Journal of Mechanical Engineering and Vocational Education (JoMEVE)
Jurnal Homepage: https://jurnal.uns.ac.id/jomeve

POLYTECHNIC LEVEL OF FACILITIES FOR LECTURERS' PROFESSIONAL DEVELOPMENT

Eddy Triyono[1]

[1]Electrical Engineering, Politeknik Negeri Semarang

Email: eddytriyono@gmail.com

KEYWORDS

Three Pillars of Higher Education
Professional lecturer
Polytechnic

ABSTRACT

Lecturers are professional educators and scientists with the primary task of transforming Science and Technology through Education, Research, and Community Service. This study aims to determine the level of facilities of each polytechnic in lecturers' professional development in the implementation of Tridharma Perguruan Tinggi (Three Pillars of Higher Education). This research was conducted in four Polytechnics. The sample was determined using stratified random sampling technique. The instrument of collecting data being used was questionnaire.

The results of this study indicate (1) The level of facilities in Polytechnic A, Polytechnic B, Polytechnic C, and Polytechnic D in terms of lecturers' professional development in the areas of Education and Teaching, Research, Community Service, and Supports has reached more than 50% of average for the very sufficient and sufficient category; (2) There are differences in the level of facilities of the four polytechnics in the field of Education and Teaching, Research, Support; (3) The level of facilities of the four polytechnics are similar in the implementation of Community Service.

INTRODUCTION

In higher education environment, lecturers are one among the foremost requirements. Lecturers act as a driving force for all matters related to scientific and academic activities. They are the spearheads and managers who turn the goals and targets of higher education into realities (Wahab, 2010, p.3). The importance of this role is key to all education efforts and improving the quality of education (Mattoussi, 2013, p.2). The facilities and infrastructure, finance and curriculum prepared will only mean if it has been used by lecturers for the intensity of the teaching and learning process. The position of a lecturer in the educational process is critical. Lecturer is one element that holds an important role for the realization of learning. Thus, to improve educational success, educator or lecturer must become the first priority whose professionalism and skills need to be fostered and enhanced. Lecturer's job is a professional job. Therefore, lecturer must have abilities and authorities, both of which can be seen in their ability to play their role as lecturer, teacher, mentor, administrator and as coach (Oemar Hamalik, 2001, p.26). As stated in Law No.20 of 2003 on National Education System, Educators is regulated in Article 39 paragraph 2 that is: Educators are professionals in charge of planning and implementing the learning process, assessing learning outcomes, conducting guidance and training, and doing research and community service, especially for educators at higher educations.

The forms of higher education in Indonesia based on Law no. 12 of 2012 on higher education are universities, institutes, colleges, polytechnics, academy, and commun ity academy. Further described in the Law that polytechnic is a higher education that organizes vocational education in various clusters of science and / or technology, and if eligible polytechnic can hold professional education. This is what distinguishes polytechnic universities from other universities, in which polytechnic only conducts vocational education. In accordance with Law no. 12 of 2012 on higher education, in the general provision no. 14, it is stated that: lecturers are professional educators and scientists with the main task of transforming, developing, and disseminating science and technology through education,

e-ISSN : 2615-5699
DOI: http://dx.doi.org/10.20961/jomeve.v1i1.18978

research, and community service. Article 1 verse 14 states that lecturers are professional educators and scientists with the primary task of transforming science and technology through education, research, and community service. While Article 16 states that: (1) vocational education is a higher education diploma program that prepares students for jobs with particular applied skills to applied undergraduate programs. (2) The vocational education as referred to in paragraph (1) may be developed by the government to an applied magister program or an applied doctoral program.

Based on the background and characteristics of the polytechnic education system, it is clear that the issue on the development of qualified human resource for polytechnics is important. For the sake of the creation of qualified human beings, there must be a basic pattern of human resource development that is well directed and planned. This must also be supported by organizations, systems and procedures, and adequate welfare to overcome challenges on global developments, technological advances, global competition among countries either now or in the future. Therefore, it is necessary to conduct a research, entitled Polytechnic Level of Facilities for Lecturers' Professional Development.

Lecturers' development is an integrated and organized effort to help lecturers to obtain welfare, knowledge, skills, harmony, and sensitivity in conducting learning and research activities as well as community service. The competence of polytechnic lecturers can be enhanced through relevant professional development programs (Kamarudin, 2010,p.7). Polytechnics lecturers need to be developed because not all lecturers in polytechnic has the required qualification (Ben Q, 2013, p.4). After completing their education, many lecturers refuse to improve their knowledge and skills, so that they cannot fully adapt the development of science and technology that are increasing rapidly (Muzenda, 2013,p.3). Polytechnic lecturers need to have the necessary competencies so that they can provide qualified education, as well as accommodate changes and innovation in education (Wan Noorani, 2010,p.6). Lecturers' competence can be improved through relevant professional development programs (Wan Noorani, 2010,p.7). Polytechnic lecturers must comprehend their own field of science while mastering other knowledge and skills. Polytechnic is a vocational higher education and accordingly the research of the lecturers is directed to applied researches, which can be applied to the society and produced in industries. (Davies J, 2009,p.5). Thus, in the development program, the lecturer of polytechnic needs to increase their knowledge and skills. The concept of polytechnic education seeks to integrate theories (academic studies) and practice (vocational training), emphasizing on the educational dimensions of both learning and work (Sharma, A., 2008,p.5). Lecturers who conduct the apprenticeship will get a learning process with the actual working environment in the industry. This will assist them in developing and improving their professionalism and personal competences (Ahmad, 2011,p.4).

According to Tjiptono (2011,p.8) facilities are physical resources that must exist before a service can be offered to users. Facilities can be in the form of anything that allows users to gain satisfaction. Facilities are all the necessary services to achieve a goal that includes movable and immovable goods. Immovable goods are goods that cannot be moved. Movable goods are differentiated into consumables and non-consumables. Consumable goods are goods that will lose their values when they are used and non-consumable goods are goods that do not lose their volume when they are used. The facilities provided should be useful and encouraging to achieve the goal. The purpose of providing facilities is to improve the professionalism of lecturers by implementing Three Pillars of Higher Education. Other goals are to motivate the spirit and productivity of lecturers and help the implementation of the work to run smoothly.

Polytechnic facilities are provided for all teaching and learning process, cooperative activities, professional development activities, professional development research activities, professional capacity building activities for book writing, article publishing activities, community service activities, community training activities, community empowerment activities, participation as a member of a professional organization, participation in organizational management, and awards giving.

The purposes of this study are; (1) to obtain information on the level of polytechnic facilities for professional development of lecturers; (2) to obtain information about the level of facilities for the implementation of Three Pillars of Higher Education.

RESEARCH METHODS

The type method used in this research was quantitative and it was carried out on four polytechnics. Data collecting instrument used was questionnaire. The stages of research conducted to achieve the expected objectives were as follows.

1. Data Collection Stage
Data collection through questionnaires containing aspects of facilities received by lecturers during the activities of implementing Three Pillars of Higher Education

2. Determination of Research Variables
Measurements on aspects of the facility aspects are spelled out through 59 questions which are the facility indicators prepared in the questionnaire.

3. Scale of Measurement
Measurement is a process of translating the results of observations into numbers so that it can be analyzed according to certain rules. Likert scale is used to measure attitudes, opinions and perceptions of a person or group of people about social events or symptoms. Likert scale can provide more possible answers to facilitate the respondents to express their level of opinion closer to reality. The size of respondents' answers in this study ranged from one to five. The highest score was awarded for the most expected answers while the lowest score for the least expected answers. Data obtained from measured variables were distributed to different classes / intervals and expressed in percent.

4. Stages of Data Analysis
To know the lecturer's perception about polytechnic facilities for professional development of lecturers, the researcher used descriptive method, that calculated the percentage of achievement score to maximum score, parametric and non parametric analysis.
5. Interpreted the results of the analysis obtained so as to provide useful information.

Population and Sample
Populations of this research were lecturers at four polytechnic. The sampling technique used was stratified random sampling technique. The research conducted was about how much the polytechnics provides facilities for lecturers' professional development. Therefore, the sample of the data source was the lecturers who got the facilities from the polytechnics.

Types and Data Sources
The type of data collected depended on the information required regarding the level of the polytechnic facilities for lecturers' professional development. The types and sources of research information are summarized in Table 1

Table 1. Types and Data Sources

Research Stages	Activities	Data Source	Expected Result	Instrument Used
Mapping	Mapping	Lecturers	Facilities given by Polytecnics	Questionnaire

Instrument Arrangement
The instrument was used to reveal the mapping of facilities provided by the institution in the implementation of Three Pillars of Higher Education. Table 2 lists the lattice grid of the instrument for the implementation of the Three Pillars of Higher Education facilitated by the institution, in the field of education and teaching, research, and community service. Each of these areas is outlined in three aspects, so that the overall number is 12 aspects.

Table 2. Lattice grid of instrument of the Three Higher Education Pillars

Statement	Aspect	Number of Items
A1	Teaching Learning Process	5
A2	Cooperative Activities	4
A3	Professional Development Activities	6
B1	Professional Development Research Activities	8
B2	Professional Capacity Building Activities for Book Writing	4
B3	Article/Proceeding Publishing Activities	5
C1	Community Service Activities	4
C2	Community Training Activities	4
C3	Community Empowerment Activities	3
D1	Participation as a Member of a Professional Organization	4
D2	Participation in Organizational Management	4
D3	Awards Giving.	8

2.4. Data collection

Data collection was done by questionnaire. The questionnaire was used to reveal facilities received by lecturers in order to develop professionalism. The results of the questionnaire were identified and classified as the basis for taking the next steps. Quantitative research data that had been collected through field work was basically still in the form of raw data. A series of processing and analysis was required so that the data could be used as an empirical basis in answering the formulation of the problem or test the research question. The data analysis activities in quantitative research included data processing and presentation, performing various calculations to describe the data, as well as performing analysis to test the research questions. The calculation and analysis of quantitative data were performed using statistical techniques. Statistical techniques used were parametric and on parametric.

3. RESEARCH RESULT AND DISCUSSION

This chapter provides the description of Polytechnic facilities on lecturers in improving lecturers' professionalism at polytechnics.

Polytechnic Facilities in the Improvement of Lecturers' Professionalism

Polytechnics have the obligation to facilitate the improvement of lecturers professionalism in carrying out the Three Pillars of Higher Education. The followings are the results of the reasearch conducted at four Polytechnics on education and teaching, research, community service and supports. In the assessment the researcher use the Linkert scale categorized into: 1 = very inadequate; 2 = inadequate; 3 = doubtful; 4 = adequate and 5 = very adequate.

Table 3 shows the result of lecturers's assessment on the facilities provided by the four Polytechnics for Three Pillars of Higher Education in developing lecturers' professionalism.

Table 3. Outcomes of service level of four Polytechnics towards Lecturers' Professional Development for Three Pillars of Higher Education

Criteria	Polytechnic A %	Polytechnic B %	Polytechnic C %	Polytechnic D %	Average %
Very adequate	6.3	5.3	24.0	16.7	13.1
Adequate	50.2	38.4	56.0	59.9	51.1
Doubtful	32.1	36.1	10.9	18.8	24.5
Inadequate	11.3	17.1	7.6	4.6	10.1
Very Inadequate	0.1	3.0	1.6	0.0	1.2

Table 3 above explains that in overall sub aspects, the average score for adequate category is equal to 51.1%. While the average score of the overall sub aspect for very adequate category is 13.1%. Thus, the level of service the four polytechnics to the Professional Development of Lecturers for the Three Pillars of Higher Education is above 50% for adequate and very adequate.

The following figure shows a graph of the results of the four facilities level Polytechnic to the Professional Development of Lecturer for the Three Pillars of Higher Education

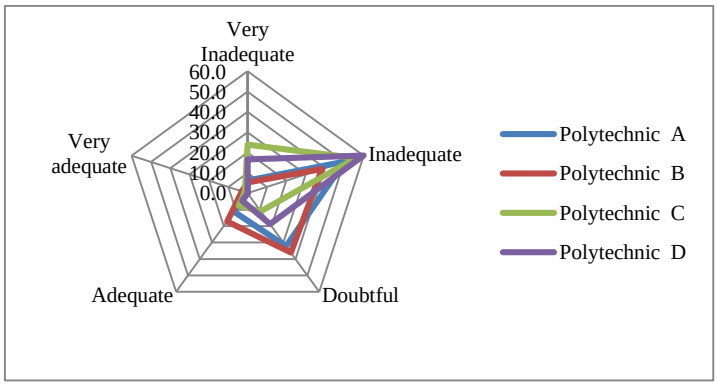

Figure 1. Comparison among the four polytechnics in level of facility in the implementation of Three Pillars of Higher Education

Figure 1 above shows that the four polytechnics are all at the highest values in the category of adequate followed by the doubtful category, and finally the very adequate category.

The following analysis uses non-parametric and parametric analysis for four polytechnics and the result is as follows:

Table 4. Comparison on the facilities of the four polytechnics in the implementation of Three Pillars of Higher Education

Analysis	Polytechnic		Education	Research	Community Services	Supports
Non Parametric	4	α	0,035	0,025	0,152	0,044
Parametric	4	α	0,030	0,001	0,162	0,033

Table 4 shows that the ones which have the same value below α = 0.05 are (1) has α = 0,035 and 0,030 which means there is difference among the four Polytechnics in education and teaching implementation, (2) has α = 0,025 and 0,001 which means there is difference among the four Polytechnics in research, (3) has α = 0,044 and 0,033 that means there is difference among the four Polytechnic in execution supporters, while having the same value above α = 0.05 ie 0.152 and 0.162 which means there is no difference in the four polytechnics in the implementation of community service.

4. CONCLUSION

The result of the research on Polytechnics Level of Facilities for Lecturers' Professional Development can be summarized as follows.

1. The level of Polytechnic Facilities for Professional Development of Lecturers at this time in conducting Three Pillars of Higher Education, in terms of education and teaching, research, community service, and support categorized into adequate category which is equal to 51,1% and the details are as follows.

a. Polytechnics A is in sufficient category of 50.2%.
b. Polytechnic B is in sufficient category of 38.4%.
c. Polytechnic C is in sufficient category equal to 56%.
d. Polytechnic D is in sufficient category of 59.9%.

2. In parametric and non-parametric analyzes

a. The four polytechnics have different facilities in the implementation of education and teaching, research, support.
b. The four polytechnics do not have any difference of facilities in the implementation of the field of community service.

Thank-you note

The author would like to express his gratitude to the Director of Politeknik Negeri Semarang, the Director of Politeknik Ilmu Pelayaran Semarang, the Director of Politeknik Kesehatan Semarang, the Director of Politeknik Maritim Negeri Indonesia Semarang who has given permission and ease in carrying out this research.

REFERENCES

Ahmad, M.F., B. Rashid, K.A.A. (2011). Lecturers' Industrial Attachment Programme to Increase Lecturers' Soft Skill and Technological Competencies for Global Stability and Security*. Journal of Sustainable Development* Vol. 4, No. 1; February 2011 p 281-283.

Amuka. L.M. et al. (2011 Mei). Examination of the Effects of Cost Sharing Policy on Science and Technology Education and Training in Kenya National Polytechnics. *Australian Journal of Business and Management Research* Vol.1 No.2 May-2011.

Ben Q, Honyenuga. (2013, January). Polytechnic Education In Ghana: A Change Management Perspective. *JSSIR*, Vol.2 (1), 22-35.

Borg, W. R., dan Gall, M. R., (2011). *Education Research*. New York: Longman

Davies, J., Weko, T., Kim, L. (2009). *OECD Reviews of Tertiary Education FINLAN* . France: OECD Publishing**.**

Hamalik. O. (2001). *Pengembangan Sumber Daya Manusia, Manajemen Pelatihan Ketenagakerjaan, pendekatan terpadu*, Jakarta : PT Bumi Aksara.

Kamaruddin W.N.W. et al. (10-11 November 2010). Enhancing Lecturer Competency of Malaysian Polytechnic Technical Lecturers: A Discrepancy Analysis*.* Bandung, Indonesia: *Proceedings of the 1 UPI International Conference on Technical and Vocational Education and Training*.

Mattoussi, F.R., Jeffrey, A.M. (2013). *Building Research and Teaching Capacity in Indonesia through International Collaboration.* New York: Institute of International Education, Inc.

Muzenda A. (2013). Lecturers' Competences and Students' Academic Performance*. International Journal of Humanities and Social Science Invention* ISSN (Online): 2319 – 7722, ISSN (Print): 2319 – 7714 www.ijhssi.org Volume 3 Issue 1 January. 2013 PP.06-13.

Presiden. (1999). Peraturan Pemerintah. Nomor 60 Tahun 1999 tentang Pendidikan Tinggi.

Republik Indonesia. (2003). *Undang – Undang No.20 tahun 2003 tentang Sistim Pendidikan Nasional*

Republik Indonesia. (2012). *Undang –Undang Republik Indonesia Nomor 12 Tahun 2012 Tentang Pendidikan Tinggi*.

Sharma Akhilanand. (June 2008). *The Review of the Functions of FIT, TPAF and other TVET Providers.* Fiji:The University of the South Pacific.

Tjiptono, Fandy dan Gregorius Chandra. (2011). *Service, Quality & Satisfication*, Edisi Kedua, Yogyakarta : Penerbit ANDI Yogyakarta

Wahab, S. H. A., et.al. (2010 Nopember 10-11). Transformational of Malaysian's Polytechnic into University College in 2015: Issues and Challenges for Malaysian Technical and Vocational Education*. Proceedings of the 1 UPI International Conference on Technical and Vocational Education and Training* Bandung, Indonesia, 10-11 November 2010, 570-578.

Wan Nooraini Wan Kamaruddin., Mohammed Sani Ibrahim. Enhancing Lecturer Competency of Malaysian Polytechnic Technical Lecturers: A Discrepancy Analysis. Proceedings of the 1 UPI International Conference on Technical and Vocational Education and Training Bandung, Indonesia, 10-11 November 2010