KEMENTERIAN PENDIDIKAN MALAYSIA

POLITEKNIK MALAYSIA

MALAYSIAN POLYTECHNIC STANDARDS

46 Years of TVET Legacy and Excellence

MALAYSIAN POLYTECHNIC STANDARDS

46 Years of TVET Legacy and Excellence

First Edition

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MyPOLYStandards
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Foreword

Director General
Department of Polytechnic Education

Director General
Department of Polytechnic Education

Since its establishment in 1969, the Polytechnic has pioneered the Technical and Vocational Education and Training (TVET) by its graduates fulfilling the nation's high skilled workforce demand. In line with the Polytechnic Transformation Programme launched in 2010, various initiatives has been implemented towards providing quality, relevant and responsive polytechnic education that fulfils the challenges of globalization as well as meeting the needs of the nation's high-income economy.

In performing its functions, the Polytechnic has instituted a system that encompasses strategic management and development of its programmes and institutions, research, teaching and learning, programme assessment and award, student development and continuous staff development based on industry demand. This Malaysia Polytechnic Standards document is meant to be as a reference to all Polytechnics under the purview of Ministry of Education Malaysia. It may also be shared as a reference to other TVET institutions.

The consolidation efforts of the Polytechnics have shown comprehensive improvement in quality, resulting in three polytechnics acquiring gold medal in institutional accreditation awarded by the Asia Pacific Accreditation and Certification Commission in 2014. This recognition has encouraged the polytechnic to pursue for other international accreditations. The development of this document has been benchmarked with other such standards for example the Accreditation Board for Engineering and Technology, EduTrust Singapore and Dublin Accord. I have complete confidence that by adopting the Malaysia Polytechnic Standards, the polytechnics will achieve greater heights in playing its role effectively.

DATUK HAJI MOHLIS BIN JAAFAR

PREFACE

The Malaysian Polytechnic Standards, or *MyPOLYStandards* Initiative by the Department of Polytechnic Education (DPE), Ministry of Education (MOE), Malaysia sets out to develop education and training standards for the Malaysian polytechnics as part of the national Technical and Vocational Education and Training (TVET) sector. TVET in Malaysia has a role to provide and support the human resources required for Malaysia's economic endeavours. This includes a requirement to be capable of continuously building human capital by encouraging the acquisition of knowledge and skills, and emphasizing creativity and imagination in the light of very strong international competition.

MyPOLYStandards, is a provision-based and competency-based professional standards which provide a consistent and clear understanding of what polytechnics should provide in terms of institutional and programme infrastructures (the provisions); and what polytechnic students are expected to learn and achieved the learning outcomes (the competencies), so that all stakeholders' needs and requirements for wholesomeness, high quality and relevancy of TVET are addressed. The standards are formulated in two parts: the institutional and programme infrastructure domain, which constitutes Part One: General Standards for Polytechnic; and the contents domain, which constitutes Part Two: Competency Standards for Polytechnic Graduates of *MyPOLYStandards*. The standards are designed to be broad yet robust and relevant to the real world, reflecting the programme design and development infrastructures to be provided, and knowledge, skills, attitudes and abilities that students need for success in work and in life. With the polytechnics and their students fully geared and prepared for the future, Malaysia will be best positioned to compete successfully in the global economy. Building on 46 years of TVET experience and an excellent foundation of TVET provisions by the DPE, MOE, *MyPOLYStandards* is the first step towards a wholesome, high quality and relevant education and training. With *MyPOLYStandards*, it should be comprehensible to all polytechnic staff, students and stakeholders, the standards for institutional and programme infrastructures; and the contents in every polytechnic provision.

In Part One: General Standards for Polytechnic consist of eight (8) general criteria covering Governance, Leadership and Administration; Teaching and Learning; Facilities and Resources; Management Of Human Resource; Student Selection and Support Services; Collaboration and Linkages; Research and Development, Consultancy and Commercialization; And Quality Assurance and Continual Quality Improvement. Each of these criterion has a set of standards and may have sub-standards. There are seventeen (17) standards altogether in the general criteria.

In Part Two: Competency Standards for Polytechnic Graduates are statements of attainment to measure accomplishments in specific abilities, particularly in the form of knowledge, skills, attitudes and abilities in the workplace that graduates should acquire from their respective programmes at the polytechnics. Competency standards form an integral part of and embedded in the polytechnic curriculum and enable comparisons of performance that may be taken as the basis for evaluation and assessment of competencies. To date, sixty-two (62) competency standards have been developed based on the specific polytechnic programmes of study on offer.

As a basic requirement, the polytechnics will have to meet all the standards in *MyPOLYStandards*.

References are given to provide the source of information of any associated information used. Notes may also been included to further elaborate on the specific requirements stated or provide definitions to assist the polytechnics to understand the intent of the standards.

Where government agencies are referred to in this document, it means relevant Malaysian government agencies which have jurisdiction over the intent of the stated requirements.

MyPOLYStandards Initiative is a national-led effort by DPE, MOE. The process used to formulate the standards ensured they were informed by the best available criteria, standards and best practices, and by the highest, most effective models in current TVET provisions; and the experience of polytechnic's policy-makers, administrators, academicians, lecturers and content experts via a series of workshops and consultations from local and foreign experts. Benchmarking and mapping against related international standards were also executed to ensure that the document is relevant and reliable, and ready to be used as a reference for any articulation initiatives with local and international professional bodies.

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THE MALAYSIAN POLYTECHNIC STANDARDS (MyPOLYStandards) INITIATIVE

Introduction

The Malaysian Polytechnic Standards or MyPOLYStandards is an initiative by the Department of Polytechnic Education (DPE), Ministry of Education (MOE), Malaysia. This initiative sets out to develop education and training standards for the Technical and Vocational Education and Training (TVET) sector in Malaysia.

The role of TVET is to provide and support human resources required for Malaysia's economic endeavours with an aspiration to become a fully developed country by the year 2020. This includes a requirement to be capable of continually building human capital by encouraging the acquisition of technical knowledge and skills, and emphasising on creative and critical thinking, in the light of very strong international competition. As depicted in Figure 1.1, the polytechnic is the largest TVET provider in Malaysia (Malaysia, 2015; BCG, 2011), and as such, DPE is the leader in TVET provisions.

Investments in the development of human capital through TVET will ensure the nation's success in the global knowledge-based economy of the 21st Century (UNESCO, 2012). As such, there has been increased awareness, as well as some consensus in Malaysia today for TVET to be repositioned at the centre stage of the national education system (Malaysia, 2015; BCG, 2011; Malaysia, 2011).

TVET Definition

TVET is defined as "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 occupation in various sectors of economic life" (UNESCO, 2011, p4). Hence, TVET equips learners not only with technical and vocational skills and competencies, but also with a broad range of knowledge, skills, attitudes and abilities that are indispensable for meaningful participation in the workplace and society such as self-confidence, interpersonal, citizenship, communication and entrepreneurial skills, and strengthen interpersonal, citizenship, communication and entrepreneurial skills. As such, the nature and context of TVET provisions (refer to MyPOLYStandards Conceptual Framework) should be enhanced to play a major role as an integral part of the national education and training system with equal importance and status to the general stream within secondary and tertiary levels. TVET can play a key role in ensuring equality of opportunity, poverty reduction, in remedying school failure and in contributing to cultural, economic and social development (UNESCO, 2012).

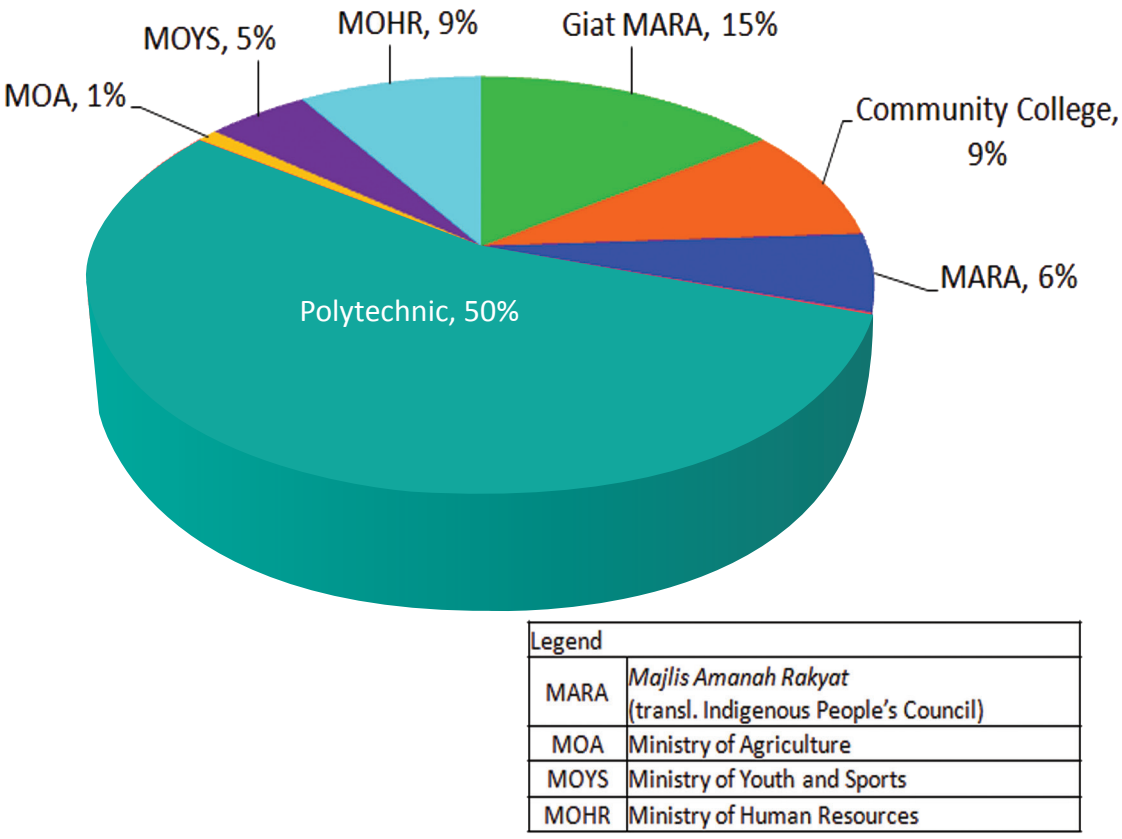


Figure 1.1: Malaysia: TVET Graduates by Providers
Source: Boston Consulting Group (2011) Rationalizing The Implementation of Technical Education and Vocational Training (TEVT).

The Evolution, Expansion and Challenges for TVET in Malaysia

TVET in Malaysia began as early as in 1906 with the establishment of the `Treacher Technical School' by the Public Works Department (MOE, TED, 1999), but was placed under the purview of the Education Department from 1925 onwards. In 1926, three more `trade schools' were built. The Razak Report on Education in 1956 while expanding TVET, also stratified it into three levels:

a) Trade Schools: for primary school leavers, consisting of a two-year skills training;
b) Technical Schools: for those who have completed middle secondary schooling; and
c) Technical Colleges: for those who have completed secondary schooling.

Further expansion of TVET came as a result of the Rahman Talib Committee Report in 1960 and in 1969, the first polytechnic in Malaysia (Ungku Omar Polytechnic) was established. Since then, many other public players (MOHR, MORD, MOYS) came into existence. Under the new University and University College Act, 1971, Institut Teknologi Kebangsaan was

established in 1972, providing the groundwork towards Malaysia's first technical university, Universiti Teknologi Malaysia in 1975. At the turn of the millenium, the Government set up four new university colleges namely: KUTKM (2000), KUiTHO (2000), KUKUM (2001) and KUKTEM (2002) - under an effort to vocationalise tertiary education. These university colleges were later upgraded to full university status, and are now respectively known as UTeM, UTHM, UniMAP and UMP, under the Malaysian Technical University Network (MTUN).

Private sector TVET in Malaysia has also evolved over the years and expanded immensely in the 1980s when the Malaysian economy was booming through industrialisation. Some of its pioneer players such as Stamford College Kuala Lumpur (established in 1952); and Taylor's College (established in 1969, now Taylor's University) are still going strong today and are leaders of the private sector TVET.

Hence, TVET in Malaysia has escalated in importance and expanded immensely over the last century. It currently comprises a plethora of formal, non-formal and informal learning for the world of work and for life. Young people, women and men acquiring knowledge, skills and competencies from basic to advanced levels across a wide range of institutional and work settings and in diverse socio-economic contexts.

However, on top of the escalated importance and the resulting expansion of TVET in Malaysia, socio-demographic changes; school-dropouts; growing youth and graduate unemployment; programmes mismatch; quality issues of provisions; access and equity for marginalized groups; persistent and widening inequalities including the invasion of foreign workers; the increased interdependency of all countries in a context of intensified economic integration (e.g. the advent of ASEAN 2015); pressures on natural resources and associated climate change; the New Economic Model (NEM), National Transformation Plans, and national aspirations; natural disasters; financial crises; as well as the pace of development of new information and communication technologies and the consequent production and circulation of knowledge, all pose important challenges to TVET provisions. These challenges are reflected in the MyPOLYStandards Conceptual Framework (Figure 1.2).

As such, there is a growing need to re-position the nature and roles of TVET in Malaysia in contributing to more equitable and sustainable patterns of human development. The relevance of current practices of, and approaches to TVET in an increasingly complex, interdependent and unpredictable world needed to be examined. TVET should shift its focus from the short-term to longer-term development needs of Malaysia, from a mere expansion of the TVET system to its transformation, and from just contributing to economic growth to an added concern for social equity and inclusion, in order to be more relevant.

Referring to the above mentioned issues and challenges faced by TVET, mere scaling up and expanding existing TVET provisions in Malaysia to increase access may not suffice. Profound transformations are needed in the conceptualisation, governance, funding and organisation of TVET. A pragmatic solution to transform TVET in Malaysia in an integrated manner, through policies, infrastructures and practices that are capable of responding effectively to the many economic, equity and transformational challenges is to set high standards for TVET and to formalize it. The attainment of high standards for TVET is expected

to produce high quality graduates (refer to MyPOLYStandards Conceptual Framework). Over the years, while there are many TVET players and providers in Malaysia, a set of formalized TVET standards has yet to be produced. Without a set of formalized standards, any provider could provide a sub-standard, below quality TVET to unsuspecting clients. Hence, this initiative to create and bring forth a set of Malaysian polytechnic standards, or MyPOLYStandards, by the DPE, MOE is very commendable and which will lead to positive, wholesome, high quality and relevant TVET provisions in Malaysia.

A set of Malaysian polytechnic standards, or MyPOLYStandards will be able to:

- provide polytechnics with a common understanding of what a wholesome, high quality and relevant TVET provisions should be;
- provide polytechnic students and stakeholders with a common understanding of required knowledge, skills, attitudes and abilities that students should attain in order to be successful in their professional career and life;
- provide clear, understandable and consistent polytechnic standards with appropriate benchmarks for all polytechnics, TVET providers, students, and stakeholders;
- align polytechnics, TVET providers, and students with work, life and stakeholders expectations;
- ensure polytechnic provisions with high quality, rigorous contents and the application of knowledge, skills, attitudes and abilities through high-order thinking skills;
- provide a framework for continuous improvement of the polytechnic system – to be wholesome, of high quality, relevant and contemporary – since the nature of polytechnic provisions will always be dynamically changing and correspondingly upgraded;
- ensure the polytechnic system is kept abreast with development in new areas / technology / frontier, in line with the national policies;
- cater to an important sector of education and training, that is, semi-professional sectors (technologist, commerce, service providers, entrepreneurs, et cetera);
- establish minimum standards and best practices by the highest, most effective models for the respective TVET areas/programmes;
- elevate polytechnics' stature and raise confidence with its high standards and appeal
- assist in identifying career pathways for the respective TVET areas/programmes

Hence, MyPOLYStandards is realistic and practical for all polytechnics and TVET stakeholders in Malaysia.

MyPOLYStandards Initiative Mission Statement

MyPOLYStandards, is a provision-based and competency-based professional standards which provide a consistent and clear understanding of what polytechnics should provide in terms of institutional and programme infrastructures (the provisions); and what polytechnic students are expected to learn and achieve on the learning outcomes (the competencies), so that all stakeholders' needs and requirements for wholesomeness, high quality and relevancy of TVET are addressed. The standards are formulated in two parts: the institutional and programme infrastructure domain, which constitutes Part One: General Standards for Polytechnic; and the contents domain, which constitutes Part Two: Competency Standards for Polytechnic Graduates of MyPOLYStandards. The standards are designed to be broad yet robust and relevant to the real world, reflecting the programme

design and development infrastructures to be provided; and the knowledge, skills, attitudes and abilities (which constitute competencies) that students need to succeed in work and life. When polytechnics and their students are fully geared and prepared for the future, Malaysia will be best positioned to compete successfully in the global economy. Building on 46 years of TVET experience and an excellent foundation of TVET provisions by the DPE, MOE, MyPOLYStandards is the initial stage of producing a wholesome, high quality and relevant education and training. With MyPOLYStandards, it should be comprehensible to all polytechnic staff, students and stakeholders, the standards for institutional and programme infrastructures; and the contents in every polytechnic provision.

In Part One: General Standards for Polytechnic consists of eight (8) general criteria covering Governance, Leadership and Administration; Teaching and Learning; Facilities and Resources; Management of Human Resource; Student Selection and Support Services; Collaboration and Linkages; Research and Development, Consultancy and Commercialization; and Quality Assurance and Continual Quality Improvement. Each of these criteria has a set of standards and may have sub-standards. There are seventeen (17) standards altogether in the general criteria.

In Part Two: Competency Standards for Polytechnic Graduates are statements of attainment to measure accomplishments in specific abilities, particularly in the form of knowledge, skills, attitudes and abilities in the workplace that graduates should acquire from their respective programmes at the polytechnics. Competency standards form an integral part which is embedded in the polytechnic curriculum and enable comparisons of performance that may be taken as the basis for evaluation and assessment of competencies. To date, sixty-two (62) competency standards have been developed based on the specific polytechnic programmes of study on offer.

In order to facilitate the understanding of the MyPOLYStandards Part One: General Standards for Polytechnic, the document is presented in the following format:

1) Preamble – an introductory statement that explains the purpose and underlying philosophy of the specific standards (gives an overview of the specific standards).
2) Objective – spells out the outcome that needs to be achieved within a given timeframe with available resources. This serves as a basis for creating policies and procedures.
3) Requirements – specify the requirements, constraints, parameters or benchmarks that must be met or satisfied. Generally, the polytechnics are expected to document their operations into policies, systems, processes and procedures (wherever applicable) in accordance to the clause to assist them in ensuring quality services.
4) Evidence – serves as a guide to support the claims of meeting the specific requirements stated.

Competency Standards for Polytechnic Graduates are well-explained and detailed in Part Two of the document.

Hence, MyPOLYStandards is a clear set of criteria for TVET institutional and programme infrastructures provisions, with shared goals and expectations for the knowledge, skills,

attitudes and abilities that will help polytechnic students succeed. MyPOLYStandards does not dictate how educators should teach. Local educators and administrators will decide and strategise on how the objectives of MyPOLYStandards are to be met. Educators will continue to devise lesson plans and tailor instructions to the individual needs of the students in their classrooms. In fact, MyPOLYStandards guides educators toward curricula and teaching strategies that will give students a deep understanding of the subject and the skills, attitudes and abilities they need to apply their knowledge.

The MyPOLYStandards Initiative is a national-led effort by DPE, MOE. The process used to formulate the standards ensured that it was informed by the best available criteria, standards and best practices, and by the highest, most effective models in current TVET provisions; and the experience of polytechnic's policy-makers, administrators, academicians, lecturers and content experts via a series of workshops and consultations with local and foreign experts. Benchmarking and mapping against related international standards were also executed to ensure that the document is relevant and reliable, and ready to be used as a reference for any articulation initiatives with local and international professional bodies.

MyPOLYStandards Conceptual Framework

Figure 1.2: MyPOLYStandards Conceptual Framework

It was argued earlier that the nature and context of TVET provisions should be enhanced, and the need to re-position TVET to play a major role as an integral part of the national education and training system with equal importance and status to the general stream within secondary and tertiary levels. Hence, Figure 1.2 presents the conceptual framework of MyPOLYStandards. The innermost circle depicts the ultimate outcome / output of MyPOLYStandards: quality graduates, that are highly competent and can help increase the nation's productivity to compete in the global market. The four outermost arrows represent the challenges faced by the TVET sector in Malaysia, namely: global demands, stakeholders' expectations, excess of TVET providers, and policies and requirements of governing and regulatory bodies.

To address these challenges, MyPOLYStandards has outlined eight (8) criteria of excellence as depicted in the second circle from the epicentre in Figure 1.2: Criterion 1: Governance, Leadership and Administration, 2: Teaching and Learning, 3: Facilities and Resources, 4: Management of Human Resources, 5: Student Selection and Support Services, 6: Collaboration and Linkages, 7: Research and Development, Consultancy and Commercialization 8: Quality Assurance and Continual Quality Improvement. From these criteria, seventeen (17) standards are proposed as a guide towards achieving overall excellence in the polytechnic and other TVET institutions. The standards, as presented in the third layer from the epicentre of Figure 1.2, were developed by aligning the current ecosystem of the polytechnic with other international standards, in order to generate a quality management system for the polytechnic.

MALAYSIAN POLYTECHNIC STANDARDS

MyPOLYStandards

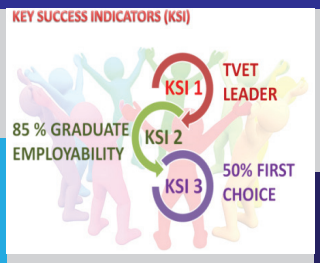
PART ONE

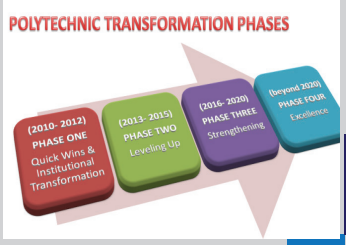
GENERAL STANDARDS FOR POLYTECHNIC

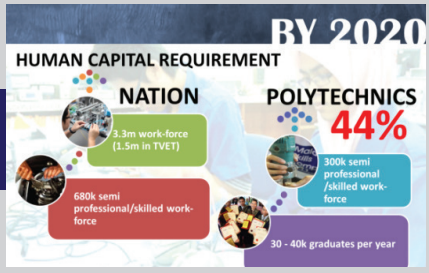
Criterion 1

GOVERNANCE, LEADERSHIP AND ADMINISTRATION

Objective: Governance, leadership and administration set the best standards to ensure an efficient delivery system that incorporates planning, organizing, leading and controlling tangible and intangible resources in the organization.







CRITERION 1 | GOVERNANCE, LEADERSHIP AND ADMINISTRATION

Governance is concerned with the structure and system of control that enable the stakeholders of the organisation to hold its director, executives and managers accountable.

Leadership provides the direction for future endeavours that could impact the performance of the organisation.

Administration is managing the day to day operation of the organisation.

Standard 1: Governance and Leadership

Preamble

Good governance is an essential factor in the successful steering and management of operations, developments and implementations in the polytechnic. While leadership and administration may differ between the polytechnics, governance that emphasizes excellence and scholarship is vital for achieving the vision and mission of the polytechnic.

Objective

This standard identifies the requirements for the polytechnic to set up a governance and leadership system to achieve its vision and spell out the roles, functions, responsibilities and policies to ensure that its mission is met.

Standards Requirements and Evidences

Standard 1.1 Governance

1.1.1 The vision and mission statements of the polytechnic and all of its programmes educational goals shall reflect the crucial elements of the processes and outcomes of TVET that are in line with the national and global expansions.

1.1.2 The polytechnic shall adopt the principles of transparency, accountability and authority to ensure good governance practices.

1.1.3 The polytechnic shall clearly define the roles, functions and structures of its governance in policy development and decision-making.

1.1.4 The polytechnic shall ensure functional integration and comparability of educational quality across all of its academic constituencies, departments and programmes.

1.1.5 The polytechnic shall establish governance entities based on representation and participation of all stakeholders with an adequate degree of autonomy.

To realize this standard, the polytechnic shall have

- Written vision and mission of the polytechnic governance which are clearly communicated to its internal and external stakeholders (such as the managements, administrators, staff, students, parents, industries, employers, scholarship and sponsorship bodies)
- Strategic plans to achieve the polytechnic's vision and mission
- A clear organizational structure indicating the relationships within them for decision-making entities
- A decision-making body which formulates policies pertaining to the polytechnic governance and administration
- An academic advising committee/relevant bodies/key academic staff including other stakeholders which are involved in the decision-making pertaining to academic matters (curriculum design/implementation, grading system, supervision of teaching and learning process, et cetera.)
- An administrative committee/relevant bodies who are involved in the decision-making, designed to support its academic programmes
- Written policies outlining governance roles and responsibilities of administration and academic staff including official government orders and circulars; quality management and other similar documents, readily made available to the polytechnic community (administrators, governing board members, academic staff, non-academic staff, parents, and students)
- The mechanisms and processes to facilitate two-way communication of polytechnic governance structures

Standard 1.2 Academic Leadership

1.2.1 The polytechnic shall clearly state and transmit the roles and responsibilities of its academic leadership to ensure effective and efficient teaching and learning.

1.2.2 The academic leadership of the polytechnic programme shall be held by those with the appropriate qualifications, professional expertise and experience, and with sufficient authority for deciding the curriculum design, delivery and review.

1.2.3 The academic leadership and other governing entities shall have mechanisms and processes to facilitate two-way communication in relation to matters such as staff training, student admission, allocation of resources and decision making processes.

1.2.4 The polytechnic shall have policies, procedures and criteria for the periodic assessment of the performance of academic leadership and governance entities to ensure effective leadership and management.

To realize this standard, the polytechnic shall have

- A list of the roles and responsibilities of the academic leadership
- Clear documentation of the lines of organization and authority of the academic leadership
- The mechanisms and processes to communicate the roles, responsibilities, and relationships of the academic leadership to the polytechnic community
- An inventory of the qualifications, work experience, areas of expertise of the academic leadership
- The mechanisms and processes for internal communication
- Records of communication such as memos, emails, meetings, minutes of meetings, et cetera
- Written policies, procedures and criteria for the evaluation of performance
- Records of performance assessment and monitoring at defined intervals

Standard 1.3 Administrative Leadership

1.3.1 The polytechnic shall ensure that the policies and practices of the administrative staff are consistent with its vision and mission.

1.3.2 The polytechnic shall have policies and criteria for the periodic assessment of the performance of its administrative staff to ensure effective leadership and management towards the attainments of its vision and mission.

To realize this standard, the polytechnic shall have

- Records of the administrative and academic staff adopting the policies and executing the plans and decisions made in accordance to its vision and mission
- The mechanisms and processes to communicate policies and decisions made by the governing bodies
- A monitoring system to ensure the adoption and execution of policies and plans by every segment of the polytechnic

Standard 2: Strategic Planning

Preamble

Strategic planning is the process of defining the polytechnic's strategy and direction, and decision-making on allocating its resources to pursue this strategy. It may also include control mechanisms for guiding the implementation of the strategy.

Objective

This standard identifies the requirements for the polytechnic to conduct its strategic planning by considering its current and potential capacities and capabilities so that it can provide excellent educational services to all stakeholders.

The standard also requires the polytechnic to set appropriate key performance indicators (KPIs) which will monitor, measure and evaluate its achievements.

Standard Requirement and Evidences

2.1 The polytechnic shall implement a comprehensive strategic planning in its management which is aligned with its vision and mission.

2.2 The polytechnic shall ensure that all its stakeholders such as the management team, key staff and all the relevant partners are involved and have participated in its strategic planning process.

2.3 The polytechnic shall develop or periodically re-evaluate its vision and mission statements to ensure that they stay aligned with the strategic plan and converged with the key stakeholders' needs and expectation. The polytechnic shall define its key stakeholders.

2.4 The polytechnic shall have corresponding action plans which are aligned with its strategic plan that guide its departments and units in their daily operations.

2.5 The polytechnic shall set appropriate key performance indicators (KPIs) and clearly-defined targets (based on SMART) to monitor, measure and evaluate its achievements for all strategies in its strategic plan.

2.6 The polytechnic shall ensure that its strategic plan is conveyed to all its stakeholders.

To realize this standard, the polytechnic shall have

- The mechanisms and processes for imparting its strategic plan to staff at all levels and other stakeholders
- Records of its strategic planning process
- Records of the strategic plan, action plans, KPIs and targets

Standard 3: Administration and Management

Preamble

Administration and management at various levels of the polytechnic provides clear guidelines and direction, builds relationship amongst different categories of staff based on comradeship and transparency, and manages resources with accountability in achieving its mission and goals.

Objective

This standard identifies the requirements for the administration and management of the polytechnic, addressing the management of financial resources, communication and publicity, management of information and the management of assets and inventories.

Standards Requirements and Evidences

Standard 3.1 Management of Financial Resources

3.1.1 The polytechnic shall maintain a financial system which is comprised of planning, organizing, endorsing, monitoring and reviewing of all of its accounting practices.

3.1.2 The polytechnic shall adhere to the official Treasury Instructions (Arahan Perbendaharaan – AP) which include financial policies, procedures, budgeting, statements and procurements to ensure good financial performance in order to support its vision and mission. Key financial procedures are also conveyed clearly to the staff.

3.1.3 The polytechnic shall have a proper and systemic accounting system with appropriate documentations of its financial status. For audit purposes, all financial records must be up-to-date, accurate and easy to retrieve.

3.1.4 The polytechnic shall have a clear line of responsibility and authority for its financial system that takes into account sufficient allocations and specific needs of each department.

3.1.5 The polytechnic's top management shall monitor its financial status, regularly produce and endorse its financial reports, and periodically conduct internal financial audit.

To realize this standard, the polytechnic shall have

- The mechanisms, procedures and processes for financial management including budgeting, accounting, reporting and preparation of relevant statements
- Up to date and accurate records of financial transactions, statements, et cetera

- Budgets, financial reports, audit reports, et cetera
- A list of the roles and responsibilities of the finance / bursary department
- An independent financial committee which oversees integrity, monitors, audits and analyses documents and reports

Standard 3.2 Communication and Publicity

3.2.1 The polytechnic shall manage communications with its students, staff and the public on all matters relating to the polytechnic including communicating its vision, mission, systems, processes, essential programmes information, events, activities and achievements in a comprehensible, accurate and timely manner.

3.2.2 The polytechnic shall promote multiple ways of communication and to ensure that all information is communicated, disseminated and broadcasted to the students, staff and the public are adequate, accurate, relevant, effective and properly recorded for audit purposes.

3.2.3 The polytechnic shall have policies and guidelines to ensure information communicated through all possible communication channels (e.g. letters, telephones, emails, Facebook, social media, web portals, et cetera) is vetted for accuracy and approved.

To realize this standard, the polytechnic shall have

- The mechanisms and processes for communication/dissemination of information and publicity
- Records of communication and publicity such as memos, emails, meetings, minutes of meetings, advertising, fax, websites, marketing collaterals, student handbook, notice boards, records of vetting and approval
- Records of reviews and audits conducted internally or by external bodies

Standard 3.3 Management of Information

3.3.1 The polytechnic shall maintain an electronic management information system to record and archive student and staff information in an accurate and timely manner.

3.3.2 The polytechnic shall maintain readily-available data and academic records of its graduates, and of its staff, relevant service data and their qualifications.

3.3.3 The polytechnic shall have policies on data dissemination, accessibility, privacy, confidentiality and security of information.

3.3.4 The polytechnic shall have appropriate security levels to access information, including sensitive information.

3.3.5 The polytechnic shall ensure that its privacy, confidentiality and security policies and procedures are well communicated to all the relevant staff.

3.3.6 The polytechnic shall consistently execute backups and restoration of critical information, especially student and staff information.

To realize this standard, the polytechnic shall have

- Records to demonstrate strict adherence to the privacy, confidentiality policy and security procedures specified
- The mechanisms, procedures and processes for data management system, with backups and restoration systems
- Processes for data dissemination
- Records of security levels to access for all information
- Records of communication of information

Standard 3.4 Management of Assets and Inventories

3.4.1 The polytechnic shall have a comprehensive assets and inventories management system for all its equipment, facilities and infrastructure.

3.4.2 The polytechnic shall maintain proper records of acquisition, procurement, monitoring and tracking of all its assets and inventories.

3.4.3 The polytechnic shall have a comprehensive maintenance records for all its equipment, facilities and infrastructure with a responsive monitoring system including disposals and actions taken to address complaints or concerns.

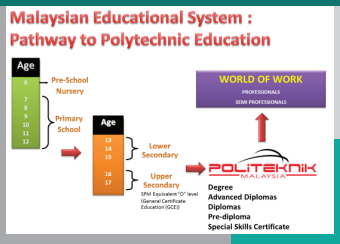
To realize this standard, the polytechnic shall have

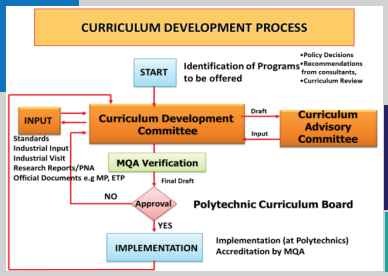
- Records of comprehensive assets management policy and procedures
- The mechanisms, processes and procedures for comprehensive assets and inventories management system
- Records, documentation and evidence for assets and inventories management system
- Documented evidence and records of maintenance and disposal of assets and inventories

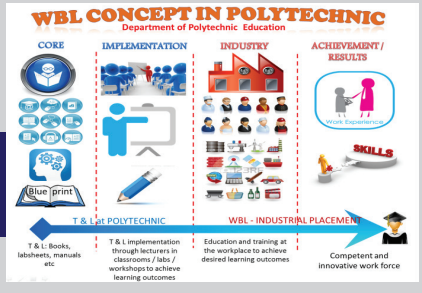
Criterion 2

TEACHING AND LEARNING

Objective: Effective teaching and learning processes determine the achievement of the intended learning outcomes. These processes include meticulous curriculum design, effective curriculum delivery and efficient student assessment.







CRITERION 2 | TEACHING AND LEARNING

Teaching and learning is the core activity of the polytechnic. It involves the use of optimal resources to produce graduates that satisfy the needs of the stakeholders. The criterion examines the design and development, delivery, student assessment, and management, of the curriculum, and programme review and evaluation to achieve programme outcomes.

Monitoring and improvement during the review process are focused on the academic performances of the students, using the data collected to review delivery processes so as to continually provide high quality educational services to develop the students to their maximum potential, and implement remedial and interventional actions.

Standard 4: Curriculum Design and Development

Preamble

A curriculum defines the body of knowledge and the area of specialisation. The dynamism of the polytechnic is reflected in its up to date curriculum which synergizes the curriculum content with the current practices in the respective disciplines and the current needs of the society.

Objective

This standard identifies the requirements to design and develop all new and existing programmes.

Standard Requirement and Evidences

4.1 The polytechnic system shall establish, develop, approve, endorse, disseminate, review and evaluate clearly defined and comprehensive curriculum for all programmes focusing on innovative teaching and learning methodologies to maximise learning outcomes, ensure relevance and rigour, and fulfill the requirements of the discipline in which its governing board, curriculum board, the administration, the relevant stakeholder partners and key staff play an active role.

4.2 The polytechnic system shall conduct a needs analysis prior to the design and development of any new TVET programmes which would involve gathering feedback from external sources and stakeholders including the relevant industries, potential employers, students, alumni, peers and experts in the field; and using the feedback to design and develop the curriculum.

4.3 The polytechnic system shall address all aspects of the curriculum design and development process and shall monitor the implementation of all of its programmes in the polytechnic.

4.4 The polytechnic system shall design and develop its curriculum with the aim to prepare graduates to attain the programme educational objectives. Learning outcomes are clearly stated in the curriculum documents.

4.5 The polytechnic system shall ensure that all of the programme aims and educational objectives are consistent with the polytechnic vision, mission and stakeholders' requirements; and are focused on the technical, managerial, personal and interpersonal skills in the specific discipline.

4.6 The polytechnic system shall design and develop courses appropriate to the specific discipline in accordance to the relevant programme and competency standards that are in use. (Refer to Part Two: Competency Standards for Polytechnic Graduates, MyPOLYStandards).

To realize this standard, the polytechnic system shall have

- The mechanisms, procedures, processes and records for designing and developing programmes and evidence of involvement of the different roles and stakeholders
- The mechanisms, procedures and processes for conducting needs analysis
- Records of needs analysis conducted such as surveys, data collection, dialogues, meetings, and others, and the evidence these data were utilised
- Documents of programme proposal, curriculum structure and curriculum contents
- The mechanisms, procedures and processes to identify required facilities, resources and staffing
- The mechanisms, procedures, processes and records for approving programme proposals
- The mechanisms, procedures, processes and records to endorse programmes
- A decision-making body which formulates policies pertaining to the polytechnic governance and administration

Standard 5: Curriculum Delivery

Preamble

The polytechnic curriculum delivery processes provide a variety of strategies for the lecturers to impart theoretical knowledge to the students and to engage them in hands-on skills pertinent to their future workplace. The polytechnic curriculum delivery processes are based on the outcome-based education (OBE) approach which specifies the intended outcomes of the curriculum. The success of meeting these outcomes largely depends on the effectiveness of the instructional strategies being employed.

Objective

This standard identifies the requirements to guide the polytechnic academic staff in the curriculum delivery.

In compliance with the standard, polytechnic academic staff will be able to implement a systematic and effective approach in curriculum delivery, by adopting the best practices.

This standard intends:

i. To achieve students' satisfaction by enriching their learning experience which in turn will benefit their career pursuits and life-long learning.
ii. To provide polytechnic academic staff the guidelines for implementing the Outcome- Based Education (OBE) approach in their teaching and learning.
iii. To ensure quality delivery and continuous improvements in TVET courses and programmes.
iv. To satisfy the requirements of the TVET curriculum and the stakeholders (students) industry/employers) in terms of relevancy and flexibility.

Standards Requirements and Evidences

Standard 5.1 Programme Planning

5.1.1 The polytechnic shall have a clearly defined and comprehensive programme delivery planning process for all of its programmes encompassing detailed programme schedule which stipulates assignment due dates, assessment or examination dates, teaching and learning venues and time table schedules for lecturers and students, semester breaks and holidays, et cetera, which should be made known to students at the onset of the programme delivery.

5.1.2 The polytechnic system shall provide ample financial allocation, facilities and teaching resources to support the course delivery, assign appropriate academic staff to deliver all its programmes; and harness all resources and equipment to achieve maximum outcomes such as the deployment of ICT and e-learning.

To realize this standard, the polytechnic system shall have

- The mechanisms, procedures, processes, records and documents for the curriculum planning process
- Documented evidence and records of resource deployment and utilization especially of academic staff, teaching facilities and equipment
- Documented evidence of critical course / programme information communicated to students
- Records of monitoring and review

Standard 5.2 Programme Management

5.2.1 The polytechnic shall appoint a leader or coordinator, and a team or committee (consisting of academic staff) to be in charge of the planning, dissemination, implementation, monitoring, improvement and evaluation of each of its programmes.

5.2.2 The polytechnic programme team shall be given ample resources including financial allocation and teaching resources to implement all the teaching-learning activities to meet the learning outcomes, and to conduct programme monitoring, review and evaluation for quality improvement.

5.2.3 The polytechnic programme team shall ensure that students fulfill the learning requirements such as attending classes, doing their assessments, and being committed and responsible for their learning.

5.2.4 The polytechnic shall cater and provide a conducive learning environment for students in which scholarly and creative achievements are nurtured, and innovations in teaching and learning are encouraged.

5.2.5 The polytechnic programme team shall administer and monitor the delivery of instructions in a timely manner to ensure the consistency and quality of teaching and learning, through teaching observations by experienced academic staff / expert, and through student surveys.

5.2.6 The polytechnic shall provide to students the most current educational goals, aims, outline, learning outcomes, and methods of assessment of each of its programmes.

To realize this standard, the polytechnic system shall have

- The mechanisms, procedures, processes, records and documents for appointments of and assigning roles to programme committee or teams
- Documented evidence and records of resource use and management
- Documented evidence and records of students' attendance, assessments, classroom management, monitoring, et cetera
- Documented evidence and records of programme information are communicated to students
- Monitoring, review and evaluation records

Standard 5.3 Instructional Methods

5.3.1 The polytechnic shall provide the instructional delivery of contents, approach, and teaching-learning methods consistent with, and supportive of the designed curriculum in achieving the desired learning outcomes. Where it is not specified in the curriculum, the academic staff may apply other suitable instructional methods to achieve the learning outcomes.

5.3.2 The polytechnic shall provide teaching amenities, facilities and equipment that are adequate, suitable and relevant for the instructional activities and ensure that they are well maintained and safe for use at all times.

5.3.3 The polytechnic academic staff shall:

a. establish students' learning goals based on students' needs, and requirements set by the stakeholders

b. prepare all instructional activities and assessments based on Student Learning Time (SLT)

c. plan the instructional delivery before class commences. The plan would focus on achieving the intended learning outcomes

d. perform the instructional delivery based on Student-Centred Learning (SCL) approaches

e. be sensitive, responsive and flexible with students' abilities and potentials when engaging them in the learning activities

f. ensure that the delivery strategy would foster independence in students in learning

g. demonstrate the use of varied teaching strategies to motivate students in learning

h. employ appropriate instructional strategies to help students develop and achieve the polytechnic students' attributes

These may include but not limited to:

- Face-to-face delivery e.g. lecture, tutorial and laboratory work
- Active learning
- Collaborative learning
- Self-directed learning
- Cooperative learning, such as Problem-based Learning and Project-based Learning
- Technology-based delivery such as online methods, teleconferencing and mobile learning
- Experiential methods such as field work, project-based learning and on- site learning or visits
- Work-based Learning (WBL) methods such as industrial training, practicum, work attachment, et cetera

i. facilitate students in reflecting their prior, on-going and post learning experience

j. conclude the delivery session by highlighting the gist of the learning and correlating the learning experience with real life or job-related situations

k. continually improve the instructional delivery by adopting varied and innovative instructional methods and techniques

l. realign instructional delivery with the curriculum and assessment periodically to achieve the intended learning outcomes. Interventions by the academic staff during students' learning shall be a part of the realignment process

m. continually update instructional contents and materials to ensure relevance with the current knowledge and technology

5.3.4 The polytechnic shall provide adequate funding for the procurement and maintenance of suitable and relevant instructional materials and equipment; and staff training where necessary.

To realize this standard, the polytechnic shall have

- The mechanisms, procedures and processes for curriculum delivery
- Documented evidence and records of ensuring high standards of curriculum delivery
- Documented evidence and records of programme delivery monitoring
- Documented evidence and records of resources to support delivery

Standard 5.4 Programme Monitoring and Improvements

5.4.1 The polytechnic shall maintain a policy on and administer the regular monitoring and continuous improvements of all of its programmes which utilise proper mechanisms and ample resources including financial allocations; appropriate and relevant data; teaching-learning methods and technologies used; administration and related educational services; as well as feedback from students and other internal stakeholders.

5.4.2 The polytechnic shall communicate the minimum required academic achievements (standards) that students must attain for each course, monitor their academic performances and use the data collected to improve its processes so as to continually provide high quality educational services to develop the students to their maximum potential.

5.4.3 The polytechnic shall regularly monitor students' learning and conduct teaching observations, student-teacher dialogues, administer students' feedback, analyse external examination reports, modules reports, feedback, and the likes, in order to collect appropriate and relevant data for monitoring purposes to ensure that the learning outcomes are achieved.

5.4.4 The polytechnic shall maintain students' academic performance reports and other forms of acknowledgements or recognition of students' achievements.

5.4.5 The polytechnic shall execute appropriate and necessary remedial and interventional actions for continuous improvement to address shortcomings in achieving the intended outcomes.

To realize this standard, the polytechnic shall have

- The mechanisms, procedures and processes for programme monitoring and improvements
- Documented evidence and records of data collection for programme monitoring and improvements
- Documented evidence and records of programme monitoring and improvements undertaken
- Documented evidence and records of resources to support programme monitoring and improvements

Standard 6: Student Assessment

Preamble

Student assessment involves all parties in promoting effective learning. The polytechnic assesses the learning outcomes of the students through various modes of assessment. It also engages the examination board to develop and implement examination policies and procedures, and handle assessment results and appeals.

Objective

This standard identifies the requirements for various modes of assessment, the assessment of students learning outcome, and the handling of assessment results.

Standards Requirements and Evidences

Standard 6.1 Assessment Methods

6.1.1 The polytechnic shall clearly communicate all critical programme assessment information to all students before the commencement of all programmes including final and continual assessment frequency and schedule, assessment modes, criteria for grading and awards, and the allocation of marks.

6.1.2 The polytechnic shall motivate students and provide a holistic educational experience through the use of varied assessment modes.

6.1.3 The polytechnic shall ensure that the number and complexity of assigned tasks commensurate with the credit load of courses, and the assessment methods for students in each learning cycle, are consistent with the nine learning domains as specified in the polytechnic assessment manual, as shown below:

Learning Domain	Assessment Method
Knowledge	Quiz, Test and Final Examination
Practical Skills	Project Work and Practical
Communication Skills	Presentation and Teamwork
Critical Thinking and Problem Solving Skills	Teamwork and Case Study
Social Skills and Responsibilities	Teamwork and Case Study
Lifelong Learning and Information	Assignment and Presentation
Management Skills	
Entrepreneurial Skills	Case Study, Project Work and Teamwork
Ethics, Professionalism and Morals	Project Work and Practical
Teamwork and Leadership Skills	Teamwork

Table 1: Polytechnic Students' Learning Domain

6.1.4 The polytechnic system shall involve its academic and examination committees / boards (which should include representatives of relevant stakeholders) in the review of student assessments, and appoint external examiners/assessors to validate the assessments.

To realize this standard, the polytechnic shall have

- The mechanisms, procedures and processes for identifying, determining, assessing and approving assessment methods
- Documented evidence of varied programme assessment modes
- Assessment papers and records

Standard 6.2 Assessment Processes

6.2.1 The polytechnic system shall ensure that the assessment principles, processes, methods and practices for each programme are aligned with the learning outcomes and contents.

6.2.2 The polytechnic system shall plan and execute the construction, development, setting, vetting and approval of the assessment with integrity, giving due consideration to the validity, reliability and fairness.

6.2.3 The polytechnic shall plan and communicate to students in writing, the examination venues, examination timetable, invigilation, et cetera.

6.2.4 The polytechnic shall provide to students in hard copy or electronic form, clear grading criteria such as rubrics and performance standards for the assessment of students' work and gather ongoing feedback on students' performance throughout the course of the programme.

To realize this standard, the polytechnic shall have

- The mechanisms, procedures and processes for assessment
- Documented evidence and records of all assessment processes
- The assessment schedules, assessment papers, rubrics and records, et cetera

Standard 6.3 Handling of Assessment Results

6.3.1 The polytechnic shall notify the assessment results to the students in a timely manner.

6.3.2 The polytechnic shall ensure that students comply with the progression criteria before proceeding to the next level of their programme.

6.3.3 The polytechnic shall ensure that students achieve the award criteria before graduation with approval by the examination board.

6.3.4 The polytechnic shall clearly communicate appeal procedures for academic matters to the students and ensure that all decisions are endorsed by the examination board.

6.3.5 The polytechnic shall have a moderation process for its academic results.

To realize this standard, the polytechnic shall have

- The mechanisms, procedures and processes for the handling of assessment results
- Documented evidence and records of all assessment results, appeal, moderation, students' progression, et cetera
- The assessment briefings, assessment papers, results analyses and statistics, employability statistics, and records, et cetera

Standard 7: Programme Review and Evaluation

Preamble

Programme review and evaluation are structured processes to ensure that programmes meet the intended outcomes. Programmes should be reviewed annually and then evaluated as specified in the curriculum within 3 to 5 years. Programme review and evaluation should be conducted using a rating scale system and complemented with interviews with the lecturers, students, support staff and industry players.

The outcome of the evaluations may lead to the introduction, termination, alignments and adjustments of programmes.

Objective

This standard identifies the requirements for the polytechnic to review and evaluate the performance and effectiveness of its programmes.

Aspects focused in this standard:

a. Programme Review
b. Programme Evaluation

To assist the users in understanding the concepts and vocabulary common to evaluations, components of an evaluation plan, information needed to conduct an evaluation, administrative and supervisory procedures for managing an evaluation, procedures for evaluating TVET curriculum and methods of checking and recording evaluation activities.

Standards Requirements and Evidences

Standard 7.1 Programme Review

7.1.1 The polytechnic shall track the students' academic results and use them for reviews of its operations to improve policies, procedures and processes (e.g. student selection and admission), curriculum design, development, planning and delivery, student welfare and support services, et cetera .

7.1.2 The polytechnic shall monitor students' academic development and performance, and take appropriate and necessary remedial and interventional actions.

7.1.3 The polytechnic shall have a system to collect appropriate and relevant data such as progression rate (moving to the next level of the programme or to the next educational level); attrition rate (leaving the programme prematurely); graduation rate (completing a course); and employment rate (employed after graduation).

To realize this standard, the polytechnic shall have

- The mechanisms, procedures and processes for programme review
- Documented evidence and records of data collection and analysis for programme review
- Documented evidence and records of remedial and interventional actions undertaken

Standard 7.2 Programme Evaluations

7.2.1 The polytechnic shall provide sufficient resources including ample financial allocations and evaluate its institutional structures and processes (administrative structure, leadership and governance, planning and review mechanisms), curriculum components (syllabi, teaching methodologies, learning outcomes) as well as student progress, employability and performance; gathering feedback from multiple sources such as students, alumni, staff, communities/parents, employers, industries, field experts, professional bodies and other external stakeholders, obtained for the 3-5 years cycle evaluation process.

7.2.2 The polytechnic shall assess the effectiveness and relevance of all of its academic processes and activities such as in the planning, management, and delivery of instruction, utilization of laboratories/workshops, industrial training, on-the-job training, student assessment, staff performance evaluations and lifelong learning programmes.

7.2.3 The polytechnic shall utilize all analyses, such as students' performance, progression, attrition, graduation and employment; of longitudinal studies to provide feedback to committees responsible for student selection and admission; curriculum design, development, planning and delivery; and student counselling, to enhance the quality of programmes and its educational services with appropriate and relevant remedial and interventional actions.

To realize this standard, the polytechnic shall have

- The mechanisms, procedures and processes for programme evaluations
- Documented evidence and records of data collection for programme evaluations
- Documented evidence and records of analyses from programme evaluations undertaken are utilized in appropriate and relevant remedial and interventional actions for programmes, procedures and processes
- Documented evidence and records of resources to support programme evaluations

Criterion 3

FACILITIES AND RESOURCES

Objectives: Adequate learning facilities and infrastructures complement academics' competency and enhance students' motivation. Effective learning integrates internal and external facilities and resources for better learning outcome.

CRITERION 3 | FACILITIES AND RESOURCES

In addition to the quality and excellence aspects in governance, leadership, administration (Criterion 1), and in teaching and learning (Criterion 2), the polytechnics should also ensure that provisions of their facilities and resources are all fit for purpose. The polytechnics' governance, leadership and administration, after formulating strategies to systematically support clearly identified student-focused teaching and learning processes, should then deploy all their facilities and resources to achieve their goals and targets. All of these mechanisms and processes are to be coherently, and seamlessly integrated together, and for which targets are to be set and performance monitored and managed.

Standard 8: Facilities and Resources

Preamble

The provision of facilities and resources is important for polytechnics to operate efficiently and safely. Adequate classrooms, workshops, laboratories, ample resources and other physical facilities create a conducive environment to enhance teaching and learning.

Objectives

This standard identifies requirements for the polytechnic to manage its infrastructures, facilities, resources and the work environment optimally to support its educational and training services, strategic plan, continual improvement and growth. It also identifies requirements for a safe and secure environment to provide quality educational services.

Standards Requirements and Evidences

Standard 8.1 Facilities

Standard 8.1.1 Campus Facilities

8.1.1.1 The polytechnic system shall provide a campus with physical facilities and infrastructures well distributed and catering to all its educational and training needs, functionally designed to provide a conducive environment for teaching and learning and at the same time meet the needs of students and staff, based on the provisions of the relevant regulatory government bodies, regulations or laws.

8.1.1.2 The polytechnic system shall locate its campus in a suitable, wholesome environment with a comprehensive environment management system comprising goals to ensure a clean and green environment, which meets all health, safety and security requirements.

8.1.1.3 The polytechnic shall provide sufficient resources for a comprehensive facilities maintenance system which include preventive, scheduled and ad-hoc maintenance for all its physical facilities and infrastructures with a responsive monitoring system covering maintenance records, including actions taken to address complaints or concerns.

8.1.1.4 The polytechnic shall regularly assess its physical facilities and infrastructures to ensure that they are ample, relevant and effectively utilized for current education and training.

8.1.1.5 The polytechnic shall periodically improve its physical facilities and infrastructures through renovations, addition of new facilities and acquisition of the latest and appropriate equipment to keep abreast with the development in educational practices and changes, and to support its vision and mission.

To realize this standard, the polytechnic system shall have

- The mechanisms, procedures and processes for campus design and development; with physical facilities and infrastructure identification, procurement and provisions
- Documented evidence and records of data collection and proposal for polytechnic inception, project brief, development and appraisal; and for physical facilities and infrastructure identification, procurement, delivery, installation and commissioning, and others
- Documented evidence and records of responsive facilities management system
- Documented evidence and records of maintenance, renovations, reviews, improvements and upgrading of campus physical facilities and infrastructures

Standard 8.1.2 Classrooms

8.1.2.1 The polytechnic shall provide sufficient number of ample-sized classrooms to accommodate total students enrolled in accordance with the design norms and standards.

8.1.2.2 The polytechnic shall provide proper furniture and sufficient teaching and learning aids in the classrooms, with responsive maintenance to ensure safety and functionality for teaching and learning processes.

To realize this standard, the polytechnic system shall have

- The mechanism, procedures and processes for classroom design, development and provisions
- Documented evidence and records of classroom assets and inventory management, maintenance, monitoring, review and upgrading

Standard 8.1.3 Workshops and Laboratories

8.1.3.1 The polytechnic shall provide suitably sized workshops and laboratories which are relevantly equipped with the proper equipment, ample well-ventilated work spaces and lightings in accordance with the relevant norms and standards.

8.1.3.2 The polytechnic shall adequately provide its workshops and laboratories with suitable and relevant furniture, equipment, tools, supplies and materials in accordance with the prescribed requirements and with responsive maintenance to ensure best practices in safety, health and environment, and functionality for teaching and learning processes in the workshops and laboratories.

To realize this standard, the polytechnic system shall have

- The mechanisms, procedures and processes for workshops and laboratories design, development and provisions, including for safety and health compliance
- Documented evidence and records of workshops and laboratories assets and inventory management, maintenance, monitoring, review and upgrading

Standard 8.1.4 Library

8.1.4.1 The polytechnic shall have an adequate number of qualified library staff with a suitable operating budget, efficiently managing a reasonably-sized library with comfortable and accessible space for individual, small or large group learning.

8.1.4.2 The polytechnic shall provide its library with the necessary furniture, relevant equipment and appropriate facilities, including internet facilities, distributed according to educational and training needs following the relevant norms and standards.

8.1.4.3 The polytechnic shall regularly review its library facilities and infrastructure to ensure that they are adequate, appropriate, relevant and are effectively functional for current education and training, and periodically improved through the addition of new facilities and acquisition of the latest and appropriate devices and equipment.

To realize this standard, the polytechnic system shall have

- The mechanisms, procedures and processes for library design and development
- Documented evidence and records of library assets and inventory management
- Documented evidence and records of maintenance, renovations, reviews, improvements and upgrading of library physical facilities and infrastructures

Standard 8.1.5 Information and Communication Technology (ICT)

8.1.5.1 The polytechnic shall provide adequate and efficient information and communication technology (ICT) infrastructure, system, devices and equipment, equipped with fast internet connectivity and the relevant softwares, to continually support and serve the needs of all staff and students.

8.1.5.2 The polytechnic shall provide a responsive ICT user support system including actions taken to address technology gaps, concerns or complaints; and a comprehensive maintenance system which may include scheduled, ad-hoc and upgrading maintenance for all its ICT facilities and infrastructure with a monitoring system covering maintenance records.

8.1.5.3 The polytechnic shall regularly review its ICT facilities and infrastructure to ensure that they are adequate, appropriate, relevant and are effectively functional for current education and training, and periodically improved through the addition of new facilities and acquisition of the latest and appropriate devices and equipment.

To realize this standard, the polytechnic system shall have

- The mechanisms, procedures and processes for ICT facilities and infrastructure design and development
- Documented evidence and records of utilization of ICT facilities and infrastructure
- Documented evidence and records of maintenance, renovations, reviews, improvements and upgrading of ICT facilities and infrastructure

Standard 8.1.6 Other Facilities

8.1.6.1 The polytechnic shall maintain a functional instructional, audio-visual aids (AVA) and multimedia centre with up-to-date educational and training resources to facilitate teaching and learning in support of and to cater to instructional requirements of academic staff and for research and development.

8.1.6.2 The polytechnic shall provide all other necessary auxillary and complementary facilities and infrastructures to support all its educational and training services such as accommodation/hostel, transportation, sports and recreation, student support, counselling, spiritual development, security and other general facilities in accordance with the relevant norms and standards.

To realize this standard, the polytechnic system shall have

- The mechanisms, procedures and processes for auxiliary and complementary facilities and infrastructures design and development
- Documented evidence and records for operations and utilization of auxiliary and complementary facilities and infrastructures
- Documented evidence and records of maintenance, renovations, reviews, improvements and upgrading of auxiliary and complementary facilities and infrastructures

Standard 8.2 Resources

Standard 8.2.1 Educational/Information Resources

8.2.1.1 The polytechnic shall supply adequate, varied and current educational and information resources including references; collections (print and non-print) and instructional materials, including appropriate information and communication technology-mediated references to continually support and serve the needs of staff, students and other clientele in academic endeavours as well as for research and development.

8.2.1.2 The polytechnic library shall have a policy regarding access to information and external linkages for effective teaching and learning, for example, through the use of the most current and effective electronic devices, library databases, networks and linkages and other means of using information and communication technology, and supplement its collection through partnerships, networking, library cooperative activities and resource-sharing with other libraries.

8.2.1.3 The polytechnic library shall maintain a library management system and continuously train and upgrade library staff to ensure relevant support and efficient services are rendered to all its users.

To realize this standard, the polytechnic system shall have

- The mechanisms, procedures and processes for educational and informational resource planning, development and utilization
- Documented evidence and records of identification, listings, procurement and provisions of references; collections (print and non-print) and instructional materials; and their utilization
- Documented evidence and records of maintenance, reviews, improvements and upgrading of educational and informational resources

Criterion 4

MANAGEMENT OF HUMAN RESOURCE

Objective : Human resource management provides proactive ways to synergise policies, human resources and practices. It includes staff recruitment, selection, performance evaluation, incentives, training, and professional and career development.

CRITERION 4 | MANAGEMENT OF HUMAN RESOURCE

The Management of Human Resource is one of the most important components in assuring the quality of TVET and therefore every effort shall be made to establish proper and effective staff recruitment, service, professional development and appraisal policies that promote staff productivity.

Standard 9: Staff Recruitment and Management

Preamble

This standard examines the polytechnic's staff recruitment and management framework in the areas of staff selection and management, so that the staff can support the polytechnic's vision and mission and provide best services to the students.

Objective

The standard outlines the requirements for academic staff recruitment and management for polytechnics which include academic staff qualifications; staff-student standard ratio by discipline; as well as staff training, education, professional development and career path way. It also specifies the support staff norms that focus on the number of posts in relation to facilities.

Specifically, the objective of this standard is to enable the polytechnic to implement staff recruitment in compliance with statutory body requirements, polytechnic and students' learning needs.

Standards Requirements and Evidences

Standard 9.1 Academic Staff

9.1.1 The polytechnic shall recruit academic staff with the appropriate qualifications, knowledge and skills, training and/or other qualities sufficient to support the implementation of its educational programmes and other activities.

9.1.2 The polytechnic shall clarify the roles of its academic staff in teaching, research and scholarly activities, consultancy, community services and administrative functions to show a balance of functions and responsibilities in accordance with academic conventions.

9.1.3 The polytechnic shall maintain adequate academic staff to student ratio in compliance with the relevant requirements of regulatory government bodies.

9.1.4 The polytechnic policy and administration shall reflect an equitable distribution of responsibilities among the academic staff.

To realize this standard, the polytechnic shall have

- The mechanisms and processes for academic staff recruitment, compliance with the relevant requirements of regulatory government bodies to ensure that the candidates meet the minimum qualifications, educational expertise and/or experience relevant to the programme(s) they are assigned to teach
- Documents and records of academic staff qualifications and job descriptions

Standard 9.2 Support Staff

9.2.1 The polytechnic shall ensure that there is sufficient number of support staff for effective facilitation of teaching and learning activities.

To realize this standard, the polytechnic shall have

- Monthly/yearly staff status reports and records (Monthly Returns)

Standard 10: Staff Professional Development

Preamble

Staff professional development should be a commitment by the polytechnic staff to continually update their skills and knowledge in order to remain professionally competent and achieve their true potential.

Objective

This standard examines the polytechnic's comprehensive training and professional development plan which consider areas such as staff competencies; the staff training needs and their individual training roadmaps; effectiveness and review of the training and succession plan.

Specifically, the objectives of this standard are to enable the polytechnic to:

i. Establish and manage staff development plan.
ii. Establish and implement career path way management programme.

Standards Requirements and Evidences

Standard 10.1 Training and Development

10.1.1 The polytechnic shall train, develop and provide for career advancement for all categories of its administrative and academic staff at all levels including its leadership.

10.1.2 The polytechnic shall provide sufficient resources including adequate financial allocations for staff training and development to enhance the required professional competency of academic staff; to motivate, retain and provide for their continued professional development.

10.1.3 The polytechnic shall enhance support staff knowledge and skills through training and and education programmes.

To realize this standard, the polytechnic shall have

- The mechanisms and processes for identifying the training needs of individual staff
- The mechanisms and processes for planning and allocating of training budgets
- The mechanisms, procedures and processes for the implementation of staff training and development
- The mechanisms and processes for monitoring , evaluating and reviewing staff training

Standard 10.2 Career Path Development

10.2.1 The polytechnic shall have a talent management system to identify, create and develop a critical mass of professional and effective academic staff for effective placement and service.

10.2.2 The polytechnic shall have a succession planning to maintain the sustainability of the organization.

To realize this standard, the polytechnic shall have

- The mechanisms and processes for talent management and succession planning
- The mechanisms and processes for identifying suitable training programmes for building capabilities
- The mechanisms and processes for assessing the suitability of staff for promotion to higher grades

Standard 10.3 Compensation and Rewards

10.3.1 The polytechnic shall have a compensation and rewards system through promotion, salary increment or other remuneration based on equitable work distribution and meritorious academic roles using clear and transparent policies and procedures.

10.3.2 The polytechnic shall have a process to maintain effective staff performance evaluation system.

10.3.3 The polytechnic shall carry out annual appraisal of all staff.

10.3.4 The polytechnic shall evaluate staff job performance to ensure the staff utilize their knowledge and skills.

To realize this standard, the polytechnic shall have

- The mechanisms and processes for evaluation of staff performance
- The mechanisms and processes for recognition and rewards
- The mechanisms and processes for compensation and benefits

Criterion 5

STUDENT SELECTION AND SUPPORT SERVICES

Objective : Students are the main clients of an educational institution. Excellent educational institutions efficiently maintain students' enrolment system and properly manage students welfare and well-being.

CRITERION 5 | STUDENT SELECTION AND SUPPORT SERVICES

Student admission is governed by policies formulated by the Ministry of Education (MOE). Student admission and selection is carried out using centralised system at the Department of Polytechnic Education through online processes. The total number of enrolment and admission is determined by the capacity of the infrastructures and teaching staff. Student Support Services provide academic assistances and other services for students to be successful in their learning. These include the required additional facilities and supporting learning services needed to create a conducive learning environment.

Standard 11: Student Selection

Preamble

Student selection is concerned with the recruitment of students into the polytechnic's programmes of study. It is to ensure that the entry students meet the admission criteria set for the programmes.

Support services provide appropriate developmental and remedial support to polytechnic students in a conducive learning environment to produce holistic, entrepreneurial and balanced graduates.

Objective

This standard identifies the requirements for student selection process and for providing appropriate support services to deliver an efficient and effective learning environment.

Standard Requirement and Evidences

11.1 The polytechnic shall have a system for admissions, published and well-disseminated, with clear statements on the criteria and process of student selection, stating pre-requisite knowledge and skills, free from discrimination and bias, which complies with prevailing policy of the regulatory government bodies.

11.2 The polytechnic shall manage its student selection practices based on guided policies and principles, and the relevant norms and standards.

11.3 The polytechnic shall monitor its student selection process to ensure that the selection exercise adhere strictly to the procedures and maintain a proper student data management system.

11.4 The polytechnic shall adequately practise the following:

- carry out student registration activities for current and new students. This shall include an efficient record keeping of the total student enrolment
- define clearly the criteria and processes of student selection to ensure the selection process complies with the principle of access and equity in education

- publish and disseminate admission policy to the public, especially to potential future students
- operate mechanisms to select students based on capabilities that are consistent with the admission policies
- develop a structured, objective and fair selection process

To realize this standard, the polytechnic shall have

- Written student selection documents and other supporting documents, outlining and explaining student selection policies, student selection criteria and the student selection management system of the polytechnic
- Mechanisms, procedures and processes for student selection with a unit or a team of staff dedicated to, and responsible for their handling

Standard 12: Support Services

Preamble

Student support services facilitate student learning and wholesome development and contribute to the achievement of student learning outcomes and to enhance student experience. Student support services include academic advice, administration for current students which include student registration, examinations and graduation, employment and career development advice, orientation activities, student representative council, co-curricular activities, accommodation assistance, counselling and health.

Objective

This standard identifies the requirements for student support services to create a conducive environment to support teaching and learning activities.

Standards Requirements and Evidences

Standard 12.1 Counselling (Academic, Pastoral and Career)

12.1.1 The polytechnic shall maintain effective academic, pastoral and career counselling services for students which comply with any established statutory procedure and this information is well disseminated to students.

12.1.2 The polytechnic shall provide qualified counsellors for pastoral assistance in matters relating to health, well-being and personal matters.

12.1.3 The polytechnic shall assign academic advisors to groups of students to provide guidance and advice in academic affairs.

12.1.4 The polytechnic shall provide assistance for students to determine their career development and gain employment.

To realize this standard, the polytechnic shall have

- Written documents and other supporting documents for counselling services to students, outlining and explaining student counselling services and its management system in the polytechnic
- The mechanisms, procedures and processes for counselling services with a unit or a team of staff dedicated to, and responsible for their handling

Standard 12.2 Co-Curricular Activities

12.2.1 The polytechnic shall make available appropriate physical, social, spiritual development, recreational and sporting facilities, and other student support services which shall include physical amenities and services for co-curricular activities:

a) to facilitate learning and wholesome personal development, and
b) to cater to students with special needs.

12.2.2 The polytechnic shall promote active participation in co-curricular activities through the establishment of clubs, societies and uniformed bodies among students in order to enhance their learning experience and nurture personal developments such as soft skills and character building.

12.2.3 The polytechnic shall appoint qualified personnel to guide and supervise the operations of the co-curricular activities.

12.2.4 The polytechnic shall monitor and evaluate the implementation of the co-curricular activities.

12.2.5 The polytechnic shall assign a dedicated management team responsible for co-curricular activities.

To realize this standard, the polytechnic shall have

- Written documents, Activity Reports and other supporting documents outlining, explaining and reporting students' co-curricular activities and their management
- The mechanisms, procedures and processes for co-curricular activities of the polytechnic with a unit or a team of staff dedicated to, and responsible for their planning, implementation, monitoring and appraisal

Standard 12.3 Transfer, Withdrawal and Appeal

12.3.1 The polytechnic shall provide fair and reasonable transfer, withdrawal and appeal policies and clearly communicate these policies internally, via its website and student handbook.

12.3.2 The polytechnic shall have a proper system for appeal cases relating to academic and non-academic matters such as admission, discipline, examinations and assessment, practical training, co-curricular activities, hostel accommodation and others.

To realize this standard, the polytechnic shall have

- Written documents, handbook, Activity Reports and other supporting documents outlining, explaining and reporting transfer, withdrawal and appeal services, and their management
- The mechanisms, procedures and processes for transfer, withdrawal and appeal policies of the polytechnic with a staff management team dedicated to, and responsible for their handling, monitoring and appraisal

Standard 12.4 Articulation, Credit Transfer and Credit Exemption

12.4.1 The polytechnic shall provide articulation, credit transfer and credit exemption services to its students, implement these policies, regulations and processes concerning articulation practices, credit transfers and credit exemptions and communicate them to all stakeholders.

To realize this standard, the polytechnic shall have

- Written documents, handbook, Activity Reports and other supporting documents outlining, explaining and reporting articulation, credit transfer and credit exemption services, and their management
- The mechanisms, procedures and processes for articulation, credit transfer and credit exemption policies of the polytechnic with a staff management team dedicated to, and responsible for their handling, monitoring and appraisal

Standard 12.5 Scholarship and Sponsorship

12.5.1 The polytechnic shall make available and assist its students in seeking appropriate and well-defined, continuing external scholarship and sponsorship programmes, grants and funding as financial assistance for deserving and needy students to pursue their programme.

To realize this standard, the polytechnic shall have

- Written documents, handbook, Activity Reports and other supporting documents outlining, explaining and reporting scholarship and sponsorship programmes, and their management
- The mechanisms, procedures and processes for administering scholarship and sponsorship programmes of the polytechnic with a staff management team dedicated to, and responsible for their handling, monitoring and appraisal

Standard 12.6 Student Representation and Participation

12.6.1 The polytechnic shall promote student representation and participation in all matters pertaining to their learning process, experience and welfare.

To realize this standard, the polytechnic shall have

- Written documents, reports, minutes of meetings and other supporting documents outlining, explaining and reporting students' involvement, participation and representation in matters relevant to their studies
- The mechanisms, procedures and processes for students' involvement, participation and representation in the polytechnic through a dedicated student body responsible for their handling

Standard 12.7 Alumni

12.7.1 The polytechnic shall facilitate networking with polytechnic graduates to obtain feedback and communication of their concerns for further improvement of the programmes and educational services.

To realize this standard, the polytechnic shall have

- Written documents, reports, minutes of meetings and other supporting documents outlining, explaining and reporting polytechnic graduates' involvement, participation and representation in matters most relevant to their study experiences
- The mechanisms, procedures and processes for polytechnic graduates' involvement, participation and representation in the polytechnic through a dedicated alumni body responsible for their handling

Criterion 6

COLLABORATION AND LINKAGES

Objective : Collaboration and linkages between educational institutions and the industry, as well as the community, are essential towards the development of a knowledge-based economy.

CRITERION 6 | COLLABORATION AND LINKAGES

Collaboration and linkages is a powerful way to build capacity and is becoming more important in current educational context. Collaboration and linkages through a wide range of programmes that foster links with relevant industries and communities would benefit and strengthen the existing teaching and learning process, research and innovation as well as staff professional development programmes. Collaboration and linkages is an essential mechanism to enhance graduates skills and experiences in the industrial sector. Linkages provide venues to generate closer ties between polytechnics and the communities in order to understand and serve their needs and concerns, and develop mutual engagements in various socio-economic activities.

Standard 13: Education Collaboration

Preamble

The escalating demand for knowledgeable, competent and experienced workers by related public sectors and industries and the rapid changes in technology have resulted in the need for polytechnics to establish collaborations, linkages and providing extension services. Collaboration and linkages between polytechnics with other institutions, professional organizations, and agencies are networking activities that contribute to enhance the quality of education by creating opportunities for mutual benefits.

Objectives

This standard identifies the requirements for polytechnics to establish collaboration and linkages to improve the teaching and learning processes.

Standard Requirement and Evidences

13.1. The polytechnic shall collaborate with other educational institutions (local or overseas) for programme cooperation; students' programme articulation (educational credit transfers, exemptions); joint research; and for student and staff exchanges.

To realize this standard, the polytechnic shall have

- Relevant documents such as Non-Disclosure Agreement, Letter of Intent, Note of Agreement, Note of Understanding, Memorandum of Agreement, Memorandum of Understanding, Memorandum of Intention and others
- Written documents such as reports, minutes of meetings and other supporting documents outlining, explaining and reporting on collaboration policies, collaboration arrangements, credit transfers, participation of staff and students in exchanges
- The mechanisms, procedures and processes for collaboration arrangements, programme articulation, participation of staff and students in exchanges

Standard 14: Linkages

Preamble

To ensure the quality in the provision of institution and industry collaboration, linkages activities must be provided to meet the stakeholders' expectation and ensure that the programme is relevant to industrial needs.

Extension services and outreach are necessary to foster exchange, cooperation and understanding among communities through knowledge and skills development, project implementation and technical support.

Objectives

This standard identifies the requirements for polytechnic to establish relationship with the industries and communities to ensure that the teaching and learning programmes stay relevant to meet the industry and community needs.

Standards Requirements and Evidences

Standard 14.1 Industrial Collaboration

14.1.1 The polytechnic shall establish engagements with relevant and related industrial partners to facilitate the achievements of its mission and vision. The engagement shall encourage the involvement of industries and communities in the design and development of curriculum as well as in the delivery and evaluation process of teaching and learning.

14.1.2 The polytechnic shall engage in dialogue sessions with the relevant and related industries to obtain information on current requirements, latest technologies and updated practices at the work places.

14.1.3 The polytechnic shall establish an industry advisory committee to provide consultation for the betterment of the curriculum and to meet industrial requirements.

14.1.4 The polytechnic shall administer collaboration arrangements with the relevant and related industries for students' industrial training placements, industrial internships, on-the-job training (OJT) and apprenticeships which include the planning, coordination, monitoring and assessment of these programmes.

14.1.5 The polytechnic shall administer collaboration arrangements with the relevant and related industries for staff attachments and training, industrial lecturers, industrial visits, partnership programmes, research and development, sponsorships and others.

14.1.6 The polytechnic shall formalize collaboration activities with proper documentations such as Non-Disclosure Agreement, Letter of Intent, Note of Agreement, Note of Understanding, Memorandum of Agreement, Memorandum of Understanding, Memorandum of Intention and others.

To realize this standard, the polytechnic shall have

- The mechanisms, procedures and processes for industrial collaboration, arrangements, training placements, industrial internships, on-the-job training (OJT) and apprenticeships for students and staff
- Written documents, reports, minutes of meetings and other supporting documents outlining, explaining and reporting on industrial collaboration policies, industrial collaboration arrangements, training placements, industrial internships, on-the-job training (OJT) and apprenticeships for students and staff
- Relevant documents such as Non-Disclosure Agreement, Letter of Intent, Note of Agreement, Note of Understanding, Memorandum of Agreement, Memorandum of Understanding, Memorandum of Intention, et cetera

Standard 14.2 Extension

14.2.1 The polytechnic shall have a policy on extension programmes based on community needs. This shall encourage close engagement with local partners especially in acquiring funding through internal sources or sponsorships.

14.2.2 The polytechnic shall involve staff in planning, implementation, monitoring and evaluation of extension services provided to the community.

To realize this standard, the polytechnic shall have

- The mechanisms, procedures and processes for extension programmes which include corporate social responsibility (CSR) programmes
- Written documents, reports, minutes of meetings and other supporting documents outlining, explaining and reporting on extension programmes

Criterion 7

RESEARCH AND DEVELOPMENT, CONSULTANCY AND COMMERCIALIZATION

Objectives: An educational endeavour driven by research, innovation and creativity is able to transform nations. Consultancy and commercialization provide avenues for institution to create and share innovative and creative ideas with the public.

CRITERION 7 | RESEARCH AND DEVELOPMENT, CONSULTANCY AND COMMERCIALIZATION

Research and development becomes the striving force to accelerate institutional excellence. Research and development aims at discovering solutions to problems or creating new products and services and knowledge that would benefit the communities and industries. It is important to inculcate a research culture amongst the academic staff to generate quality research output. Consultancy and commercialization is greatly emphasized for the purpose of giving benefit to the economy and society by building up strong networking between the related parties.

Standard 15: Research and Development Activities

Preamble

Research can be defined as a sequence of activity (in an orderly manner), through which the findings introduce new knowledge to the body of existing knowledge in the focused area. This includes finding a new solution to existing problems where the present solutions are not effective or are not solving the problems.

Innovation refers to activities undertaken to produce new products or services, new systems or processes. Innovation includes enhancement activities to existing product/service/system/process. Invention and development of new prototype or product/service/system/process enhancement is an innovation activity.

Objectives

This standard is to identify the requirements for the polytechnic to establish policies, entities, mechanisms and provisions to undertake research and innovation activities, and to comply with any other policies or directives from stakeholders, to promote research and innovation activities that support teaching and learning to achieve its vision and mission.

Standards Requirements and Evidences

Standard 15.1 Research and Development

15.1.1 The polytechnic shall promote research and scholarly activities, as well as provide the relevant resources in their support.

15.1.2 The polytechnic staff shall be involved in various types of research and innovation activities to keep abreast with new knowledge and technology.

15.1.3 The polytechnic shall report, disseminate, publicise, implement and utilize research and development output for polytechnic improvements, innovation and commercialization.

15.1.4 The polytechnic shall manage, monitor and evaluate research and development projects and outputs to reflect on the progress they have made and their emerging needs.

To realize this standard, the polytechnic shall have

- The mechanisms, procedures and processes for research and development programmes
- Written documents, reports, proceedings, minutes of meetings/ discussions and other supporting documents outlining, explaining and reporting on research and development programmes.
- Evidence of research and development activities such as innovation in technology; joint research; joint extension activities; staff training, industrial attachment and problem-solving with industries; action research and others
- Evidence and related documentation on development of prototypes and products, innovations, intellectual property and commercialization

Standard 15.2 Consultancy

15.2.1 The polytechnic shall engage its expertise for consultancy services along identified specializations to benefit the community which may or may not derive income.

To realize this standard, the polytechnic shall have

- The mechanisms, procedures and processes for consultancy services
- Written documents, reports, proceedings, minutes of meetings/ discussions and other supporting documents outlining, explaining and reporting on consultancy services
- Evidences of consultancy activities such as product/ prototype development, entrepreneurship and business development guidance, jury service, judging panels and others
- Evidences and related documentation on consultancy services and activities

Standard 15.3 Intellectual Property and Commercialization

15.3.1 The polytechnic shall maintain a system and proper documentation relating to intellectual property management and acquisition, for products, processes or services.

15.3.2 The polytechnic shall maintain a system and proper documentation relating to commercialisation of products, processes or services.

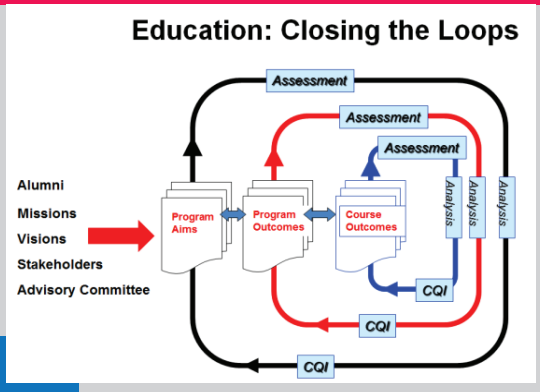
To realize this standard, the polytechnic shall have

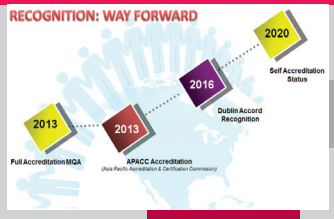
- The mechanisms, procedures and processes for acquiring intellectual property rights for products, processes and services
- The mechanisms, procedures and processes for commercialization of products, processes or services
- Written documents, reports, proceedings, minutes of meetings/ discussions and other supporting documents outlining, explaining and reporting on acquiring intellectual property and on commercialization

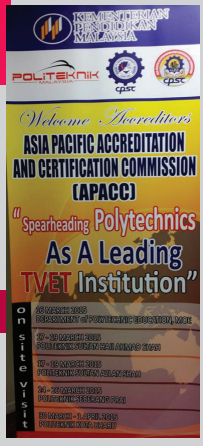
Criterion 8

QUALITY ASSURANCE AND CONTINUAL QUALITY IMPROVEMENT

Objectives: Quality assurance delivers efficient and effective system, processes and products; continuously improve and revisit targets for further enhancement, and build-up better image to compete in an emerging market.







CRITERION 8 | QUALITY ASSURANCE AND CONTINUAL QUALITY IMPROVEMENT (CQI)

Quality assurance is an approach in quality management that is increasingly in demand in the current competitive market. Quality assurance focuses on ensuring the tasks, procedures and processes are executed exactly as intended every time. Continual quality improvement serves to enhance the quality of the outcome and embrace the spirit of continual quality improvement to meet the needs and exceeds the expectations of the stakeholders.

Standard 16: Quality Assurance

Preamble

Quality Assurance refers to administrative and procedural activities implemented in a quality system so that the requirements and goals of the organization can be achieved. Quality Management System covers dynamic policies, procedures and mechanisms for regular reviewing and updating of its structure, functions, strategies and core activities to assure quality and achievement of the key performance indicators.

Objectives

This standard identifies the requirements for the polytechnic to conduct data collection and monitoring through the identification of salient data, by conducting internal audit and management review meetings. It also identifies the requirements for the polytechnic to conduct internal assessment to determine whether the policies, systems, processes and procedures are effective in achieving the desired results. The auditing processes will assess the polytechnic's commitment towards continual improvement and organizational excellence so that students can benefit from the high quality of educational services.

Standards Requirements and Evidences

Standard 16.1 Data Collection and Monitoring

16.1.1 The polytechnic shall administer and maintain a quality assurance system with assigned targets, policies, roles, responsibilities, manuals, reports, remedial actions and a dedicated team to take charge.

16.1.2 The polytechnic shall establish the relevant data (scope, source, methodology, frequency and ownership) to be collected and analyzed for the purpose of measuring its performance against the targets set.

16.1.3 The polytechnic shall have a data collection process to monitor, measure and evaluate the achievements of its targets and periodically monitor its achievements.

16.1.4 The polytechnic shall regularly collect, compile and analyse the data collected in a systematic and reliable manner. This shall include student and staff satisfaction survey.

16.1.5 The polytechnic shall provide relevant analysed data to the management team, relevant staff or stakeholders in a timely manner for quality improvement.

16.1.6 The polytechnic shall analyse trend data to harness its strengths and take appropriate actions to overcome its weaknesses.

To realize this standard, the polytechnic shall have

- The mechanisms, procedures and processes of dissemination of data to relevant stakeholders
- Documented samples of data collected, data compiled, data analysis report, data trend analysis on the achievements, overall students and staff satisfaction, quality of student support services and others
- Evidences of data sharing with management team, relevant staff or stakeholders
- Documented evidence of monitoring the results against all targets set
- Documented interventions and actions taken to address gaps when targets are not met
- Reviewed records

Standard 16.2 Internal Auditing

16.2.1 The polytechnic shall maintain updated policy and operation manuals for quality assessment and internal auditing.

16.2.2 The polytechnic shall have a version of control system to keep track of the revisions history of manuals.

16.2.3 The polytechnic shall ensure that policy and/or operation manuals are easily accessible to relevant staff for their daily operations, and are regularly reviewed and updated.

16.2.4 The polytechnic shall carry out internal quality audit by independent and well-trained staff.

16.2.5 The polytechnic shall conduct regular internal audit on its operations. Based on the audit reports, the strengths and areas for improvement are compiled for management review purposes.

To realize this standard, the polytechnic shall have

- Policy and operation manuals for internal audit processes
- Document control procedure for internal auditing
- Documented evidences for internal audit processes
- Internal audit reports
- Management review records

Standard 16.3 Management Review

16.3.1 The polytechnic shall review its management and operations based on review reports and data analysis to monitor the achievement of its vision and mission and ensure its systems and processes are continually improved.

16.3.2 The polytechnic shall conduct a comprehensive management review meeting annually, chaired by the top management to focus on reviewing its strategic and action plan.

16.3.3 The polytechnic shall compile and report all audit findings. Any necessary action must have clear ownership and execution timeline.

16.3.4 The polytechnic shall monitor and evaluate the effectiveness of the implementation of the action plans to address audit findings.

16.3.5 The polytechnic shall disseminate management review outcomes to relevant stakeholders for the purpose of seeking feedback to continually improve the processes.

To realize this standard, the polytechnic shall have

- Minutes of annual management review meeting
- Management review reports
- Documented evidences that the management team reviews the strategies
- Documented evidences that the management review report is shared with relevant stakeholders

Standard 16.4 Feedback and Complaints

16.4.1 The polytechnic shall set up a system for collecting feedback and complaints from stakeholders and non-stakeholders. This includes a timely response system for any feedback and complaints received.

16.4.2 The polytechnic shall have a close-loop feedback and complaint management system to ensure that every feedback and complaint are addressed appropriately and effectively.

16.4.3 The polytechnic shall establish a clear response time for any feedback and complaint received from customers.

16.4.4 The polytechnic shall provide a dispute resolution policy and procedures that are communicated clearly to its customers.

16.4.5 The polytechnic shall maintain records for all feedback and complaints as well as the actions taken as resolutions.

16.4.6 The polytechnic shall analyse the feedback and complaints received and these serve as inputs for the review process and continual improvement.

To realize this standard, the polytechnic shall have

- Records of feedback, complaints and disputes
- Documented evidences of review, monitoring response time, evaluation, action(s) taken and improvements made for feedback, complaints and disputes received
- Reviewed records

Standard 17: Continual Quality Improvement

Preamble

Continual Quality Improvement is a process to ensure programmes or activities are systematically and intentionally improving services as well as increasing positive outcomes to meet and / or exceed the expectation of the customers. Continual Quality Improvement environment offers positive changes using evidence-based practices. Continuous improvement is most effective when it becomes a daily habit. Continual Quality Improvement consists of corrective and preventive actions and continuous quality improvement programmes.

Objectives

The standard shall act as a backbone for achieving organizational excellence by providing regular reviewing and updating process of its structures, functions, strategies and core activities. Specifically, the objectives of this standard are:

i. to provide a mechanism to execute Continual Quality Improvement at institutional level.
ii. to monitor the efficiency of the work processes across the institution to be able to achieve the intended objectives.
iii. to monitor the impact of the education and training services to satisfy the stakeholders' needs.

Standards Requirements and Evidences

Standard 17.1 Corrective and Preventive Actions

17.1.1 The polytechnic shall undertake corrective and preventive measures to meet its targets as evidence of progressions towards quality improvement.

17.1.2 The polytechnic shall have a corrective and preventive system to harness its strengths and take appropriate actions to overcome its weaknesses.

17.1.3 The polytechnic shall have a detailed corrective action plan that clarifies the roles, responsibilities, timeline, and management endorsement of the corrective actions implementation.

17.1.4 The polytechnic shall monitor and evaluate the effectiveness of the implementation of the corrective action plans.

To realize this standard, the polytechnic shall have

- The mechanisms, procedures and processes for corrective and preventive actions
- Documented evidences for corrective action plans implementation and monitoring, and its dissemination

Standard 17.2 Continuous Quality Improvement

17.2.1 The polytechnic shall continuously review and improve the systems, policies, processes and procedures to provide high quality educational services for the students.

17.2.2 The polytechnic shall commit to provide adequate and appropriate resources, technologies, learning support services, facility development and upgrading, in order to enhance institutional quality.

17.2.3 The polytechnic shall have intervention plans for developing and enhancing students' academic, personal and career development.

17.2.4 The polytechnic shall optimise its resources in the implementation of continuous improvement plans.

17.2.5 The polytechnic shall utilize staff, students and other stakeholders' feedback and suggestions for continuous improvement.

17.2.6 The polytechnic shall review and evaluate the effectiveness of its continuous quality improvement programmes.

To realize this standard, the polytechnic shall have

- The mechanisms, procedures and processes for continuous quality improvement
- A written continuous quality improvement policy, which is clearly disseminated to all staff
- A written workflow of the functions/tasks/job specifications to demonstrate how continuous quality improvement programmes are implemented and monitored
- A continuous quality improvement committee to perform and monitor the continuous quality improvement undertakings at all levels in the institution

MALAYSIAN POLYTECHNIC STANDARDS

MyPOLYStandards

PART TWO

COMPETENCY STANDARDS FOR POLYTECHNIC GRADUATES

Introduction

In its aspiration to become a fully developed nation by the year 2020, Malaysia invest in education and training for better workforce quality, economic productivity and global competition. To fully realise these goals, Malaysia is commited in developing a human capital which can respond to changes in the workplace and new world business scenario of the Millennium. The human capital must be of quality manpower that can help increase the nation's productivity to compete in the global market. Thurow (1970) defines human capital as an individual's productive capabilities — skills, talents, and knowledge — that can produce goods and services. Accordingly, human capital is measured in terms of the value of goods and services produced, and the value of human capital depends on the value of the consumption of these goods and services.

Investment in human capital can take place either through education and training or health expenditures. The investment in human capital through education and training will foster productive skills while the investment in human capital through health expenditures will improve productive lives. This conventional wisdom largely influences individuals, firms and government to invest in education and training for various socio-economic reasons. Specifically, an individual's decision to invest in human capital is generally based on the sound return of his / her investment (benefits exceed costs) while a firm's decision to invest in human capital is based on the belief that productive human capital will lead to higher output. The government's decision to invest in human capital is based on its role as the promoter of the people's welfare and as the driving force of human capital development in pursuit of economic productivity and global competition. It is for these reasons that the Department of Polytechnic Education (DPE) of the Ministry of Education (MOE) initiated the development of the Malaysian Polytechnic Standards or MyPOLYStandards to assure the quality of its infrastructure and programme provisions, as well as the marketability of its graduates.

The rest of Part Two of this document consists of sections on The Needs for the Competency Standards in Malaysian Polytechnics, What are Competency Standards?, The Process of Developing Competencies, Guiding Principles and Competency Standards Development Process. The section on Guiding Principles for the Development of Competency Standards for Polytechnic Graduates highlights the philosophical rationales in the development of potentials of an individual and the hybrid concept of education and training in the polytechnic education system in Malaysia. Part Two also includes a general explanation of the Process of Developing Competency Standards for a Specified Programme, Body of Knowledge Framework — Personal Development, Mathematics, Sciences, Technical and Workplace Competencies — and the Curriculum Development Process.

The Needs for Competency Standards in Malaysian Polytechnics

Education and training in Malaysia is a national endeavour. With an annual allocation that represents nearly a quarter of the national operating expenditure, the government of Malaysia is committed in developing a highly productive and competent workforce, especially in the middle level section of technical manpower and executives. This sizeable investment allocated for the education and training sector is in line with the country's quest to become a fully developed nation as aspired in Vision 2020. To fully realise this vision, the government has embarked on new economic initiatives, namely the transformation towards a productivity and quality-driven economy, the adoption of high value-added, capital intensive and innovation driven industrial programmes, improvement in the nation's services sector, and the development of strong scientific and technology capabilities.

The government's commitment towards developing a highly productive and competent workforce makes the role played by the technical and vocational education and training providers all the more significant. Towards this end, post-secondary technical and vocational education and training providers, especially polytechnics, have emerged to be the leading provider of manpower at the semi-professional level of various industries in the country. Historically, the development of polytechnic education and training can be traced back to the various phases of industrialisation initiatives. The first two polytechnics — Ungku Omar Polytechnic and Sultan Haji Ahmad Shah Polytechnic — were set up in the eras of Import-Substituting Industrialization (in the 1960s) and the First Phase of Export Processing Zones (in the 1970s). In the 1980s and 1990s or the eras of the Second Phase of Export Processing Zones and the Introduction of Heavy Industries respectively, eleven (11) more polytechnics were set up.

Malaysia entered the era of new economies and brainpower industries, as the 21st century dawned, and twenty (20) more polytechnics were established, bringing the number of polytechnics nationwide to thirty-three (33). The era of new economies is characterised by economic restructuring and the ascendancy of knowledge as a primary commodity that necessitates the creation of a more flexible job structure. This means that there is a need for a change in the related education and skills requirements. In addition, according to Thurow (1996), the era of brainpower industries is the period of disappearance of classical comparative advantage where knowledge is the only source of long-run sustainable competitive advantage. Therefore it is imperative that polytechnics ensures the programmes, qualifications and graduates produced meet both the national and international standards of professional preparation and practice. Failing to face up to these challenges may jeopardize the country's competitive advantage in the long run.

In view of these challenges posed by the new economies and brainpower industries that polytechnic education and training faces in the 21st century and in light of polytechnic education and training that is becoming more global, the Department of Polytechnic Education, Ministry of Education has identified and undertaken several transformational initiatives towards developing the MyPOLYStandards which has incorporated the national competency standards for graduates in its Part Two. Undoubtedly, the development of these

standards can assure the quality of its infrastructure, programmes and graduates, boost national and international standing, increase market access, enhance graduates mobility, and attain prestige and distinction.

What are Competency Standards?

Webster's New World College Dictionary defines 'competent', as well qualified, capable, fit, sufficient, adequate of understanding, or authorised; and 'competence' refers to a condition or quality of being competent (Webster's New World College Dictionary, 1997, p. 284). Similarly, the Oxford Advanced Learner's Dictionary defines 'competent' as having the necessary ability, authority, skill and knowledge, and "competence" as being able to do something well (Oxford Advanced Learner's Dictionary, 1995, p. 232). In other words, competency is the state of achieving adequate capabilities, acquiring deeper understanding or attaining creditable authority, particularly in the form of knowledge, skills and abilities to perform jobs, duties, or tasks in an employment position or career advancement. In short, competency refer to having a set of related knowledge, skills, attitudes and abilities required for performing functions in the workplace.

'Standard' according to Webster's New World College Dictionary, is the type of model, or example commonly or generally accepted or adhered to or criterion set for usage or practices or a level of excellence or attainment, regarded as a measure of adequacy (p. 1306). Similarly, The Oxford Advanced Learner's Dictionary defines a standard as a level of quality, or a specified level of quality or thing used as a test or measure (pp. 1161-1162). Based on these definitions, a standard can be understood as an accepted or agreed upon criterion or level of attainment used as a measure of accomplishment of specific abilities. To put it briefly, a standard is a statement of attainment to measure accomplishment in the workplace.

Combining the two terms, competency standards can therefore be defined as statements of attainment to measure accomplishments in specific abilities, particularly in the form of knowledge, skills, attitudes and abilities in the workplace. Competency Standards form the integral part of and are embedded in the curriculum and enable comparisons of performance that may be taken as the basis for evaluation and assessment of competencies. The questions now are the following: How can competencies be developed? What are the learning processes and learning experiences that students have to undergo in order to acquire specified learning outcomes and develop specified competencies?

The Process of Developing Competencies

In consonance with other education systems, the development of competencies in the polytechnic education system involves learning. According to Merriam-Webster On-line Search (2009), learning is defined as the acquisition of knowledge or skill or a modification of a behavioural tendency by experience. In short, learning can be understood as knowledge or skill gained that resulted in behavioural change through being involved in or exposed to something over a period of time. According to Laks (2009), learning is a series of activities that encodes incoming information at the input learning phase, indexes the incoming information with existing memories and contextualises a set of experience through the incorporation of new information with existing memories at the process phase and results

in a change in performance or behaviour at the output phase (refer to Figure 2.1). Laks (2009) further highlights that the cognitivist's perspective of learning is on the input of the learning phase, or a change in the cognitive structure while the behaviourist's perspective learning is on the output of the learning phase, or a change in behaviour. Harmonising views from both perspectives, Laks (2009) proposes that the process of learning starts with the acquisition of knowledge or skill at the input phase and ends with a change in performance or behaviour. Likewise, as put forward by the behaviourists, it is also fair to suggest that the learning process can occur deductively through repeated, habitual activities or possibly through trial and error processes. The accumulation of meaningful data from these activities and processes will eventually facilitate reasoning from fairly general to logically valid conclusion, thus will lead to the formation of valuable information, new-found knowledge and/or timeless conventional wisdom.

The implications of incorporating concepts of learning and understanding how learning actually occurs from different perspectives — that is, an approach that views learning as a process of indexing and contextualization as opposed to another approach that views learning as the presentation of the same cues to elicit a demonstration of learning — on polytechnic education will be further discussed in the next section, Guiding Principles: The Hybrid Concept of Education and Training.

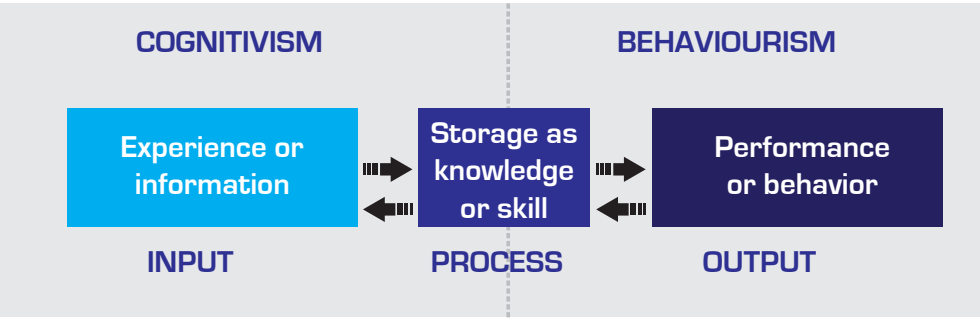


Figure 2.1: The Process of Learning

The development of competency consists of four stages: development, crystallisation, naturalisation and demonstration of learning. In the development stage, the acquisition of knowledge, skills, attitudes and abilities can be done through instruction. In polytechnics, since the curriculum forms an integral part of the teaching and learning process, it is only through a well-developed, closely monitored curriculum that an intellectually challenging real world learning experience can be imparted to polytechnic students. It is equally important, that distinctive traits, unique characteristics and learning needs of students can be identitied through the explicit outcomes of a student-oriented curriculum. Thus, this will facilitate the development of appropriate knowledge, skills, attitudes and abilities among students. In other words, it is only through a distinctive learning process — the acquisition of knowledge and skills or change in performance arising from experience — that knowledge, skills, attitudes and abilities are developed (refer to Figure 2.2).

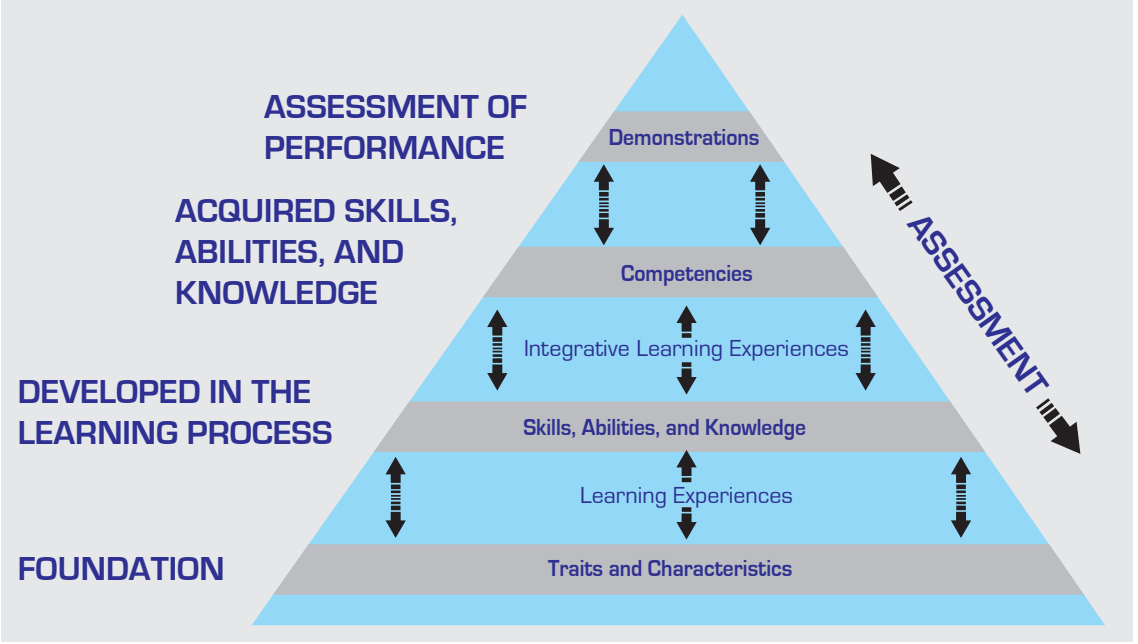


Figure 2.2: The Process of Developing Competencies

Subsequently, in the crystallisation stage, students will have to undergo a series of integrative and deep learning experiences where information from multiple sources and perspectives are put together. At this stage, integrative learning experiences will result in more meaningful learning, thus retaining knowledge, skills, attitudes and abilities over a period of time. Integrative, deep learning experiences are designed so that students can be actively engaged in more rigorous activities such as connecting, understanding, reflecting and evaluating information of prior knowledge, skills, attitudes and abilities, and apply them in varied settings. Experiences that these students acquire through integrative learning will not only lead to the building of mental models of the crystallisation of knowledge, skills, attitudes and abilities, but will also enhance the development of values — a set of enabling behaviours that guide the conduct of oneself during professional endeavours. In short, it is the integrative, deep learning experiences that lead to the essence of competency development, or a set of related knowledge, skills, attitudes and abilities required for performing functions in the workplace.

In the naturalization stage, polytechnic students, after undergoing and engaging in rigorous acquisitive and transformative learning experiences would have developed both exceptional and distinctive competencies to enable them to work with diligence and high capacity. At this point, the development of students' cognitive domain enables them to make judgments about the value of ideas or materials while the development of students' affective domain allows them to constantly adopt a belief system and philosophy that will guide them to behave consistently with their personal values. In addition, the development of students' psychomotor domain will facilitate them to consciously or unconsciously master all related skills and activities expected of them.

In the demonstration of learning stage, students who have achieved a certain level of competency will then have to demonstrate that they have acquired the specified learning

outcomes expected of them. At this stage, students will have to prove that they can apply the specific set of skills, knowledge, attitudes and abilities in either educational or workplace settings. The real challenge is to ensure that they will be assessed according to the pre-determined standards and the curricula of the related programmes of study. As in Malaysian polytechnics, the use of the same standards and curricula does not only ensure uniformity in tthe quality of teaching and learning but also promotes consistency in assessing students' performance.

Guiding Principles

Guiding principles refer to the fundamental truth of norms, values or ideals that keep and direct a person, a group or an organization on a course. Guiding principles are values upheld by individuals that guide them either in personal or professional endeavours. For an organisation, guiding principles are the embedded norms and values that guide its existence and normally used for the formulation of vision, mission and strategies. In other words, guiding principles are often understood as philosophical rationales that guide policy makers or practitioners in explaining the truthfulness and rightfulness of their actions. Such guiding principles can be used to explain the rationale for the development of Competency Standards for Polytechnic Graduates and its relation to human capital development in Malaysia, specifically at the semi-professional level.

The guiding principles for the development of Competency Standards for Polytechnic Graduates are based on the following philosophical rationales:

- The holistic approach in the development of potentials of an individual
- the hybrid concept of education and training

Holistic Approach in the Development of the Potentials of an Individual

The planning and management of polytechnic education and training system are closely related to the conceptualisation and realisation of policies and directions, in accordance with the needs of the industry and nation with a direct focus on the monitoring of the implementation of policies related to curricula, co-curricular activities, industrial training, evaluation and examinations. Apart from that, the system also deals with the establishment of good relations with the public, private and industrial sectors. Historically, polytechnic education and training system is associated with the National Education Philosophy. After forty-six (46) years of the establishment of the first polytechnic—Ungku Omar Polytechnic — the underlying concepts of developing an intellectually, spiritually, emotionally and physically balanced individual have remained intact. The National Education Philosophy states that:

> *Education in Malaysia is an on-going effort towards further developing the potential of individuals in a holistic and integrated manner, so as to produce individuals who are intellectually, spiritually, emotionally and physically balanced and harmonious, based on a firm belief in and devotion to God. Such an effort is designed to produce Malaysian citizens who are knowledgeable and competent, who possess high moral standards and who are responsible and capable of achieving high level of personal well-being as well as being able to contribute to the harmony and betterment of the family, the society and the nation at large.*

To polytechnic educators, the National Education Philosophy is essentially the paramount guiding principle for any form of educational programmes in the country. The essence of the philosophy is translated into the mission of polytechnic education and training, that is, to develop human capital at the middle level in the technical, commercial and service sectors. It is therefore the responsibility of policy makers and curriculum developers to develop strategies to complement the spirit underlying the philosophy, thus enhancing the mission of developing the middle level section of human capital. Towards this end, a polytechnic curriculum that is balanced in terms of design and with emphasis on the development of cognitive, affective and psychomotor domains will result in the development of a holistic, knowledgeable and competent human capital.

The Hybrid Concept of Education and Training

A discussion of the National Education Philosophy is not complete without specifically highlighting the traditional roles of polytechnics in relation to the roles played by other post-secondary technical and vocational training providers in the country.

As mentioned previously, firstly, the main role of polytechnics is to develop human capital at the middle level in the technical, commercial and services sectors. In this case, human capital can be understood as people who are educated and trained with technical skills to perform technician level job types. It is through the standard-based curricula that these individuals' net worth and value in the labour market are increased. For example, the curricula for engineering programmes at both certificate and diploma levels in the polytechnics are geared towards enabling student-technicians to exercise technical judgements based on an intelligent application of engineering principles as compared with industrial/trade technicians or craftsmen/skilled workers. According to Colombo Plan Staff College (1989), engineering technicians, or high grade technicians require more theoretical abilities as compared to industrial or trade technicians who require more practical abilities, or as compared to craftsmen/skilled workers who simply need to rely on the accumulation of skills and experience. The above differences in the use and exercise of technical judgements significantly distinguish the job types of engineering technicians, industrial or trade technicians and craftsmen/skilled workers, thus justifying the curriculum differentiation between the three categories of technicians and skilled workers. It is therefore not wise nor practical to suggest that the polytechnics should adopt narrow job tasks, or occupational specific curricula suited for the training of craftsmen / skilled workers in their programmes of study.

Secondly, polytechnic graduates are meant to meet the demands of occupations at the middle level and are profiled as the minds-on, hands-on and hearts-on individuals. The potentials of these individuals can only be best developed to the fullest through a hybrid concept of education and training; the concept that utilises learning experience from the best that education and training can offer. According to Fortino (1999), the difference between education and training is through the learning experience. If students are expected to undergo a learning experience that is focused, intensive, narrow and exclusive to one subject matter, training is the answer. This learning experience is the usual approach adopted by various skills training centres around the country where occupational skills standards are the source of teaching reference. However, if students are expected to undergo a learning experience that is open-ended, expansive, broad and inclusive, then education is

the choice. This type of learning experience is the normal pedagogical approach taken by many higher education institutions. Since Malaysian polytechnics are mandated to produce the minds-on, hands-on and hearts-on individuals, the hybrid concept of education and training approach is the most appropriate to be employed. Towards this end, the design and development of curricula for the polytechnics must cater to the following rationales — dynamic, explicit outcomes, fully articulated, realistic, student-oriented, evaluation-conscious and future-oriented — and these curricula are supplemented with actual practical experience in the industries. It is the educational approach that ensures the assimilation of new information within the context of an individual's prior experience and knowledge while the training approach will facilitate students to apply what they have learned to real-world situations.

In other words, in the polytechnic education system, the educational learning approach is used to explain mathematical, scientific and engineering concepts and principles while the training approach is used to reinforce those concepts and principles during the practical work. The two-pronged approach provides polytechnic graduates with the immediate skills required for the job market as well as the ability to cope with the acquisition of new skills through lifelong learning. In short, it is hoped that through the hybrid concept of education and training, and through standard integrated curricula, the development of cognitive, affective and psychomotor domains of the individuals will be enhanced.

However, one should note that the practical training outlined in the polytechnic curricula is not meant for students to be as skilful as the training conducted in other skills training centres. In light of the foreseen limitation of resources, including time, facilities, lecturers, and in view of predetermined duration for each programme of study, it is impossible for the polytechnic curricula to be designed to equip polytechnic students with concepts, principles, and other theoretical and technical know-how that mirror the actual professional responsibilities. It is also impossible for the polytechnic curricula to cater for a wide range of skills, as if polytechnic students are prepared for the craftsmen's/skilled workers' job types. It should be understood that compulsory industrial training and practical training activities conducted in laboratories/workshops are designed so that polytechnic students meet the practical hours prescribed in the curricula as well as for the purpose of entry level in most job markets.

To further enhance practical learning experiences, polytechnics are embarking on new programmes that adopt the work-based learning approach so that students can be assigned to work in various industries, thus fulfilling the practical learning requirements before they join the workforce. It is important to reiterate that the broad-based, futuristic polytechnic curricula are developed to suit the needs of the new economies. Based on this notion, the polytechnic curricula are designed to equip student-technicians or student-executives with thorough knowledge and practical learning experience of the whole business environment. Rather than equipping students with specific skills or narrow job tasks that are terminal in nature — due to rapid technological advancement and changes in market demand — the polytechnic curricula place greater emphasis on a new set of hard and soft skills. Moreover, in an effort to develop students who are both academically and socially balanced, elements of generic student attributes — communications skills, critical thinking and problem solving abilities, leadership skills, continuous communication and information management, team

spirit, entrepreneurship skills, moral value and professional ethics — are embedded in soft skill courses and integrated in extra curricula activities in polytechnics. It is hoped that these efforts will assist and facilitate opportunities for graduates to work smarter and more intelligently, making full use of their thinking skills, thus increase graduates' employability in the job market.

The Competency Standards Development Process

The process of developing Competency Standards for Polytechnic Graduates consists of four stages, namely Search for Body of Knowledge and Professional Standards, Analysis, Synthesis and Evaluation of Information, Development of Competency Standards and Verification of Competency Standards (please refer to Figure 2.3).

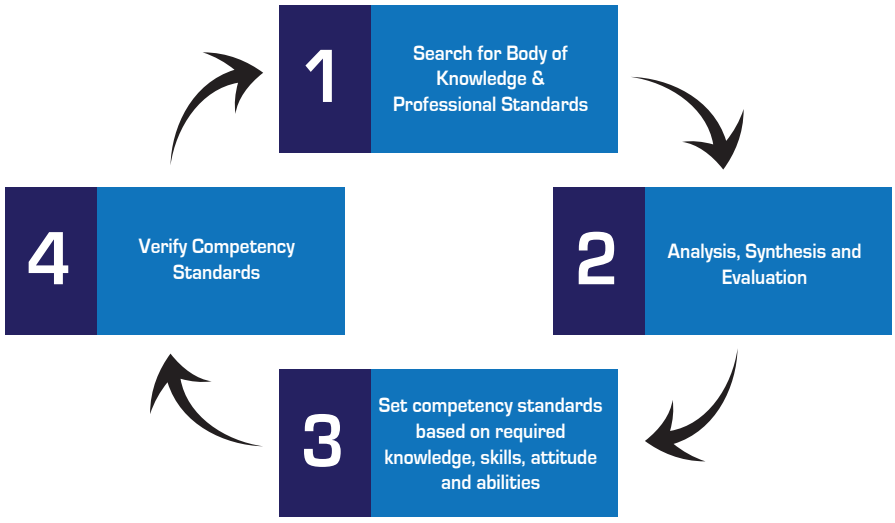


Figure 2.3: The Competency Standards Development Process

The first stage is to conduct an extensive search for the body of knowledge and professional standards. This involves the investigation of essential information that is known and understood about a particular field of study, including its related components, areas and sub-areas. The other related materials include the history of the particular field of study, the hallmark development, relevant data, philosophy and points of profession, as well as associated organisations or institutions. At this juncture, job functions and all required competencies associated with specified functions and tasks are identified. Since the development of Competency Standards is very much information-driven, especially with respect to standards, a series of special search for available professional standards and professional bodies have to be thoroughly conducted.

The second stage of the development is to analyze, synthesize and evaluate information gathered. Analysis of the information includes identifying interrelationships, associations and differences among materials, including identification of components, disciplines, areas and sub-areas. Synthesis involves putting the relevant information together, combining and forming new knowledge from the analysis and making sense of the materials gathered.

This includes the building of a model of the body of knowledge, or a framework for specified programmes which consists of five main components: Personal Development, Mathematics, Sciences, Technical and Workplace Competencies. In addition, the groupings of areas and sub-areas related to the prescribed discipline are dealt with at this stage. The evaluation phase deals with the prioritisation of information and determination of net worth or value of information gathered, including all the learning outcomes from relevant documents and professional standards. This means an adherence to the process of elimination as not all the analysed and synthesised information can be included in the specified body of knowledge for a programme.

The third stage is the development of the Competency Standards for programmes of study based on analysed, synthesised and evaluated information. The development of the Competency Standards for a programme begins with the identification of components, disciplines, areas and sub-areas of the programme. At this juncture, the learning outcomes from relevant materials or professional standards, usually at area or sub-area levels, are analysed from the point of their suitability to become the discipline learning outcomes. A group of similar discipline learning outcomes that has been identified is then develop into broader statements of competency to become learning outcomes for a programme. A compilation of the discipline competency standards constitutes the Competency Standards for the programme.

The last stage represents the verification of the Competency Standards for a specified programme of study. At this stage, a panel of experts from industries, associations, professional bodies, institutions of higher education and non-government organisations review and scrutinize the Competency Standards document. Inputs from the panel of experts are discussed and weighed before they are integrated into the document.

The Development Process of Competency Standards for a Specified Programme

The second stage of the Competency Standards development process is analysing, synthesizing and evaluating information gathered. Figure 2.4 shows the steps that are involved in the development process of competency standards for a specified programme of study. At this stage, various steps are put together, ranging from the identification of components, disciplines, areas and sub-areas to writing of learning outcomes and statements of competency standards. However, before the statements of competency for a specified programme of study can be developed a clear idea about the components, disciplines, areas and sub-areas of the Body of Knowledge Framework for the programme essential. In other words, the body of knowledge must be built first and the framework sub-divided into identifiable components and disciplines. Each of these components will be further sub-divided into areas and sub-areas.

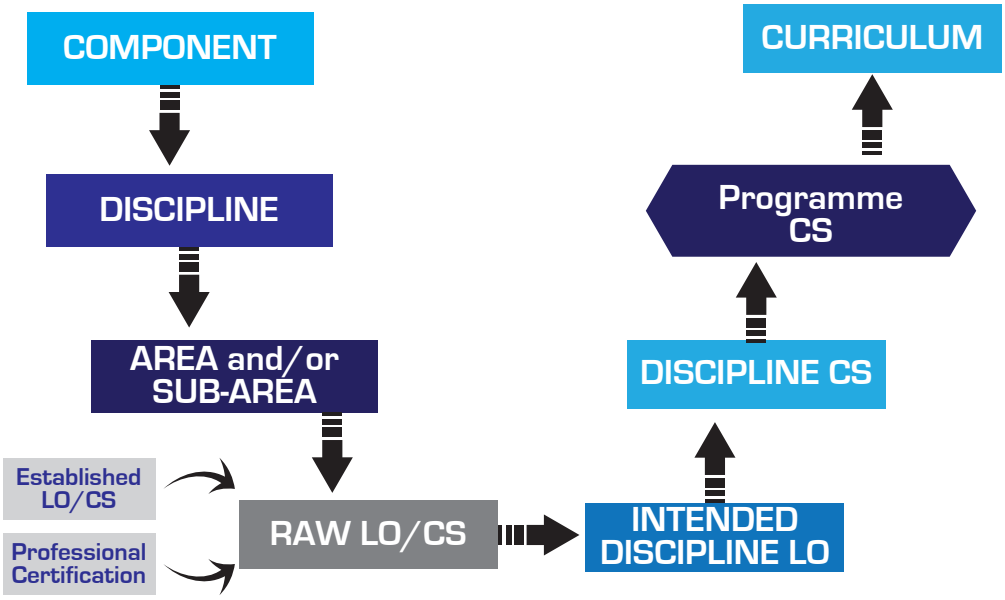


Figure 2.4: The Development Process of Competency Standards for a Specified Programme

Once the framework with the components, disciplines, areas and sub-areas has been developed, the process of writing statements of competency commences. The writing of competency statements begins with the identification and categorisation of learning outcomes from the relevant literature and from the established professional standards for each area or sub-area. The biggest challenge in writing statements of competency for a programme is to identify the keywords, terminologies and key ideas of the learning outcomes for the area/sub-area. Statements of competency which are connected to the demonstration of learning, specify the learning outcomes expected of students to be able to perform. It is therefore pertinent to choose words such as demonstrate, perform or display that show what students need to acquire the specified learning outcomes. Once completed, the next step is to develop these statements of outcome at area or sub-area levels into broader statements of attainment for a discipline or for a particular programme of study. In this case, it should be noted that many programmes of study may be developed from a particular discipline. It should also be noted that statements of competency for a discipline are broader than those of a programme.

Body of Knowledge Framework

A Body of Knowledge Framework is a graphical representation of the essential information that is known and understood about a particular field of study. The Body of Knowledge Framework consists of several identifiable components, disciplines, areas and sub-areas (refer to Figure 2.5).

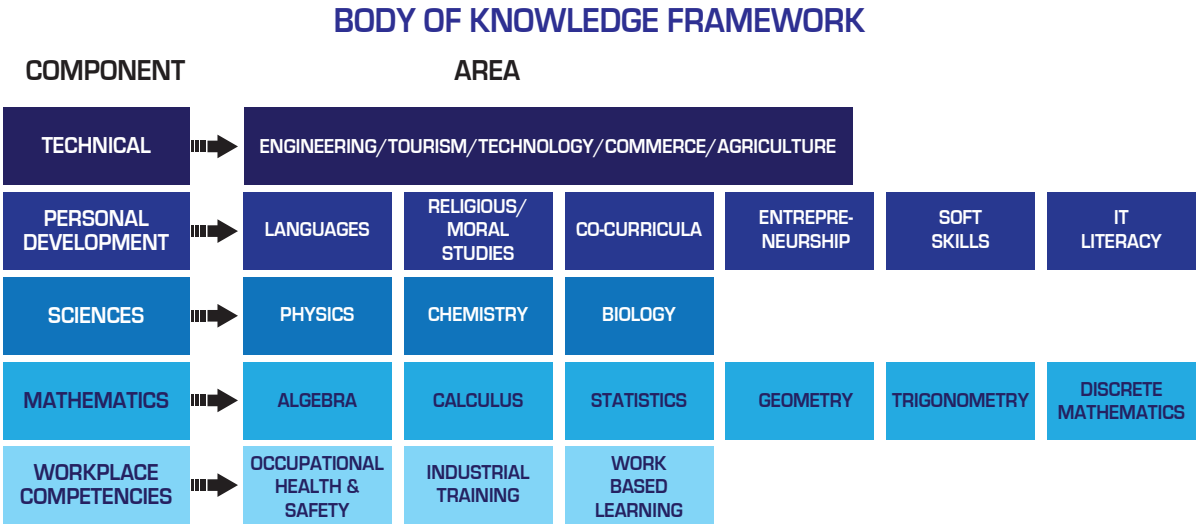


Figure 2.5: The Body of Knowledge Framework

Each component in the framework represents divisions of essential information according to organized knowledge. In the case of the Competency Standards for Polytechnic Graduates, the framework is subdivided into five components, namely Technical, Personal Development, Sciences, Mathematics and Workplace Competencies. The Personal Development component deals with the domain of essential information on personal growth. The Mathematics component refers to a specific collection of available knowledge dealing with quantities, magnitudes and forms through the use of numbers and symbols. The component of Sciences deals with the domain of systematized knowledge of nature and the physical world. The Technical component refers to a specific collection of available knowledge dealing with the application of principles or rules of natural or applied sciences. The component of Workplace Competencies deals with the domain of systematized knowledge of specific abilities, particularly in the form of knowledge, skills and abilities required in the workplace.

Areas, on the other hand, represent the subdivisions or elements of the previously identified component. Accordingly, the elements of the Personal Development component are Languages, Religious/Moral Studies, Co-curricula Modules, Entrepreneurship Studies and Soft Skills. The subdivisions of the Mathematics component are Algebra, Calculus, Statistics, Geometry, Discrete Mathematics and Trigonometry while the elements of the Sciences component consist of Physics, Chemistry and Biology. Domains of essential, core and specialised knowledge in each of the related programmes of study represent the elements of the Technical component. Courses such as Occupational Health and Safety, Industrial Training and Work-Based Learning are the elements of the component of Workplace Competencies.

The Curriculum Development Process

Curriculum development is the process of designing and preparing the programme structure, courses and syllabus for a programme of study according to specified criteria. It involves the integration of many inputs and adheres to many processes.

The development starts with examining feedback from industries, examining for government planning documents and interpreting Needs Analysis results. Referring to Figure 2.6, Needs Analysis is a systematic survey of demands of agencies, industries and business communities for a particular programme of study. It facilitates curriculum developers in planning for a particular programme of study in the most effective way possible.

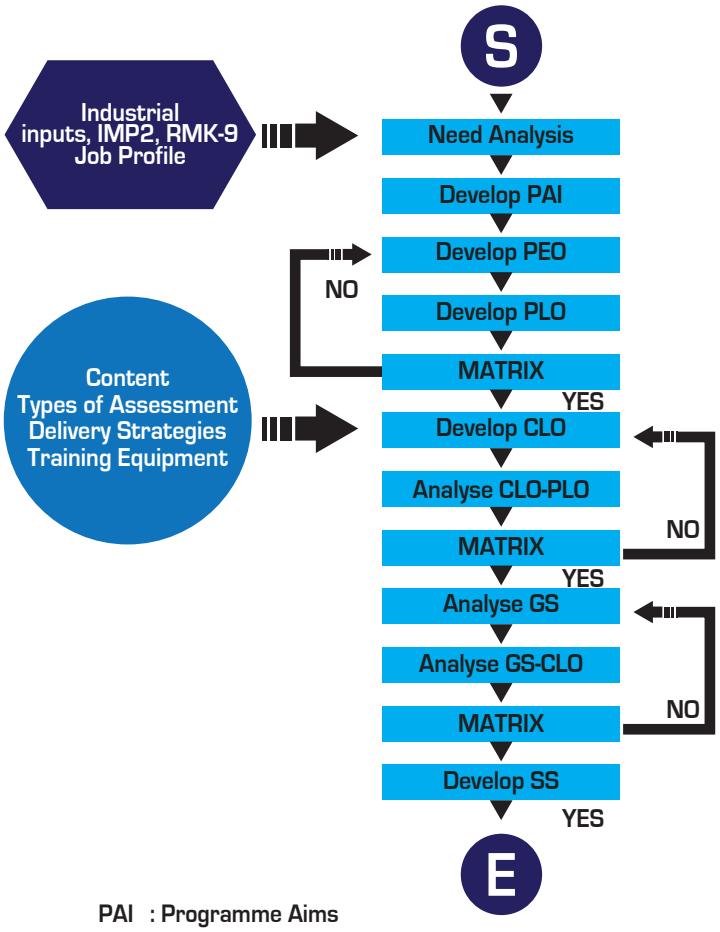


Figure 2.6: Curriculum Development Process

The results from the Needs Analysis help policy makers and curriculum developers understand the actual socioeconomic needs of a particular programme of study. In developing a curriculum, results from the Needs Analysis will assist developers in understanding the profile of the future graduates, thus contributing to the development of Programme Aims (PAi).

The development of Programme Learning Outcomes (PLO) refers to the process of identifying skills sets expected of students to accomplish upon completing a programme of study. In developing PLO, curriculum developers must adhere to eight domains prescribed by the Malaysian Qualifications Agency (MQA). These eight domains are: Knowledge; Practical Skills; Social Skills and Responsibilities, Values, Attitudes and Professionalism; Communication, Leadership and Team Skills; Problem Solving and Scientific Skills; Information Management and Lifelong Learning Skills; and Managerial and Entrepreneurial Skills. In the polytechnic curriculum, adaptability is the ninth domain integrated during the development of PLO. A matrix of PAi versus PLO is analysed so that the eight domains of learning outcomes are captured in the main elements or objectives of a programme.

Once statements of PAi and the PLO are approved, the next step is to develop a programme structure. A programme structure is a schedule of sequence of courses, consisting of information on credits, contact hours, pre-requisites, that guides curriculum implementers in planning teaching and learning in institutions. Once a programme structure is approved, credits and learning outcomes for courses, or Course Learning Outcomes (CLO), may be identified and developed. To ensure that the eight domains of learning outcomes (or nine domains including adaptability) are captured in the main elements or objectives of programme, a matrix of PLO versus CLO is analysed. After analysing the PLO-CLO matrix, the next process is to develop and write the General Outcome (GO) for the course, followed by the GO-CLO matrix analysis. The last step is to develop and write the Specific Outcome (SO) for each course. Hence the overall curriculum design and development of a programme comprises input from both industries and the professionals, in addition to the identified competency standards. These inputs are integrated to develop PAi, PLO, CLO, GO and SO for the curriculum.

List of Competency Standards by Programme

Phase 1

1.	DIP	Diploma in Information Technology (Programming)
2.	DNS	Diploma in Information Technology (Networking)
3.	DAT	Diploma in Accountancy
4.	DKA	Diploma in Civil Engineering
5.	DDM	Diploma in Digital Media
6.	DFP	Diploma in Fashion
7.	DKM	Diploma in Mechanical Engineering
8.	DPE	Diploma in Process Engineering (Petrochemicals)
9.	DUP	Diploma in Tourism Management
10.	DHK	Diploma in Hotel and Catering Management
11.	DKE	Diploma in Electronic Engineering

Phase 2

1.	DPB	Diploma in Building Services Engineering
2.	DBK	Diploma in Wood Based Technology
3.	DAS	Diploma in Environmental Engineering
4.	DUB	Diploma in Quantity Surveying
5.	DUT	Diploma in Land Surveying
6.	DSB	Diploma in Architechture
7.	DPW	Diploma in Town and Regional Planning
8.	DTK	Diploma in Electronic Engineering (Computer)
9.	DJK	Diploma in Electronic Engineering (Control)
10.	DEP	Diploma in Electronic Engineering (Communication)
11.	DEO	Diploma in Electronic Engineering (Optoelectronic)
12.	DET	Diploma in Electrical Engineering
13.	DEU	Diploma in Electronic Engineering (Medical)
14.	DKM	Diploma in Mechanical Engineering
15.	DTP	Diploma in Mechanical Engineering (Manufacturing)
16.	DPU	Diploma in Mechanical Engineering (Air Conditioning and Refrigeration)
17.	DEM	Diploma in Mechatronic Engineering
18.	DJL	Diploma in Mechanical Engineering (Plant)
19.	DPT	Diploma in Mechanical Engineering (Agriculture)
20.	DMK	Diploma in Mechanical Engineering (Plastic)
21.	DMB	Diploma in Mechanical Engineering (Material)

22. DMT Diploma in Mechanical Engineering (Textile)
23. DMP Diploma in Mechanical Engineering (Packaging)
24. DAD Diploma in Mechanical Engineering (Automotive)
25. AKM Advanced Diploma in Mechanical Engineering
26. AEM Advanced Diploma in Mechatronic Engineering
27. AAD Advanced Diploma in Automotive Design and Manufacturing Engineering
28. DPR Diploma in Marketing
29. DIN Diploma in Insurance
30. DIB Diploma in Islamic Banking & Finance
31. DKB Diploma in Banking & Finance
32. DRM Diploma in Retail Management
33. DLS Diploma in Logistics & Supply Chain
34. DSK Diploma in Secretarial Science
35. DPM Diploma in Business Studies
36. DEC Diploma in Business Studies (E-Commerce)
37. DPI Diploma in International Business
38. DEV Diploma in Event Management
39. DHF Diploma in Foodservice (Halal Practice)
40. DCA Diploma in Culinary Arts
41. DGT Diploma in IT (Game Technology)
42. DIS Diploma in IT (Information Security)
43. DLH Diploma in Landscape Horticulture
44. DAG Diploma in Agrotechnology
45. DAQ Diploma in Aquaculture Technology
46. DBT Diploma in Biotechnology
47. DFT Diploma in Food Technology
48. DRG Diploma in Graphic Design
49. DRI Diploma in Industrial Design
50. DDV Diploma in Video & Film Studies
51. DMC Diploma in Print Media Technology

Academic Leadership	Academic leadership refers to individuals or entities in an institution entrusted with supervisory and decision-making responsibilities to ensure the successful implementation of a TVET programme.
Academic Staff	Perform activities associated with teaching and learning; research and innovation; and institutional administration and services to the community.
Administration	Administration refers to the activities that relate to the running of an organization that manages the day-to-day operation of the organization.
Alumni	A graduate of an institution such as a school, college or university.
Apprenticeship	A system of training a new generation of practitioners of a trade or profession with on-the-job training and enable to gain a license to practise in a regulated profession.
Archive	Records of data and information.
Articulation	The process of comparing and mapping the content of courses that are transferred between institutions.
Articulation Programme	A plan or project agreed by both institutions for courses transferrable in further study.
Career Pathways	A career pathway is a series of articulated educational and training programmes and services that enables staff to advance over time to successively higher levels of knowledge and management skills for human capital development.
Classrooms	Ample size of space to accommodate student for teaching and learning activities
Co-Curricular Activities	Non-academic activities that all students must participate in to enhance social interaction, leadership, healthy recreation, self-discipline and self-confidence.
Collaboration	Collaboration can be defined as the action of working together with either partners or together to create opportunities for mutual benefits.

Collaborative Learning	An educational approach to teaching and learning that involves groups of students working together to solve a problem, complete a task, or create a product.
Compensation and Rewards	All of the rewards earned by employees in return for their labour including direct, indirect financial compensation and non-financial compensation
Constructive Alignment	Constructive Alignment is an approach to curriculum design in which the teaching and learning activities are designed to maximize learning by requiring students to engage and activate the verbs specified in the learning outcomes and for them to activate the same task in the assessments The term construct refers to students constructing and structuring their own understanding and personally make meaning to what is to be learned. Alignment refers to a learning environment setup by the teacher that allow students to meaningfully engage with the actual learning outcomes and re-engaging the tasks in the assessment tasks in order to solicit how well the outcomes are learned.
Consultancy Services	Specialist and expertise consultation.
Continual Quality Improvement (CQI)	A system that seeks to improve the provision of services with an emphasis on future results.
Cooperative Learning	A teaching arrangement that refers to small, heterogeneous groups of students working together to achieve a common goal. Students work together to learn and are responsible for their teammates' learning as well as their own.
Counselling	Session of advising on specific area.
Course Learning Outcome (CLO)	The outcome the student acquire knowledge and able to perform the required skill after completing a course.
Credit Transfer	Credit shall be given to students who have taken courses in a programme of study prior to the programme being followed either in the same institution or other institutions.
Curriculum	Curriculum is an "academic plan," which should include: the

	purpose of the curriculum (i.e., goals for student learning), content, sequence (the order of the learning experience), instructional methods, instructional resources, evaluation approaches, and how adjustments to the plan will be made based on the experience or assessment data.
Curriculum Delivery	Process involving the planning for teaching, assessing, moderating, recording and reporting of the learning-teaching process.
Curriculum Structure	Curriculum Structure consists of compulsory, core, specialisation and elective courses that have to comply with curriculum specifications and follow the programme standard.
Educational Resources	Related resources such as personnel, equipment, and information technology to facilitate teaching and learning activities.
Extension	An act or instance of extending, lengthening, stretching out, or enlarging the scope of something (collaboration or linkages).
Facilities	Space or equipment provided to staff or students to facilitate teaching and learning environment.
Governance	Governance is defined as the mechanisms and processes which enable an institution to operate effectively in order to accomplish its mission.
Graduate Attributes (GA)	Equip a student to achieve their full potential in employment, life and community and to ensure graduates of an institution meet the demand of industry, community and globalisation. It covers nine domains that are consistent with Malaysian Qualification Framework and MOHE Graduate Students' Attributes.
Industrial Internship	A job training for graduate education in related industry for white collar and professional career.
Industry Advisory Committee	A group of volunteers from relevant industries that meets regularly on a long term basis to provide advice and/ or support to an institution or one of its sub-units.
Information Resources	Related resources such as personnel, equipment, and information technology.
Instructional Method	Process by which instruction occurs, whether that might be lectures, class discussions, small group discussions, simulation, or individual project.

Intellectual Property (IP)	Legal concept which refers to creations of the mind for which exclusive rights are recognized.
Intended Learning Outcome (ILO)	What the students should acquire at the end of a lesson.
Internal Auditing	An independent, objective assurance and consulting activity designed to add value and improve an organisation's operations.
Laboratories	A room or building in which practical activities took place e.g. : Mathematics, Sciences, Tourism and Hospitality, Commerce.
Lecture	Mainly an oral presentation intended to present information or teach people (students) about a particular subject.
Letter of Intent (LoI)	An interim agreement that summarises the main points of a proposed deal, or confirms that a certain course of action is going to be taken.
Linkages	A linkage industry can be defined as an industry which is linked to other industries for its growth and competitiveness.
Management	Management manages and provides directions of the organisation.
Memorandum of Agreement (MoA)	A document written between parties to cooperate on an agreed upon project or meet an agreed objective.
Memorandum of Understanding (MoU)	A document that records the common intent of two or more parties where the parties do not wish to become a contract but which, if meeting other criteria, can be recognised, in law, as a contract.
Needs Analysis	Information on all aspects of the proposed programme including issues and trends, nationally, regionally and internationally to be considered. Information from stakeholders is useful for the purpose of needs analysis.
Non-Disclosure Agreement	A legal contract between two or more parties that outlines confidential material, knowledge, or information that the parties wish to share with one another for certain purposes, yet wish to restrict access to or by third parties.
Note of Agreement (NoA)	A legal document recording the final understanding of two or more parties to do a certain action understated terms and conditions.

Note of Understanding (NoU)	A formal text that sums up the terms and understanding of a contract which mostly has been negotiated up to this point only in spoken form.
On-job-training	A form of training taking place in a normal working situation.
Outcome-Based Education (OBE)	A method of education that focuses on what exactly students can do after they were taught.
Partnership Programme	A higher education provider/ institution exchange programme between industries or other higher education provider.
Pastoral	Related to the part of work of teachers in giving help or advice on personal matters, connected especially to education matters.
Post Test	The identical test used as the pre-test, but, it is conducted at the end of the programme.
Pre Test	Conducted at the beginning of a programme to provide an understanding of the programme participants' knowledge before the implementation of the programme activities.
Programme Educational Objective (PEO)	The outcome student should acquire and display of competency after three to five years graduate.
Programme Evaluation	A purposeful, systematic, and careful collection and analysis of information used for the purpose of documenting the effectiveness and impact of programmes, establishing accountability and identifying areas needing change and improvement. Evaluation is a structured process to determine if a programme had produced the intended outcomes.
Programme Evaluation	The assessment of policies, materials, personnel, performance, quality of practice or services, and other inputs and implementation experiences. Process evaluation takes place during the implementation of a programme.
Programme Learning Outcome (PLO)	The outcome students should acquire and display of competency after completing a course/programme.
Programme Review	A process of evaluate programme effectiveness. The arrangement of courses that was structured had been analysed for a specified duration and an amendment is

	made to archive learning outcomes.
Scholarship	Financial award or aids provided to students to help fund attendance based on academic merits.
Self-Directed Learning	A process by which individuals take the initiative, with our without the assistance of others, in diagnosing their learning needs, formulating learning goals, identify human and material resources for learning, choosing and implement appropriate learning strategies, and evaluating learning outcomes.
Sponsorship	Aids or support given by patrons to students.
Staff	All full-time, part-time and adjunct personnel employed (directly and indirectly) by the institution who are responsible to deliver its educational services to the students. Key staff refer to staff who are not in the management team but may hold appointments or roles which can greatly impact the institution's operations.
Stakeholder	A person, group or organisation that has interest or concern to the institution such as students, parents, employers, industries and commerce, professional bodies, alumni, the community, and others. Stakeholders can affect or be affected by the institution's actions, objectives and policies. Key stakeholder(s) may refer to a person or group that the institution provides a service to, for example, students; or a person, group or organisation who play a critical role towards achieving the institution's vision and mission, for example, staff, educational partners, key partners / suppliers, the community, and others.
Student Assessment	Assessment process serves to verify, support, and validate the students' learning outcomes.
Student Centred Learning (SCL)	A learning strategy which emphasises students to work in groups and individually to explore problems and be active knowledge seeker and not as passive recipients of knowledge.
Student Feedback	Student feedback using well-designed questionnaires, which are filled by the majority of students, is extremely useful for identifying specific problems. Student feedback can also be obtained through their representation in the

	programme committee. Courses that are less popular or negatively evaluated by students may be defensible but at least the feedback will identify and analyse students' perceptions. If necessary such courses can be modified.
Student Learning Time (SLT)	The effective learning time, or students' effort in learning, or learning content in order to achieve the learning outcomes.
Student Selection	Covers the admission policy particularly on the criteria and processes of student selection. Apart from student selection, the issue of transfer credits and credit exemption will also be focused. The standard will then be cascaded down and implemented at the institution's level for a particular programme.
Support Services	Support services are necessary to enhance and facilitate learning and contribute to the achievement of learning outcomes. It includes physical amenities and services such as finance, academic advice and counselling.
Support Staff	Support staff consists of various schemes which focus on the terms of reference set. Support staffs are appointed by the appointing authority either by the government or responsible parties.
Talent Management Programme	The anticipation of required human capital by an organisation and setting a plan to meet the needs.
Teaching Observations	Process of monitoring the teaching and learning activities.
Training and Development	Training and development refers to the practice of providing training, workshops, coaching, mentoring, or other learning opportunities to employees to inspire, challenge, and motivate them to perform the functions of their position to the best of their abilities and within standards set by management and the institution.
Transfer	Means a student changes the programme of study but remains as a student of the institution.
Tutorial	Of or relating to tutors or a tutor. A period of intensive tuition given by a tutor to an individual student or a small group of students.
Withdrawal	Means the studentship status is terminated and the student is no longer a student of the institution.

Work-Based Learning (WBL)	Learning delivered by a training provider in the workplace.
Workshop	A room or building in which practical activities take place e.g. engaging in technical and engineering work in which products or goods are produced, manufactured or repaired. A meeting at which a group of people engage in intensive discussion and activity on a particular subject or project.

GLOSSARY OF ACRONYMS

AP	Arahan Perbendaharaan (Malay) (Transl. Treasury Instructions)
APACC	Asia Pacific Accreditation and Certification Commission
ASEAN	Association of Southeast Asian Nations
AVA	Audio-visual aids
BHIP	Bahagian Hubungan Industri dan Kebolehpasaran Pelajar (Malay) (Transl. Industrial Relations and Graduate Marketability Division)
BKI	Bahagian Kecemerlangan Instruksional (Malay) (Transl. Instructional Excellence Division)
BKPro	Bahagian Kecemerlangan Professional (Malay) (Transl. Professional Excellence Division)
BPP	Bahagian Pengambilan Pelajar (Malay) (Transl. Student Recruitment Division)
CISEC	Collaboration, Industrial Services and Employability Centre
CLO	Course Learning Outcome
COPIA	Code of Practice for Institutional Audit
COPPA	Code of Practice for Program Acreditation
CPSC	Colombo Plan Staff College
CQI	Continual Quality Improvement (also Continuous Quality Improvement)
CSR	Corporate Social Responsibility
DPE	Department of Polytechnic Education
GA	Graduate Attributes
GS	General Statement
ICT	Information and Communication Technology
ILO	Intended Learning Outcome

KPI	Key Performance Indicator
KUiTHO	Kolej Universiti Tun Hussein Onn (Malay) (Transl. Tun Hussein Onn University College)
KUKTEM	Kolej Universiti Kejuruteraan dan Teknologi Malaysia (Malay) (Transl. University College for Engineering and Technology, Malaysia)
KUKUM	Kolej Universiti Kejuruteraan Utara Malaysia (Malay) (Transl. Northern University College for Engineering, Malaysia)
KUTKM	Kolej Universiti Teknikal Kebangsaan Malaysia (Malay) (Transl. National Technical University College, Malaysia)
LOI	Letter of Intention
MoA	Memorandum of Agreement
MOE	Ministry of Education
MOHR	Ministry of Human Resource
MORD	Ministry of Rural Development
MoU	Memorandum of Understanding
MOYS	Ministry of Youth and Sports
MQA	Malaysian Qualifications Agency
MTUN	Malaysian Technical University Network
MyPOLYStandards	Malaysian Polytechnic Standards
NDA	Non-Disclosure Agreement
NEM	New Economic Model
NoA	Note of Agreement
NoI	Note of Intention
NoU	Note of Understanding
NTP	National Transformation Plan
OBE	Outcome-Based Education

OJT	On-the-Job Training
PAi	Programme Aims
PEO	Program Educational Objective
PLO	Program Learning Outcome
PRDC	Polytechnic Research and Development Centre
R & I	Research and Innovation
SCL	Student-Centred Learning
SLT	Student Learning Time
SMART	Specific, Measurable, Achievable, Reliable and Timely
SS	Specific Statement
TED	Technical Education Department
TVET	Technical and Vocational Education and Training
UMP	Universiti Malaysia Pahang (Malay) (Transl. Pahang Malaysia University)
UniMAP	Universiti Malaysia Perlis (Malay) (Transl. Perlis Malaysia University)
UTeM	Universiti Teknikal Malaysia Melaka (Malay) (Transl. Melaka Malaysia Technical University)
UTHM	Universiti Tun Hussein Onn (Malay) (Transl. Tun Hussein Onn University)
WBL	Work-Based Learning

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