

TVET agency-industry collaborations: addressing diversity

Abstract

This paper highlights some of the initiatives undertaken by Malaysia in addressing social and economic challenges via TVET programmes in general and through TVET agency – industry collaborative efforts in particular. A brief description of the TVET programmes operated by the various agencies in Malaysia is to be presented, followed by examples of collaboration initiatives undertaken at the various levels of the TVET system. The issues and challenges encountered in their implementations are identified as factors that must be addressed to ensure the sustainability of future TVET collaborations.

1 Introduction

Addressing diversity lies at the core of the Malaysia Education System and was mandated into the National Education Master Plan 2006-2010 to the effect that the development of the Malaysian Education System is to be based on four major spearheads promoting education-for-all. These are namely, access to education, equity in education, quality in education and efficiency and effectiveness in educational management (Ministry of Education 2006). The measures implemented in providing education for all include enforcing the compulsory primary education policy in 2003 (Education Act 1996, 29A, 2006), the fee-free schooling policy begun in 2008, and the provision of a wide choice of programmes to meet the needs of diverse learners.

Technical and vocational education and training (TVET) is a branch of education introduced into the mainstream education system and recently transformed in line with government initiatives designed to promote access, equity, quality of education all ultimately aimed at developing the necessary local workforce in possession of the necessary skills and competences for achieving the high income nation status by 2020 (Mohd Zain 2008). The term TVET as used in Malaysia is synonymous with the term technical and vocational education as frequently used by the United Nations Educational, Scientific and Cultural Organisation (UNESCO). The definition of TVET is similar to the definition of TVE used by UNESCO that refers to “... those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences, and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life.” (UNESCO 2005, 7). According to UNESCO (2005), the aspect that set TVET apart from other forms of education and training has to do with its emphasis on work productivity. In all TVET programmes, emphasis on work productivity is always of central importance and in some cases, is the sole aim of the education and training.

One of the TVET goals in Malaysia is to ensure the learning needs of all its young people and adults are met through equitable access to appropriate learning and life-skills programmes in. This is in line with one of the six goals of Education for All (EFA) within the Dakar Framework for Action that was established at the World Education Forum in Dakar, 2000. The normal academic practice in secondary schools tends to favour learners with high mathematical, verbal and analytical skills and is far less geared to learners with spatial and kinesthetic aptitudes. Hence the availability of TVET programmes in schools provides greater opportunities for diverse learners who would normally have been left behind during secondary education. Focusing on vocation in TVET provides a pathway for those who show a strong inclination towards early vocational pursuits.

2 TVET providers and programmes in Malaysia

In Malaysia, TVET is provided in schools and training institutions by various ministries, such as the Ministry of Education (MoE) ; the Ministry of Higher Education (MoHE) provides TVET in polytechnics and community colleges and in some technical universities; the Ministry of Human Resource provides TVET in skills training institutes; the Ministry of Youth and Sports provides TVET in their National Youth Skills Institutes (Mohd Zain 2008) and lastly the Ministry of Rural and Entrepreneurial Development and the Ministry of Women, Family and Community Development also provides TVET programmes.

Under the above various ministries TVET agencies target different groups of participants and vocational sectors for their TVET programmes but at times they may overlap in their implementations. While TVET programmes provided by the MoE and MoHE focus on further education and training to ensure better career opportunities, TVET programmes run by other ministries lay their major emphasis on workforce productivity. As a result the different agencies under these ministries provide different entry points to TVET access. The Ministry of Youth and Sports, for instance, provides programmes preparing young people with basic TVET skills for their future life also geared to life-long learning so their target group ranges from 18 to 40-year-olds. Notably, most of the participants of these TVET programmes are among unemployed youth. However, the Ministry of Women, Family and Community Development, focuses on programmes providing basic household management and home-science skills to teenagers and single parents. By contrast with the Ministry of Women, Family and Community Development, the programmes under the Ministry of Human Resources is not particularly gender-oriented and aims at preparing trainees to be skilled workers and their target groups consist largely of school leavers.

In summary, there are a number of ministries and agencies providing TVET to meet the diverse needs of the people. As this but a brief paper, only TVET programmes and collaborations undertaken by agencies directly under the MoE and the MoHE come under its scrutiny.

3 TVET under the Malaysian Education System

As TVET is part of the education system in Malaysia, a brief outline of the Malaysian Education system is provided here to provide a better understand of the provisions for TVET under the MoE and MoHE.

3.1 Malaysian Education System

As mentioned above the Malaysian education system is under the purview of two ministries; the MoE - responsible for pre-school, primary and secondary education, and the MoHE responsible for tertiary education. Malaysians receive 12 years of schooling including one year of pre-school, six years of primary school and five years of secondary school as shown in Table 1. Primary education is compulsory for all children under the amended Education Act and its enforcement commenced in 2003 (Education Act 1996, Section 29A).

School pupils are assessed at various times during their education to gauge their educational achievement. In year six primary school pupils, sit the standard examination; the *Ujian Penilaian Sekolah Rendah* (UPSR) which is to assess their educational attainment the six years of primary education. Primary school leavers go on to do three years of lower secondary education before they sit for the next standard examination, the *Penilaian Menengah Rendah* (PMR) in their third year of their secondary education (Table 1). These grades in the PMR are used to assess upper secondary education placement. Under the Malaysian Education System, TVET is offered starting in upper secondary education, at the age of 16 and onwards. In general, the MoE provides TVET programmes in schools whereas the MoHE provides TVET in community colleges, polytechnics and specialised technical universities.

Table 1: The Structure of the Education System in Malaysia

Level	Age	Duration (years)	Standard Examination
Pre school	5+	1	
Primary school	6-12	6	UPSR
Lower secondary school	13-15	3	PMR
Upper secondary school	16-17	2	*SPM
Lower six	18	1	
Upper six	19	1	*STPM
Certificates & Diploma	18-21	2-3	
Tertiary education (MoHE)	20-	4/5 year prog.	

*SPM: Sijil Pelajaran Malaysia ('O' Level equivalent); used for selection towards Diploma programme

*STP: Sijil Tinggi Pelajaran Malaysia ('A' Level equivalent); used in selection towards Degree programmes

Of the total primary school student population, only 77% would enrol for upper secondary education with the remainder not completing 12 years of schooling (MoE 2010). Here TVET stepped in as an element in the government initiatives for increasing participation in upper secondary education.

3.2 TVET programmes

To repeat, TVET programmes are offered by the MoE and the MoHE. Under the existing education system of the MoE, TVET is offered from the commencement of upper secondary education. However, recently a vocational transformation programme was approved giving students the opportunity to enrol in TVET courses earlier. Fifteen secondary schools offered basics vocational education as part of the pilot project in 2012. The vocational transformation programme also involves an introduction of a third stream – a skills stream – at upper secondary education level. Hence, three TVET streams are offered at upper secondary school these are the technical stream, vocational stream and skills stream. Pupils obtaining excellent PMR grades are eligible to enrol in the technical stream programmes. The programmes' aim is to prepare students for further education and in becoming future professionals. Those obtaining good PMR results are permitted to enrol in the vocational stream programmes. These programmes aim to prepare students for further education and to become semi-skilled professionals. Finally, those not suited for the other two streams are to be encouraged to enrol in the skills stream programmes designed to produce a skilled workforce and provide a platform for further skills-training in skills-training institutes.

Based on statistics carried out in 2010, compared to the rest of the world, enrolment in TVET programmes in Malaysia, was relatively low (approximately 15%) whereas the average of countries involved in the Organization of Economic co-operation and Development (OECD) was 44% (Fletcher 2012). This low enrolment is a cause for concern and is at the core of the vocational education transformation programme focusing on increasing TVET enrolment in schools as a means to provide a diversity of learners (as mentioned in a speech given by the Deputy Prime Minister on January 6th 2012 at an event to mark the launching of the vocational education transformation programme). TVET participation in other countries has been associated with greater number of pupils completing their secondary education (Yoo Jeung Joy Nam 2009) and is expected to make a significant contribution to combatting the high drop out rate in Malaysia (MoE 2010). Greater provisions have been made for further vocational education and skills-training pathways.

The vocational education transformation plan has also been undertaken to prepare the necessary workforce to assist in the country's economic transformation plan. Under the vocational transformation programmes, students are exposed to vocational education earlier; starting at year 1 in lower secondary education rather than only at upper secondary school level. The programmes are shown in Table 2. Upon completion of lower secondary TVET education, students can further their studies at vocational colleges run by the MoE, public skills-training institutes run by the other ministries, or at private skills-training institutes.

Table 3: **Structure of vocational education in lower secondary school (5% participation anticipated)**

Year of study	TVET qualifications
Year 3	<input type="checkbox"/> can continue in the course of their choice to obtain the Malaysian Skills certificate level 2
Year 2	<input type="checkbox"/> students can choose to enroll in a specific courses that will enable them to obtain the Malaysian Skills Certificate level 1
Year 1	<input type="checkbox"/> basics of vocational education, for those who did not perform too well in their UPSR

3.3 Vocational colleges

Beginning in 2012, 15 vocational schools took part in a pilot project on vocational colleges. Programmes at vocational colleges are four year programmes offered to students who have completed basic vocational education at lower secondary education. The curriculum consists of a high practical component (70%) combined with a 30% theoretical component. By 2013, all vocational schools are to be transformed into vocational colleges (Utusan online, October 14, 2012). Upon completion of the vocational colleges programmes students are awarded the Skills Certificate Level 4 by the Skill Development Department under the Ministry of Human Resources. They will be awarded the Diploma by the Ministry of Education. Successful graduates will also receive certification from the relevant industries. Such multiple recognition provides the graduates with better job prospects. Those wishing to further their studies, may enrol in higher TVET institutions under the various ministries as well as private TVET higher institutions.

4 TVET under the MoHE

TVET programmes under the MoHE are offered in technical universities, polytechnics and community colleges. Graduates from these programmes are awarded Degrees, Advanced Diplomas and Diplomas related to the various disciplines. A summary of the TVET programmes and related awards under the MoHE and the MoE are shown in Table 3. To enhance post-secondary TVET the Polytechnic Transformation Plan was undertaken in 2010 (MoHE 2010). Here greater opportunities for pursuing higher education in TVET was created by establishing three premier polytechnics with the mandate of offering Advanced Diploma programmes in the related disciplines.

Table 5: **TVET programmes and related awards under the Malaysian Education system**

Ministry	Institutions	TVET programmes / awards
MoHE	<input type="checkbox"/> Technical universities	<input type="checkbox"/> 4- 5 year programmes / Degree <input type="checkbox"/> 3 year programmes / Diploma
	<input type="checkbox"/> Community colleges	<input type="checkbox"/> Modular programmes / <i>Sijil Kolej Komuniti & Sijil Modular Kebangsaan</i>
	<input type="checkbox"/> Polytechnics	<input type="checkbox"/> 3 – 4 year programmes / Diploma & Advanced Diploma
MoE	<input type="checkbox"/> Vocational colleges	<input type="checkbox"/> Diploma programmes (National Skills Certificate Level 4)
	<input type="checkbox"/> Vocational schools	<input type="checkbox"/> Vocational streams (National Skills Certificate 1 & 2) <input type="checkbox"/> Malaysian Vocational Skills Certificate)
	<input type="checkbox"/> Technical schools	<input type="checkbox"/> Technical streams (SPM)
	<input type="checkbox"/> Mainstream schools	<input type="checkbox"/> Basics vocational education (National Skills Certificate 1&2)

5 Collaboration initiatives undertaken at the various levels of the TVET system

Collaboration initiatives are taken on by TVET agencies for various reasons. Of the most emphasized collaboration objectives feature; the improvement of research capacities and commercialization potentials (as undertaken by TVET institutions under the MoHE), the improvement of technical skills, to reduce demand and supply mismatch, the enhancing of employability skills, and the promotion of knowledge transfer between institutions and the community. The TVET agency-industry collaborations discussed in this paper are limited to those taken on by agencies under the two ministries responsible for education in Malaysia (i.e. the MoE and the MoHE). Table 4 provides a brief summary of some of the established collaboration programmes taking place involving institutions under the two ministries.

Table 7: **TVET agency-industry collaborative efforts**

Ministry	Institutions	Collaboration initiatives
MoHE	Technical Universities	<input type="checkbox"/> Industry PhD <input type="checkbox"/> Research , innovations and commercialization
		<input type="checkbox"/> Industrial Training
	Polytechnics	<input type="checkbox"/> Internships programmes for students (industrial trainings), <input type="checkbox"/> Industrial attachment for lecturers <input type="checkbox"/> Guest lectureships
	Community colleges	<input type="checkbox"/> Work-Based learning
MoE	Vocational Colleges	<input type="checkbox"/> Traineeship programmes
	Vocational Schools	<input type="checkbox"/> Basics of financial management
	Mainstream schools	<input type="checkbox"/> Traineeship programmes

5.1 Industry PhD

The industry PhD programme launched in 2010 is a collaboration programme agreed between the MoHE and industry. It is part of the existing MyBrain15 programme targeting 60,000 PhD holders by 2023 (MoHE 2011). The Industry PhD programme has invited professionals from industry to take on industry-based research to promote innovations leading to increased competitiveness of Malaysia. The programme has been offered in full-time registration mode only. Five hundred Industry PhD grants are allocated in total with 100 participations targeted for 2011 (MoHE 2011). For each industry PhD candidate, a maximum of RM 50,000.00 has been allocated by the MoHE for supervision, tuition, training, examination, and thesis fees. Expenses for research activities are expected to be provided by the participating industry. In 2011, 97 industry PhD applications were approved, which good for the starting programme with the 2011 target set at only 100 PhDs.

Success in the implementation of the programme required a number of players; a university representative, human resource personnel from industry, industry staff to undertake the PhD research and a MoHE representative. Thus, a memorandum of understanding was signed between the participating industry and the university to confirm both parties' commitment in the collaboration.

The quick response by the universities in preparing the implementations of the Industry PhD programmes guidelines was vastly helpful in expediting the process of the Industry PhD application. Roles taken on by industry and university for the industry PhD implementations have been specified in the university guidelines. Each PhD candidate is supervised by at least two supervisors, one from the industry where the candidate works and one from the Univer-

sity at which the candidate is registered. The associated industry takes responsibility for identifying the industry supervisor and the university for issuing the appointment letter. Research topics are suggested by the industry concerned for the research to be carried out must be in their business area. The industry supervisor oversees the research as it is carried out in industry. The university supervisor has to meet the PhD candidate for supervision at the workplace as well as in the university as agreed in a schedule acceptable to both industry and university. The industry is responsible for providing research materials and equipment for the candidate. Assessment of research progress is the responsibility of both supervisors in ensuring the research work undertaken is meeting the needs of the industry and satisfying the requirements of the associated doctoral degree. In other words, the University is responsible for ensuring the quality of the candidate's research meets the doctoral requirements while the industry is responsible for ensuring their own industry needs are met. The cost of the industry PhD is taken on by the Ministry of Higher Education allocating a maximum of RM 50,000 per candidate for tuition, training, examination, and thesis fees while the industry provides research materials and equipment. Within the university itself, the roles of different departments such as the postgraduate centre and faculties are spelled out carefully to ensure the programme's smooth implementation. Further details on the implementation mechanism can be gleaned from the guidelines of two universities, the Universiti Tun Hussein Onn Malaysia (available at <http://ps.uthm.edu.my/v1/downloads/Upload/koleksiphdindustri.pdf>) and the Universiti Teknologi Malaysia (available at http://www.sps.utm.my/phdindustri/Slide_PhD_Industri.pdf).

As it is a new initiative, those implementing the industry PhD face some novel challenges. The challenges identified during implementation that need to be addressed concern industry commitment and readiness of participants. Informal discussions revealed candidates saying they were often called upon to take on added responsibilities not directly related to their PhD programme, duties they felt undermined their capacity to focus on their target research project. This is possibly caused by is a lack of appreciations among employers of the great commitment candidates must dedicate to completing their planned research projects. The problem can be alleviated, to a degree, if universities obtain a better understanding of the working of the industry they are dealing so they could assist their PhD candidate in deciding what are viable and win-win research projects. There was concern by a low number of applicants for programmes that to be improved by better promotional exercises to industries and improved networking between academia and industries to create a better understanding of each other's needs and how they can be met through the industry PhD programmes.

According to Lukas and Andrews (n.d.) the successful implementation of any collaboration can be condensed into four key factors: *clarify the purpose; let form follow function, involve the right people and get it in writing*. Based on these key factors, three key factors apply to industry PhD programme success: *documented facilitative mechanism* (get it in writing), *common understanding and acceptance of what constitute an industry PhD* (clarity of purpose) and *industry-wise university supervisors* (involve the right people).

Documentation of the facilitative mechanism such as on-site supervision by industry supervisors and visits by university supervisors are essential. Emphasizing on-site supervision rather than “at-university supervision” ensures the candidate is not away from his workstation often. Ordinary PhD students are expected to see their supervisors frequently, sometimes once a week at the early stage of their candidature. This is certainly not beneficial to an industry PhD candidate as frequent absence usually delays their research progress. The documentation will facilitate ease of movement by university supervisors. *Common understanding and acceptance of what constitute an industry PhD* will result in a more committed industry. Committed industry is highly crucial as it ensures necessary support is given to the candidate and promotes focus on the research at hand. High commitment results in the necessary materials and equipment being made available at the right time, in the right quantity and quality without the burden of lengthy red tape procedures. Committed industry minimizes unrelated work assignments that could distract the candidate from their research. Lastly, *industry-wise university supervisor* is a key factor in the successful implementation of the industry PhD. The industry-wise university supervisor can be seen as the “bridge” in the industry-university working relationship. The supervisor is in the position to strike a balance between the requirements of the doctoral degree award and industry needs and ensure the candidate is not torn between the two as the meeting point in the industry needs and doctoral requirements may have to be negotiated sometimes. Supervisors failing to see the “other side” and insist on their University requirements may be only jeopardizing the candidate’s success . The industry-wise university supervisors importance here is crucial. Finally, although important, the key factors alone do not necessarily guarantee successful completion of the industry PhD as other factors may be in play. Moreover, these factors only apply under the assumption that the candidate is willing to commit and able to carry out research work.

5.2 Research, innovations and commercialization

Optimizing research capabilities is one of the goals of collaborations in the higher education sector. Thus, the collaborators here are mainly institutions of higher learning with some participation from research institutions and industries. In the institution-institution collaboration, sharing of resources such as research equipment and expertise are prevalent. A typical collaboration is a research project undertaken by technical experts of two or three universities. Recently, industry participation has been greatly encouraged in any research projects undertaken by universities. In the case of the Malaysian Technical Universities Network Centre of Excellence grant scheme (MTUN CoE Research Grant scheme), for instance, each proposal for the application of a grant must include collaborators from industries as well as the institutional collaborators. The institution-industry collaborations are expected to enhance research capabilities on both sides, improve productivity and increase commercialization potentials of products generated from the research projects.

In other words, while institution-institution collaboration generally aims at increasing knowledge and human capital development, while institution-industry collaboration has additional goals; increasing intellectual property rights, promoting problem-solving in industries to

increase productivity and to increase the commercialization potentials of university research products.

To promote institution-industry collaboration, organizational support is provided via centre for research and centre for university-industry relations. As a consequence, many memorandums of understanding have been signed between institutions and industry as an indicator of willingness to collaborate although an equal number of activities has not actually materialized. In general, the institution-institution collaboration was found to be more successful compared to the institution industry collaborations. Several factors have been highlighted that contribute to the less prevalent occurrence of institution-industry collaborations on research and innovations but one in particular has cropped up most significantly; the mismatch of emphasis – this occurs as universities emphasize on knowledge acquisition and human capital development while industries tend to emphasize more on profit taking. A study may be necessary to find better ways of improving the success of this mode of collaborations.

5.3 Industrial training and internships for students

Industrial training is a collaboration between institutions of higher learning and industries which permits students to be attached to industries. This training is part of the pre-employment skills development process (using the three pillars skills development framework in Yoo Jeung Joy Nam 2009). All technical programmes undergraduates in universities and polytechnics have to undergo 3-6 months of industrial trainings in industries. To support the industrial training programmes, a large industry is a necessity. In 2010 alone, for example, 5000 companies were involved in the training of 7800 community college students. For the time they are occupied in industries, the industries are expected to provide them with suitable tasks preparing them for work as well as future learning. The outcomes anticipated are improved technical skills and soft skills.

The success in supporting learning experience of these collaborations depends highly on suitable matches between the students' field of studies and the industry field. Students tend to prefer living near their home during the industrial attachment period to reduce living costs but suitable industries may not be available at these locations. Some industries are reluctant to give challenging work to trainees resulting in students being “undertrained” technically and socially. Institutions too are facing a challenge in finding suitable industries.

In general the programmes have been rather successful as the number of students securing work after graduations as a result of their trainings are quite high. Students returning to universities or polytechnics after the industrial trainings often feel more confident in their ability to learn and undertake vocational-related tasks. Students feel industrial training provides them with the “reality experience” they can link to the theoretical knowledge that Universities or polytechnics exposed them to. Research indicates these industrial trainings do actually improve students' soft skills as expected (Osman et al. 2008).

5.4 Work-Based learning programmes

Work-based learning programmes were first introduced in 2007 in four community colleges under the MoE, via four programmes; hotel and catering, electrical technology, computer technology and automotive technology. Four industry sectors participated in the programmes: automotive, electrical electronics, computer technology and the hotel and catering sector. The main aim of the programme was to enhance employability potential of graduates by promoting their soft skills, technical and vocational skills. The WBL curriculum were co-developed by the colleges and related industries.

The programmes were found to be successful in terms of developing students' soft skills related to creative and critical thinking (Alias & Abd Hadi 2011) as well as knowledge (Kamin, Cartledge & Simkin 2010) and problem-solving skills (Wan Mohamed & Omar 2010). In addition to the WBL benefits to students', Kamin, Cartledge & Simkin (2010) it was found there were other benefits such as improved facilities through industry donations and teachers' knowledge and skills improvement. Despite its potential benefits, the WBL faces several hurdles in terms of students' logistics. Sadly, the WBL programmes were kept on hold in 2010 due to the change of stewardship when the MoE was split up into two ministries the MoE and the MoHE 2010. This involved the restructuring of existing management at the existing colleges by the MoHE where they had been run previously by the MoE.

Due to their past success, WBL programmes are to be resumed in 2013 (Md. Noor 2013). However, past implementations have highlighted areas that need to be looked into to increase the WBL success potential. Among these, the most urgent relates to the welfare of the individual trainees who face many logistical challenges during the WBL phase of their training. These difficulties can be resolved through better management of work placements as suggested by Kamin, Cartledge & Simkin (2010).

5.5 Traineeship programmes

Traineeship programmes representing school-industry collaboration were introduced into the vocational education system in 2012 and offered to those interested with parental consent. The programmes involve upper secondary school students to work in industry two days a week as part of their pre-skills development process. These traineeship programmes are only offered to students in the skills stream. Several initiatives have been taken by the MoE and the individual school to ensure traineeship programme success. The MoE signed a memorandum of understanding with Shell Malaysia, for instance, in which Shell Malaysia contributes US\$32,000 annually over a period of five years to provide students with specialist welding training (Cicerello 2012). In another successful example, an individual school, namely the Kluang Vocational College, signed an agreement with Liebherr Appliances Sdn Bhd in Kluang to provide job training for the college students. As well as providing workshop facilities, training materials and products, the company is also adopting the college as a centre of excellence for training its workers (Bahari 2012). According to the principal of the college Bahari, the company is committed to the extent by which it is prepared to make jobs available to the college graduates in 2015.

Despite some success stories, hurdles are still to be overcome in implementing the traineeship programmes. First and foremost, decisions by the host industry to take in trainees from schools and colleges have to be based upon a consensus agreed upon between school, industry and parents. Challenges arise here from the lack of working policies in guiding the implementation of the traineeships. Hence, industry feels quite apprehensive in taking on these very young trainees (some can be as young as 14) into their workplace. Some industries are reluctant to accept students that have yet to become skilled. Thus, to invite better participation from industries, the government has improved the Human Resource Development Fund given to participating industries in which industry can claim up to 100% of training related expenditure (Lembaga Pembangunan Pelaburan Malaysia 2012).

5.6 Basics of financial management

Some knowledge of financial management is vital to ensure students can manage their financial needs when they secure employment. To prepare students for real working life, it is imperative they are exposed to financial management issues. Aware of this need, the MoE is collaborating with the Employee Provident Fund to raise awareness among vocational school students of the employees' and employers' rights and responsibilities. These programmes which will be officially launched next January in 15 vocational colleges and have been designed to educate future Malaysian workers on the importance of financial planning post-retirement even before entering the world of work (New Straits Times 2012).

6 Conclusion

Collaborations between TVET agencies and industries are occurring at various levels of the education sector in Malaysia and pre-employment skills-development forms the main collaboration objective across all levels of education while research and innovation serve as a second main objective in the higher TVET sectors. Benefits are observed on both sides although there are issues to contend with of various forms. Issues relating to the sustainability of the collaboration initiatives are mainly the continuity of governance, a better understanding of multiple collaborators' needs and ensuring commitment in collaborative programmes. Despite the challenges facing collaboration efforts, ensuring successful working collaboration is vital as they are essential for meeting the diverse needs of the education and industry sectors. Successful collaboration can be achieved with the right environment and supportive organizational structure; a win-win partnership towards mutual benefits for both sides and the right people prepared to undertake new responsibilities collaborations so often require. It is these factors that call out for attention in ensuring future collaborative undertakings.

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