



A Tie between Educational Institution and Industry: A Case Study of Benefit from Work-Based Learning

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Abstract: Work-Based Learning (WBL) is the learning methodology that uses two workplaces: educational institutions and industries. WBL connects the knowledge and approaches in workplaces by reciprocal sharing of the theory from educational institutions and expertise in technical skills by industries. This research explores the experience of connecting the knowledge and approaches in workplaces between institutions and the industry via three pilot programs that apply WBL methods: The Networking Advanced Diploma, Bachelor of Facility Management with Honors and Bachelor of Computer Engineering Technology (Medical) with Honors. This study employed a multiple case study of qualitative approach. The data collections in the field study were conducted using in-depth, face-to-face interviews and semi-structured protocol with the three participants from polytechnics and five participants from the industry. The findings showed that WBL could connect the knowledge and approaches in workplaces by sharing the educational information, technical skill and technology between institution and industry. The findings also show that industrial attachment and win-win situations happen in WBL. Based on the results of this study, hopefully, there are more ways to connect knowledge and approaches between institutions and the industry to ensure the sustainability of WBL programs.

Keywords: Work-based learning, technical skill, technology, industrial attachment, win-win situations

1. Introduction

Work-based Learning (WBL) is a learning method that requires collaboration between institutions and industries. This is because a WBL program structure requires the student(s) to be placed at institutions for theoretical learning and in the industry to convert the theoretical input into practical learning. Watisin (2017) defines that WBL is a learning method that emphasizes learning through working experience and collaborates between educational and industrial institutions. Sweet (2001) stated that WBL is the education provided by institutions and requires collaboration with industries because such a learning process can provide a real experience to the WBL students. WBL can also reduce the gap of differences between the theories studied in educational institutions to be transferred practically in the workplace. Lemanski *et al.*, (2011) shared their view regarding to WBL in a term used by institutions involving relationships between universities and industries to create new learning opportunities in the working environment. This collaboration can also bring a win-win situation between educational institutions and the industry (Naidu, 2011). However, WBL implementation is not as easy as one may think because it requires a close working relationship between the industry and educational institutions. Long-term relationships need to be built wisely and fulfilling the aspiration of both parties.

One of the advantages of this collaboration is that, through win-win situations, both parties can share and transfer knowledge between each other. It happens throughout their collaboration. Educational institutions can share theories with the industry, while the industry can share their expertise and educational institutions' expertise. Van De Hoof & De Ridder (2004) stated that sharing and transferring knowledge is how a group of individuals exchange the knowledge either

explicitly or implicitly, thus creating new knowledge. This process is important to develop the knowledge of an individual in the organization. Sharing of knowledge consists of acquisition, dissemination, sharing and knowledge management. According to JPPKK (2019), knowledge sharing can also enhance knowledge and practical skills in close the gap between theory and practice. Meanwhile, the process of knowledge transfer must be done through acceptance, processing and observation so that it can be shared by every member of the organization (Simmonds, 2012)

2. Work-based Learning in Malaysia

WBL is one of the modern learning methods that entered Malaysia in early 2007. A total of 11 diploma courses were offered using the WBL approach and managed by Community Colleges (Ahmad et. al, 2007). However, the program using WBL lasted only two years because of the internal restructuring between Community Colleges and Polytechnics. The impact of the restructuring causes the program using WBL transferred to polytechnics in July 2010. However, only five courses using WBL were introduced in Polytechnics through the Advanced Diploma program (Information of Malaysian Polytechnic, 2019).

In 2013, Community College once again reoffering the Diploma program courses using the WBL approach. Until now, there is 14 Diploma in Community Colleges using the WBL method. Besides that, the Advanced Diploma program using WBL at Polytechnic also gradually upgraded to the Bachelor with Honour of Polytechnic program using WBL. The implementation of WBL in the Bachelor with Honour of Polytechnic program is to differentiate with other Bachelor with Honour programs from other educational institutions. As of 2018, there were seven Bachelors with Honour of Polytechnic program and eight Diploma program using the WBL method. The implementation of the WBL in polytechnics also involves several premier polytechnics in the early stages. In the future, the polytechnics have planned to expand their implementation of the WBL to all Malaysian polytechnics, and 75% of the courses offered are in the form of the WBL approach (Polytechnic Transformation Direction, 2010).

The WBL approach was also taken seriously when the Malaysian Qualifications Agency (MQA) (2016) took the initiative to introduce the WBL's general guidelines to the Higher Education Centres, industry, students, employees, tutors, coaches, and to all the individuals who may be interested in WBL activities. The guidelines also highlight the various approaches of the WBL, design and presentation methods of the WBL curriculum, assessment, role, responsibilities, and monitoring of the WBL's implementation (Malaysian Qualifications Agency, 2016). The WBL's general guidelines have been implemented in two pilot programs introduced by the Public University (UA), a Bachelor of Entrepreneurship with Honours program in UMK and the Bachelor of Plantation Management program UPM. Both programs use the same concepts of WBL but in a different type of duration study, i.e., 2u2i. There are 19 Diploma in Community College programs, seven Bachelor with Honour of Polytechnic programs, eight Diploma in Polytechnic programs, and 31 Bachelor with Honour programs at public universities using the WBL approach (Ministry of Education, 2019). The Department of Polytechnic and Community Colleges (2019) also published the guidebook for implementing the WBL approach in the polytechnic program as guidelines and references to all the Malaysian Polytechnic and all the parties involved in the implementation of the program using the WBL approach. There are 14 Diplomas in Community Colleges, 8 Bachelors with Honour of Polytechnic and 16 Bachelors with Honour of Public University. Based on Malaysia's chronology of the WBL development approach, researchers have found that this approach has developed and takes place in Malaysia's education system. The WBL development can connect the knowledge and approach between institutions and industry.

2.1 Sharing and Transferring Knowledge in WBL

In WBL, the sharing and transferring of knowledge are voluntary and require cooperation between institutions and industry. The sharing and transferring of knowledge happen along with the WBL collaboration to students, lecturers, and industries' employers. Knowledge sharing can also improve knowledge and practical skills, thus bridging the gap between theory and practice (JPPKK, 2019). According to Ardichvili et al., (2003), sharing and transferring knowledge consist of giving and demanding new knowledge. Sharing and transferring of knowledge can contribute to the improvement of organizational performance.

Industry attachment is one of the sharing and transferring of knowledge in WBL. Industry attachment is an important asset in helping the institutions further enhance technical lecturers' skills and creativity in producing graduates who possess the skills and expertise in accordance with current needs (Wan Sulaiman, 2007). According to the results of a study conducted by Ahmad and Abd Rashid (2011), industry attachment can help lecturers ready in terms of pedagogy, technical, and effective module delivery methods and possess the industry-specific experience to improve practical skills. In addition, the involvement of lecturers in industrial attachments also expands the network of relationships between lecturers and the industry, opening a wide avenue for lecturers to follow the latest technology in the industry as well as holding joint ventures in Research and Development (R&D) (Kaser, Brooks & Brooks, 2007).

The study results by Talbot and Lilley (2014) also showed that WBL programs implemented in educational institutions had opened new opportunities for students and lecturers to increase knowledge, especially in terms of skills, and further providing opportunities for them to achieve higher levels of learning. As for the lecturers, it can provide added value to them to be used in promotion matters. Ahmad and Abd Rashid (2011) also supported that there is an increase in Learning and Teaching sessions in the classroom. Technical lecturers who follow attachments can describe theoretical

aspects more effectively and can even relate theoretical aspects to technological developments in the industry well. Without this collaboration in WBL, educational institutions may be facing the problem of attachment to industry. According to Yusof (2004), the industrial attachment cannot be carried out by lecturers due to the difficulty in finding an industry that suits their type of expertise. Wan Sulaiman (2007) and Yusof (2004) also added that the period and location of the industrial attachment being carried out, among other factors, also contribute to industrial attachment failure.

For the industry, with the sharing and transferring of knowledge in WBL, Hasnizawati *et al.*, (2008) stated that an organization's achievement depends a lot on the organization's achievement and commitment. However, internal and external factors such as incentives, encouragement from colleagues and employers, salary increments, employment policy changes, and other related matters will be influenced by the employee's achievement. Wang, *et al.*, (2000) also supported that the benefits gained by an organization through the sharing of knowledge depend on how its employees acquire, share and use existing knowledge. This sharing of knowledge can improve the performance of employees and organizations. Through knowledge sharing, employees can share the way they work, add more creative ideas, especially in terms of services and products, and increase productivity. Kaser, Brooks & Brooks (2007) stated that the sharing and transferring of knowledge have also indirectly expanded the communication network between the institution and the industry and opened a wide space for technical instructors to follow the industry's latest technology. This matter is also supported by Zookefli and Md. Nor (2008), who stated that knowledge sharing and transfer allow employees to share the best way of working, increasing the proliferation of more creative ideas in terms of products and services, and increasing productivity by shortening the problem-solving process.

2.2 Conceptual Framework

WBL is a method used to expand learning boundaries between classrooms and work situations real by involving the community as a learning source (National Center on Secondary Education and Training (NCSET), 2011). The concept of WBL implementation is to allow students to learn various types of skills that can create a synergistic relationship between learning in the institution and the world of work. It is used as wrong a way to bridge the existing gap between theory and actual practice and try to make that learning more meaningful. Figure 1 shows a conceptual framework of the factors influencing the involvement of industry with polytechnics in aspects of motivation, potential benefits to be gained, and barriers to be faced by polytechnics and industry for the WBL program's success.

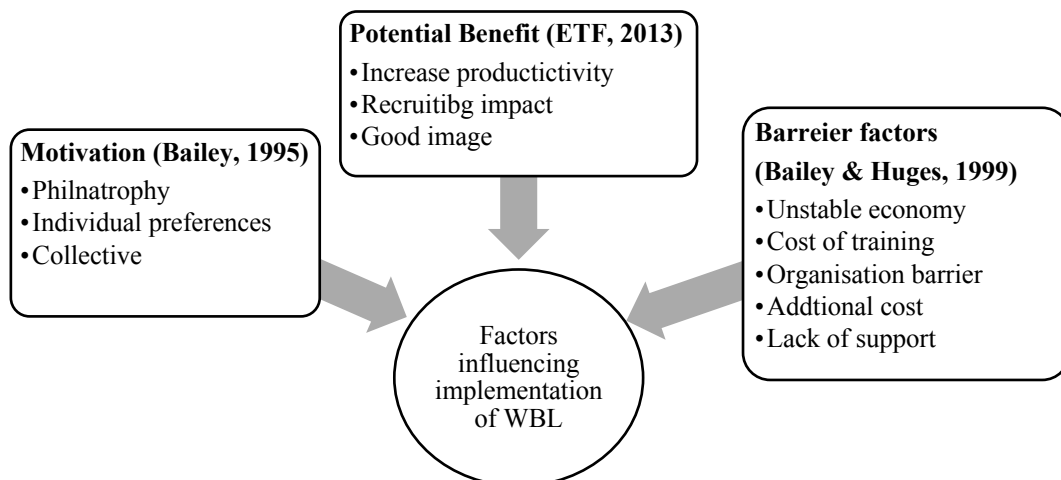


Fig. 1 - The factors and barriers involvement of industry in WBL

The conceptual framework is a concept framework, model, or concept model referred to as the visual explanation, graphically, configured, or narrative about the concept to the study's focus. The conceptual framework in this study used a qualitative concept framework that is different from the conceptual framework in quantitative research. This is because the qualitative conceptual framework only assists the researcher as the guideline and builds a hypothesis instead of testing it (Maxwell, 2013; Patton, 2015; Merriam, 2018). To explore the sustainability collaborations in WBL, researchers have chosen to use the findings of the Bailey and Hughes (1999) studies as a reference before the WBL collaboration. This is because researchers have found Bailey and Hughes are the researchers who conducted numerous studies on the WBL. Among the findings conducted by them in the WBL were Bailey, Hughes and Mechur (2001) in their research, found that the WBL can help the students continue their studies at higher levels.

Meanwhile, the Bailey & Merrit (1997) survey showed that the WBL positively impacts students' achievement and motivation. Hughes's studies *et al.*, (2001) also shown that the WBL students have problem-solving skills, decision-making, working in groups, communication skills, working in various circumstances, and providing full commitment in carrying out their work. The Bailey (1995) studies show the philanthropy motivation, individual interest, and collective are the elements that led to WBL collaboration. Bailey once again researched the form of a case study with Hughes in 2009, located in (9) urban and rural areas. The exploration results on the case studies showed similar findings as

philanthropy motivation, individual interest and collective. Based on the finding for motivation before collaborating in both case studies, researchers have concluded to use the elements as a reference in her research on the exploration of experience before collaborating in WBL.

3. Purpose of the Study

This research explores the sharing and transfer of knowledge between educational institutions and the industry in three pilot programs: Advanced Diploma in Networking program, Bachelor of Facilities Management Technology with Honours program, and Bachelor of Medical Electronics Engineering with Honours program.

4. Methodology

This study used a qualitative approach because the researchers want to explore the experience by sharing and transferring knowledge between educational institutions and industry. The researcher used the multiple case study method in three pilot programs using WBL, Advanced Diploma in Networking, Bachelor of Facilities Management Technology with Honours, and Bachelor of Medical Electronics Engineering with Honours.

The researcher also adapted the design from Maxwell's Interactive Model (2013). Figure 2 shows the first component of the research is to explore the sharing and transferring of knowledge between educational institutions and the industry in three pilot programs. Researchers explore how the experience before the collaboration between educational institutions and industry in Advanced Diploma in Networking program, Bachelor of Facilities Management Technology with Honours program, and Bachelor of Medical Electronics Engineering with Honours program. The researcher also explores how the similarities and differences in collaboration experience can lead to WBL sustainability. The second component is the conceptual framework. Researchers have used the Bailey and Hughes (1999) studies for elements before the collaboration as a guideline when she conducts the research. The third component is the question of the study. Researchers focused on gaining collaborative sustainability through exploring experiences from three pilot programs using the PBK method. The fourth component is the data collection method. Researchers used only semi-structured interviews and conducted the interviews until researchers satisfied with the data. The last component is reliability, validity and ethic. For reliability and validity, the researcher makes the transcription cross check-up with the participant. For the ethnic, the researcher also selects the voluntary participant and protects personal details and data by using the consent form. All the components are connected and run simultaneously.

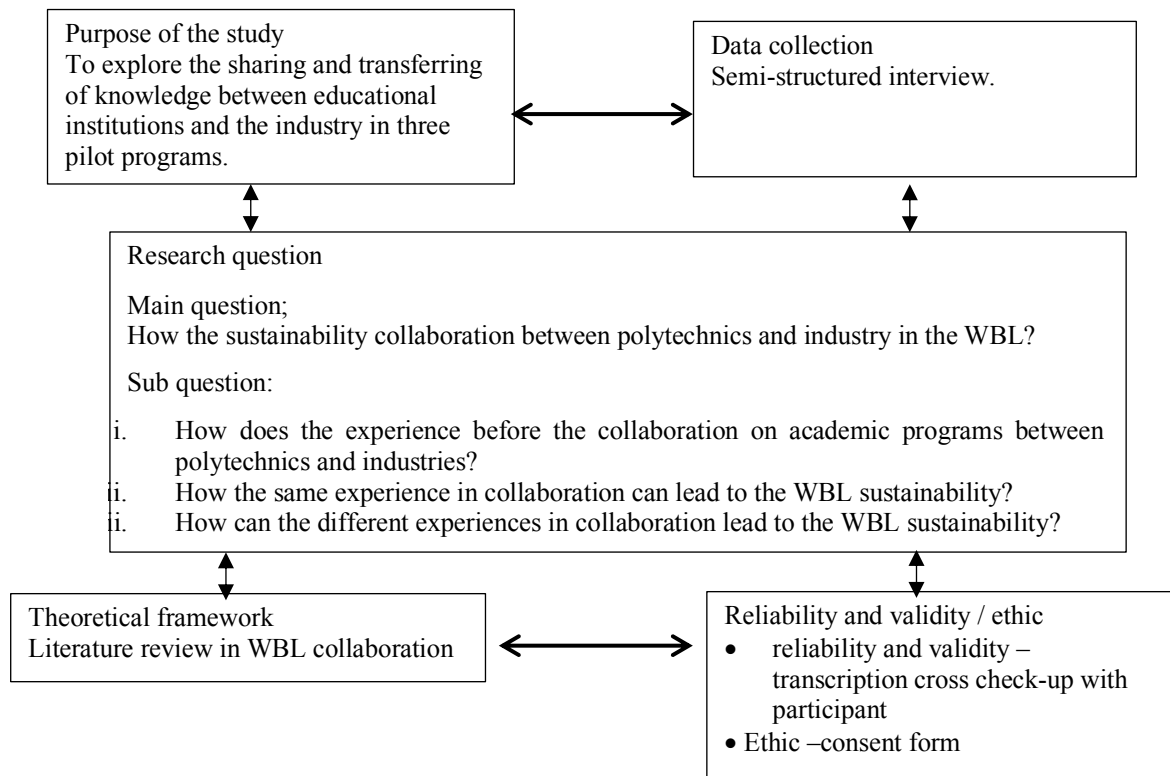


Fig. 2 - Research design

(Source: Adapted from Maxwell, 2013)

4.1 Data Collection

In this study, researchers used face-to-face, in-depth interviews as a method of data collection. Researchers have interviews with participants repeatedly until the researchers are satisfied with the data and information about the sharing and transferring of knowledge between educational institutions and the industry. Seidman (2019) stated that the interview methods are the most consistent method to get data and information indirectly. Repeated interviews with each participant also can provide in-depth data to the researchers' studies, and there may be other information that contributes to research. Researchers have used face-to-face methods to make sure researchers can interact with participants to share and transfer knowledge from Polytechnic and industry. Yin (2018) supported by says that interviews are the best way for qualitative data collection involving experiences. The researcher also used semi-structured interviews only. This is because semi-structured interviews are more flexible and allow participants to describe their opinion to the researchers. Researchers provided two sets of interview protocols during the interview session; a set for institutions and a set for the industry. Two sets of the protocol were developed to find out the process of sharing and transferring knowledge in the WBL approach from polytechnics and industries.

4.2 Multiple Case Study Profile

This study involved eight participants selected through the purposive sampling method. The participants are experienced and possess a vast amount of information, plus are directly involved in WBL. Two polytechnics have been involved in this study, namely Ungku Omar Polytechnic (PUO) and Sultan Salahuddin Abdul Aziz Shah Polytechnic (PSA), alongside three industries, namely Mesiniaga Berhad, UEM Edgenta Berhad, and Advanced Pact Sdn Bhd. Table 1 shows the summary of the justification of the participant selection and the location of this study.

Table 1 - Summary of justification for the selection of participants and locations

Case study	Participant	Institution/ Industry	Position	Experience
First case study -Advanced Diploma in Networking	PK1	PUO	Head of Advanced Diploma in Networking program	Handle, coordinate and monitor the WBL program since 2010
	PK2	Mesiniaga Berhad	Head of System Engineer and Training Unit (WBL coordinator)	Handle and coordinate WBL program since 2010
Second case study- Bachelor of Facilities Management Technology with honor	PK3	PSA	Head of Facilities Management Technology and coordinator of the Bachelor of Facilities Management Technology with Honours program	Handle and coordinate WBL program since 2010
	PK4	UEM Edgenta Berhad	Corporate communications officer and WBL coordinator for both programs	Handle WBL program since 2007
Third case study - Bachelor of Medical Electronics Engineering with Honor	PK5	PSA	Head of Bachelor of Facilities Management Technology with honor	Handle, coordinate and monitor the WBL program since 2007
	PK6	UEM Edgenta Berhad	Head of Medical Electronics Engineering and coordinator for the biomedical program	Handle, coordinate and monitor the WBL program since 2007
	PK7	Advance Pact Sdn Bhd	Senior service manager of Advance Pact WBL coordinator	Handle WBL program since 2010/2007 Coordinate and monitor WBL program since 2014

4.3 Data Collection Procedure

Before the interview with the participant, researchers already do the rapport. Rapport is important to make a good relationship between researcher and participant. The researcher also approaches the participant to be the participant in her research by explaining the brief information about this research and providing the consent form to be signed by the participant if they are willing to be involved in this research. The consent form is important to be signed by the participant to ensure all the participant's personal data and information are protected. Researchers have applied ethics in this research by referring to the American Psychological Association (2010) and Creswell (2012). Researchers also get permission

from the participant to record all the conversations using recording tapes for the analysis purpose. After that, researchers continued to arrange face-to-face appointments with all the participants for the collecting data purposed. Researchers take seven months for the data collection.

All the interviews were transcript, and the researcher gives back the transcript to the participant to cross-check the information given by the participant during the interview is correct and accurate. The participant can also respond by commenting and correcting the data if there is confusion or inaccuracy. The participants were also allowed to remove the data if necessary. After that, the researcher will correct all the corrections. Merriam (2018), Seidman (2019) and Creswell (2012) also support that the correction of facts and cross-check with participants can be used as reliability and validity for the research. All the transcript was analyzed using thematic analysis.

4.3 Data Analysis Procedure

There are four processes in data analysis which are data transcripts, data cleaning, coding and developing themes as recommended by Miles & Huberman (2002), Seidman (2019) and Creswell (2012). The first process is to interpret the data. Data obtained from audio recordings during the interview process with participants were transcript from audio to the text form. Researchers used Window Media Player and Microsoft Word software to make it easier for researchers in the data transcription process. Researchers also used the UK data archive (2014) as a guideline for transcription format. There were 24 sets of audio recordings from 8 participants were transcribed by researchers in text form. The second process is data cleaning. Data cleaning can remove data containing speech styles, repetition of words and irrelevant sentences to the research.

The third process is coding. Miles and Huberman (2002) have stated that coding is the process of labelling or giving specific codes to a data unit. Code is a tag or label to mark a unit of meaning to descriptive information. In this research, researchers have created an index code for each transcription. The process of indexing transcripts is done by labelling a distinctive code to each study participant. Straus and Corbin (1998) state that the coding process is divided into three stages: open coding, axial coding, and selective coding. The coding was carried out after the researchers transcribing and clearing the data for 24 sets of transcriptions. Open coding is an early stage of categorization. At this stage, the data is separated from part of the whole transcription and compared. The data will label and group. Researchers conducted axial coding by identifying, marking, and categorizing each keyword or WBL fact for each line of text and sort it into a small group. Moreover, the last researchers make the selective coding by collecting the code from each category to form a major theme for this research, which is WBL sustainability collaboration between Polytechnic and industries.

The next process in data analysis is theme development. After accumulating the data that has been coded, researchers find the same types of code and develop the sub-theme. From those sub-themes, researchers combine the sub-themes to form a theme. The formation of themes and sub-themes is referred to as the research's theoretical framework, and there is other new themes and sub-themes form in the research. According to Creswell's recommendations, the theme formation was stopped when three to nine themes were formed (2012). Researchers have repeated this analysis in all the three researcher case studies. The researcher also makes cross-case comparisons between the three case studies to find the similarities and different themes for all three case studies to report WBL sustainability collaboration.

5. Results

Based on the participants' experience, the researchers found that throughout the collaboration between educational institutions and the industry in WBL, the sharing and transferring of knowledge between institutions and industry took place throughout the collaboration. As we know, Mesiniaga Berhad, UEM Edgenta Berhad, and Advance Pact Sdn. Bhd. are big industries in Malaysia. There are a lot of skilled, qualified and experienced engineers working there. The engineers from that industry possess technical knowledge, which is very different from theoretical knowledge. Therefore, the sharing and transferring of knowledge between PSA, PUO and Mesiniaga Berhad, UEM Edgenta Berhad, and Advance Pact Sdn. Bhd. are important in ensuring that there is a balance between theoretical knowledge and practical skills.

In the first case study, PK1 has said that they have invited Mesiniaga Berhad engineers as industry visitors every semester to share knowledge. The knowledge sharing from Mesiniaga Berhad engineers is to share experiences based on theory and skills that can only be acquired through practice in real situations. This gives PUO an advantage in acquiring skills that are in line with industry requirements. For this sharing, PUO has also allocated a number of consolation money for knowledge sharing, but it is not inviting speakers from outside for knowledge sharing.

"We invited engineers from Mesiniaga to the polytechnic for the seminar. We do it every semester. We have KPIs for industry visitors every semester." PK1 (293) -21/4 (300).

"We also give tokens to teaching instructors. The token is in the form of consolation money. They are not given any allowance. Did not pay anything. He sincerely teaches." PK1 (1) - 21/4 (325).

"The talk is all paid because it is in the allocation. However, the government rate is not very high. In RM120 / hour." PK1 (1) -21/4 (375).

"Among them, I think knowledge transfer. This means that the Mesiniaga party has qualified engineers. When we invite them to give a talk, they are willing to come and share their experiences. They are different from academics. Academics rely on theory alone. They are more to the real situation. Not only students get input but also our department. Usually, we will do it once a year." PK1 (3) -23/9 (280).

PK3 also added that the sharing and transfer of knowledge throughout the collaboration between PSA and UEM Edgenta Berhad could strengthen the relationship between institutions and industry. This is because any latest information regarding the industry's skills at UEM Edgenta Berhad can be channeled to PSA. From the PSA point of view, they can share theoretical knowledge directly with UEM Edgenta Berhad. Even students can share knowledge by applying theoretical knowledge to practices.

"When we collaborate, we can strengthen the relationship between industry and institutions. A string of such knowledge in the industry can be delivered at the institution. As for our part, in terms of theoretical, we can deliver to the industry." PK3 (3) -29/10 (137)

"This student does the work like the staff does. He can transfer knowledge of industry and institutions, and we can strengthen collaboration." PK3 (3) -29/10 (188)

According to PK6 in the third case study, the transfer of knowledge also happens during their collaboration. They have learned a lot of academic-related knowledge given by PSA. One of the knowledge that has been learned is how to develop the curriculum in the right way. In addition, UEM Edgenta Berhad itself has its staff development training center used to train their employees based on the experience and expertise of senior staff instructors without proper guidelines on developing and evaluating their curriculum. With the knowledge of curriculum development received from PSA, they can now develop their own curriculum, improve the existing curriculum and make the training evaluations more organized.

"Actually, during WBL, we study with each other. We can learn from PSA how to develop the curriculum, because we can develop our own curriculum and we can make our own assessment." PK6 (1) -16/5 (236)

"We have our own training center and our training center is only based on the experience of their employees and lack in terms of the actual assessment. We lack the experience of creating a curriculum, material, and rubric we all do not know. We learn from PSA, and this thing really helps us." PK6 (2) -19/9 (273)

PK3 also agrees that the sharing and transferring knowledge can also be direct and indirect while students undergo WBL at UEM Edgenta Berhad. Through these collaborations, they can share knowledge in terms of work experience, theoretical knowledge, practical skills, and current technology. However, PK3 also considers the actual workload of the UEM Edgenta Berhad industry and ensures that collaboration in the sharing and transferring of knowledge does not burden UEM Edgenta Berhad. PK3 also wants to make sure that this collaboration runs smoothly and does not want UEM Edgenta Berhad to feel burdened.

"Knowledge transfer if we make it through WBL, of course, we have two-way communication. We directly knowledge transfer that we find between industry and institutions is while students conduct WBL. When students are there indirectly, if the industry does not carry out theoretical and only practical knowledge transfer, the second benefit is the student. Students will get a lot of knowledge, experience, and updated technology. By joining the student industry, we can work while studying. They can see new tools, new systems." PK3 (2) -25/8 (127)

"The knowledge that people have is transferred to our students so that our students can get information but not burden the industry" PK3 (2) -25/8 (155)

Besides UEM Edgenta Berhad gaining new knowledge in curriculum development, PK5 also shared that PSA also gained new knowledge by learning how to use the latest technologies and new equipment at UEM Edgenta. PSA lecturers were also invited by UEM Edgenta Berhad and Advance Pact Sdn. Bhd to carry out industrial attachments before placing WBL students. Not to mention, PSA lecturers can also undergo industrial attachments whenever they want to learn the latest technology in the industry more easily and clearly.

"..We can learn how new technologies and the latest equipment available near the hospital can be channeled to the polytechnic" PK5 (3) -29/11 (132)

"We will take whatever opportunity there is. Concessions have expertise. We are limited to the curriculum only. So, we want expertise from the outside and ever-changing technology. We have made industrial attachments there to allow us first to learn the equipment available, and we can also get an idea of the environment there before placing our students to make WBL there. We can also make industrial attachments at any time." PK5 (3) -29/11 (189)

PK3 also stated that their lecturers could undergo industrial attachments that can allow them to add and share knowledge. Although they hold a broad academic background and knowledge, they may face constraints in translating their existing knowledge into practical forms. Therefore, through this collaboration, PSA lecturers have the opportunity to practice at UEM Edgenta Berhad and establish a good relationship with UEM Edgenta Berhad.

"Our lecturers may be able to attach the lecturer industry by doing practicals near there" PK3 (2) -25/8 (193)

"The third to the lecturers. Lecturers can add knowledge with knowledge sharing. Lecturers do not know everything. On the theoretical we may know, on the practical side, the industry again knows." PK3 (3) -29/10 (227)

UEM Edgenta Berhad also supports and welcomes PSA lecturers to make industrial attachments at their company. PK4 has shared that knowledge sharing through the industry attachment method lets PSA lecturers perform industrial attachments at UEM Edgenta Berhad for three months. As long as PSA lecturers are here, they will receive initial exposure to the scope of WBL work before placing students at UEM Edgenta Berhad to undergo practical exercises. This is important because by conducting site visits, lecturers from PSA can overview what their students will do as they are placed in the industry to undergo WBL.

"There is indeed knowledge sharing through the WBL method. For FAM, PK3 and his group have been on-site visits and also become part of our group to learn. This happened before the first group of students did WBL here. They can know what we are teaching and what happened in the real situation." PK4 (3) -13/11 (251).

PK1 from the first case study also supports that PUO has sent three of their lecturers to conduct industrial attachments for three months at Mesiniaga Berhad as one of the knowledge sharing mechanisms. As long as PUO lecturers are there, they can see through how Mesiniaga Berhad environment is, the way and culture of work there before they place students to undergo WBL at said company. This way, PUO lecturers will know more about what will be done and learned by WBL students before the student placement takes place.

1st Industrial attachment on 2011. We sent three lecturers to Mesiniaga to make an industrial attachment for three months. This is because before we send students, we send lecturers first to be given exposure to the scope of work in Mesiniaga tu Macam mana." PK1 (2) -25/5 (120)

The PUO lecturer industrial attachment is also supported by Mesiniaga Berhad as informed by PK2 about the industrial attachment by PUO lecturers. He stated that there are lecturers from PUO who undergo industrial training with Mesiniaga. While they are here, they can share experiences, work skills, and experiences at Mesiniaga Berhad. Later, they relate them to the knowledge to be shared with other PUO lecturers and students.

"There are lecturers here who do training. Sit here for a few months for training. So that when he teaches later, he can retell what he did in the industry and relate knowledge to the daily work environment." PK2 (1) -19/4 (420)

"Lecturers also have a lecturer industry insertion program at Mesiniaga where the lecturer can also intern at Mesiniaga. Transfer of knowledge in terms of skills. We share our own experience, working methods, working skills, and how to work in the field. That is how we transfer knowledge." PK2 (1) -19/4 (473)

PK4 and PK6 from the third case study also supported this, saying that they have invited PSA lecturers to undergo industrial attachments at UEM Edgenta Berhad and Advance Pact Sdn. Bhd. They want to allow PSA lecturers to handle

equipment in real situations. PSA lecturers can also receive certain exposure before placing WBL students at UEM Edgenta Berhad and Advance Pact Sdn. Bhd.

“We have invited PSA lecturers to make industrial attachments here. It is nice for them to see more closely what their students are learning while they are here.” PK6 (1) -16/5 (289)

“Our PSA lecturers have been invited to make an attachment here. We want to provide exposure to them as well as they can gain knowledge and skills. Skills that do not exist at PSA. Skills that are only available in the industry.” PK7 (1) -16/5 (332)

Besides doing the industrial attachment, PK5 has also shared that they also invited senior engineers from Advance Pact Sdn. Bhd. as the Industrial Visiting Lecturer to make courses and seminars on current issues, with even PK5 also providing some consolation for appreciation. Among the important courses held by Advance Pact Sdn. Bhd is the competency course. Competency courses are important to PSA lecturers in order for them to be eligible to use the bio-medical equipment available in PSA laboratories. This is because some PSA lab equipment can only be operated by someone who possesses a competency qualification certificate. Moreover, through this collaboration, PSA lecturers acquire new knowledge and obtain competency certificates that qualify them to use the equipment and improve their existing skills.

"Usually the industry enters the polytechnic, we call industry visiting lecturers –PPI. This means we invite them from experienced industries related to polytechnics and attend here and we will do seminars on specific issues. Another we provide tokens as a reward.” PK5 (2) -25/7 (322)

"With the collaboration with industry, we find that new technological knowledge can be channeled to students while practicing in the industry. We also invite them as industry visiting lecturers and make competency courses for lecturers. Competency courses allow our lecturers to use equipment that only requires people with a competency certificate. We pay them using a specific budget. Moreover, our lecturers get certificates of competence." PK5 (2) -25/7 (379)

PK8 also supports that Advance Pact Sdn. Bhd did organize two technical training for ten PSA lecturers on hemodialysis and ventilator equipment handling for five days. Before the competency course was made, Advance Pact Sdn. Bhd. has already created such a module, and MOHE has recognized the module. Recognition from MOHE is important in ensuring that the competency course certificate issued can be used by PSA lecturers to get an increase in remuneration to their salaries.

"The PSA has invited an advance pact for technical training on how to maintain the ventilator machine to their lecturer. We create a 5-day course for 10 JKE lecturers, and when we create a module, we get an endorsement from MOHE and teach them. With the certificate issued by the advance pact, the lecturer can request an increase in remuneration. We also provide technical training to other universities as well. We do invest our employees to go to training and through that our staff can train others." PK8 (3) -25/9 (172)

6. Discussion

Based on the findings, researchers have found that there is a process of sharing and transferring the knowledge throughout collaboration between institutions and industries in WBL. Sharing and transferring the knowledge is when a group of individuals exchange the knowledge and create new knowledge. This process is important to developing an individual's knowledge in an organization (Fooff & Ridder, 2004). According to JPPKK (2019), knowledge sharing can also enhance knowledge and practical skills and bridge the gap between theory and practice. Sharing and transferring knowledge requires cooperation between institutions and industries. In the first case study, Mesiniaga Berhad engineers were invited by PUO to a seminar organized by PUO every year. The purpose of the seminar is to share the technology, knowledge and skill and expertise of Mesiniaga Berhad with PUO. The second case study's findings also found that PSA and UEM Edgenta Berhad had the opportunity to exchange information and knowledge needed by them. PSA lecturers have gained skills while UEM Edgenta Berhad's staff have gained theoretical knowledge. This has been supported by Kaser, Brooks and Brooks (2007) which state that the sharing and transferring the knowledge has also indirectly expanded the relationships between instructors and industry and keep up to date with the latest technology in the industry. Researchers also found that in WBL, the sharing and transferring the knowledge is not limited to PSA lecturers and staff of UEM Edgenta Berhad only, but also continuously happens to students. The findings of Talbot and Lilley (2014) also supported that implementing the WBL program in educational institutions has opened up new opportunities for the

students to gain new knowledge. UEM Edgenta Berhad can also learn the correct ways in the development of syllabus and curriculum for their training centers. The findings of a third case also support that the sharing and transferring the knowledge can give PSA lecturers opportunities to gain the latest knowledge and skills from UEM Edgenta Berhad and Advance Pact Sdn. Bhd. The latest knowledge and skills can help PSA lecturers in their teaching and learning in PSA.

All the cases agreed that the sharing and transferring the knowledge could make sure the PUO and PSA can do the industrial attachment at Mesiniaga Berhad, UEM Edgenta Berhad, and Advance Pact Sdn Bhd. Talbot and Lilley (2014) findings show that the implementation of the WBL program in institutions has opened up new opportunities for students and lecturers to gain new knowledge. Furthermore, industrial attachment is an important asset to the institution to enhance the skills and creativity to produce the expertise and skills graduate in line with current needs (Wan Sulaiman, 2007). The industrial attachment also can allow the technical instructors the real experience to improve their teaching quality where they can connect the theoretical learning in the classroom with the real situations in the industry. The industrial attachment also can give real experience to the PUO and PSA lecturers before the placement of WBL's students in Mesiniaga Berhad, UEM Edgenta Berhad, Advance Pact Sdn Bhd. Ahmad and Abd Rashid (2011) also supported an improvement in learning and teaching lesson in classrooms where the technical instructors who followed the industrial attachment could elaborate and connect the theoretical with the latest technology in the industry. This is in line with the objectives of the Department of Polytechnic and Community Colleges, which is to produce a knowledgeable technical instructor to enhance their professional and personal competencies, thus producing graduates who can meet the current and future needs of the industry (Training and Career Development Division, 2011). Besides that, the involvement of lecturers in industrial attachment also can help to expand the network of relationships between institutions and industry and give them opportunities to the lecturers to pursue the latest technology in the industry as well as organizing joint ventures in Research and Development (R&D) (Kaser, Brooks & Brooks, 2007).

According to Yusof (2004), the industrial attachment is tough to be carried out by the institution due to the difficulties of finding the right industry following their type of expertise. Wan Sulaiman (2007) and Yusof (2004) added that the duration and place of the industrial attachment contributed to the failure of industrial attachment. However, the results of the researchers' exploration showed different outcomes. Through the WBL approach, PUO and PSA lecturers can do the industrial attachment at Mesiniaga Berhad, UEM Edgenta Berhad, and Advance Pact Sdn Bhd at any time according to the duration and needed by PUO and PSA lecturers.

Besides that, researchers have found that in the third case study, Advance Pact Sdn. Bhd. has organized two technical pieces of training for PSA lecturers to share and transfer the knowledge. The training focuses on hemodialysis and ventilator equipment and lasts for five days to ten PSA lecturers. The module used in this training has recognition from MOHE and gives the Advance Pact Sdn. Bhd. to issue competency certificates to training participants from PSA to enable them to operate the PSA equipment and can be used for promotion. In addition, there is also equipment in PSA that a person can only operate with a competency certificate, so through this training, it can be value-added to the PSA lecturers through collaboration in WBL.

7. Conclusion

Based on the study results, the researchers have found that the sharing and transferring of knowledge happen throughout the collaboration between educational institutions and industry in WBL. This situation may help transfer knowledge from institutions to the industry, and the expertise from the industry can share and transfer their knowledge to the lecturers at the institutions. Industries can also gain new knowledge to structure their curriculum and evaluation for their training center. The lecturers from institutions can place themselves in the industrial attachment in view of gaining new skills and expertise from the industry, then sharing them in their teaching and learning processes with the students. Overall, the researchers have concluded that sharing and transferring of knowledge happen throughout collaborations in the WBL.

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