THE EFFECTIVENESS OF SYNCHRONIZATION MANAGEMENT MODEL OF VOCATIONAL HIGH SCHOOL GRADUATE COMPETENCE WITH INDUSTRIAL COMPETENCY

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Abstract

This research aims to examine the effectiveness of the synchronization management of vocational high school graduate competence with industrial competency in mechanical major. It employed Research and Development (R & D) approach developed by Borg and Gall which was modified into three stages: (1) preliminary study; (2) development study; and (3) model dissemination. After testing its effectiveness using experimental design (before-after), the developed model was proven more effective than the old version. This insight leads positively to vocational graduate employment rate and competence improvement. Here, the stakeholders have a profound impact on model effectiveness as they assist and facilitate the synchronization process. It is recommended that their commitment or support shall reach its maximum capacity so that the vocational school graduate competence is well-matched to the demand from industry.

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INTRODUCTION

The strategic role of vocational education, as one part of national education system, is undeniably apparent in fostering skillful workforce in a state level. As Trilling and Fadel (2010) suggest, the 21st century instructional design shall result in "innovative, inventive, self-motivated and self-directed, creative problem solvers to confront increasingly complex global problem". It is highly possible to intepret vocational teaching and learning as economics education in which consequently, its implementation increases job opportunity and supports economic activity, growth, distribution, not to mention welfare.

Referring to Law No. 20, 2003 about National Education System, students at vocational school are prepared to work in a spesific field after graduation. This set-up involves a fruitful cooperation with industry to forecast the qualifications needed for a particular job. This type of school is, therefore, urged to provide sufficient skill training and knowledge transfer for future job market and advanced education (Martinez Jr. & Reynaldo L., 2007: Gasskov, 1998).

In fact, there are some serious discrepancies between the present reality and ideal situation as what Slamet (2013: 15-16) stated in four points: (1) the students at vocational schools are dominantly focused only on a particular skill; (2) the harmony of school and industry in terms of quantity, quality, location, and time allotment is not formally organized; (3) the schools are less responsive in keeping up with the increasing pace of economic development at local, national, regional and international level; and, (4) the student proportion at vocational to senior high school becoming 30%:70% from initial ratio 70%:30% explicitly demands the vocational education to ensure their graduates to have a decent job.

The issue of mismatch competence between vocational graduates and job requirement in a number of companies or industries is disheartening. It would be unsurprising when the government is urged to prioritize quality improvement of vocational school performance for future benefit, less unemployement rate among its graduates (Samsudi, 2009). From that concern, the emphasize of the vocational curriculum on a useful job-oriented subject (productive competence) now seems necessary. In details, its selection on substantive lesson must be in line with science and technology development, society as well as individual need, and job vacancy (Nolker and Schoenfeldt, 1983). In other words, if the school wishes for the suitability of the graduate skill to the overwhelming industrial demand, the design and mastery of vocational competence must be adapted to the current trend.

The idea of competence synchronization with industry emerges as an attempt to equip vocational school graduates; here, the mechanical major is no exception. Its productive competence is synchronized in an integrative and continuous management development. The matching process, as an "outside in" work, also considers external factors to examine how and why it is essential for schools which subsequently establish internal organization to serve outer needs. The success of synchronization management is immensely determined by stakeholder involvement because its goal, the relevance of school curriculum with industry, is achievable whenever the related parties are willing to take part (Finch & Crunkilton 1999, 16).

RESEARCH METHOD

Research and Development (R&D) approach was employed in this study. It refered to the procedure proposed by Borg and Gall, modified into three stages covering: (1) preliminary study; (2) development study; and (3) model dissemination. The development stage was carried out through two phases: internal validation by focus group discussion as well as expert judgement and external one through limited model experiment. Its effectiveness was tested, according to Sugiyono (2009), by

experimental design (before-after) aimed at gaining information whether the breakthrough model was more effective than the old synchronization management.

RESULT AND DISCUSSION

The model of competence synchronization management between vocational school graduates and industrial competency was obtained through preliminary and development study by internal validation, i.e. focus group discussion and expert judgment. Its result is illustrated in Figure 1 below:
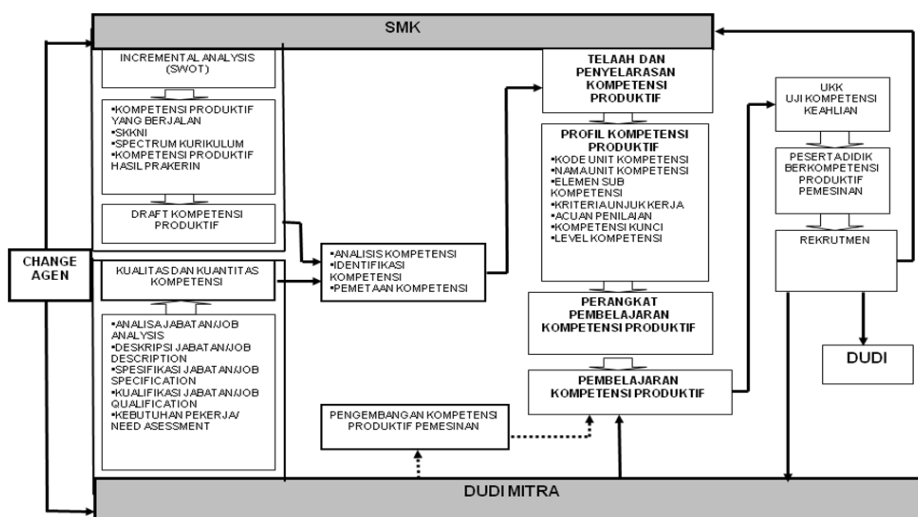

Figure 1. Synchronization management model of mechanical productive competence

Meanwhile, the model effectiveness was assessed by an indicator of synchronization management implementation, productive competence development, stakeholder involvement and students' competence enhancement. This assessment was conducted during limited experiment or external validation. Its data on the old model from 7 respondents is presented in Table 1 whereas its recently developed version is indicated in Table 2. The means on both models, old and new, were obtained by determining the standard score. The obtained ideal score, 112, was from the multiplication of 4, 4, and 7 (4 was the highest answer score, 4 was three pieces of instrument and 7 was the number of respondents). Here, the ideal score for each peace of instrument was 28 (4 was the highest score, 7 was the total respondents).

Table 1. The effectiveness of the old model of the productive competence synchronization management

RESPONDENT	SCORE				TOTAL
	a	B	c	d	
1	3	3	3	3	12
2	2	1	1	1	5
3	2	2	2	3	9
4	3	3	3	3	12
5	3	3	2	3	11
6	2	2	1	3	8
7	2	2	1	1	6
TOTAL	17	16	13	17	63

According to table 1 in which the sum was 63, the effectiveness of the old model was 0.563 or 56.3% from the expected criteria. Then, the assessment of synchronization management implementation of mechanical productive subject resulted in 0.607 or 60.7% from the determined criteria whereas the assessment of productive competence development was 0.571 or 57.1 % from the standard. The measurement for stakeholder involvement fell in 0.464 or 46.4 % from the standard and as for the students' competence enhancement was 0.607 or 60.7 %.

Table 2. The effectiveness of the new model of the productive competence synchronization management

RESPONDENT	SCORE				TOTAL
	a	B	c	d	
1	4	4	4	4	16
2	3	3	4	4	14
3	4	4	4	4	16
4	4	4	4	4	16
5	4	4	3	4	15
6	4	4	4	4	16
7	3	3	3	4	13
TOTAL	26	26	26	28	106

Table 2 with sum 106 demonstrates the effectiveness assessment result on the newly developed synchronization management model which was 0.946 or 94.6 % from the set criteria. With the total data of 106, the implementation of mechanical productive synchronization was indicated as effective by the number of 0.929 or 92.9 % from the standard criteria whereas the productive competence development was 0.929 or 92.9 % from the determined criteria. In this regard, the measurement of stakeholder involvement was 0.929 or 92.9 % from the expected criteria and the students' competence enhancement was 1.000 or 100 %.

Table 3. The comparison of the effectiveness between the old and new model

OLD MODEL	ASPEK PENILAIAN MODEL	NEW MODEL
60,7%	Synchronization management implementation	92,9%
57,1%	Productive competence development	92,9%
46,6%	Stakeholder involvement	92,9%
60,7%	Student competence enhancement	100%
56,3%	Mean	94,6%

Table 3 clearly indicates that the new model effectiveness on productive competence synchronization mamangement surpasses its older version. The effectiveness means for the recent model was 94.6%, definitely more than the former one which was only 56.3%. That latter model apparently increases the implementation of synchronization management from 60,7 % to 92,9 %, mechanical productive competence development from 57,1 % to 92,9 %, stakeholder involvement from 46,6 % to 92,9 % and student competence improvement from 60,7 % to 100 %. The data, of course, becomes an evidence that the newly developed model was more satisfying than its predecessor.

To further statistically prove the significance of effectiveness difference between the old and new model, t-test with related samples using SPSS version 16 was performed. It employs one sample T-test based on hypothesis (H_a) stated "more effective". In this research, the formulated hypotheses were:

H_o : The new model of productive competence synchronization management is less than or as effective as the old management model.

H_a : The new model of productive competence synchronization management is more effective than the old management model.

$$H_o : \mu_1 \leq \mu_2$$
$$H_a : \mu_1 > \mu_2$$

Table 4. The result of t-test on the model effectiveness

Paired Samples Test

EFFECTIVENESS	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 OLD-NEW	-6.14286	2.11570	.79966	-8.09955	-4.18616	-7.682	6	.000

In order to disclose the difference of model effectiveness, the value of t was compared to the t tabel with dk n-2 = 5. According to the value tabel in t distribution with 5 dk, if one tail test with the degree of error (α) was 5%, thus the value of t table= 2,015. Furthermore, the t measurement was actually -7,682 categorized on the group H_a or rejection H_o. The value of t measurement was on the acceptance area H_a, thus H_a the new model of productive competence synchronization management was more effective than the old one was acceptable. It underlies the conclusion of this study in terms of the synchronization management implementation, productive competence

development, stakeholder involvement and student competence improvement.

CONCLUSION

In this study, the newly developed model of mechanical productive competence synchronization management is proven more effective than its former version. It is demonstrated by the synchronization management, productive competence development, stakeholder involvement and student competence improvement. Regarding the optimum result, the mediator or harmonious party has an substantial role in creating the balance of job demand and supply. It is suggested that the related stakeholders shall be fully committed and involved in the competence synchronization management of the vocational school graduates.

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