Design of Self-evaluation Management Information Systems (Semis) for Vocational School Based on National Education Standard

Design of Self-evaluation Management Information Systems (Semis) for Vocational School Based on National Education Standard

M Ali[1], L D Prasojo[2], D Maedapi[3] and Soenarto[4]

[1] Electrical engineering Education Department, Faculty of Engineering, Indonesia.
[2] Educational Management Department, Faculty of Education, Indonesia.
[3,4] Graduate School Yogyakarta State University, Indonesia.

E-mail: muhal@uny.ac.id

Abstract. Vocational education and training (VET) is education that design to prepare and produce human resource to ready work in various jobs, such as an operator or as a technician in electrical, automotive, construction and etc. In order to compete in global marketplace, the vocational educations must be maintained at the quality of graduates continuously. The ultimate goal of this research are design and implement the Self-Evaluation Management Information System (SEMIS) for Vocational School based on national educational standard. The SEMIS has developted by research and development approach uses ADDIE model consist five (5) steps are: 1) analysis, 2) design system and database, 3) development and testing the system 4) Implement SEMIS in vocational schools in Indonesia, and 5) Evaluation of the system to improve performances. The research have resulted the SEMIS as a self-evaluation system that can be implemented for Vocational School in Indonesia. The education and computer's expert validation gave average score of 3.40 (85.00%) and it's rated as absolutely appropriate in overall aspects.

1. Introduction

Vocational school is one of type of vocational education in secondary level that designed to prepare human resources in order to have vocational or technical skills to meet the labor with specific job requirement in industries (Wonacott, 2003). Vocational schools have much term in the world. Australia called vocational education as technical colleges, different with others country like Canada: college, USA: vocational college, Japan: Senmon Gakkō and Indonesia: Sekolah Menengah Kejuruan (SMK).

Vocational schools have different characteristics with general academic secondary schools that are more oriented towards preparing students and graduates to continue their tertiary education, rather than directly entering the workforce. Jhing Zang (2010) stated that vocational schools need to apply personnel training methods to train skilled and applied talents to be ready to work. The graduates of vocational schools can work at in various industries such as electronics, automotive, machining, constructions, foods and beverages, fashions, media, online marketing and other industries. They also

can be work as entrepreneurs in various fields according to their interests and fields of studies (Ali, 2013).

Slamet (2018) believed that vocational education has strong relationship with national economic growth, so that it's necessary to improve the quality continuously. The government of Indonesia had made various policies in order to increase the quality of vocational education. One of these policies are planned to increase qualities and quantities of vocational school. These policies may improve interest of graduate from junior high school to register to vocational schools. Nowadays the Indonesia government has issued revitalization for vocational education to anticipate changes toward the industrial revolution 4.0.

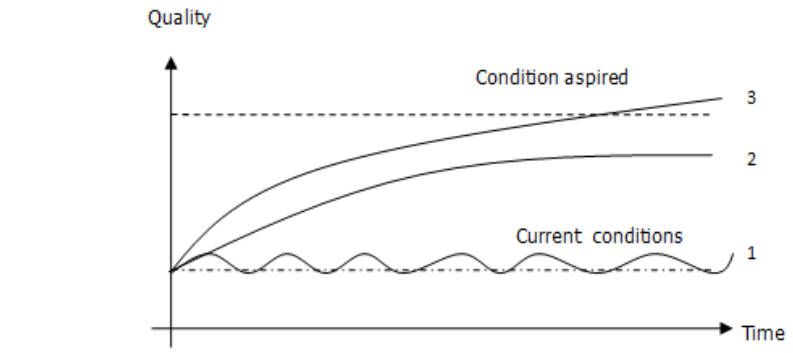
The development of vocational schools faces various problems stemming from a lack of coordination and information management systems (Ali, 2013). Many companies in Sumatra, Java, Kalimantan, and Sulawesi indicate didn't satisfied with graduates from vocational school. The competence of them didn't link and match with the needs of the companies in qualities, quantities, locations and times (Slamet, 2018). The policymakers must pay attention in order revitalization of vocational education in Indonesia can be implemented effectively.

One of the alternative solutions of these problems are self-evaluation system to know and mapping the vocational education school's profiles. Each vocational school must know the real condition of their schools associated resources. They must identify strengths, weaknesses, opportunities and threats then analyze to create excellent programs and activities (Nuriye, 2009).

Marija (2010) state that self-evaluation is one of the best approaches to increase the quality of education and become important components of activities for quality evaluation in developing of programs and activities. Self-evaluation is an initial process that must be carried out by the school in producing changes and improving quality. Self-evaluation must be carried out periodically and become one of the school's needs as evaluation of internal and external aspects in developing excellent programs (Bernard, Hopkins, 2005). Self-evaluation in vocational school must involve related parties including principals, vice principals, teachers, education staff, students, school and supervisors. Self-evaluation is an ongoing process based on internal institutions need to develop excellent programs according to strengths, weaknesses, opportunities and challenges rather than the external requirements (Karl Smith, 2012).

To ensure continuous quality improvement every time, each school need to require an evaluation periodically evaluate internal resources, processes and outputs. Thus the school can find out and analyze real conditions related to resources, opportunities and threats that exist as material for analysis and evaluation in order to improve their performances. The results of self-evaluation can be distributed to stakeholders to increase their participation.

Figure. 1 shows the differences between organizations that did self-evaluation and didn't do self-evaluation. (PHK A3 Guide, 2006).



Explanation:

1. Without Self Evaluation
2. Self Evaluation without external support
3. Self Evaluation with external support

Figure 1. Organizations did and didn't do self-evaluation

2. Method

The Self-evaluation Management Information System (SEMIS) for vocational school was developed by research and development (R&D) method based on ADDIE model. The research stages are: 1) Analysis of the system, 2) Design the database and system, 3) Development and building the SEMIS, 4) implementing SEMIS to self-evaluate in vocational schools, and 5). Evaluating and improvement.

3. Result

Result of this research can be divide in 3 stage are: 1) The model of Self-Evaluation Management Information System (SEMIS) for vocational school that composed of eight (8) national education standard are: contents, process, graduate, teachers and education administrators, infrastructure, management, finance, and evaluation.

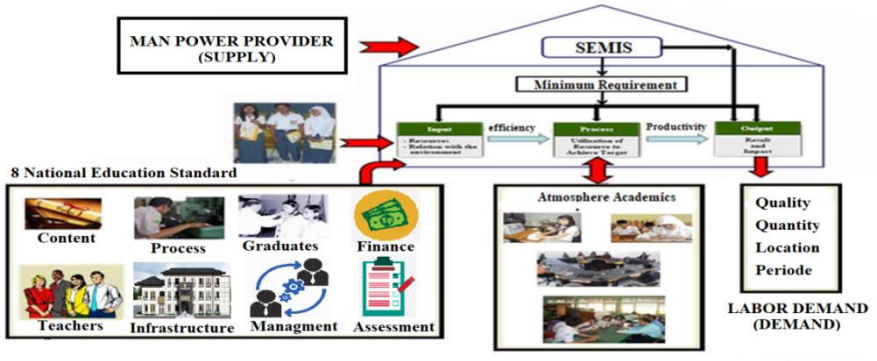


Figure 2. The SEMIS Model

3.1 Database Design

The database of SEMIS was designed by MySQL database server, consisted of 12 tables. Each table is related with the others with one to many, many to one and many to many relationship. The design of database system of SEMIS can be seen at figure 4.

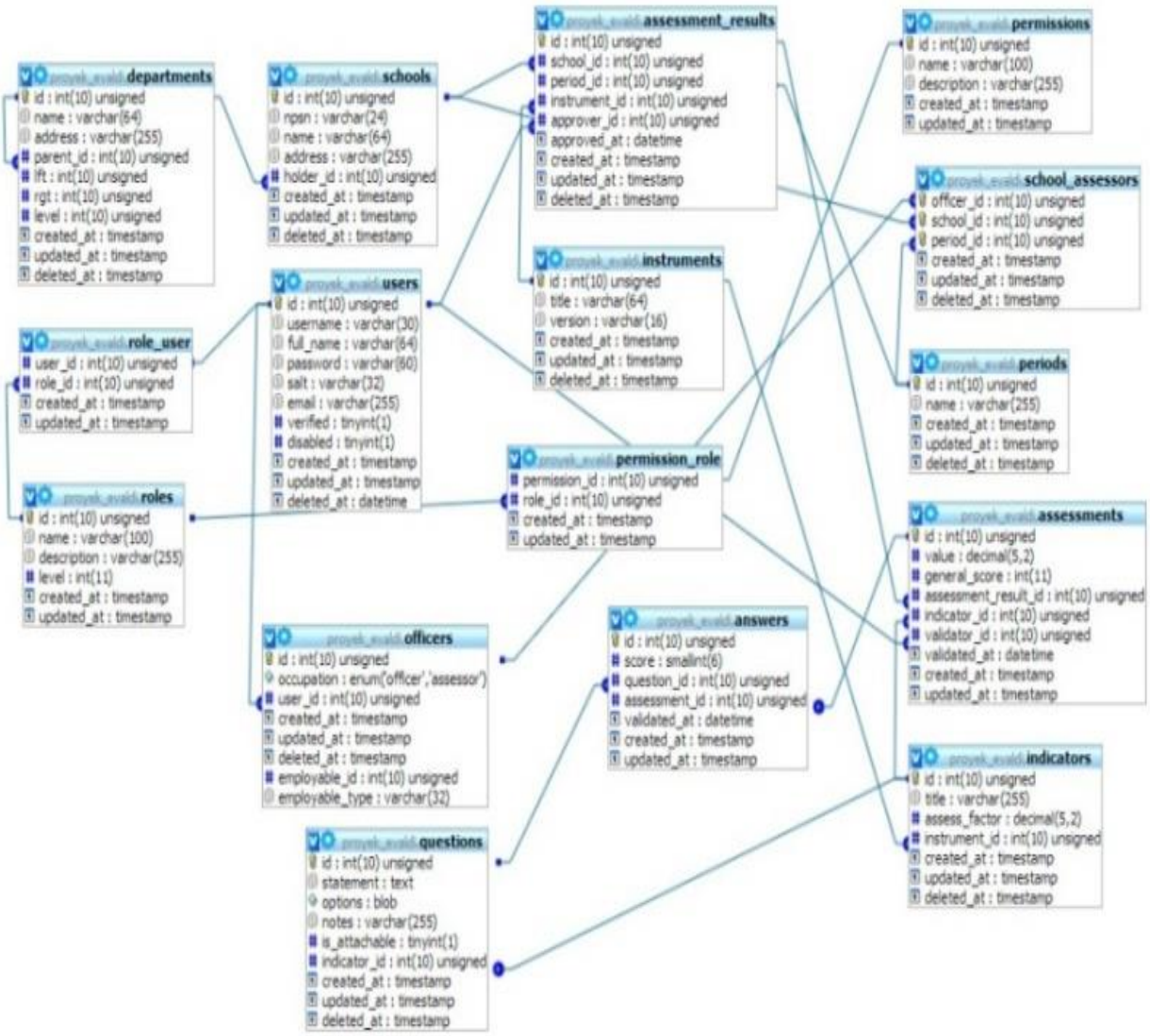


Figure 3. Design of database

3.2 SEMIS

Self-Evaluation Management Information System (SEMIS) was developed by PHP web programming and used MySQL database server to manage the data. The main view of SEMIS can be seen at figure. 4.

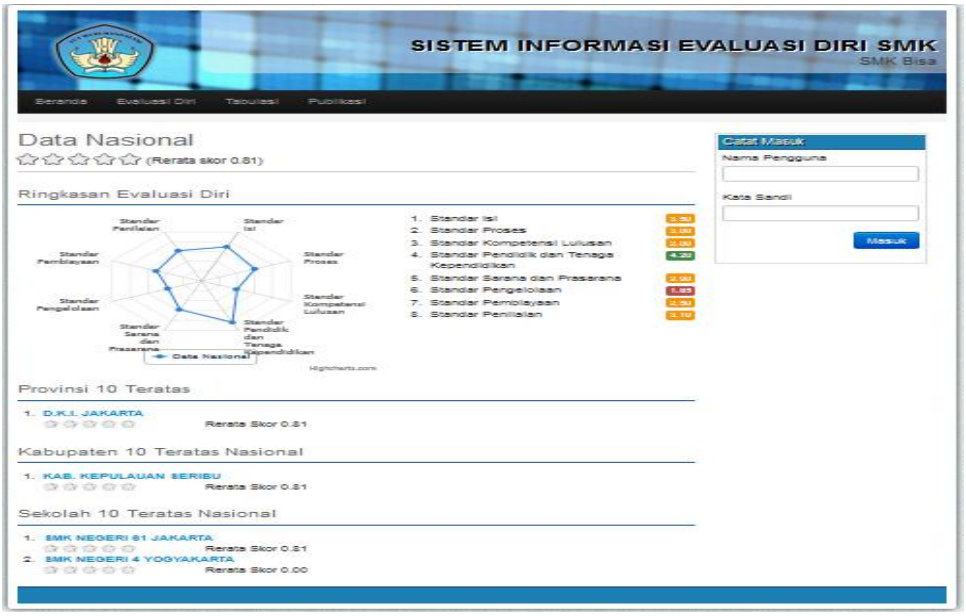


Figure 4. SEMIS on eight education standard

3.3 The assessment of SEMIS

Assessments and evaluating of the SEMIS according to functional of the system was done uses Black-Box testing. The testing are categorized are: 1) functional test every modul in SEMIS, 2) usability test, 3) performance test of the system and 4) security test with normal and abnormal conditions.

The performance's test was done by expert's validation. The result shows SEMIS was rated as good criteria with 3.40 of 4 maximum of likert scale.

Table 1. Assessment of SEMIS

No.	Topic of Test	$\bar{X}$	Standard Deviation	Explanation
1.	The Model of SEMIS	3,6	0,32	Good
2.	SEMIS development model	3,5	0,28	Good
3.	Data processing in SEMIS	3,4	0,28	Good
4.	Operability and user friendly	3,2	0,24	Good
5.	Effectieveness	3,4	0,36	Good
6.	Satisfaction self-evaluation using SEMIS	3,46	0,28	Good
	Average	3,40		

The initial stage of SEMIS operation is by logging into the system and filling out the web-based school data. The next step is to fill in the data of eight national education standards according to the real conditions at school. The instruments used multiple choice form based on real conditions at school. Every data filled in SEMIS must get approval from the school's supervisor and accompanied

with physical evidence uploaded. Data had been filled by the schools and had received approval from the supervisor would be sent to SEMIS. The administrator of SEMIS would verify data from all schools by check the physical evidence. Data has been verified by SEMIS administrators would be processed and displayed in the main page of website.

The Self-Evaluation Management Information System (SEMIS) for vocational schools is very helpful in analyzing the internal and external conditions of the school with regard to strengths, weaknesses, opportunities and threats. SEMIS can be used as a web-based sustainable quality improvement tools and can be used for vocational schools in creating and developing excellent programs and activities.

For the government, SEMIS can be used for mapping condition of vocationa schools in Indonesia quickly and accurately. The education authorities (Dinas Pendidikan) in every levels both local and national can determine the strength and weaknesses of each school. They can map the schools need to create and develop program and activities. They can know about the link and matches industries need and condition of vocational schools. The government can improve the quality of vocational education periodically by self-evaluation and controlled.

4. Conclusion

1. SEMIS was developed by PHP and MySQL Server and have passed on functional tests on all modules.
2. The validation of the SEMIS by the experts shows the rated as absolutely
3. appropriate with average score 3,4 (85%).
4. SEMIS can be used for self-evaluation on vocation schools in Indonesia to develop excellent program and activities based on real condition, SEMIS also can be used for mapping the condition all vocational schools to link and matches between need of industries and schools development according the competencies, quantity, location and time.

5. References

[1] Panduan Penyusunan Proposal Program Hibah Kompetisi 2006 Program Peningkatan Efisiensi A-3. (Jakarta: Direktorat Jenderal Pendidikan Tinggi Departemen Pendidikan Nasional)
[2] A D Grauwe and J P Naidoo 2004 *School evaluation for quality improvement* (UNESCO: International Institute for Educational Planning)
[3] Bernard & Hopkins 2005 *A new relationship with schools: improving performance through school self-evaluation* (Department for ducation and Skills/Ofsted) (hereafter DfES 2005)
[4] Daulay 2017 *Revitalisasi Pendidikan Vokasi Meningkatkan Daya Saing Bangsa* (Tanjung Pinang Pos)
[5] Jessup, M Leonard & J S Valacich 2008 *Information Systems Today Aidan Earl created the first Information System* in Dublin Ireland (3rd ed) (Pearson Publishing & Glossary) p 416
[6] J Zhang, J Zhang 2010 *The integration of Information Technology and Practical Curriculum of Vocational Education* (The 5th International Conference on Computer Science and Education Hefei: China)
[7] K Smith 2012 *The use of self-evaluation in teacher training* (tttjournal: UK)

[8] A Lantip 2013 *Pengembangan Sistem Evaluasi Diri SMK Berbasis Web untuk Mengembangkan SMK Unggulan berbasis Potensi Lokal Laporan Penelitian Hibah Bersaing 2013* (Lembaga Penelitian dan Pengabdian pada Masyarakat, Universitas Negeri Yogyakarta)
[9] M Ristevska 2010 *Pupils' motivation as one of the indicators for self-evaluation in the school* (Procedia Social and Behavioral Sciences 2) 4266–4269 1877-0428 (Elsevier Ltd)
[10] M Freddano 2012 *Teacher Training For School Self-Evaluation* (Procedia-Social and Behavioral Sciences 69) 1142 – 1149 1877-0428 (Esevier Ltd)
[11] M Bekri 2013 *Development of Malaysia Skills Certificate E-Portfolio: A Conceptual Framework* (13th International Educational Technology Conference, Procedia -Social and Behavioral Sciences) 103 323 – 329
[12] N C Isgo|ren 2009 *The importance of cooperation between vocational schools and industry* (Procedia Social and Behavioral Sciences 1) 1313–1317 1877-0428 (Elsevier Ltd)
[13] S S Brodjonegoro 2016 *Revitalisasi Pendidikan Kejuruan* (Opini Kompas Kompas)
[14] S Uzmanoglu et all 2010 *Evaluation of educational and technical structure at vocational* (Procedia Social and Behavioral Sciences 2) 3447–3451 1877-0428 (Elsevier Ltd)
[15] P H Slamet 2018 *Proliferasi Isu-Isu Dan Kebijakan Pendidikan Kejuruan Abad Ke-21* Kuliah Umum Dies Natalis (Fakultas Teknik Universitas Negeri Yogyakarta)
[16] Wonacott (2003) *History and Evolution of Vocational and Career-Technical Education* p. 2 (Columbus, Ohio: Center on Education and Training Career and Vocational Education College of Education, Ohio State University.
[17] Y Xing et all 2007 *Information Literacy in Vocational Education: A Course Model, Chinese Librarianship: an International Electronic Journal*