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Developing an Instrument to Measure the Effectiveness of the Link and Match Learning and the Availability of the Practical Laboratory Facilities on the Quality of Vocational School Graduates

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Abstract

This study aimed to develop an appropriate standard instrument that can measure the influence of link and match learning and the availability of practical laboratory facilities on the quality of vocational school graduates. This instrument was prepared because no standard instrument based on this activity would theoretically improve the quality of vocational school graduates. The quality of graduates from an educational institution, including vocational schools, is influenced, among other things, by the competence of teachers, students, materials, methods, facilities and infrastructure, educational environment, curriculum, and costs. This research used a quantitative approach using survey research model with Structural Equation Modeling (SEM) analysis techniques. Factor analysis in this research used Confirmatory Factor Analysis (CFA) with the help of Lisrel 8.80 full version. The measurement model is based on Goodness of Fit criteria, namely, to test the suitability of the theoretical model with empirical data. The instrument is valid to measure the influence of link and match learning and the availability of practical laboratory facilities on the quality of vocational school graduates.

Keywords: Link and match, Availability of facilities, Quality of graduates, CFA

INTRODUCTION

It is well-recognized that globalization has impacted all aspects of life in the economic, social, and cultural fields. These conditions ultimately bring about increasingly tight competition in various aspects of life, especially competitive advantage in all industrial and service sectors prioritizing Human Resources (HR) capabilities. Indonesia's human resources currently have difficulty competing regarding work ethic, discipline, responsibility, skills, and foreign language abilities. Data shows that the quality of education in Indonesia is still relatively low. This is supported by research reports from several institutions regarding the level of competitiveness of Indonesian human resources. It was found that the 2000 Human Development Report (HDR) showed that the quality of Indonesia's human resources was in 105th place out of 108 countries studied. Meanwhile, the UNDP released the Human Development Index (HDI) reported that Indonesia was ranked 108th in 1998, 109th in 1999, and 111th in 2004 out of 174 countries studied. Furthermore, a survey conducted by the Political and Economic Risk Consultancy (PERC) shows that the quality of Indonesian education is the worst in the ASEAN region.

Quality education will be realized through efforts to improve education, which are carried out continuously. Quality education is one of the main factors determining the success of a nation's development. One of the benchmarks for quality education is competent graduates who can contribute greatly to development. Thus, education plays a very important role in improving the quality of human resources (HR), so the quality of education needs to be paid attention to so that quality human resources can be realized as expected.

It must be realized that to become a nation that can compete in the current era of globalization, especially in the industrial sector, one effective way that can be done is to build the quality of human resources by improving the quality of education. Improving the quality of education should be carried out in an integrated manner by paying attention to all aspects and elements in implementing education. This is focused on realizing a sustainable vocational education and training system that is expected to equip the young generation with abilities or mastery and innovation in science and technology (science and technology), work skills, an entrepreneurial spirit, and the development of superior character. To obtain quality educational results, it is, of course, required to provide quality education.

According to Muntohar (2014), the quality of input, process, output, and outcome are all considered aspects of quality in education. When pupils are prepared to move further in the field of education in compliance with the minimal national criteria, educational input is deemed to be of high quality. If an educational process can provide an engaging, inventive, creative, and joyful learning environment where learning objectives are successfully met, then it can be considered high-quality. When pupils attain both academic and non-academic learning outcomes, educational output is deemed to be of high quality. In the meantime, educational outcomes are deemed to be of high quality if graduates are promptly employed by organizations that require them and if stakeholders are pleased with the graduates of these educational establishments.

According to Syukur (2013), quality also encompasses the educational process and the outcomes of education. A quality education process incorporates a number of inputs, including infrastructure and other resources, school facilities, administrative support, instructional materials (cognitive, emotional, and psychomotor), methodology, and the creation of a welcoming environment. The outcomes and method of high-quality education are linked.

The low ability of graduates to compete is largely due to their quality needing to be in line with graduate targets, so graduates still find it difficult to work. This is because the requirements set to be accepted as an employee in an institution or business world continue to increase. Some requirements include mastery of a foreign language, computer literacy, and an entrepreneurial spirit. The number of school graduates who continue to higher education levels increases yearly. Nonetheless, their exam performance is typically still low, meaning that only a tiny portion of them are approved and able to continue their studies (Mulyasa, 2002).

Education must be able to produce graduates who can think globally, act locally, and be based on noble morals/*akhlakul karimah* (Mulyasa, 2008: 4). various factors are considered to influence improving the quality of education, including the competence of teachers, students, materials, methods, facilities and infrastructure, educational environment, curriculum, and costs. Of these factors, researchers will examine two components, namely link and match learning and the availability of laboratory facilities. Learning carried out by teachers plays a very important role in improving the quality of learning processes and outcomes. To improve the quality of education nationally, the government is trying to make changes and reforms in the education system. One of the efforts that has been and is being made concerning teachers is the enactment of Law Number 14 of 2005 concerning Teachers and Lecturers and Government Regulation Number 19 of 2005 concerning National Education Standards, both of which are government policies that contain government efforts to organize and improve quality of the teacher in Indonesia.

According to Robst (2017), there are several ways to evaluate how well education and employment align. One of them is the amount of education. This opinion explains that the quantity of schooling is only one way to consider the suitability between the education obtained and the work undertaken. Likewise, Sloane (2013) states that if workers have the required degree of education, they could not be matched. However, the type of schooling is not, which leads to workers not being suitable if the education level is appropriate but the skills they possess are not appropriate. These two opinions further emphasize that the link-and-match policy is a factor that also determines the quality of graduates at the vocational school level.

Another factor that influences graduates' quality is the availability of facilities and infrastructure, especially practical laboratories. Educational facilities and infrastructure are educational factors whose existence is essential in the educational process. Gunawan (1996: 116) states that educational facilities and infrastructure administration activities include planning, prequalification, procurement, storage, maintenance, deletion, and control. Facts in the field show that there are still various problems in managing educational facilities and infrastructure in vocational schools, namely that teachers have not been able to manage educational facilities and infrastructure by practice and theory.

As stated previously, the problem regarding vocational school graduates that is still being faced today is the inability of vocational school graduates to fill several job vacancies due to

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competency requirements needing to be met. Not only that but many graduates are also found to be working in ways that do not match the areas of competency studied. Based on the description above, it is necessary to carry out an in-depth study regarding the influence of link-and-match learning and the availability of practical laboratory facilities on the quality of vocational school graduates. However, before do that, we should develop an instrument that can measure the influence of link and match learning and the availability of practical laboratory facilities on the quality of vocational school graduates. So, this study aimes to develop an appropriate standard instrument that can measure the influence of link and match learning and the availability of practical laboratory facilities on the quality of vocational school graduates.

METHOD

A development research model employing CFA (Confirmatory Factor Analysis) factor analysis methodologies was employed in this study. The connection and match variables, the accessibility of useful laboratory facilities, and the caliber of graduates are the variables included in this study. The quality of vocational school graduates, the availability of practical laboratory facilities, and standard tools for measuring link and match learning are the outcomes of this research. The link and match instrument's items, the availability of real laboratory space, and the caliber of graduates as reported by 100 Banten Province vocational school graduates in Indonesia served as the key sources of data for this study. A basic random sampling technique was used to choose each responder.

Examine the factor loadings in the path coefficients of the structural and measurement models to identify good items. To make the items in the link and match learning instrument appropriate for use as a measuring tool for data collecting in research, instrument standardization was done. Confirmatory Factor Analysis (CFA) and Lisrel 8.80 complete version were utilized for factor analysis in this investigation. The Goodness of Fit criteria, which assess the theoretical model's suitability in light of empirical data, serve as the foundation for the measurement model.

RESULTS AND DISCUSSION

A standard instrument was developed to assess link and match learning, the availability of practical laboratory facilities, and the caliber of graduates based on the whole set of trials and revisions twice. The following were the outcomes of applying maximum likelihood estimates to estimate the parameters of the Graduate Quality instrument at the First Order Confirmatory Factor Analysis stage: The greatest parameter value (λ) in the Absorption dimension in the work environment is 0.827, meaning that an increase of 1 in ξ_10 is projected to cause an increase of 0.827 in X10, with an error value of 0.316. Conversely, X2 is predicted to grow by 0.603 with an error value if ξ_2 increases by 1, as the lowest parameter value (λ) is 0.603.

The greatest parameter value (λ) in the knowledge mastery dimension is 0.738, meaning that an increase of 1 in ξ_26 is projected to result in an increase of 0.738 in X26, with an error value of 0.455. Conversely, the parameter value with the lowest value (λ) is 0.580. This implies that an increase of 1 in ξ_13 will likely result in a 0.580 rise in X13, with an error value of 0.663. The greatest parameter value (λ) in the Skills dimension is 0.775, meaning that an increase of 1 in ξ_35 is projected to result in an increase of 0.775 in X35, with an error value of 0.400. Conversely, the parameter with the lowest value (λ) is 0.550. This implies that an increase of 1 in ξ_30 is projected to cause an increase of 0.550 in X30, with an error value of 0.697. All statement items have a t-value > 1.96 at the 0.05 level, according to the results of the measurement model analysis, indicating that the items are legitimate and appropriate for usage with a construct validity value of 0.969.

The factor loadings on the dimensions of the construct are valid, with factor loading values >0.5, according to the findings of the Graduate Quality instrument's Second Order Confirmatory Factor Analysis. With a construct dependability score of 0.844, the factor loading for the dimensions of absorption in the workplace is 0.996, knowledge mastery is 0.986, skills is 0.860, and attitude is 0.997.

The following were the outcomes of applying maximum likelihood estimates to estimate the parameters of the Link and Match Learning instrument at the First Order Confirmatory Factor Analysis stage: The greatest parameter value (λ) in the learning planning dimension is 0.967, meaning that an increase of 1 in ξ_15 is projected to cause an increase of 0.967 in X15, with an error value of 0.065. Conversely, the parameter value with the lowest value (λ) is 0.639. This implies that an increase of 1 in ξ_9 is projected to cause X9 to increase by 0.639, with an error value of 0.709. The greatest parameter value (λ) in the learning implementation dimension is 0.955, indicating that an increase of 1 in ξ_30 is projected to result in an increase of 0.955 in X30, with an error value of 0.088. Conversely, the parameter with the lowest value (λ) is 0.826. This implies that an increase of 1 in ξ_23 will likely result in an X23 increase of 0.826, with an error value of 0.318.

The maximum parameter value (λ) in the learning evaluation dimension is 0.951, indicating that an increase of 1 in ξ_40 is projected to result in an increase of 0.951 in X40, with an error value of 0.095. Conversely, the parameter with the lowest value (λ) is 0.739. This implies that an increase of 1 in ξ_38 is projected to cause an increase of 0.739 in X38, with an error value of 0.459. With a construct reliability value of 0.996, the measurement model analysis

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results indicate that all statement items have a t-value > 1.96 at the 0.05 level, indicating that they are valid and appropriate for usage.

The factor loadings on the learning planning dimension, with factor loading values >0.5, are valid, according to the findings of the Second Order Confirmatory Factor Analysis analysis of the Link and Match Learning instrument. The learning evaluation dimension has a construct validity value of 0.962 and the factor loading size for the learning implementation dimension is 0.950.

The following were the outcomes of applying maximum likelihood estimates to estimate the parameters of the Practical Laboratory Facilities Availability instrument at the First Order Confirmatory Factor Analysis stage: The maximum parameter value (λ) in the Laboratory Existence dimension is 0.959, indicating that an increase of 1 in ξ_6 is projected to result in an increase of 0.959 in X6, with an error value of 0.080. Conversely, the parameter with the lowest value (λ) is 0.715. This implies that an increase of 1 in ξ_4 will likely result in an increase of 0.715 in X4, with an error value of 0.489. The maximum parameter value (λ) in the dimension of laboratory conditions is 0.928, indicating that an increase of 1 in ξ_15 is projected to result in an increase of 0.928 in X15, with an error value of 0.138. Conversely, the parameter with the lowest value (λ) is 0.603, indicating that an increase of 1 in ξ_24 is projected to cause X24 to grow by 0.603, with an error value of 0.636.

The greatest parameter value (λ) in the dimension of laboratory equipment is 0.987, which indicates that an increase of 1 in ξ_38 is projected to cause an increase of 0.987 in X38, with an error value of 0.122. Conversely, the parameter with the lowest value (λ) is 0.818. This implies that an increase of 1 in ξ_37 is projected to cause an increase of 0.818 in X37, with an error value of 0.330. All statement items have a t-value > 1.96 at the 0.05 level, according to the results of the measurement model analysis, indicating that the items are legitimate and appropriate for usage with a construct validity value of 0.990.

In the meantime, factor loading values > 0.5 indicate that the factor loadings on the dimensions that make up the construct are valid according to the findings of the Second Order Confirmatory Factor Analysis of the Availability of Practical Laboratory Facilities instrument. With a construct validity score of 0.913, the factor loading for the laboratory presence dimension is 0.999, the dimension of laboratory conditions is 0.978, the laboratory conditions are 0.910, and the laboratory utilization dimension is 0.992.

CONCLUSION

The instrument is valid to measure the influence of link and match learning and the availability of practical laboratory facilities on the quality of vocational school graduates.

REFERENCES

Gunawan, A. H. (2011). *Administrasi Sekolah: Administrasi Pendidikan Mikro*. Jakarta: PT Rineka Cipta.

Mulyasa, E. (2002). *Manajemen Berbasis Sekolah.* Bandung: PT. Remaja Rosdakarya.

Mulyasa, E. (2008). *Standar Kompetensi dan Sertifikasi Guru.* Bandung: Remaja Rodakarya.

Muntohar, P. M. (2014). *Manajemen Mutu Sekolah (Strategi Peningkatan Mutu dan Daya Saing Lembaga Pendidikan.* Yogyakarta: Ar-Ruzz Media.

Robst, J. (2017). Education and Job Match: The Relatedness of College Major and Work. *Economics of Education Review, 26*, 397-407.

Sloane, P. J. (2013). Much Ado About Nothing? What Does The Over-Education Literature Really Tell Us? *Overeducation in Europe: Current Issues in Theory and Policy, 45*(3), 234-254.

Syukur, F. (2013). *Manajemen Pendidikan Berbasis Madrasah.* Semarang: Pustaka Rizki Putra.