LMS, (6) manufacturing facility about randomization, (7) security facility with a user account (password), and, (8) facilities to display settings.

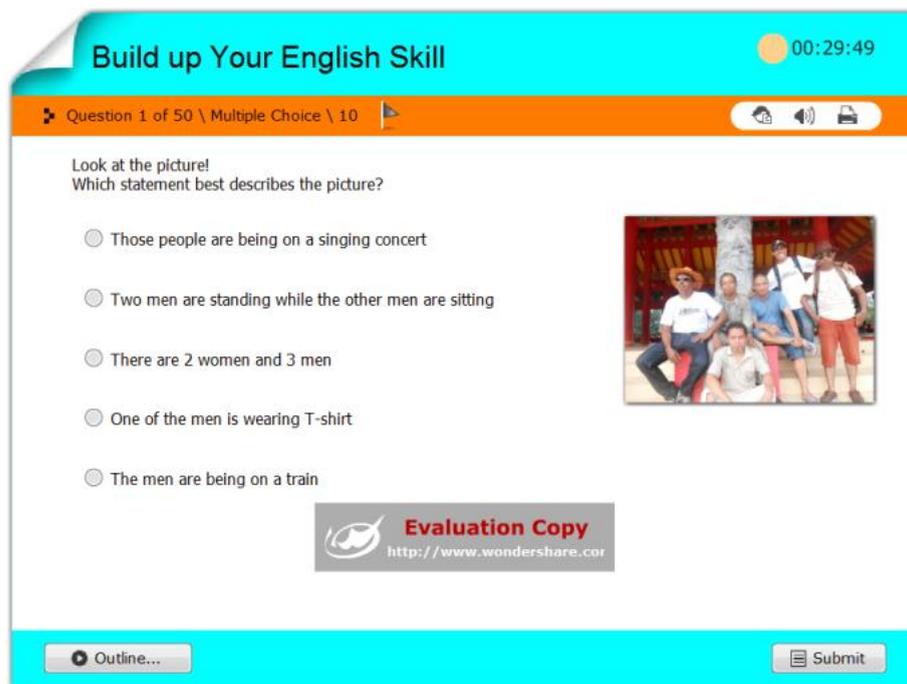
The minimum requirement to run Wondershare Quiz Creator is: (1) Microsoft Windows 2000 / XP / 2003 / Vista, (2) Microsoft Excel 2000/2002 / XP / 2003/2007 (required if importing quiz from excel), (3) Processor minimal 233 MHz Intel Pentium or AMD K6 processor. (4) 128 MB RAM, (5) 25 MB of free hard disk space, (6) DirectX 8.1 or higher, (7) Windows-compatible video card with at least 800 x 600 screen resolution and 256 colors (8) Sound card Windows- compatible (recommended), (9) Macromedia Flash Player 8 (recommended). Software (software) Wondershare Quiz Creator is a software license, where the trial version can be downloaded from [http://www.wondershare.com/e-learning/quizcreator/quizcreator\\_overview.html](http://www.wondershare.com/e-learning/quizcreator/quizcreator_overview.html).

A series of English material test has been conducted and input to the software of wonder share quiz creator. The products are as follows:



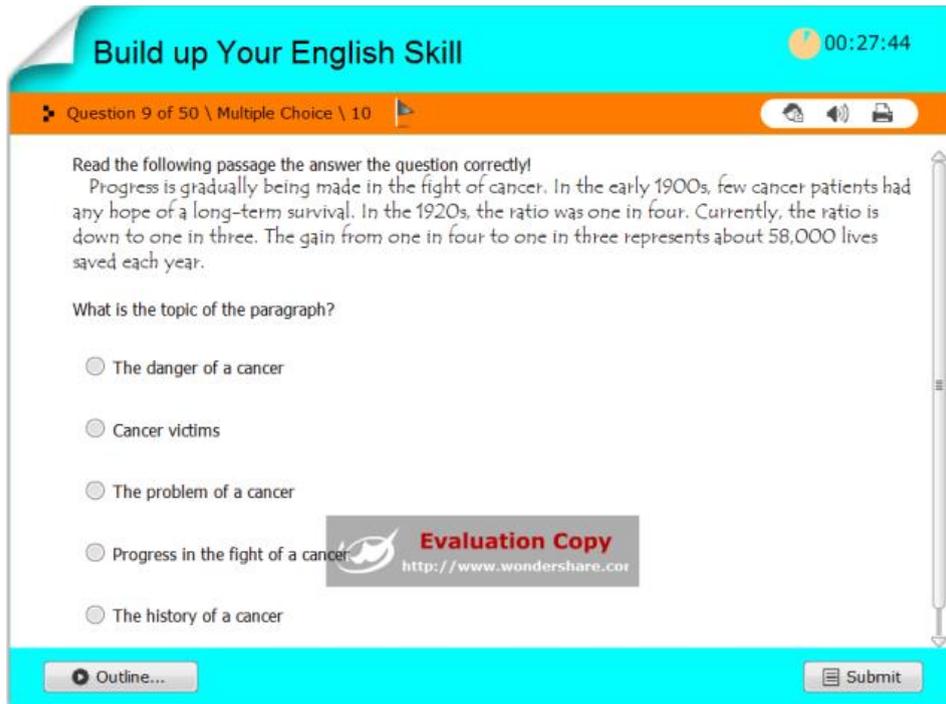
**Image 1:** Opening Screen

An opening screen covers the name of the test and the identity of the author.



**Image 2:** The Material of CBT

The material of computer-based test consist a 50 questions of multiple choice.



**Image 3:** The Material of CBT



**Image 4:** The closing (The result of the test)

Closing screen is the result of the test consist of the total questions, full score, passing rate, passing score, your score, and elapsed (time spend for finishing the test).

Validating the content/material, multimedia development and the quality of multimedia design are important steps to follow. The writer has invited 3 persons to

contribute to these steps. First validation results came up with an unsatisfactory result, meaning that the components had not meet the criteria or standards. Corrections and revisions should be conducted. After the second validation, three components – content/material, multimedia design, and multimedia quality meet the criteria or

standard. Table below show the result validity of content of computer-based test:

**Table 1:** The Validation result of The Material Substance

No	Statement	Criteria of Judgement		
		First validator	Second validator	Third Validator
1.	The relevance of material for learning purposes	Appropriate	Very appropriate	Very appropriate
2.	The relevance of the topic towards the material content, truth, and concept	Very appropriate	Appropriate	Very appropriate
3.	The relevance with the syllabus	Very appropriate	Very Appropriate	Very appropriate
4.	The appropriateness with the terms used	Very appropriate	Appropriate	Very appropriate
5.	Actuality and originality ideas	Very appropriate	Appropriate	Very appropriate

Validation of multimedia components is due to the following aspects: the relevance of materials, clear, logic, well-organized systematization, the enhancement of learning motivation, the completeness and

quality of learning materials. The evaluation scores are Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1).

**Table 2:** The Validation result of interactive validation

No.	Statement	Criteria
1.	The appropriateness of media selection	Appropriate
2.	The relevance of materials with the learning purpose	Very appropriate
3.	Clear, logic and well organized systematization	Appropriate
4.	Interactivity	Appropriate
5.	The enhancement of learning motivation	Very appropriate
6.	The completeness and quality of learning materials	Appropriate
7.	The clarity of material explanation, example and exercise	Appropriate
8.	The consistency of evaluation towards the material	Appropriate
9.	The relevance and consistency of the materials evaluation tool	Very appropriate
10.	Feedback on the exercise and evaluation result	Very appropriate

This aspect is needed to be validated due to consideration that it affected the quality of the media being developed. A

questionnaire of fourteen closed questions is distributed to be validated.

**Table 3:** The Validation result of multimedia practicability

No.	Statement	Criteria
1.	The software works effectively and efficiently	Good
2.	Reliability: the ability and speed of the software responds	Good
3.	Usability: easy and simple to operate/use	Very good
4.	Compatibility: to test the possibility of the software can be run on various operating systems and computer capacity	Very good
5.	The complete program documentation, including instalation, trouble shooting, program design/flow program	Very good

#### 4. Conclusion

Test, evaluation and assessment are the most common activities at schools. For many years, paper-based test is chosen as the type of test in the country, even in the National Examination. Due to the rapid growth of information and communication technology, test, assessment and evaluation can be conducted by the help of computer. Series of questions can be input in particular software of computer-based test. The writer has used software of wondershare quiz creator to input questions.

Validations for the three components to be validated: content/materials, multimedia development and the quality of multimedia. Validation results of the three components are valid. The implementation of computer-based test of English subject for the second grade students of vocational high schools at the borderline of Indonesia and East Timor is done based on consideration that students of the borderline are should be encouraged to be more familiar in using computer and internet in their daily lives.

#### 5. References

- [1] Borg and Gall. 1983. *Educational Research: An Introduction*. Fourth Ed. New York: Longman Inc.
- [2] Bull, Joanna & Coleen McKenna. 2004. *Blueprint for Computer-Assisted Assessment*. London: Routledge Falmer.
- [3] Chappuis, Jan & Stiggins, Rick J. 2011. *An Introduction to Student-Involved Assessment For Learning*. New York: Pearson Assessment Training Institute.
- [4] Chih Chang, Wen. 2009. Using S-P Chart and Bloom Taxonomy to Develop Intelligent Formative Assessment. *Journal of Taiwan University. Taiwan*. Vol.7. Page: 1-16. [Http://infotrac.galegroup.com](http://infotrac.galegroup.com). (access date December 7, 2015)
- [5] Clemens, Nathan H & dkk. 2015. The Predictive Validity of Computer-Adaptive Assessment of Kindergarten and First-Grade Reading Skills. *Journal of Texas AM University. Texas*. Vol. 44. Page.76-97. [Http://infotrac.galegroup.com](http://infotrac.galegroup.com) (access date Desember 7, 2015)
- [6] Depdiknas. 2003. *Undang-Undang Republik Indonesia Nomor 20 Tahun 2003 tentang Sistem Pendidikan Nasional (Sisdiknas)*. Jakarta: Departemen Pendidikan Nasional
- [7] England, Liz. 2012. *Online Language Teacher Education*. London: Routledge Taylor and Francis Group.
- [8] Glassmeyer, David M, Rebecca A. Dibbs, & R. Thomas Jensen. 2011. Determining Utility of Formative Assessment Through Virtual Community. *Journal of University of Northern Colorado*. Colorado. Vol: 12 (1) 2011. Page. 23-35. [Http://infotrac.galegroup.com](http://infotrac.galegroup.com) (access date Desember 7, 2015)
- [9] Hake, R.R. 1999. Analyzing Change/Gain Score. Dept. of Physics, *Journal of Indiana University*. USA
- [10] Hidayati, Ani Nur. 2012. *Pengembangan Perangkat Pembelajaran Sejarah Kelas XI*

- SMA Berbasis E-Learning Claroline Untuk Meningkatkan Aktivitas dan Hasil Belajar Siswa pada Materi Perkembangan Kehidupan Kerajaan Hindu-Budha di Indonesia*. Tesis Program Studi Kurikulum dan Teknologi Pembelajaran. Unnes.
- [11]Jong, Morris Siu-yung & Junjie Shang. 2015. Impeding Phenomena Emerging from Students' Constructivist Online Based Learning Process: Implications for the Importance of Teaching Facilitation. *Journal of Department of Curriculum and Instruction – Centre for the Advancement of IT in Education, University of Hongkong*. Vol. 18 (2). 2015. Page: 262-283. [Http://infotrac.galegroup.com](http://infotrac.galegroup.com) (access date Desember 7, 2015).
- [12]Kementerian Pendidikan dan Kebudayaan. 2014. *Permendikbud Nomor 144*. Jakarta: Kemdikbud.
- [13]Lilley, Mariana, dkk. 2005. Learners' Perceived of Difficulty of Computer-Adaptive Test: A Case Study. *Journal of IFIP International Federation for Information Processing*. London. Vol. 29. 2005. Page: 1026. [Http://infotrac.galegroup.com](http://infotrac.galegroup.com) (access date Desember 7, 2015)
- [14]Rahmlow, Harold F & Woodley Katheryn K. 1979. *Objectives-Based Testing*. New Jersey: Educational Technology Publications.
- [15]Scalise, Kathleen & Bernard Gifford. 2006. Computer-Based Assessment In Learning. *Journal of Technology, Learning and Assessment*, 4 (6). Boston. Vol. 4 (6). 2006. [www.jtla.org](http://www.jtla.org). (access date December 8, 2015)
- [16]Schank, Roger C. 2002. *Designing World-Class E-Learning*. New York: McGraw-Hill.
- [17]Tao, Yu-Ui, dkk. 2008. A Practical Computer Adaptive Testing Model for Small-Scale Scenarios. *Journal of Educational Technology & Society*. National University of Kaohsiung. Taiwan. Vol. 11 (3) page: 259-274. [Http://infotrac.galegroup.com](http://infotrac.galegroup.com) (access date December 7, 2015)
- [18]UNDP. 2014. Human Development Report (online), (<http://.undp.org/content/undp/en/home/librarypage/hdr/2014-human-development-report.html>) access date December 7, 2015
- [19]UNESCO. 2011. Education for All: Global Monitoring Report, (online), (<http://www.unesco.org/new/en/education/themes/leading-the-international-agenda/efareport/statistics/efa-development-index/>), access date December 7, 2015.