

Industries and Vocational Colleges Collaboration Gap: Application of Borich's Needs Assessment Model

Faizatul Ashikin Ramli^a, Nur Husna Abd Wahid^{b*}, Nur Salwa Abd Wahid^b

^a*Kolej Vokasional Kota Tinggi, Jalan Bunga Raya, Pekan Kota Tinggi, 81900, Johor, Malaysia*

^b*School of Education, Faculty of Social Sciences and Humanities, Universiti Teknologi Malaysia, 81310 UTM Johor Bahru, Johor, Malaysia*

*Corresponding author: husna@utm.my

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Abstract

Collaboration between vocational colleges and industries is indeed significant to produce graduates who are industry relevant and ready to face future challenges. The smart partnerships between vocational colleges and industries have created a good synergy in transforming the talent of graduates which ultimately contribute to the development of the nation. This study was conducted to identify the collaboration gap between vocational colleges and the industries. The Borich evaluation model was used as an approach in achieving the main objective of this study which is to identify collaboration gap between vocational colleges and industries. Researchers used the entire population of 195 vocational academic staffs as the respondents for this study. The data of this study were obtained through questionnaires and analyzed using MWDS (Mean Weight Discrepancy Score). Six aspects of collaboration identified through literature include a) placement of staffs in the industry b) curriculum c) added value c) support d) facilities and e) training. Using the Borich needs assessment method, placement of academic staff in the industry showed the largest collaboration gap (MWDS=1.43), followed by the collaboration for facilities sharing (MWDS=1.09), collaboration in training (MWDS=0.90), collaboration in support (MWDS=0.81) and collaboration in providing added value for the students. The smallest collaboration gap is the curriculum aspect (MWDS=0.71).

Keywords: Industrial-institutional gap, Industrial- Institution Collaboration, Vocational College.

Abstrak

Kerjasama antara kolej vokasional dan industri sememangnya penting untuk melahirkan graduan yang relevan kepada industri dan bersedia menghadapi cabaran masa hadapan. Perkongsian pintar antara kolej vokasional dan pihak industri telah menunjukkan sinergi yang baik untuk mentransformasikan bakat graduannya yang akhirnya membawa kepada pembangunan negara. Kajian ini dijalankan untuk mengenal pasti jurang kolaborasi di antara kolej vokasional dengan industri. Model penilaian Borich digunakan sebagai pendekatan dalam mencapai objektif utama kajian ini iaitu mengenal pasti jurang kolaborasi antara kolej vokasional dan industri. Penyelidik menggunakan keseluruhan populasi 195 kakitangan akademik vokasional sebagai responden kajian ini. Data kajian ini diperolehi melalui soal selidik dan dianalisis menggunakan MWDS (*Mean Weight Discrepancy Score*). Enam aspek kerjasama yang telah dikenal pasti melalui kajian literatur ialah a) penempatan kakitangan dalam industri b) kurikulum c) nilai tambah c) sokongan d) kemudahan dan e) latihan. Menggunakan kaedah penilaian keperluan Borich, penempatan kakitangan akademik dalam industri menunjukkan jurang kerjasama terbesar (MWDS=1.43), diikuti dengan kerjasama untuk perkongsian kemudahan (MWDS=1.09), kerjasama dalam latihan (MWDS=0.90), kerjasama dalam sokongan (MWDS=0.81) dan kerjasama dalam memberikan nilai tambah kepada pelajar. Jurang kolaborasi terkecil ialah dari aspek kurikulum (MWDS=0.71).

Kata kunci: Jurang industri-institusi, Kerjasama Industri- Institusi, Kolej Vokasional.

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1.0 INTRODUCTION

As part of the Technical and Vocational Education and Training (TVET), vocational colleges in Malaysia aim to promote workplace learning and enhance occupational skills of the individuals. Vocational colleges are among TVET institutions that play a major role in preparing skilled workforce for the nation. As TVET institutions, vocational colleges outputs becomes the input of industries. Therefore, it is crucial for vocational colleges to have close collaborations with the world of work to facilitate the demand of current need of the employment (Cheong & Lee, 2016; Oviawe, Uwameiye, & Uddin, 2017; Siddiky & Uh, 2020; Singh & Tolessa, 2019). The former prime minister, Tun Dr Mahathir Bin Mohammed (2019) urged for more major industry players to be active in developing human capital and support the national TVET implementation policy, especially in helping local TVET graduates by recognizing the skills they have and further sharing the expertise they possess. He noted that "the main players in the country's public and private TVET institutions should get out of their respective comfort zones and find effective solutions. One of the approach is via collaboration across various stakeholders, especially with the industry" (BERNAMA, 2019).

One of the main purpose of a close linkage between TVET institutions and the industries is to provide a strong foundation towards bridging the gap in terms of skills and to meet the manpower needs of the workplace (Oviawe et al., 2017; Rodzalan, Noor, Abdullah, & Saat, 2022). However, the collaboration between TVET institutions and the industries especially in the developing countries could be further improved. According to Cheong and Lee (2016) “several weaknesses have hobbled technical and vocational education and training, preventing it from providing supportive roles to academic institutions which include the lack of coordination among key stakeholder” (p.115). This includes the lack of links between training providers and the industries. Collaboration between vocational colleges and the industries has been established since the rebranding of vocational education institutions in Malaysia. The rebranding of Technical and Vocational Education (TVET) in the Vocational Education Transformation Plan was launched by the former Deputy Prime Minister, Tan Sri Muhyiddin Yassin in 2012. The transformation for Vocational Colleges involves improvement in the curriculum and assessment, co-curriculum, On the Job Training (OJT), and school enterprise (SE) to expose students to entrepreneurial aspects, and employability skills. The transformation was also aimed at providing students with soft skills for career advancement, external relations, and relationships with industry-collaborations with strategic partners to increase the marketability of graduates and assist in On Job Training and other activities, relationships with the community-enhance a conducive environment to aid the students’ experience. The ultimate goal of vocational colleges is to produce graduates who 70% work in industry, 20% further their education and training and 10% become entrepreneurs. Therefore, a strong relationship with the industry is a key component to the success of the TVET transformation plan. A strong relationship between institutions and industry is important in driving the country's economic growth towards the sustainability of TVET education in Malaysia. To establish a wide network of collaboration with the industry, vocational colleges are strongly encouraged to have Memorandum of Understanding (MoU) with industries. However, in 2018 report shows that numbers of MoU between industries and vocational colleges is still at a low level, especially vocational colleges in the Johor state where there are still many vocational colleges without any MoU (Ramli, 2020). Although the industries and educational institutions as a whole are aware of the importance of this cooperative relationship, the readiness of each organization to work successfully needs to be furthered studied (Abdullahu, Mohd Tobi, & Masrom, 2017)

■2.0 LITERATURE REVIEW

Collaboration with the industries and the training institutions is the foremost concern for a successful TVET program. According to Ahyat, Rahman, and Yasin (2017) the collaboration between TVET institutions and the industries will bridge the gap in terms of skills mismatch required by the industries today. The current gap in terms of skills mismatch can be reduced by the interaction between institutions and industries through placement in industry, curriculum collaboration and training (Cheong & Lee, 2016; Okon, 2019; Oviawe et al., 2017; Rodzalan et al., 2022; Singh & Tolessa, 2019). According to Siddiky and Uh (2020), there are several areas of collaboration based on different models of collaboration between TVET institutions and industries. The areas include on-job training, curriculum development, joint financing, student employment, and facilities sharing. Among the models that present studies related to industry collaboration and vocational institutions is the Price Model (1991). Price (1991) Model suggest six aspects of collaboration between vocational and industry institutions which include, placement of teachers and students in the industry, twinning program (apprentice), compact program (recruitment), industry -based curriculum and entrepreneurship education. According to price (1991), through the placement of students and teachers in the industry, the problem of unemployment can be solved as it allow students and teachers to gain experience from the industry. Hull's (1998) model emphasizes the collaborative relationship between educational institutions and industries suggested four elements of cooperation namely student’s involvement in the industry, teacher’s involvement in the industry, the role of educational institutions and advisory bodies. Student’s involvement include apprenticeship, mentee mentoring, career camps and industry visits. While the teacher’s involvement in the industry is through placement in the industry and industrial visits (Hull, Grevelle & Parnell, 1998). Several researchers suggested there is a need for placing TVET academic staffs in the TVET institutes to gain some practical experiences within the industries in order to improve teaching and learning (Ahyat et al., 2017; Garba, Dawha, & Sini, 2020; Maleszyk, 2017; Rosly, Hussin, Sidek, & Jiea, 2019). Placement of instructors in the industries is actually important in providing exposure to technology and the latest information related to the industry. The experience of placement in this industry will help improve the quality of teaching and learning of vocational technical education instructors. Another collaboration model related to TVET and industry collaboration is Dual System Model. The model focuses on the blending of theoretical and practical orientations and Job-specific training (Pilz, 2016). Meanwhile in Malaysia, the Department of Skills Development (JPK) involves industry collaborative activities such as the development of National Occupational Skills Standards (NOSS), the establishment of Industry Leadership Body, Implementation of National Dual Training System (SLDN) appointment of Technical Advisor Committee (TAC) and holding Industrial Attachment Training among TVET instructors. Based on the literature, collaboration aspects between institutions and industries include the following: Curriculum, placement of staff, on-job training, added value for students, support and facilities sharing.

Researchers have used the Borich (1980) Assessment Model to conduct an analytical assessment of the importance of various types of studies since this model was proposed. This model serves to identify gaps in assessing competencies or elements. Competencies may be derived from existing research, literacy readings, industry standards, the law, the professional community, and/ or from existing stakeholders (Mc Kim, 2013). Borich assessment states that it can be used are to identify 'What is' and 'What should be', 'Importance' and 'Ability', 'Importance' and 'Knowledge' and 'Importance' and 'Produce learning' (Umar, Man, Nawi, Latif, & Samah, 2017). From the analysis, gap in terms of competency becomes significant therefore allowing organization to identify competency or area need to be given attention. This Assessment Model allows researchers to identify the most needed competency or aspects so that relevant trainings and changes ranging from the most needed to the least needed could be provided. In addition, this evaluation model projects competency or area of concern according to priorities (Mc Kim, 2013). The Borich assessment model involves four steps i.e., related to i) identified

competencies and questionnaire development, ii) then the questionnaire division, iii) then the analysis to prioritize competencies and lastly iv) is comparing competencies with the highest gap with training that needs to be improved (Kiumars, 2008).

The aim of this study was to evaluate the collaboration gap between vocational colleges and the industries using Borich Need Assessment Model. To achieve the objective, perception of the importance and readiness to carry out collaboration with industries were measured. Thus, this study used the achievement dimension approach based on Wahid, Laura, Daniel, and Mark (2016) research. Perceptions of readiness were measured from unprepared to highly prepared. While the perception of importance was measured from not important at all to very important. Data were analyzed using mean weight discrepancy score (MWDS) in identifying the competency gap between aspects of readiness and importance. Instructions for answering questions were made clear to avoid confusion among the respondents while answering the items within the questionnaire. The main purpose of MWDS is to explore items that show high importance values however received a low value of readiness. Findings were analyzed using Excel Based MWDS Calculator (Choi, Bae, Ji, Jung, & Yang, 2021).

3.0 METHODOLOGY

Quantitative descriptive design approach was employed in this study where data was collected at a point across the study . (Kumar, 2011). The research was quantitative and non-experimental in nature (Keith, 2015). The research employed a structured questionnaire for data collection. The questionnaire was adapted to suits the objectives and research questions. Back translation method was employed. The instrument was designed in double matrix (refer Figure1) to minimize confusion, heuristics and respondent fatigue (Borich, 1980; Mckim, 2013). Survey items were used to measure level of perceived importance on a five-point scale designated as: 1 = no importance at all, 2 some importance, 3 = moderately importance, 4 = very importance and 5 = extremely importance. Similarly, the items were used to measure level of perceived readiness in the competency areas on a five-point scale as: 1 = not prepared at all, 2 = low prepared, 3 = moderately prepared, 4 = high prepared, and 5 = very high prepared. Overall the item were organized into six domain aspects which consisted of a) placement in the industry; b) curriculum; c) added value; c) support; d) facilities and e) training.

PENILAIAN KEPERLUAN						PENILAIAN KESEDIAAN				
TIDAK PENTING SAMA SEKALI	TIDAK PENTING	SEDIKIT PENTING	PENTING	SANGAT PENTING		TIDAK SEDIA SAMA SEKALI	TIDAK SEDIA	SEDIKIT BERSEDIA	SEDIA	SANGAT BERSEDIA
1	2	3	4	5		1	2	3	4	5
					1. <u>Penempatan guru kolej vokasional di industri sebagai pelatih untuk memahami budaya kerja di industri (Price 1991)</u>					

Figure 1 Doubel Matrix Survey

The population of the study involved vocational colleges academic staffs located in Johor who serve more than 5 years. The criteria is selected among experienced and senior staffs who had more involvement in on- job training and able to contribute singnificant insights on the collaboration aspects required by the industries. According to Saifudden (2016) novice academic staff is the person who have difficulties in skill and pedagogy during delivery the class. Therefore may not be suitable to part of the respondent for this study. This study applied total population sampling technique. According to Stephanie(2018), the benefit using this method is it gives deeper insights into the target population as compared to partial samples . It has the potential for the researcher to paint a much more complete picture, and greatly reduces guesswork. A paper based survey was employed to 258 respondent with 195 response collected making the return rate for this study is eproximately 70%. The data was analysed using Mean Weight Discrepancy Score (MWDS) by using Excel Based MWDS Calculator (Mc Kim & Saucier 2011; Mc Kim 2013). Descriptive statistics was primarily used in the analysis.

A modified Borich Needs Assessment Model was used to compute the competency requirements of the respondents (Borich, 1980; Mckim, 2013). The Borich Needs Assessment Model is a self-evaluative procedure which relies on the judgments of vocational college academic staff to decide which element that they feel important and ready to collaborate with the industries. MWDS score values indicate differences in perceptions (Borich, 1980; Mc Kim 2013; Matthew, 2014; Wahid, 2016). A fundamental assumption of this procedure is that the respondent can best judge his or her own expertise and, when explicitly asked to do so, can make an objective judgment (Borich, 1980; Sulaiman, 2017). Mean Weighted Discrepancy Score (MWDS) which could be obtained though the following calculation:

$$MWDS = \frac{\sum [A - B] \times \bar{A}}{N}$$

A = importance rating

B = readiness rating

\bar{A} = mean importance

N = number observation

4.0 RESULTS

The findings in Table 1 provide the perception of importance and readiness, of the respondents towards different aspects of collaboration. Based on the analysis, in general, the respondents perceived all aspects of collaboration are important and needed between vocational colleges and the industries. However, in some aspect of respondents' perceptions, showed a lower level of readiness in collaborating with the industry. In general, the perception of the respondents showed lower level of readiness as to compared to the level of importance. Due to these differences, the study was able to identify collaboration gaps in the aspects studied.

Table 1 Importance and Readiness Aspects of Collaboration

Item	Importance		Readiness	
	Mean	Standard Deviation	Mean	Standard Deviation
	(M)	(SD)	(M)	(SD)
Placement of staff in the industry	4.370	0.454	3.918	0.583
Sharing of facilities	4.327	0.427	4.076	0.552
Training	4.255	0.504	4.164	0.528
Support	4.265	0.483	4.074	0.597
Added Value	4.269	0.456	3.980	0.493
Curriculum	4.135	0.408	4.103	0.530

The next section provides the extent of the discrepancy of each collaboration aspects. Discrepancy score is based on the differences between the level of perceived important and perceived readiness. The findings for collaboration aspects Mean Weight Discrepancy Score are showed in Table 2.

Table 2 Collaboration Aspects Mean Weight Discrepancy Score

Aspects	Mean Weight Discrepancy Score	Ranking
Placement of staff in the industry	1.43	1
Sharing of facilities	1.09	2
Training	0.90	3
Support	0.81	4
Added Value	0.71	5
Curriculum	0.64	6

Findings in this study represent the mean weight discrepancy scores (MWDS) and ranking of the collaboration aspects in the study area. Figure 2 illustrates the Ranking of the collaboration aspects. Results in Table 2 indicated the placement staff in the industry perceived to be most important aspect of collaboration however the most least ready to implement by vocational college academic staff with an MWDS score of 1.43. The second widest competency gap is collaboration in facilities sharing with MWDS = 1.09. Collaboration in training aspect showed competency gap of MWDS = 0.90 followed by collaboration in the support aspect (MWDS of 0.81) and ,added value aspects with MWDS of 0.71. Aspects with the smallest discrepancy score is collaboration in the curriculum with MWDS = 0.64.

Referring to Figure 2, position A indicates that the collaboration in staff placement is perceived to be very important, yet perceived as the least ready to collaborate. Followed by positions B and C that indicate the aspects of the collaboration (facilities, training, support, added value) are important but moderately ready to be implemented. While position D indicates that the aspects of collaboration (curriculum) are important and most ready to be implemented. Therefore the least prepared aspect of collaboration is placement of academic staff in industry thus needed to be given more attention.

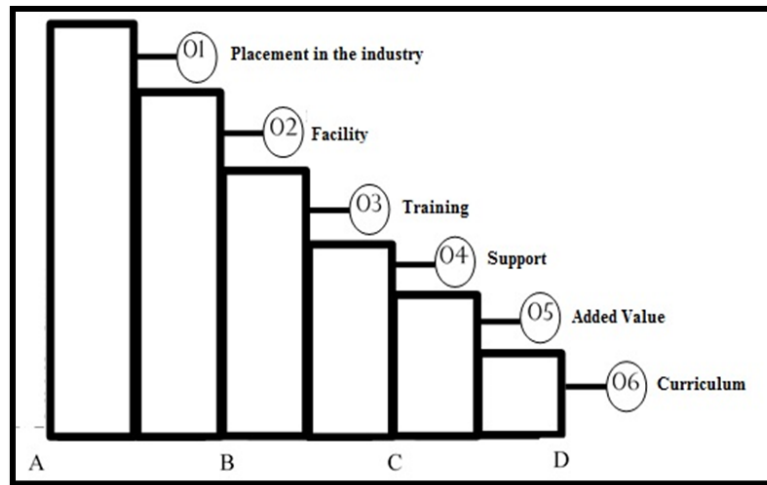


Figure 2 Collaboration Aspects Mean Weight Discrepancy Score Rank

5.0 DISCUSSION AND RECOMMENDATION

The findings of current study revealed the application of Borich Need Assessment Model was able to identify the collaborations gap between vocational colleges and the industry. The aim of the study was to discover which collaboration aspects perceived to show a high importance however perceived as the less readiness to collaborate. This study is important in order to better serve by improving the partnership between industries and vocational colleges. Respondent identified placement of staff in the industry as area of greatest discrepancy. Placement of academic staff showed the largest collaboration gap. Most of the respondent value the importance of being place in the industry as suggested by researchers such as (Ahyat et al., 2017; Garba et al., 2020; Maleszyk, 2017; Rosly et al., 2019). According to Rosly et al. (2019) “TVET lecturers need to prepare themselves with skill training and development, attend industrial attachment, acquire professional or industrial certification, Training of Trainer (TOT) upskilling and reskilling, and sharing knowledge and skills with others”. However, the state of readiness in the lowest. Most of the academic staff are not ready to be placed in the industry. Therefore, from the MWDS score, placement of academic staffs within the industries should be given a focus in developing the specific criteria to improve the situation. Additional benefit from the administration might enhance staff motivation to be more actively involve with the industry. Therefore, there is a need for additional investigation on this issue. Curriculum aspects shows the smallest discrepancy. This is a positive indicator showing that most of the academic staff are aware of the importance of an up-to-date syllabus and ready to collaboration in that area. A close collaboration between vocational colleges with the industries is very crucial to ensure the alignment of the curriculum with the need in the industry. Wilson (2012) stated that important curriculum aspects to be improve is ICT skills, soft skills and technical skills to ensure graduates are competent and become relevance to the industry. Therefore, involvement of the industry in recent practice such as appointing of Industry Advisory Panel (IAP) is a great effort to gain advise on the relevance of the curriculum to industry needs.

6.0 CONCLUSION

Overall, all the aspects studied -placement of academic staff in the industry, sharing facilities, training, support, added value and curriculum- were perceive important and ready to be carried out in vocational colleges. All aspects are perceived important and necessary to ensure the sustainability of programs in vocational colleges and ensure the quality of vocational college graduates are relevant for the industries. Staff placement and sharing facilities are the two aspects of collaboration urgently needing attention form stakeholders to ensure collaboration between the two organizations are strengthened. Both aspects require clearer guidelines to establish and facilitate the collaboration.

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