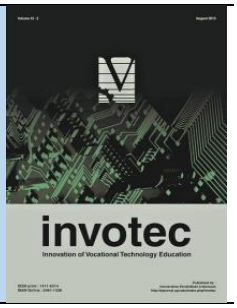
JURNAL UPI

Innovation of Vocational Technology Education

Available online at http://ejournal.upi.edu/index.php/invotec




# Bilateral Relations of Vocational Education and Industry in Work Based Learning Model: Effective or Problematic?

Raden Rifqi Hafizhuddin Al Wafi
*Universitas Pendidikan Indonesia, Bandung, Indonesia*

**ARTICLE INFO**

*Article history:*
*Received: 14 April 2020*
*Received in revised form: 29 May 2020*
*Accepted: 20 July 2020*
*Available online: 31 August 2020*

*Keywords:*
*work-based learning;*
*industry;*
*school vocational education;*
*bilateral relation*

*Authors email:*
*radenalwafi@upi.edu*

**ABSTRACT**

This study shows the background that occurs between industry and vocational schools. The purpose of this study is to uncover the problems that occur in bilateral relations between vocational and industrial secondary education institutions for work-based learning models that have existed before. The method used in this study is a separate analysis by researchers with qualitative methods. The results found factors that inhibit learning do not run effectively because the industry in providing information about the latest technology used by the company is not distributed evenly so that the facilities available in each school are different, the character of student work is not in accordance with the mental needs of the industry, the lack of monitoring of the implementation of the Moment of Understanding that is overseen by a clear legal body / institution, the duration of time given is less effective in the industry because time constraints make students unable to apply the many theories obtained at school.

## 1. Introduction

Work-based learning is a form of learning related to all fields of work and based on learning in the workplace and learning through work that aims to gain knowledge and skills (Ismail et al., 2015; Zhang et al., 2016). The European Higher Education Area (EHEA) in the 2011-2020 period strongly supports work-based learning (WBL), the ministry responsible for higher education considers that the WBL is able to meet the twin goals of of improving individuals' employability and increasing economic competitiveness (EU Bruges Communication, 2011). Despite the global agreement on this trajectory and the underlying competency approach, their concrete implementation in 2018 European Higher Education Institutions (HEI) is highly variable depending on the country and institution (Remaud et al., 2013). Various existing learning approaches, teaching in practice, work-based learning or integrated learning are able to maintain relevance that is important in many learning programs in vocational high schools (Freestone, Thompson, & Williams, 2006). This learning exists in the workplace, but under certain conditions it can also be in higher education

(Brennan & Little, 1996). They question the respective roles and responsibilities of employers and higher education in continuing adult education and training, and identify risks and problems accordingly. Learning is more focused on problem solving, interaction between students and peers and students' thinking creativity. The development of learning methods is due to the incompatibility of existing learning system programs with work requirements and curriculum patterns in vocational high schools (Van Rensburg, 2008;Taousanidis & Antoniadou, 2008)

The gap of knowledge, experience and perception in training supported in practice is another obstacle to achieving the goals of the vocational high school curriculum. There needs to be an awareness of the company and academics must pay close attention that the goal is not training that is ready-to use engineers but training young people for decades of professional careers in a developing environment (Rouvrais, Remaud, & Saveuse, 2018). On the other hand students may not have sufficient skills to work for a particular subject or personal communication skills and self-management there needs to be work skills for graduates of vocational students (Moise et al., 2013; Nugraha, Djohar, & Komaro, 2019). This certainly becomes its own motivation for curriculum design and education implementers in vocational high schools to build bilateral relations that will support learning with work-based learning approaches in sharing information that has a positive relationship with the task dimensions and interactions in the process (Battistelli et al., 2019). In line with previous research entitled "partnerships between higher education institutions and firms: the role of students' curricular internship" (Franco, Silva, & Rodrigues, 2019). Mutual relations between sectors Vocational education and training and industry are fundamental in determining the success of the Vocational Education system. Co-existence between the two parties in this sector needs to be managed and endeavoured in such a way that each party will be able to contribute to each other and benefit from each other. Vocational high schools need to consider how they can work effectively in introducing work-based learning processes as well as expanding cooperation with industry and giving special duration in training as well as effective supervision (Eddy, 2010). Thus, the optimization and evaluation strategies needed for the quality of education of programs that require work-based learning can be in accordance with the objectives of preparing students to overcome the industrial environment.

The purpose of this study is to discuss the problems that occur in bilateral relations between vocational secondary education institutions and industry for pre-existing work-based learning models that are expected to provide effective learning for students in accordance with the competencies needed by schools and industries.

## 2. Context and Review Literature

### 2.1 Work-based learning model

Work-based learning (WBL) is learning that integrates material into the world of work, this learning model utilizes a workplace structure of experience in the workplace that contributes to the

social, academic, and career development of students, and is intended as a supplement to learning activities (Nurdiyanto, 2018). WBL is it does not necessarily envisage just one method for approaching learning in the workplace. It is equally comfortable with the term Work Applied Learning and/or Work-Based Action Learning which may foreground Action Research as a principal approach to learning and problem solving and bringing about change (Abraham, 2012). Whether using WBL techniques or more conventional class-room-based teaching methods, the driving force is always the same, namely to take the University into the workplace and, through the learning of individual employees, enable the business or organisation to develop and change in accordance with the demands placed upon it (Major, 2016).

### 2.2 Bilateral relation

Bilateral relations are a type of relationship that involves two parties. The founding element of international relations and the core of diplomatic work or, as Thomas Gomart has suggested, “the basic form of the diplomatic game” (Gomart 2002). In this study bilateral relations carried out in a more specific context are not in a country but the relationship between the two sides between school and industry in a work-based learning model.

Maintaining diplomatic relations is based on an agreement between the two parties. Beyond this communication capability, bilateral relations are mainly structured around relations between heads of state and / or government, embassies, private stakeholders, and relations between civil society. Certain bilateral relations "count" more than others. There is a series of potential relationships based on institutional elements that are common to all bilateral relations, from "friendship" and "special relations" to "hostility" and other conflict relations, and include various possible levels of closeness. It's not enough to just talk about "bilateral relations" like that; they must be qualified and determined. In fact, bilateral relations may be relevant at the general or sectoral level; they may be symmetrical or asymmetrical, involve dependence or interdependence, be institutionalized or not, consensual or debated, new or old, founded on shared interests and / or values, and may experience phases, changes, and regressions in all of these aspects, which are not complete list. It is the role of diplomacy to determine when, where and how bilateral relations become more important (Balzacq, Charillon, & Ramel, 2019).

### 2.3 Vocational education

According to the OECD, “Vocational Education and Training (VET) includes education and training programs designed for, and typically leading to, a particular job or type of job” (henriques, 2018). These programs differ from general “regular” ones, which are in essence more academic and aimed at preparing students for college. According to Pavlova explained that vocational education is education with the main goal of preparing to work using a competency-based education approach (Winangun, 2017).

Gray and Herr provide the term Workforce Education for technical and vocational education and they define Workforce education is that from of pedagogy that is provided at the prebaccalaureate level by educational institutions, by private business and industry, or by government-sponsored, community-based organizations where the objective is to increase individual opportunity in the labour market or to solve human performance problems in the workplace and according to Bennet Vocational education includes all forms of technical and vocational education and is carried out by various forms of educational institutions, both government and community, formal or nonformal, with the aim of helping people obtain education and training based on lifelong learning principles (Hanafi, 2014).

## 3. Methods

This research was conducted in April to May 2019. The informants in the study were Vocational High School teachers in Bandung and 3 industrial staff in the city of Bandung. Overall, teachers and industry staff were interviewed to assess the opinions that became obstacles in the learning process based on the aspects of learning in Vocational High Schools with conformity in the industrial world. Data is collected by both the school and industry which produce findings that fit the context. Industrial work practice teachers and industry trainer staff are chosen because they know what the obstacles are in the field.

In this study we use semi-structured interviews for teachers and related industry staff. The instrument consists of 12 questions to find out if there is a problem in the cooperative relationship between school and industry in a work-based learning model effectively, besides asking them about the obstacles they encounter in the work-based learning process. With the core points on the topic of problems being asked about the suitability of the program, the competencies that students will achieve in developing student skills, as well as the facilities and infrastructures that support and are needed are in line with standards in the field. The responses given by both parties regarding the duration of learning time in the work-based learning model are appropriate or not, from interviews between the industry and schools found a meeting point in the interview. Interviews last for 20-35 minutes for each resource person during 2 meetings.

After the necessary permission is taken from the School and industry administration, the researcher interviews the class teacher, explains the complete instrument and asks them to help answer the questions asked by the researcher, as well as with industry staff who connect the field of collaboration with the school to be interviewed. All interviews agreed and transcribed. The optical answer sheet is processed and then processed to get answers from anything that is a problem in a cooperative relationship in the learning process of work-based learning. Data is first analyzed separately by the researcher according to qualitative methods. Then the data from the question items are grouped into several indicators. To make the coding process coherent, we make brief definitions and references for each indicator. Through this interview, a consensual coding scheme was created.

The second reading of all recorded material allows us to systematically reduce the number of categories by combining the same terms and eliminating redundancy. The following theme areas: (1) the suitability and application of the school and industry collaboration program; (2) strengthening students' skills in work-based learning; (3) suitability of learning competencies needed; (4) suitability of facilities and infrastructure needed; (5) factors that hinder the relationship between school and industry cooperation; (6) conformity of standard operational procedures (SOP) policies in the field and those taught in schools; (7) competency suitability needed by industry; (8) support from companies that collaborate; (9) the suitability of time duration in implementing work-based learning.

## 4. Results

Work-based learning comes with learning opportunities, has emerged as one of the key features of Education and vocational secondary school reform as a system responding to the demands of global competition. The characteristics of work-based learning come from learning resources that integrate theory and practice into work knowledge and skills. The significance of work-based learning and the weaknesses of the learning process is not separated from the need for support from both parties in the industry and educational institutions. The cooperative relationship between the vocational Education Schools needs to adjust to the existence of an industrial culture to be able to improve the skills and suitability of the work ethic that students have from the work-based learning model process. According to the informants' responses both the Vocational Education school especially Vocational High School teachers and from the industry support the existence of collaborative learning programs like this. But there are still many things that need to be addressed in its implementation, not yet concretely implemented properly, which makes the process less optimal.

Vocational High Schools need to follow the direction of the development of global industrial technology which is supported by industrial cooperation is expected to exchange information and provide development to the learning process of students that they can directly feel from the facilities and infrastructure that support practice. Of course this collaboration relationship requires clear supervision from both parties so that the learning process with this method can effectively improve student skills. The role of the teacher and industry staff in this case is key in the evaluation evaluation scheme whether the student has the skills that are in accordance with the desired competency standards. In fact there is still a lot of information when this learning process takes place in the industry students do not do many things for fear of obstructing the course of production.

With such a paradigm, the industry does not yet fully believe in student skills. Learning competencies need to be discussed by the school and industry so that what is taught in the school is in accordance with what is provided by the industry so that students can focus on achieving the desired skills. Of course the facilities and infrastructure in this case are crucial in improving student skills, the role of government and industry should be able to facilitate students, especially in schools

by supporting adequate practice facilities in accordance with the standards used in industry. From the results of the interviews the two parties found factors that inhibit this learning did not work effectively including (1) Industrial openness in providing information about the latest technology used by the company (2) student work mentality that is not in accordance with the mentality needed by the industry so students still afraid or reluctant to communicate interactively with industry staff when the learning process in the industry takes place (3) the lack of monitoring of the implementation of the MOU that is overseen by a clear legal body / institution. The need for government intervention in a cooperative relationship between schools and industry will have a positive impact on both parties and ensure the monitoring of third parties who contribute to supporting this work-based learning process. The incompatibility of facilities at the school will have an impact on the suitability of the material competencies achieved, especially in practice (4) the duration of time given by each school is still lacking with the amount of material in the provision of study time in the appropriate industry. Table 1 show the results of exposure to vocational education schools and industry parties.

Table 1. Results of exposure to vocational education schools and industry parties

| Topics | Industry | School |
|---|---|---|
| Collaboration program | Still needs a lot of improvement, especially vocational schools / vocational schools are less able to follow the development of industrial technology. | It's good, the implementation has not been properly implemented. |
| Program suitability | Appropriate, but there are still many things that need to be improved in terms of supervision of both parties | Appropriate, but there are still gaps in practice facilities and facilities |
| Development of student skills | The development of student skills needs to be monitored gradually by both parties | Not only facilities and infrastructure, but the teacher, the environment also affects student skills |
| Learning competence | Schools need more updates to harmonize the competency skills needed in the industry | There are a lot of discrepancies between the internship program and what the school teaches |
| Infrastructure | Greatly affects the suitability of both parties need to support the completeness of facilities and infrastructures | Government funding and industry assistance are needed to match the facilities and infrastructure |

Table 1. *Cont.*

| Topics | Industry | School |
|---|---|---|
| Cooperation inhibiting factors | Openness in the industry in providing information about the latest technology used by the company | The Memorandum of Understanding must be implemented well, the legal institutions that shelter it, the needs of a dynamic labor market |
| Standard Operating Procedures policy | Depending on each company has a different SOP | Many small industries do not implement Standard Operating Procedures well |
| Industry competence | Adjusting to the development needs and global markets | Depending on the facilities in the school, if possible will be taught, if not only material lessons will be held |
| Company support | Not fully supporting needs to be accompanied by the seriousness of the Institution and overshadowing regulations | Depending on how the support and seriousness of the government |
| Match duration | Not enough time is usually given 3-6 months can only get experience about the industry | Too long, if you need a clear internship program for a long time |

## 5. Discussion

From the results of research data prove that the work-based learning model is a learning model that is quite effective in providing learning opportunities to students directly in the field. This is one of the most effective ways for society today by adjusting collaborative technological developments to produce technology as well as knowledge with general studies, educational institutions and collaborative industrial companies (İşgören et al., 2009). The need for a two-way relationship from the industry and vocational education institutions is built effectively to enable this work-based learning method to run smoothly. Relevant to what is studied requires maximum supervision so that this process can produce appropriate skills. Previous studies emphasize that work-based learning methods require the involvement of students, educational institutions and promising industries. This will create additional value features for students, because students excel in theoretical, academic and direct technical field skills (Owens & Rutherford, 2007). The research found several obstacles to its implementation including the monitoring and evaluation that were not maximal as the results of previous studies found that the use of evaluations to improve the quality of education from programs that involve work-based learning (Marshall, 2012).

Vocational education schools provide confidence in the industry to guide students to achieve competencies according to the curriculum. Work management learning Work-based learning is sometimes not optimal because the monitoring process of school supervisors is limited (Hajisoteriou & Angelides, 2014). For this reason, management steps need to be carried out, namely: (1) conducting observations and evaluating standard places or locations because sometimes the location search is carried out by students and the school does not control the activity. (2) schools carry out work-based learning in industry which contains a real picture of work and attitudes that must be carried out while in the industry. (3) the school conducts mentoring periodically at least once a month. (4) periodic evaluation of the quality of learning in industry at least once a month. It aims to improve capabilities in accordance with the development of technology that continues to develop, schools should collaborate with industry to be willing to make time for the world of education if there are new technologies created (Wibowo, 2016).

## 6. Conclusion

From the results of this study it can be concluded that the relationship between vocational education institutions and industry especially in the work-based learning process is still much that needs to be improved in terms of periodic supervision, investment in renewable technology to educational institutions, the seriousness and control of the collaborative oversight body which is shaded by the government on a regular basis as well as standardizing the adjustment of the duration of work-based learning time, which until now is still different for each school. In this case, industrial support is a necessity for establishing cooperation between schools as a competent supplier of skilled workers and industry as a place for professional workers. In addition, a labor recruitment system can be held in schools with industries that have worked together so that there is an appropriate linking of labor distribution.

## References

Abraham, S. (2012). *Work-Applied Learning for Change*. Adelaide: AIB Publications.

Balzacq, T., Charillon, F., and Ramel, F. (2019). Correction to: Global Diplomacy. *Global Diplomacy: An Introduction to Theory and Practice*, 314.

Battistelli, A., Odoardi, C., Vandenberghe, C., Di Napoli, G., and Piccione, L. (2019). Information sharing and innovative work behavior: The role of work-based learning, challenging tasks, and organizational commitment. *Human Resource Development Quarterly,* 30(3), 361-381.

Brennan, J. and Little, B. (1996). *A Review of Work Based Learning in Higher Education. Milton Keynes: The Open University.* Quality Support Centre, Centre for Higher Education and Information.

Eddy, A. (2010). Work-based learning and role extension: A match made in heaven?. *Radiography,* 16(2), 95-100.

EU Bruges Communication. (2011). *The Bruges Communiqué on enhanced European Cooperation in Vocational Education and Training (VET). 2011–2020 period of application*

Franco, M., Silva, R., and Rodrigues, M. (2019). Partnerships between higher education institutions and firms: The role of students' curricular internships. *Industry and Higher Education,* 33(3), 172-185.

Freestone, R., Thompson, S., and Williams, P. (2006). Student experiences of work-based learning in planning education. *Journal of planning education and research,* 26(2), 237-249.

Gomart, T. (2002). La relation bilatérale: un genre de l'histoire des relations internationales. *Matériaux pour l'histoire de notre temps*, 65(1), 65-68.

Hajisoteriou, C., and Angelides, P. (2014). Facing the 'challenge' School leadership in intercultural schools. *Educational Management Administration & Leadership,* 42(4_suppl), 65-82.

Hanafi, I. (2014). *Pendidikan Teknik dan Vokasional.* Bandung: Refika Aditama.

Henriques, R., Catela-Nunes, L., Reis, A. B., and Seabra, M. D. C. (2018). Vocational education: coursetaking choice and impact on dropout and college enrollment rates. *Investigaciones de Economía de la Educación,* 13(13), 37-56.

İşgören, N. Ç., Çınar, A., Tektaş, N., Oral, B., Büyükpehlivan, G., Ulusman, L., ... and Uzmanoğlu, S. (2009). The importance of cooperation between vocational schools and industri. Procedia-Social and Behavioral Sciences, 1(1), 1313-1317.

Ismail, S., Mohamad, M. M., Omar, N., Heong, Y. M., and Kiong, T. T. (2015). A Comparison of the work-based learning models and implementation in training institutions. *Procedia-Social and Behavioral Sciences,* 204, 282-289.

Major, D. (2016). Models of work-based learning, examples and reflections. *Journal of Work-Applied Management.*

Marshall, J. E. (2012). Developing midwifery practice through work-based learning: An exploratory study. *Nurse education in practice,* 12(5), 273-278.

Moise, I. A., Popescu, T., Kadar, M., and Muntean, M. (2013). Developing students' educational experiences through work-based learning programmes. *Procedia-Social and Behavioral Sciences,* 93, 1045-1049.

Nugraha, H. D., Djohar, A., and Komaro, M. (2019). Employability Skills Framework for Mechanical Engineering. *Proceeding 5th UPI International Conference on Technical and Vocational Education and Training (ICTVET 2018).* Bandung.

Nurdiyanto, H. (2018). A work-based learning model with technopreneurship. *Glob. J. Eng. Educ,* 20(1), 75-78.

Owens, D., and Rutherford, J. (2007). The development of work-based learning as part of post-qualifying education: a case study from the School of Nursing, University of Salford, UK. *Industry and Higher Education,* 21(5), 361-366.

Remaud, B., R. P. Martin, T. Sánchez, and J. C. Arditti. (2010). Using Industry Internships to Improve the Quality of Engineering Higher Education in Europe. The Experience of French Graduate Engineering Schools. *Proceedings of the 2nd Intl. Conference: Institutional Strategic Quality Management - ISQM2010,* Sinaia, Romania, October 14–16.

Rouvrais, S., Remaud, B., and Saveuse, M. (2020). Work-based learning models in engineering curricula: insight from the French experience. *European Journal of Engineering Education,* 45(1), 89-102.

Taousanidis, N. I., and Antoniadou, M. A. (2008). The Greek Challenge in work-based learning. *Industri and Higher Education,* 22(3), 177-182.

Van Rensburg, E. (2008). Evaluating work-based learning: insights from an illuminative evaluation study of work-based learning in a vocational qualification*. Industry and Higher Education,* 22(4), 223-232.

Wibowo, N. (2016). Upaya memperkecil kesenjangan kompetensi lulusan sekolah menengah kejuruan dengan tuntutan dunia industri. *Jurnal Pendidikan Teknologi dan Kejuruan,* 23(1), 45-59.

Winangun, K. (2017). Pendidikan vokasi sebagai pondasi bangsa menghadapi globalisasi. *Taman Vokasi,* 5(1), 72-78.

Zhang, B., Yin, C., David, B., Xiong, Z., and Niu, W. (2016). Facilitating professionals' work-based learning with context-aware mobile system. *Science of Computer Programming,* 129, 3-19.