

# WORK-BASED LEARNING OF ROLLING & INTEGRATED MODEL ON VOCATIONAL EDUCATION OF DIPLOMA III AUTOMOTIVE

**Budi Tri Siswanto**

Automotive Engineering Education Department  
Faculty of Engineering Yogyakarta State University  
budi\_ts@uny.ac.id

## Abstract

This research aims at obtaining: (1) work-based learning model for Diploma III of automotive engineering; (2) the output of work-based learning with the developed model; (3) the response from the program director and company management toward the model. This study can be categorized as Research and Development as well as experimental research which was conducted at training center in various Brand Right Holder Agents (*Agen Pemegang Merek/APM*) for Automotive in Jakarta, Karawang, Tangerang, Bekasi. The population was automotive students who joined Industrial Practice in Yogyakarta and Central Java. Two groups of students of 100 were chosen by purposive sampling technique from 3 state universities and 3 private universities. The experimental study was conducted on July – October 2010 with factorial aspect of 2 X 1. Content Validation analysis was conducted by expert judgement. Construct validation was conducted by factor analysis and item reliability was determined by Cronbach's alpha formula and KR-20. Data were analyzed with descriptive analysis, correlation, regression, path, and t-test using the SPSS program of 17. Suitability Test was using Structural Equation Modeling (SEM) with the help of the LISREL program of 8.80 at significance level of 0.05. The research results showed that Work-Based Learning of Rolling & Integrated was appropriate to increase the learning quality, (2) the output was higher significantly compared to the conventional one which covered automotive mechanic knowledge, professional attitude, working readiness, students autonomy, (3) the response from the program director and company management toward the model can be categorized as high in case of concept of work-based learning, the implementation and their perception.

**Key word:** Work-Based Learning of Rolling & Integrated Model, vocational education

---

## INTRODUCTION

The holder of vocational education should keep enhancing the learning process to produce graduates in line with labor market demand. The development of technology and the dynamic of work place have been a challenge to accomplish the core competence for the graduates of vocational education. The demand of corporate work are getting higher, this condition urge vocational education institutions to anticipate and deal with the changes by utilizing the existing capabilities.

The challenge to have a high-quality vocational education is the background to implement Work-Based Learning approach in Diploma III of Automotive. This approach is utilizing workplace to restructure the experiences from the workplace as the contribution to the social, academic, and

career development for the students as well as a supplement in learning activities. The experience learning from workplace is applied, smoothed, expanded for both in campus and workplace. By implementing this method, the students could develop their attitude, knowledge, skill, insight, behavior, habits, and associate from both contexts to create real-life work activities (Lynch & Harnish, 1998).

The quality of vocational education is strongly influenced by the learning approach. The implementation of vocational education cannot be separated from industrial area. The theories of experiential learning, teaching and learning context, and work-based learning are relevant in managing vocational education. Developing of vocational education with these theories is needed to improve the quality of learning outcomes, which in turn affects the quality

of learning outcomes and the quality of graduates.

The results of recent research concludes that the utilization of Work-Based Learning (WBL) has a positive effect on achievement, motivation, and continuing education (Bailey & Merrit, 1997). The research and evaluation studies on WBL showed that there is a relation between the students' outputs and outcomes and learning structure in school and industrial experience in the workplace. If the purpose of the program, the curriculum and work-based experience are designed and applied with capable support staff as well as combined with regular evaluation, the program will have a positive impact (Lynch & Harnish, 1998; Fallow & Weller, 2000; Braham & Pickering, 2007; Garnett, 2008).

The role of the Automotive Diploma program as the place to prepares young engineers who fulfill the industrial standard are developed by implementing work based learning approach in partnership context to find out its role to improve the quality of learning results and graduates. It consists of : (1) a model for organizing work-based learning in vocational education programs of Diploma III Automotive, (2) the outcomes of work-based learning implementation model.

## **THEORITICAL FRAMEWORK**

### **Work-Based Learning**

Work-Based Learning (WBL) is used as the terminology in different countries as one of school or college programs to gain experience of the corporate world (WBL Guide, 2002). It is also for young people to be ready in the transition period to learn the reality of working activities so they could make the right choices for working. Work-based learning is a training that relates directly to the requirements of the job on offer in your organization" (Glass, Higgin, & McGregor, 2002). Medhat (2008 : 8) defines program WBL as "a process for recognising, creating, and applying knowledge through, for, and at work which forms part (credits) or all of a higher education qualification. Mean while, Raelin (2008) states that WBL combines action learning and organizational learning context or organisasi learning organization.

WBL become a trend in education, because it affects learners' satisfaction and

increase the role of tutors in learning (Woltering, Herrler, Spitzer, & Spreckelsen, 2009). Learning can be expanded with the realistic equipment/environments and supported with learning models such as learning situation which is conditioned, associative, systemic, simulative, and constructivist (Sharpe, 2006). According to Gray (2001), WBL is a learning process at university level as learning to work. Such as job placement, in-house training, and learning through work (eg. work-related to accredited colleges or credited like co-op program).

### **Work-Based Learning Model**

There are various models of WBL such as apprenticeship opportunities, career mentorship, cooperative work experience, credit for prior learning (CPL), internship, job shadowing, practicum, school-based enterpreneurship, service learning, teacher externship, tech-prep, vocational student organizations, volunteer service, worksite fieldstrip (iseek, 2008). According to Guide (2002), WBL is a planning connection and it is supervised from class experiences with expectation and work place reality. Work-based learning is a continual process starting from classroom lecturing until competitive placement. The cycle is as follow, classroom lecture - informal interview- industry tour-job visit - entry level work experience - on-the-job (OTJ) training - approved apprenticeship program-competitive employment.

Work-based learning model, a standard program maintenance system is, equipment training infrastructure facilities already meet the minimum standard requirements for competency training model, field instructors and counselors available model, good organization of its human resources model, the environment and security situation safe and adequate work model, and other means of support for learning on the job completion.

The implementation model of WBL is a WBL program model which has the standard of operation, adequate equipment to address competency standard, the availability of instructure and supervisor, good organization of human resources, occupational safety and health & other

supporting facilities. All requirements are available at the training centers in various automotive industries as cooperation partner. Thus, this model can be considered as the reference for the implementation of WBL program.

### **Work-Based Learning of Rolling & Integrated Model**

The implementation of Work-Based Learning of Rolling & Integrated is a model application, planning, execution, monitoring & supervising and learning program evaluation based working context which is conducted by organizing management of vocational education Automotive Diploma III on field practicum to give industrial experience with working industrial partnership and working context. Work-Based Learning of Rolling & Integrated is development model from the current industrial practicum, the improvement itself covers, (1) expanding the duration, practicum period from 3 credits or one and a half month or equivalent with 256 hours is added into 3 months or 90 days in 3 different places; (2) grouping implementation by placing in dormitory with the goal of unity, time and place efficiency and discipline training as well as teamwork; (3) rolling implementation, groups of student gain experience from 3 different places in order to obtain complete experience in automotive spectrum and also to give the students better understanding of any corporate culture in reflection process, abstraction & generalisation, and transfer in experiential learning by repetition or accumulation of experience in three different industrial places; (4) integrated implementation, there is theoretical

material provided on each location that is considered as credit and the material presenter is a qualified instructor from industrial spectrum while the material itself adjusted with industrial characteristic. Integrated hypothetical model of Work-Based Learning of Rolling & Integrated obtained from technician inputs and it was adjusted to the condition of some APM consist of: annual training program, target, facilities, instructors and other developed into final model of Rolling & Integrated WBL Model through several field testing.

### **Review of Related Studies**

Many scholars have conducted research on work-based learning such as Bragg (1995), Bailey & Merritt (1993), Andrew A Rezin & N. L. McCaslin (2001), Julie Chadd & Marcia A. Anderson (2005), and Mallika Modrakee (2005). Rezin & McCaslin found that among graduate diploma/automotive tech-prep at Ohio in 1993-1994, the apprenticeship model significantly determined in the implementation of vocational education, the success of industrial job market, and graduate satisfaction. Mallika Modrakee concluded that WBL program have the potential to solve any problems of carrier development. Also, WBL had crucial role to the participant for decision making.

### **Conceptual Framework**

There are several factor that influence the success of work based learning implementation among the students of Automotive Engineering (Diploma III). Based on the theories above, the relationship among the variables can be drawn as follow.

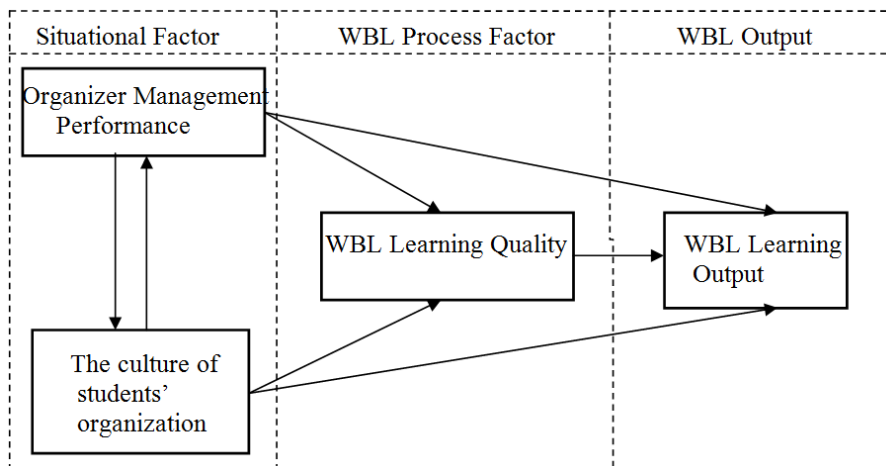


Figure 1  
Construct map for the quality of WBL result

### METHOD

This study was using *Research and Development* (R&D) (Borg & Gall, 1983:772) and continued by experimental stages through conceptual model, theoretical models, hypothetical model, and the final model. This model was called Work-Based Learning of Rolling & Integrated with FGD (*Focus Group Discussion*) activities as well as Delphi technique and experimental approach. Development method in this study referred to the recommended model from Borg & Gall (1989) and Plomp (1997). Concordance test was using Structural Equation Modelling (SEM) technique with goodness-of-fit kriteria. Product test was conducted to gain information whether the model was better than the conventional one.

The experimental design was Randomized pretest-posttest control group design. The structural model was using as analysis technique for Concordance test of the research to find out the influence of exogenous variable and endogenous variable (Jöreskog & Sörbom, 1996:11). Standardized factor loading from observed variable was  $\geq 0.3$  (Borden & Abbot, 2009:459) and T-values with the score of  $\geq 1,96$  (Wijanto, 2008:137). Hypothetical model of Work-Based Learning of Rolling and Integrated on vocational education of Automotive (DIII), development stage Work-Based Learning of Rolling & Integrated Model, and Model can be drawn as follow on the figure 2, 3 and 4.

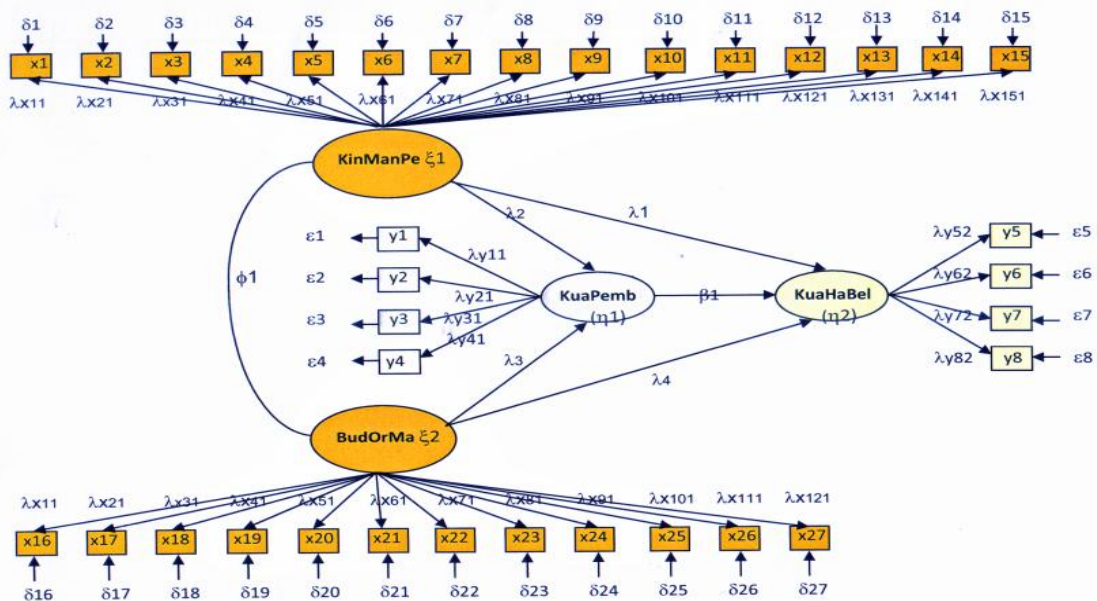


Figure 2  
Hypothetical model of the variables and the manifestation of Work-Based Learning of Rolling & Integrated implementation on vocational education of Automotive (DIII)

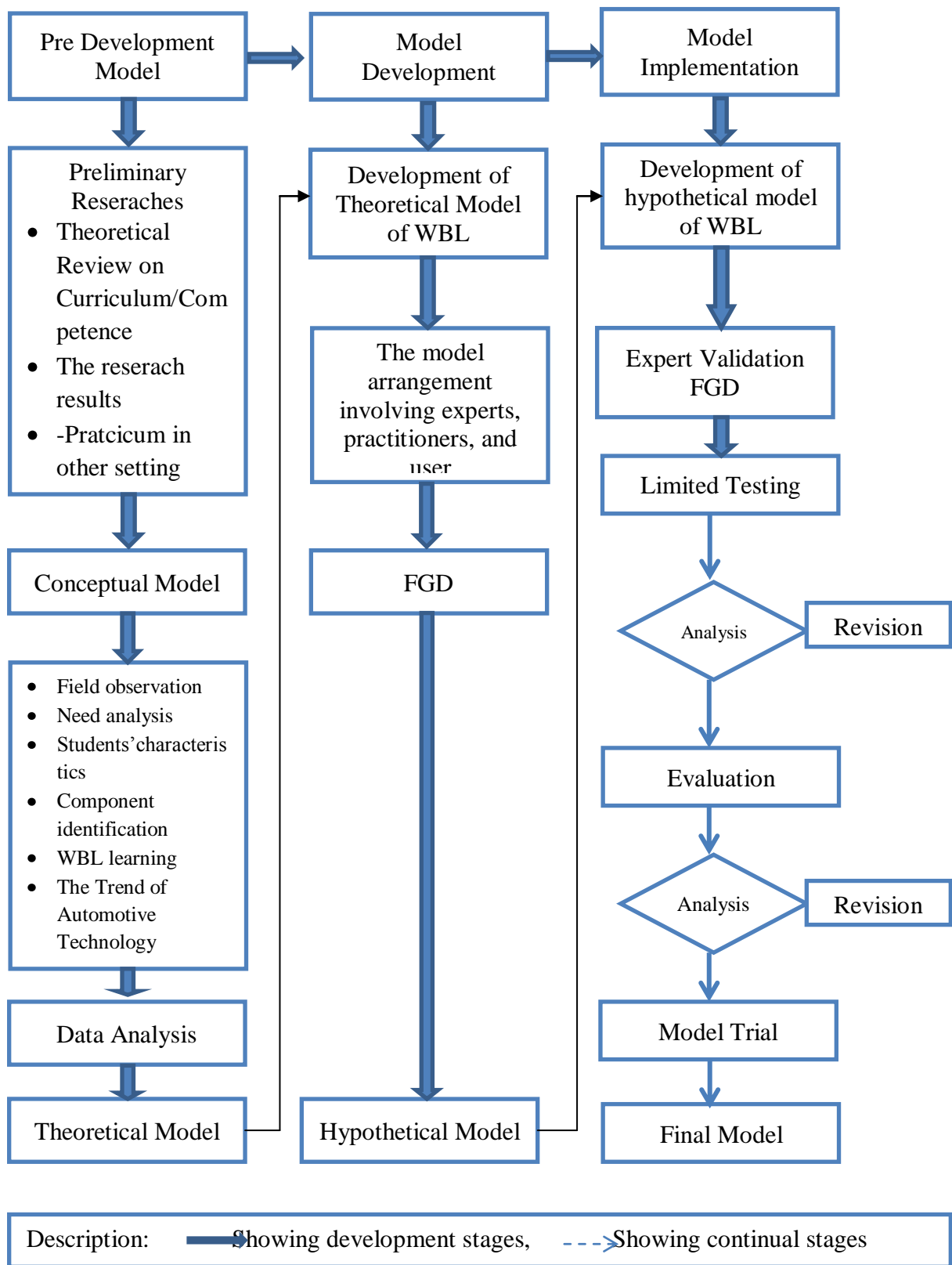


Figure 3.  
The stages of Work-Based Learning of Rolling and Integrated model  
(Adapted from Plomp)

**Description :**

- $\xi_1$  (Ksai 1) = The managing performance of the director/ organizer  
( $X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, X_{13}, X_{14}, X_{15}$ )
- $\xi_2$  (Ksai 2) = The culture of student organization  
( $X_{16}, X_{17}, X_{18}, X_{19}, X_{20}, X_{21}, X_{22}, X_{23}, X_{24}, X_{25}, X_{26}, X_{27}$ ),
- $\eta_1$  (Eta 1) = Learning quality of WBL ( $y_1, y_2, y_3, y_4$ )
- $\eta_2$  (Eta 2) = Quality of WBL learning result ( $y_5, y_6, y_7, y_8$ )

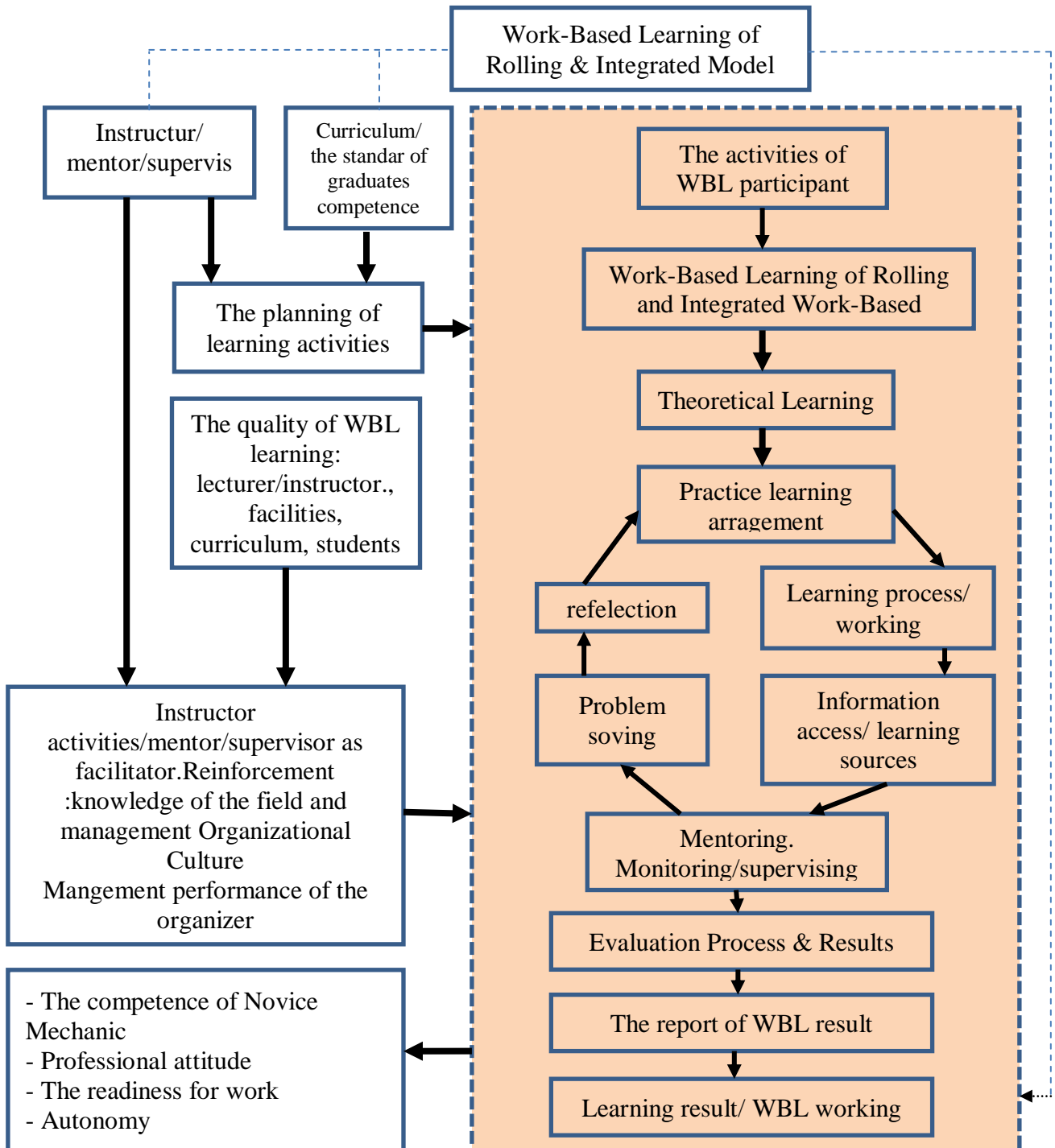


Figure 4.  
Final Model of Work-Based Learning of Rolling & Integrated Model



## Hypothesis and Research Questions

Major Hypothesis: Work-Based Learning of Rolling & Integrated Model has significant influence on the quality of learning result

- How effective is the model of Work-Based Learning of Rolling & Integrated to improve the quality of learning result among the students of WBL Diploma III of Automotive?
- What are the outputs aspects of WBL learning result quality with the developed model?
- How high is the output aspects of Work-Based Learning of Rolling & Integrated Model which consists of mechanical knowledge of automotive beginner, students' professional attitude, job readiness, and students autonomy?

## RESEARCH RESULT AND DISCUSSION

SEM analysis was using to findout the influence of exogenous latent variables: the mangement performance of the organizer, students' organizational culture toward the endogenous latent variables: WBL learning quality, and the quality of WBL learning result with the assistance of LISREL 8.80 program. As the requirement of fit model, the overall fit of the instruments were conducted by consulting goodness of fit index criteria. The indicator was to measure fit model which was based on : (1) Root Mean Square Error of Aproximation (RMSEA)  $\leq 0.08$  showed good and fit; (2) p-value  $\geq 0.05$ ; (3) Goodness of Fit Indices (GFI)  $\geq 0.90$  &  $0.80 \leq$  GFI, 0.90 marginal fit; and (5) Comparative Fit Index (CFI)  $\geq 0.90$ ,

Normed Fit Index (NFI)  $\geq 0.90$  (Jöreskog & Sörbom, 1993; Solimun, 2002:80; Imam Ghozali, 2008; Wijanto, 2008).

The stages of the research were (1) hypothetical model validation, (2) the trial of implementation models, and (3) outputs test of the learning outcomes of Work-Based Learning of Rolling & Integrated Model. The first stage was validation of hypothetical model as concordance testing for the model with SEM which consisted of several activities, i.e. testing the validity of cost-effectiveness models, (2) observing the tendency of the quality change of learning outcomes among WBL participants. The second stage was testing the relationship between variables with simple and multiple regression tests. The third stage was testing the quality of the learning outcomes of Work-Based Learning of Rolling and Integrated model.

### Test of the Validity of Cost-Effectiveness Models

The result of testing model with the assistance of LISREL 8.80 program showed that Test for Goodness of Fit Index data (N=100) to all variable categorized as fit. Output test showed Chi Square coeffisient of 970.13 with probability of (p) at 0:07, acquisition  $p > 0.05$ , which indicates that the obtained empirical data had similarity with the theoretical foundation based on SEM. It means that the model had emphirical support or fit model. Goodness of Fit Index result on the other parameters are shown as follow

Table 1  
Goodness of Fit Indexon 3 observations

No	GOF size	Cut of Value	Observation result			Description
			1	2	3	
1	Kai kuadrat (p)	small (p > 0.05)	970,13 (P = 0.15)	1.124,20 (P = 0.23)	1.667,35 (P = 0.31)	achieved
2	RMSEA	$\leq 0.08$ (min)	0.07	0.06	0.06	achieved
3	NFI	$\geq 0.90$	0.94	0.95	0.97	good
4	CFI	$\geq 0.09$	0.40	0.37	0.20	achieved
5	PGFI	$> 0.06$	0.48	0.56	0.66	achieved

No	GOF size	Cut of Value	Observation result			Description
			1	2	3	
6	GFI	≥0.90	0.98	0.97	0.94	good
7	AGFI	≥0.80	0.94	0.90	0.91	good

Testing result showed that hypothetical model was appropriate and consistent with the obtained data from the field on the first, second, and third observation. Also from the results of multiple regression three factors, the determinant coefficient (R2) of the three independent variables KMP (X1), CDE (X2), and BOM (X3) on KHB variable (Y) is 0.250, 0.119, and 0.255. Thus, the variable quality of WBL learning outcomes can be explained

by three independent variables for first observation was 20.0%, 11.9% for second observation, and 25.5% for third observation.

Meanwhile, the result of t-test between group and observation were presented on the table 2. It showed significant difference that implementation of Work-Based Learning of Rolling & Integrated model improve the quality of WBL learning.

Table 2  
Summary of T-Test from all variables (significant 0.05)

Variable	Observation 1			Observation 2			Observation 3		
	t	Sig.	Observation	t	Sig.	Observation	t	Sig.	Observation
Management performance of the organizer (X1)	.077	.046	Significant	.324	.001	Significant	.024	.000	Significant
Student organization al culture (X2)	2.843	.105	Not Significant	4.940	.004	Significant	2.675	.000	Significant
The quality of WBL learningt (X3)	.253	.013	Significant	1.974	.006	Significant	.175	.000	Significant
The quality of EBL learning result (Y)	3.152	.093	Not Significant	6.307	.275	Not Significant	.693	.000	Significant
mechanical knowladge of automotive beginner (Y1)	.757	.700	Not Significant	.002	.885	Not Significant	2.027	.000	Significant
students' professional attitude (Y2)	.364	.748	Not Significant	.743	.469	Not Significant	.010	.001	Significant
job readiness (Y3)	1.112	.767	Not Significant	4.558	.146	Not Significant	1.623	.000	Significant



Variable	Observation 1			Observation 2			Observation 3		
	t	Sig.	Observation	t	Sig.	Observation	t	Sig.	Observation
students autonomy (Y4)	2.262	.036	Significant	2.606	.088	Not Significant	.983	.000	Significant

- The effectiveness of Work-Based Learning of Rolling and integrated model to improve the quality of industrial practice on the students of Automotive (Diploma III) were on (1) the mean of 3.6 on a scale of intensity at 4, (2) the mean 3.7 out of 4 on a scale of efficiency, (3) mean of 3.7 out of 4 on a systematic scale, (4) the mean of 3.8 on a practical scale of 4 (5) the mean of 3.5 on a productive scale of 4.
- The outputs form work-based learning of rolling and integrated model, i.e. mechanical knowledge of automotive

beginner, students' professional attitude, job readiness, and students autonomy on the final observation showed (1) the mean of mechanical knowledge of automotive beginner (24,84-significant), (2) students' professional attitude (45,03-significant), (3) job readiness (85,59-significant), and students' autonomy was very high (96,35-significant)

The description of the direct and indirect influence as follow:

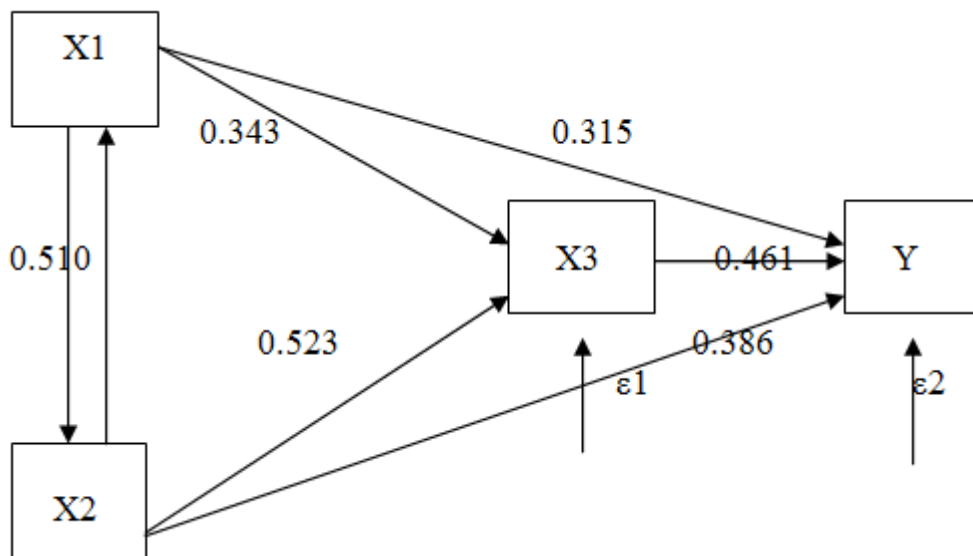


Figure5.

The results of the calculation of empirical causal relationships between variables

Description:

X1 : Management performance of the organizer (according to the students)

X2 : Students Organizational culture

X3 : The quality of WBL learning

Y : The quality of WBL learning result

#### 1. Direct influence

$$p_{x3x1} = 0,343$$

$$p_{x3x2} = 0,523$$

$$p_{yx1} = 0,315$$

$$p_{yx2} = 0,386$$

$$p_{yx3} = 0,461$$

## 2. Indirect influence

$$X1 - Y \text{ through } X3 = p_{x3x1} \cdot p_{yx3} = 0,343 \cdot 0,461 = 0,157$$

$$X2 - Y \text{ through } X3 = p_{x3x2} \cdot p_{yx3} = 0,523 \cdot 0,461 = 0,241$$

## Discussion and Suggestion

Experimental test result showed that the implementation of Work-Based Learning of Rolling & Integrated had significant influence towards the quality of learning result which covered some aspects, such as beginner automotive mechanical knowledge, professional attitude, readiness of working mentality and students' autonomy. Experimental class had higher mean point for those variables compared with control class which implementing conventional apprentice method for its field practicum program.

In this recent period, industrial or field practicum puts more emphasis only on cognitive and skill aspect. Meanwhile, by implementing WBL method, affective, working readiness, and autonomy aspects were significantly improved. Progress also happen in other aspects which influence learning result quality as well, i.e. working performance of organizer management (based on students' perception), WBL learning quality, and students' organizational culture. This result showed that Work-Based Learning of Rolling & Integrated was effective to improve the learning quality. It has similar implication with some studies about the implementation of work based learning in some countries at some schools and colleges (Bragg, 1995; Rezin & McCaslin, 2001; Mallika Modrakee, 2005).

The response of organizing management towards the implementation of Work-Based Learning of Rolling & Integrated is also categorized as high. It means acceptability level for this model to be applied on their training center was good. High category was also obtained on their perception toward Roll-Int WBL model, WBL program, and soft skills which should be trained in this model. Are the other outcomes beyond the aspects that have been examined also high? For instance, competence of automotive mechanical practicum, attitude towards mechanical profession, attitude toward

automotive carrier area, and so on. Further research can be conducted to reveal those aspects.

By adding the duration of industrial experience into 3 months and applying 3 places rolling, the learning process has better-quality, students' perception toward organizer working performance is higher, and students' organizing culture is improved and at last the learning result increased significantly. The students obtain better tutoring either individually or group. Besides, the students attain longer-term experience and it makes the students have deeper reflection, generalization & abstraction, and transfer in experiential learning. In this model, the learning experience is so complete such as, togetherness in daily life (in dormitory), mentoring (group or individual), autonomous learning (making productive training program supervised by an industrial mentor), adequate training facility (in training center) and a conducive atmosphere for studying (working environment, time discipline, teamwork, clear learning target)

The result findings will be appropriate to be applied in APM which has complete training Centre, such as adequate mess with high discipline regulation, well-organized CSR program, human resource management standard, and complete facility. However, essentially, this model can be applied to some APM workshop in rural areas which has no dormitory. Generally, the workshops of APM in rural area have applied after-sales service standard, such as selling, service, and spare part. There is no big difference among the standard of workshop/service after-sales or the facility between the center workshops and workshop in rural area. In addition, in rural area, they already had standard and continual mechanical quality control, well-procedure operation standard, broad networking, and well-established corporate culture. Although Work-Based Learning of Rolling and Integrated have not

covered all automotive spectrum (only light vehicle engineering, auto body engineering, and Autotronic engineering), the researcher believes that this model can be applied to two other spectrums. By having participation from various APM in broad spectrum, Work-Based Learning of Rolling & Integrated has a great chance to be applied and the students' competence combination will be more complete, if there are various APM getting involved. The combination of three of five automotive spectrums will give interesting point to be applied in various implementations.

This model proves effective for industrial practicum course (PI/KP/PK/PKL) with the cooperation and

commitment of various APM in Jakarta, Karawang, Tangerang and Bekasi. Suggestion: (a) applying this model broadly either in big cities or other cities by utilizing main dealer, local training, or authorized sales service in some areas which generally also hold regular training with a broader spectrum of automotive. (b) the result of Rolling and Integrated Model is a terminal destination not a final destination; (c) It is necessary to conduct similar research on other related area of work based learning implementation in vocational education.

Final Model of Work-Based Learning of Rolling & Integrated can be seen at figure 6.

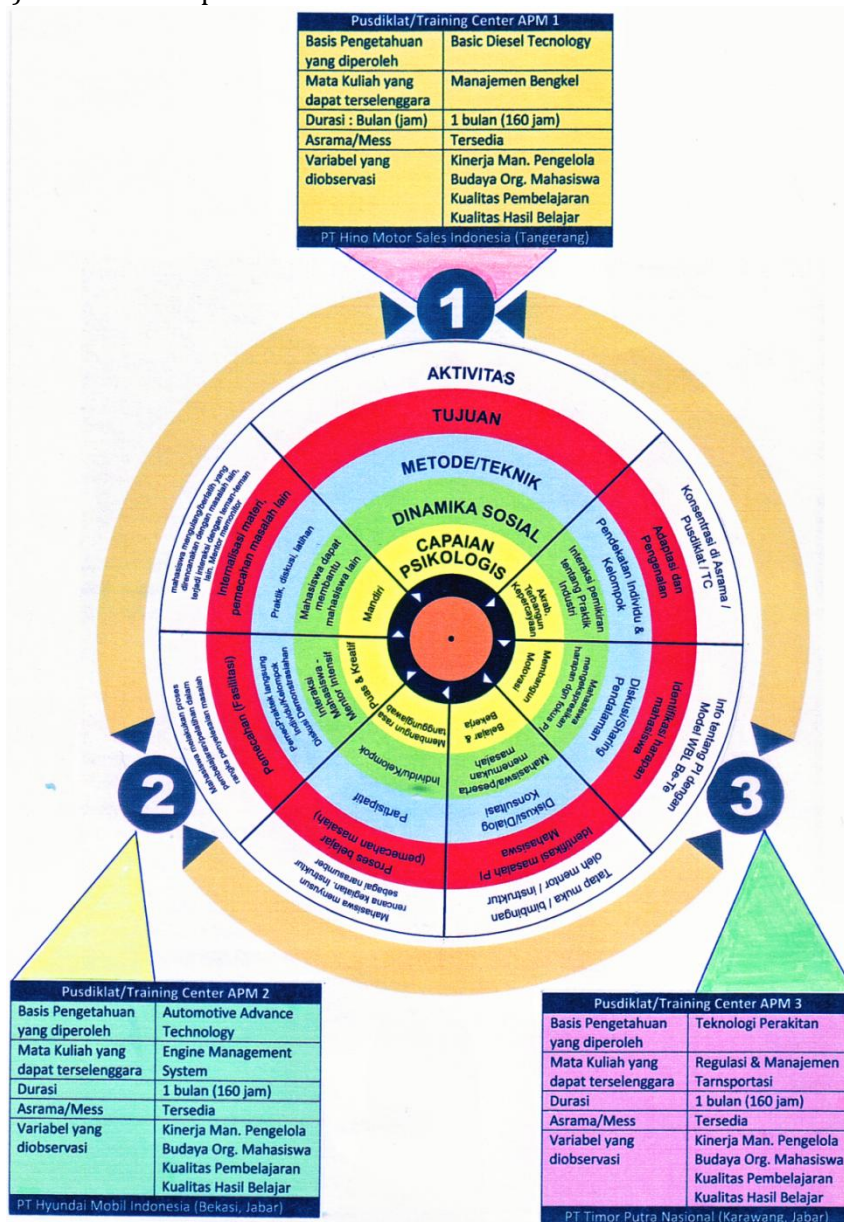


Figure6.

The implementation of Work-Based Learning of Rolling & Integrated Model

## CONCLUSION

Based on on the data analysis and the discussion, several conclusion can be drawn as follow:

1. Based on the testing and development, Work-Based Learning of Rolling & Integrated on vocational education of Automotive (Diploma III) was able to improve the quality of learning result on industrial practice program. Work-Based Learning of Rolling & Integrated was effective to improve four aspect of learning result i.e. mechanical knowledge of automotive beginner, students' professional attitude, job readiness, and students autonomy.
2. The outputs form Work-Based Learning of Rolling & Integrated model i.e. mechanical knowledge of automotive beginner, students' professional attitude, job readiness, and students' autonomy were significantly higher than the conventional class. The testing result of Work-Based Learning of Rolling & Integrated model had met the requirements of research and development, such as accuracy, realistic, and benefits. Data and information were analyzed according to scientific techniques such as validity and reliability of the instrument, respondents, group of the experimental and control class, documentation, and requirement fulfillment and the prerequisite of other researches.

## References

- Bailey, T. & Meritt, D. (1993). Youth apprenticeship : lesson from the U.S. experience. *CenterFocus, 1*. Diakses 8 Agustus 2008, National Center for Research in Vocational Education dari : <http://ncrve.berkeley.edu/CenterFocus/cf1.html>.
- Borg, W. R. & Gall, M. D. (2003). *Educational research: an introduction*. Fifth edition. New York: Longman.
- Bragg, D. D. (1995). *Work-based learning in two-year colleges in the united states*, National Center for Research in Vocational Education, Berkeley, CA. ERIC No : EDIII78446.

Diakses pada tanggal 10 Pebruari 2009.

- Braham, J. & Pickering, J. (2007). Widening participation and improving economic competitiveness; the dual role of work-based learning within foundation degrees. *Proceedings of The Work-based Learning Futures Conference*, UK, Buxton, April 2007, 45-52.
- Budi Tri Siswanto. (2011). *Pengembangan model penyelenggaraan work-based learning padapendidikan vokasi diploma III otomotif*. Disertasi doktor, tidak diterbitkan, Pascasarjana Universitas Negeri Yogyakarta.
- Byars, L., & Rue, L. W. (2000). *Management (skill and application)*. Boston : Irwin McGraw Hill.
- Cunningham, I., Dawes, G., & Bennet, B. (2004). *The handbook of work based learning*. Burlington : Gower Publishing Company.
- Fallow, S., & Weller, G. (2000). Transition from student to employee : a work-based program for "graduate apprentices" in small to medium enterprises. *Journal of Vocational and Education Training, 52*(4), 665-685.
- Garnett, J. (2008). Recognising and enhancing the quality of university work-based learning programmes. *Proceedings of the work-based learning futures II conference*, UK, Middlesex, May 2008, 32-38.
- Gay, R. L. (1990). *Educational research: competencies analysis and application*. 3<sup>rd</sup> edition. Singapore: Macmillan Pub. Co.
- Glass A., Higgins, K., & McGregor, A. (2002). *Delivering work based learning*. New York : Scottish Executive Central Unit.



- Gray, D. (2001). *A briefing on work-based learning. Assessment Series No. 11.* LTSN Generic Centre Assessment Series.
- Hersey, P., & Blanchard, K. H. (1996). *Management of organizational behavior.* New York: Pearson.
- Lynch, R.L. & Harnish, D. (1998). Preparing pre-service teachers education students to used work-based strategies to improve instruction. In *Contextual teaching and learning : Preparing teachers to enhance student success in the workplace and beyond* (pp. 127-158). Columbus : OH : ERIC Dearinghouse on Adult, Career, and Vocational Education.
- Mallika Modrakee. (2005). *Vocational Education Development in a Work-Based Learning Programme.* Disertasi doktor, tidak diterbitkan, School of Education Faculty of Human Development Victoria University.
- Medhat, S. (2008). The path to productivity : *The progress of work-based learning strategies in higher education engineering programmes. Final Report.* London : The New Engineering Foundation.
- Paris, K.A., & Mason, S.A. (1995). *Planning and implementing youth apprenticeship and work-based learning.* Wisconsin : Center on Education and Work, Univer-sity of Wisconsin.
- Raelin, J. A. (2008). *Work-based learning. Bridging knowledge an action ini the workplace.* New and revised Edition. San Francisco : John Wiley and Sons.
- Rezin, A. A., & McCaslin, N. L. (2001). Comparing the impact of traditional and cooperative apprenticeship programs on graduates' industrisucces. *Journal of Career and Technical Education*, 18, Number 1 Fall.
- Sugiyono. (2006). *Metode penelitian kuantitatif, kualitatif, dan R & D.* Bandung: Penerbit Alpha Beta.
- Robbin, S. P. (2006). *Perilaku organisasi: konsep, kontroversi, aplikasi. Edisi Indonesia* (Terjemahan oleh Benyamin Molan). Jakarta: PT Prenhallindo. (Edisi asli diterbitkan tahun 2003 oleh Pearson Ed. Inc. New Jersey Upper Saddle River).
- Varona, F. (1996). Relationship between communication satisfaction and organizational commitment in three Guatemalan organizers. [versielektronik]. *The Journal of Business Communication*, 33, 2: 111-140.
- Work-based learning guide 2002. Diakses pada tanggal 2 Pebruari 2009, dari : <http://www.iowaworkforce.org/files/wlg02.pdf>