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PROCEEDINGS

4th International Conference on Technical and Vocational Education and Training (TVET)

Theme :
Technical and Vocational Education and
Training for Sustainable Societies



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FOREWORDS

This proceeding aims to disseminate valuable ideas and issues based on research or literature review in the field of vocational, technical and engineering studies, which have been presented in 4th International Conference on Technical and Vocation Education and Training. This conference has taken place in Hospitality Center Universitas Negeri Padang, November 9-11, 2017.

The theme of Conference focused on the perspective of technical and vocational education and training for sustainable society to face the challenges of 21st century, globalization era, and particularly Asian Economic Community. To overcome the challenges, we need the innovation and change in human resources development. Technical vocational educational and training have essential roles to change the world of education and work in order to establish sustainable society.

Undoubtedly, TVET need to enhance the quality of learning by developing various model of active learning, including learning in the workplace and entrepreneurship. Create innovation and applied engineering as well as information technology. Improvement of management and leadership in TVET Institution, and development of vocational and technical teacher education.

Many ideas and research findings have been shared and discussed in the seminar, more than 176 papers have been collected and selected through scholars, scientists, technologist, and engineers'. as well as teachers, professors, and post graduates students who participated in the conference.

Eight keynote speakers have taken a part in the conference, namely Prof. Intan Ahmad, Ph.D. (Director general of learning and student affairs, Kemenristek Dikti) and Prof. Josaphat Tetuko Sri Sumantyo, Ph.D. (CEReS Chiba University) and Prof. Dr. Maizam Alias (UTHM Malaysia) and Prof. Ganefri, Ph.D. (Rector of UNP) and Prof. Dr. Ramlee bin Mustapha (UPSI Malaysia) and Prof. Nizwardi Jalinus, Ed.D. (Chair of TVET doctoral program, FT UNP) and Prof. Michael Koh, Ph.D. Dr. Fahmi Rizal, M.Pd., MT (Dean of FT UNP). They all have a great contribution for the success of the conference.

Finally, thank a million for all participants of the conference who supported the success of 4th International conference on TVET 2017 and most importantly, our gratitude to all scholars who support and tolerated our mistake during the conference.

Padang, 9 November 2017

Prof. Dr. Nizwardi Jalinus, M.Ed
Chair of Scientific Committee

PROCEEDINGS
**4th International Conference on Technical
and Vocational Education and Training (TVET)**

Theme:
**Technical and Vocational Education and Training
for Sustainable Societies**

**Padang, November 9-11, 2017
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FOREWORD

Welcome for all respected scholars, researchers, post graduate students and especially Keynote Speakers to the 4 ICTVET. The theme of the conference focus on Technical and Vocational Education and Training for sustainable societies and consist of six subthemes. i.e Development of learning model on TVET, Workplace Learning and entrepreneurship, Innovation on applied engineering and information technology, Management and Leadership on TVET, Vocational and Technical Teachers education, and Assessment and Evaluation on TVET.

Sustainable society should be followed by the improvement of various factors that have impacts to the quality of vocational and technical education and training, particularly to overcome the competitiveness of the world business. As we have already known the rapid change of technology as well as the change of demography, having a great effects to the life of peoples in this world, The competitiveness need a collaborativeness to survive the life of millions peoples who lost their jobs. Young peoples as a productive generation have to be creative and innovative to face the competitiveness. So this proceeding contents consist of various findings of research in the field of vocational and technical education as well as applied technology and mainly based on the subthemes of the conference.

Finally, we would like to thank a million for all participants of this conference and all parties who support the success of this conference. Hopefully the seminars and scientific work of this seminar can be a reference material for basic education and elementary school teacher education in Indonesia.

Padang, July 2, 2018

Tim Editor



NEED ANALYSIS APPLICATION ON THE FEASIBILITY STUDY
OF THE HYDROELECTRIC POWER SELECTION
(CASE IN SOLOK, PESISIR SELATAN AND SIJUNJUNG REGENCY)
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RELATIONDRAG FORCE REDUCTION ON CIRCULAR CYLINDER USING
CIRCULARDISTURBANCE BODY WITH TURBULENCE INTENSITY
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IMPLEMENTATION OF CONTEXTUAL TEACHING AND LEARNING ON
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EVALUATION OF LEARNING PROCESS USING CIPP MODEL
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Ambiyar

EFFECT OF GASOLINE ADDITIVE MATERIALS
ON ENGINE PERFORMANCE
Remon Lapisa, Dwi Sudarno Putra, Ahmad Arif and Syafmi Algifari Abda'u

**THE ROLE OF INFORMATION TECHNOLOGY IN THE IMPROVEMENT
OF TEACHER'S COMPETENCIES AND TEACHING LEARNING PROCESS
EFFECTIVENESS IN ESA SEJAHTERA SCHOOL PEKANBARU**
Muhammad Luthfi Hamzah, Hamzah and Astri Ayu Purwati

SIMPLE WATER PURIFIER USING MULTILEVEL SYSTEM
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IMPROVING TEACHERS' PROFESIONALISM APPROPRIATE TO NEW
CURRIRULUM 2017 FOR VOCATIONAL SCHOOLS BY CAPACITY
BUILDING AND WORKSHOP ABOUT PREPARING LOCAL
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DEVELOPMENT OF MODEL OF PROPELLER-CROSS FLOW WATER
TURBINE FOR PICO HYDRO POWER GENERATOR
Purwantono, Refdinal, Hendri, and Syahrul

can be analyzed that the mixture of premium with methanol 5 % shows a large and optimum power increase, because the test result data of methanol 5 % show the most stable data and graph and no significant power loss at the maximum load. The mixture of premium with 5 % methanol can increase power by 9.86 % over premium. It can be concluded that the mixture of premium with 5 % methanol is suitable for engine with compression ratio 10.7: 1.

4. CONCLUSION

Based on the result of data analysis and research that has been done, it can be concluded that mixing of additive materials ethanol dan methanol with premium gasoline fuel can increase octane number. The most optimum increase of octane number generated in the mixture of 20 % methanol with premium that is from 88 up to 117.1. While the most optimum power generated in the mixture of 5 % methanol with premium is power increase up to 9.86 %. So it is found that the mixture of premium with 5% methanol is suitable for engine with compression ratio 10.7: 1.

5. ACKNOWLEDGEMENTS

The authors would like to thank to the chairman and team members and all those who have worked together to complete all of this research activity so it can be done well.

6. REFERENCES

- [1] H.Maksum, Motor Bakar, Padang: UNP Press, 2012.
- [2] S. U.Handayani, "Pemanfaatan Bio Ethanol Sebagai Bahan Bakar Pengganti Bensin," Universitas Diponegoro, 2013.
- [3] B. Arends, Motor Bensin, Jakarta: Rineka Cipta, 1980.
- [4] R. Lapisa, "Desain dan Kajian Simulatif Heat Exchanger Berprofil 'Spiral Tube In Pipe' sebagai Pemindah Panas Antara Ethanol dan Air," *SAINTEK*, Vol. XII, No. 1, Sept. 2009, pp. 46-51.
- [5] R. Tirtoatmodjo, "Pengaruh Naphtalene Terhadap Perubahan Angka Oktan Bensin Unjuk Kerja Motor dan Gas Buangnya," Universitas Kristen Petra, 2000.
- [6] A. Arif, "Karakterisasi Performa Mesin Diesel Dual Fuel Tipe LPIG dengan Pengaturan Start of Injection dan Durasi Injeksi", *Pros. SNMT MMT-ITS*, 2015.



EFFECT OF GASOLINE ADDITIVE MATERIALS ON ENGINE PERFORMANCE

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Faculty of Engineering, Universitas Negeri Padang

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ABSTRACT:The octane number is one of references is measurement of fuel quality in gasoline engines. The high octane number of fuel reduce engine knocking possibility that can improve the engine performance. One of the solutions to increase the octane number in gasoline fuels is to add additive materials. The additive materials that have been considered in the present study are ethanol, methanol and naphthalene. The type of gasoline fuel used in this study is premium. This study are to determine the effect of the additive materials on premium fuel to increase the octane number and power generation of motorcycles engines. This experimental study is conducted by mixing the additive materials to premium fuel with percentage ranging from 5% to 20%. The results indicate that the premium fuel mixture with 20% methanol increases the octane number from 88 to 117.1 and premium fuel with 20% ethanol increases octane number up to 99.6. The most optimal premium fuel mixture is to 5% methanol that can increase the power generation up to 9.86%.

Keywords: Octane Number, Additive Materials, Gasoline Engine, Performance

THE ROLE OF INFORMATION TECHNOLOGY IN THE IMPROVEMENT OF TEACHER'S COMPETENCIES AND TEACHING LEARNING PROCESS EFFECTIVENESS IN ESA SEJAHTERA SCHOOL PEKANBARU

Muhammad Luthfi Hamzah¹, Hamzah² and Astri Ayu Purwati³

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ABSTRACT: *The need of technologies in human life grows stronger and faster. Basically almost every business and non business sector in this world has integrated with information technology especially in the education sector. The purpose of this study is to analyze the effect of information technology toward teacher's competence and teaching learning process effectiveness. Population of this research are 53 teachers in Esa Sejahtera School Pekanbaru and the sampling technique used is total sampling with 53 teachers as respondents. Data analysis technique use path analysis on the basis of regression coefficient where the research variabel consist of Information Technology (X1), Teacher's competence (Y1) and teaching Learning Process Effectiveness (Y2). The result of this research found that Information technology directly has significance influence toward teacher's competence and also teacher's competence directly has significance influence toward teaching learning process effectiveness. Besides that, the result for indirectly influence show information technology has significance influence toward teaching learning process effectiveness through teacher's competence. Suggestion of this research is management of Esa Sejahtera School Pekanbaru should enhance the information technology applied in Esa Sejahtera School Pekanbaru in order to improve teacher's competencies and teaching learning process.*

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1. INTRODUCTION

Educational success is essentially influenced by many factors, among others: teachers, learners, curriculum, facilities, and environmental education. Teachers and educators is one of the factors determining the success of any educational sector. That is why in every educational evaluation in curriculum and human resource always comes down to the teacher factor. This shows that the role of the teacher in the world of education is very important. To improve the quality in education, teacher's competence is the things that need to be considered. Teacher's competence is a combination of personal ability, academic, technological, social, and spiritual and creating the competence standard for teaching profession's, which includes mastery of the material, an understanding of learners, learning Educational, personal and professional development [1].

Environmental change outside the world of education such as social, economic, environmental, technological, political world requires education to rethink how these changes would affected and how to interact with those changes. One of the changes in the environment that greatly affect the world of education is the presence of Technology,

information and communication. Technology integration should be defined not simply as a question of access but rather as a tool both for improving educators' professional productivity and promoting student learning [2].

Technology can be a powerful tool for transforming learning. It can help affirm and advance relationships between educators and students, reinvent our approaches to learning and collaboration, shrink long-standing equity and accessibility gaps, and adapt learning experiences to meet the needs of all learners.

Esa Sejahtera School is a school which was founded in 2005 and is located in Pekanbaru. Esa Sejahtera School has a vision to be a leading school with excellent services to create a learning community who highly embraces challenges and seeks opportunities through creative approaches.

Table 1. Final Year Students achievement in Esa Sejahtera School year 2014 to 2016

Year		2014	2015	2016
Student's achievement	Elementary School	79.8	82,8	83.8

Middle School	-	82.8	75
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From the table 1 above, it can be seen the student's achievement in Esa Sejahtera School Year 2014 to 2016 for students elementary school increase from 79.8 to 83.4 from 100. The different case happen in middle school level where student's achievement in 2015 is 82.8 in the average and go down to 75 in year 2016. This phenomenon is the basis for knowing how the teacher's role in carrying out the teaching and learning process so that it is able to boost student's achievement. Meanwhile, like many other researchers (see for example Darling-Hammond, 1999), have concluded that the school effect on achievement derives mainly from variations in teacher quality. [3]

The research question in this research are : 1) Does information technology directly influence to teacher competencies ? 2) Does information technology indirectly influence to teaching learning process effectiveness through teacher's competence ? 3) Does Teacher's competence directly influence teaching learning process ?

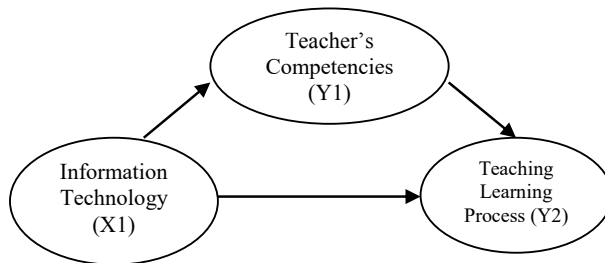


Figure 1. Research Framework

From the research framework above, can be formulated as the following hypothesis :

H1 : There is directly influence between information technology toward teacher's competencies.

H2 : There is indirectly influence between information technology toward teaching learning process through teacher's competencies.

H3 : There is directly influence between teacher's competence toward teaching learning process.

2. LITERATURE REVIEW

1. Teaching Learning Process

The learning process is an activity of interaction between teachers and students which will end with the process of evaluation as a results of the study. The learning process is also interpreted as a process of interaction between teachers and students as an attempt to reach the learning objectives, which takes place in a

particular location and within a specific time.

In the overall educational process at school, learning is the most important activity. This means that the successful achievement of the education objectives depend on how the process of learning can take place effectively. Understanding a teacher in understanding learning will greatly affect the way teachers teach [4].

In a way to make the learning activities process comply with education purpose, the teaching learning process activities have to prepared well by the teachers and this plan named RPP (Rencana Penyelenggaraan Pembelajaran). RPP is a learning scenario would be implemented by the teacher in class and in the specified time interval. This plan functioned as a teacher's tools in implement and evaluate students learning activities.

In addition, teachers are also required to have a good learning strategies in order to produce an effective learning process. Vienna Senjaya (2008) suggests that Strategy Learning is a learning activity to do the teachers and students to learning objectives can be achieved effectively and efficiently. One of a good learning concept is create a creative learning strategy. [5]

Indicators in the teaching learning process [4]:

- Absorption of the students towards learning materials or knowledge (student's achievement index)
- Students change in behavior and attitudes.

2. Teacher Competencies

Competencies are the skills and knowledge that enable a teacher to be successful. To maximize student learning, teachers must have expertise in a wide-ranging array of competencies in an especially complex environment where hundreds of critical decisions are required each day. Few jobs demand the integration of professional judgment and the proficient use of evidence-based competencies as does teaching. [6]

There are two problems with this description of the concept of competence: Firstly, it tries to set cognitive standards for behaviours that cannot be standardized. Secondly, from a research point of view, competences make up a sub-category of cognitive skills; the idea of "competence" as a distinct category different from "cognitive skills cannot be sustained."

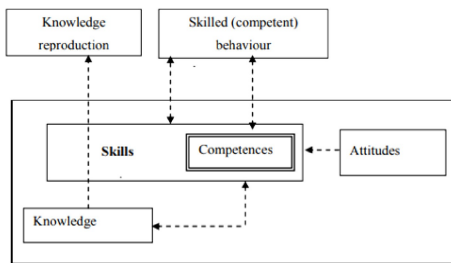


Figure 2 Competences as sub-skills

However, this debate about the description does not mean that the term competence should not be used. The term might also be reserved to indicate that the associated knowledge and skills originate from a professional practice. But when all is said and done the only determinants of human abilities are knowing (the cognitive), feeling (attitudes) and doing (skills) [6].

In a much broader sense, competence is a highly valued quality that accounts for the effective use of knowledge and skills in specific and concrete contexts. The mastery of relevant knowledge and skills alone is no guarantee of successful performance in complex environments. Individuals should be able to select from their available knowledge and skills in such a way that efficient and effective behaviour occurs which requires special “abilities” that take into account the characteristics of a specific context [6].

To measure the teacher’s competencies in order to determine the teacher’s performance in teaching learning process used the following indicators [8] :

- Pedagogic
- Personality
- Professional
- Social

3. Information technology in teaching learning process

Information and communication technology (ICT) is a crucial element in the life of nation and State. The role of information technology on human activity at this time is very important. Information technology has become the main facilities for the activities of the various sectors where technology functioned as a changes to the structure and operation of organizational management, education, transport, health and research. [9]. Therefore it is very important to the company to upgrade human resources (HR) in mastering information technology, ranging from skills and knowledge, planning, operation, maintenance and surveillance, as well as

increasing the ability of ICT leaders in government institutions, education, Enterprise, SME (small medium enterprise), and ect.

The development of information and communication technology has given influence to the world of education particularly in the learning process. In the world of education, the existence of information and communication systems is one of the components which cannot be separated from the educational activities. Educational institution must have the components needed to run operations education, such as students, facilities and infrastructure, organizational structure, processes, human resources (educators), and the cost of operation. Whereas communication and information system in education consists of supported components to provide the information required as decision makers while doing educational activities. Furthermore, the rule of information and communication technologies in education can be conclude as following :

- Information technology as a skill (skill) and competence
- Information technology as the infrastructure of education
- Information technology as a source of teaching materials
- Information technology as a tool and educational facilities
- Information technology as education management tool
- information technology as a decision support system

3. METHODOLOGY

This research conducted at Esa Sejahtera School Pekanbaru. The design of this research employs descriptive research. Descriptive research is the study of problem society as well as the procedure that apply in the community and specific situation, including on relation activities, attitudes, views, ongoing processes and the effect of phenomenon.

Data were gathered via an anonymous questionnaire. In an introductory section, participants were acquainted with the aims of the study and asked to participate by filling out the questionnaire. The questions obtained from the variabel’s indicator.

The populations in this research are all teacher at Esa Sejahtera School with total 53 respondents. Based on the number of population that allows it to be taken as whole as a sample (census sample).

Data analysis technique of this research use validity and reliability test for the whole question item in research questionnaire. Thus, this research conducting hypothesis tests (path analysis) for direct and indirect influence between dependent and independent variable.

4. RESULT AND DISCUSSION

1. Structural Model Test

Tabel 2. The Significance Test Result for Direct Effect

Direct Effect	Path Coefficient	t _{statistic}	Sig.
X1 to Y1	0.740	10.881	0.000
X1 to Y2	0,923	2.754	0.033
Y1 to Y2	0,521	3.865	0.000

Source : Primary Data Processed

Based on the table above, it can be concluded several thing as follows:

- a. Information Technology directly has positive influence on teacher competencies. It is proved by path coefficient value is 0.740 and t-statistic value is 10.881. t-statistic value is higher than t-table ($10.881 > 2.009$) which mean that H_0 is rejected or information technology (X1) significantly influence on teacher competencies (Y1) at 0.740 indicating the higher value of information technology will lead the higher value of teacher competencies.
- b. Information Technology directly has positive influence on teaching learning process. It is proved by path coefficient value is 0.923 and t-statistic value is 2.754. t-statistic value is higher than t-table ($2.754 > 2.009$) which mean that H_0 is rejected or information technology (X1) significantly influence on teaching learning process (Y2) at 0.923 indicating the higher value of information technology will lead the higher value of teaching learning Process.
- c. Teacher Competencies directly has positive influence on teaching learning process. It is proved by path coefficient value is 0.521 and t-statistic value is 3.865. t-statistic value is higher than t-table ($2.754 > 2.009$) which mean that H_0 is rejected or teacher competence (Y1) has significantly influence on teaching learning process (Y2) at 0.521 indicating the higher value of information technology will lead the higher value of teaching learning Process.

Tabel 3. The Significant Test Result for Indirect Effect

Indirect Effect	Aroian Test					t _{table}
	A	B	Sa	Sb	z-value	
X1 to Y2 through Y1	0,74	0,52	0,08	0,11	6.67	2.009

Based on the table above, it can be concluded that the effect of information technology (X1) on teaching learning process (Y2) through teacher performance (Y1) and it is proved by z value is more than t-table ($6.67 > 2.009$).

The result of this research show that the key success of teaching learning process is part of the impact of teacher competencies. It means, student learning success can be seen from the quality or changes that shown by the student after following teaching learning process. An important factor influencing whether learning activities effectiveness have a positive impact on outcomes for students is the extent to which those outcomes form the rationale for, and ongoing focus of, teacher engagement. Such a focus requires teachers to understand the links between particular teaching activities, the ways different groups of students respond, and what their students actually learn.

Further, according to the research finding by Rosdiana (2016) where the effectiveness of the learning process is the influence of teacher's competence and commitment to teaching. In this case, the level of teacher's competencies can support the teacher's performance in order to provide quality of learning process. This research also in line with the opinion of Carl Rogers that suggests the practice of education operates on in terms of teaching. He asserted that the professionalism the teacher is very necessary to support improvement in the achievement of the learning results [10].

Moreover, one of the key success of teacher's competencies is ability in use of technology. The existence of technology can enable teachers to transform their teacher practices, given a set of enabling conditions. Teachers' pedagogical practices and reasoning influence their uses of technology, and the nature of teacher's technology use impacts student achievement. The most effective teacher uses of technology can challenge the students to understanding and thinking, either through whole-class discussions and individual/small group work using technology. Technology are seen as important tools to enable and support the move from traditional 'teacher-centric' teaching styles to more 'learner-centric' methods [11].

5. CONCLUSION

The conclusion that can be drawn from this research is to create an effective learning process and produces a good student's achievement, school need to improve their teacher's competencies. Competent teachers is based on the ability of pedagogic, social abilities, professional abilities and personal ability. The ability of teachers in using information technology gave an impact in the development of the learning process at the present time where the use of information technology is able to create competence of teachers in support and provide a creative teaching learning process and learn the students to be able in preparing themselves with their technological capability.

Along with the conclusions, propose the following suggestions: (1) the school management should monitor the performance of teachers through classroom observation, laboratory and workshop and to gather information from students about the implementation of learning, and the results are returned to the council inform the teacher, (2) the school management should be provide teacher with the technologies facilities and training in order to improve the teacher's ability in use of technology.

6. REFERENCES

- [1] Lawless K. & Pellegrino J. (2007) Professional development in integrating technology into teaching and learning: knowns, unknowns, and ways to pursue better questions and answers. *Review of of Educational Research* 77, 575–614.
- [2] Hernández-Ramos P. (2005) If not here, where? Understand-ing teacher's use of technology in Silicon Valley schools. *Journal of Research on Technology in Education* 38, 39–64.
- [3] Hanushek, E. A., Kain, J. F., & Rivkin, S. G. (1998). Teachers, Schools and Academic Achievement. Working Paper 6691. *NBER Working Paper Series*. Cambridge MA: National Bureau of Economic Research.
- [4] Hamalik, Oemar, 2007, *Proses Belajar Mengajar*. Jakarta : PT. Bumi Aksara
- [5] Sanjaya. W, 2006, *Pembelajaran berorientasi Standar Pendidikan*, Jakarta : Kencana Penada Media.
- [6] Jackson, P. W. (1990). *Life in classrooms*. New York, NY: Teachers College Press.
- [7] Westera, W. (2001). Competences in Education: a confusion of tongues. In *Journal of Curriculum Studies*. 33(1), (pp.75-88).
- [8] Schmidt, W.H, Cogan, L., & Houang, R. (2011). The role of opportunity to learn in teacher preparation: An international context. *Journal of Teacher Education*, 62(2), 138-153
- [9] Gunawan, G. 2009. *Pentingnya Teknologi Informasi dalam pendidikan*. Situs <http://www.cianjurcybercity.com/2009/01/09/>
- [10] Rosdiana, D. 2016. Pengaruh Kompetensi Guru Dan Komitmen Mengajar Terhadap Efektivitas Proses Pembelajaran Serta Implikasinya Pada Hasil Belajar Siswa Dalam Mata Pelajaran. *Jurnal Penelitian Pendidikan*.
- [11] Hamalik, Oemar, 2007, *Porpses Belajar Mengajar*. Jakarta : PT. Bumi Aksara



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