Technical and Vocational Education and Training (TVET) Reform in Malaysia: A Comparative Benchmarking Review of Germany, the Republic of Korea, and Singapore

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ABSTRACT

Technical and vocational education and training (TVET) is important to Malaysia's efforts to develop a skilled workforce, support industrial upgrading, and respond to technological change. However, coordination across ministries and agencies, the alignment of training with employer needs, and the recognition of skills and qualifications remain important policy concerns. This paper presents a comparative review of Malaysia's TVET system and selected features of three international systems: Germany's dual vocational education and training model, the Republic of Korea's Meister high schools, and Singapore's Institute of Technical Education (ITE) and work-study pathways. It finds that the cases offer different, context-dependent lessons: Germany embeds workplace training within a regulated partnership involving employers and public authorities; Korea's Meister high schools are designed around the skill needs of industrial sectors; and Singapore combines technical education with structured work-study and progression pathways. These models should not be treated as directly interchangeable or as evidence that a single governance structure is universally superior. For Malaysia, the review recommends strengthening inter-agency coordination and transparent programme information, expanding quality-assured work-based learning, improving qualification and credit articulation, and making skills-related career and wage progression more visible.

INTRODUCTION

Technical and vocational education and training (TVET) is a key component of Malaysia's efforts to develop a skilled workforce and support industrial transformation. The Twelfth Malaysia Plan (2021–2025) and the National TVET Policy 2030 provide important policy contexts for skills development and the coordination of technical training. The National Semiconductor Strategy also identifies workforce development as a strategic priority, including a target to train and upskill 60,000 high-skilled Malaysian engineers [1]–[3].

Despite sustained policy attention, Malaysia's TVET landscape involves multiple ministries, agencies, public institutions, and private providers. The OECD has identified fragmented oversight, overlapping provision, and the lack of a comprehensive, readily comparable picture of programmes and qualifications as challenges for coordination and labour-market alignment [4]. These issues can make it harder for learners and employers to understand differences among programmes, qualifications, and progression routes. They also reinforce the need for reliable information about programme outcomes and employer demand.

International comparison can help identify institutional arrangements and practices that may be adapted to Malaysia. This paper considers three cases: Germany's dual vocational education and training (VET) system, the Republic of Korea's Meister high schools, and Singapore's ITE and work-study pathways. The purpose is not to rank these countries using non-comparable indicators, but to identify transferable policy principles and the conditions under which they operate.

This review evaluates the evolutionary trajectory of Malaysia's TVET framework, examines its core structural bottlenecks, benchmarks its operational realities against Germany, South Korea, and Singapore, and proposes an evidence-based roadmap for reform.

MALAYSIA'S TVET LANDSCAPE AND KEY CHALLENGES

A. Governance and coordination

Malaysia's TVET provision is distributed across multiple ministries and agencies. The OECD's 2024 economic survey reports that ten ministries oversee TVET programmes and notes that fragmented provision and the absence of a single, comprehensive programme register can complicate coordination and the recognition of qualifications [4].

A practical reform priority is therefore to clarify responsibilities, strengthen coordination between existing bodies, and publish comparable information about programmes, qualifications, costs, enrolment, completion, employment outcomes, and progression routes. Any proposal to establish a new apex authority should be assessed against the mandates and performance of existing coordinating bodies to avoid creating an additional layer of governance without resolving the underlying coordination problem.

B. Industry engagement and work-based learning

Training is more likely to remain relevant when employers contribute to identifying occupational skills, shaping curricula, providing workplace learning, and evaluating trainees' competence. Malaysia has experience with dual-training and work-based-learning approaches, but their scale and quality should be assessed.

Germany illustrates one approach to employer participation. Its dual VET system combines company-based training with vocational schooling, while responsibilities and financing are shared among companies and public authorities. The Federal Institute for Vocational Education and Training (BIBB) explains that companies finance the in-company component, while federal states fund vocational schools and public authorities support the system in different ways [5]. This is a mixed-financing model, not a system in which companies pay all training costs. Its institutional and labour-market context should be considered before adapting individual elements to Malaysia.

For Malaysia, policy measures could include support for SMEs that provide supervised workplace training, clearer quality standards for work-based learning, and stronger mechanisms for employers to update occupational competencies. Incentives should be tied to verified training activity and learning outcomes rather than participation alone.

C. Qualification recognition, progression, and public perception

Learners need transparent routes from skills certificates to diplomas, degrees, and employment. Malaysia's academic and skills qualification arrangements involve different agencies and frameworks; however, the extent of barriers to credit transfer should be measured rather than assumed to be uniform across all institutions and programmes. A national mapping of learning outcomes and credit-transfer arrangements could identify where articulation is already possible and where further agreements are needed.

Public perceptions of TVET are also shaped by the quality of facilities, teaching, employment opportunities, and the visibility of career progression. Claims that TVET graduates generally earn only the minimum wage, or that a particular model guarantees employment, require current, representative evidence and should not be presented as universal facts. Graduate outcomes should be analysed by qualification level, field, institution, region, and employment status.

COMPARATIVE BENCHMARKING

A. Germany: dual vocational education and training

Germany's dual VET model combines learning in a company with instruction at a vocational school. Companies provide the workplace training and pay apprentices, while public authorities support the school-based component and the broader system [5]. The model demonstrates how occupational training can be embedded in employment settings and supported by established institutional responsibilities.

Potential lesson for Malaysia: strengthen the quality and predictability of employer–provider partnerships, define the learning outcomes expected in workplaces, and ensure that SMEs can participate without compromising training quality. The German model should not be described as a single, fully centralized system: responsibilities are shared across federal, state, employer, and chamber institutions.

B. Republic of Korea: Meister high schools

The Republic of Korea's Ministry of Education describes Meister high schools as vocational high schools designed to respond to the needs of industrial sectors and develop skilled workers. The official overview also describes policy efforts to adapt vocational programmes to emerging fields, including semiconductors and digital technology [6].

Potential lesson for Malaysia: develop selected sector-focused pathways in close consultation with employers, especially where occupational demand is clear and sustained. Partnerships should include transparent admission criteria, recognised qualifications, workplace exposure, and monitoring of graduate outcomes.

C. Singapore: ITE and work-study pathways

Singapore restructured its ITE system into three regional colleges under the "One ITE System, Three Colleges" model. The Ministry of Education's historical overview also documents subsequent pathways connecting ITE qualifications with polytechnic study [7]. In addition, SkillsFuture Singapore describes work-study programmes that combine employment with structured workplace training, mentorship, and further qualifications [8]. These arrangements illustrate how technical education can be supported by visible institutional identity and defined progression routes.

Potential lesson for Malaysia: make progression routes easier to understand, strengthen work-study arrangements with participating employers, and communicate the employment and further-study options attached to each qualification. Progression should remain dependent on programme requirements and learner achievement.

D. Cross-case synthesis

Table 1. Qualitative comparison of selected TVET features

Dimension	Malaysia	Germany	Republic of Korea	Singapore
Institutional arrangement	Multiple ministries and agencies; coordination remains a policy concern [4]	Shared responsibilities across companies and public authorities [5]	Meister high schools are a specialised vocational-school pathway [6]	ITE colleges and work-study pathways form part of a broader technical and skills ecosystem [7], [8]
Employer engagement	Strengthening the scale and quality of employer involvement remains a policy priority	Company-based training is a core component of the dual model [5]	Sector-oriented programmes are intended to respond to industrial needs [6]	Work-study programmes combine employment with structured learning [8]
Learning setting	Mix of institution-based and work-based provision; programme-level data are needed	Company training plus vocational school [5]	School-based specialised vocational education, with industry orientation [6]	Technical education plus work-study and workplace learning options [7], [8]
Progression	Qualification mapping and credit-transfer arrangements require clear, accessible information	Routes depend on the relevant qualification and education arrangements	Progression and employment outcomes should be assessed by programme	ITE-to-polytechnic routes and work-study qualifications are documented, but are not universally automatic [7], [8]

POLICY RECOMMENDATIONS FOR MALAYSIA

A. Improve coordination and programme transparency

Strengthen the role of existing coordination mechanisms and clarify the responsibilities of ministries, regulators, and providers. Before creating a new statutory authority, conduct a functional review to identify duplicated mandates, gaps in accountability, and the administrative costs of alternative arrangements. Establish and maintain a public programme register that reports provider, qualification, accreditation status, duration, fees or public subsidy where available, enrolment, completion, employment outcomes, and progression opportunities.

B. Expand quality-assured work-based learning

Increase access to structured workplace learning through formal agreements among providers, employers, and learners. Define expected competencies, supervision, assessment, occupational safety, and the balance between workplace and institution-based learning. SMEs may require shared training facilities, simplified administration, or targeted financial support. Incentives should be evaluated against additional training delivered, learner completion, competency attainment, and employment outcomes.

C. Strengthen qualification articulation

Map learning outcomes across skills certificates, diplomas, and degree programmes and publish programme-specific credit-transfer rules. Articulation should be based on demonstrated equivalence of learning outcomes and assessment standards rather than a blanket merger of academic and skills qualifications. Pilot agreements between selected skills providers and higher-education institutions, evaluate them, and expand only where the results support doing so.

D. Make career and wage progression visible

Work with employers and industry associations to publish occupational pathways that connect recognised competencies with job roles and further training. Where feasible, collect and report graduate employment and wage outcomes by field and qualification level. Any proposal for a progressive wage framework should be assessed against sectoral wage structures, employer capacity, and existing labour policies; international examples should inform design rather than be copied without adaptation.

E. Evaluate reforms using comparable indicators

Create a monitoring framework with consistent definitions and reporting periods. Suggested indicators include employer participation, the number and proportion of learners receiving quality-assured workplace training, completion rates, competency assessment results, employment and further-study outcomes, graduate wages, employer satisfaction, and cost per successful learner. Data should be disaggregated by programme, qualification, field, gender, region, and provider where appropriate. Baselines and evaluation methods should be published before targets are used to claim success.

CONCLUSION

Germany, the Republic of Korea, and Singapore offer different examples of how TVET can connect technical learning with employer needs and career progression. Germany's dual system highlights the importance of structured company-based training and shared financing; Korea's Meister high schools demonstrate a sector-oriented vocational pathway; and Singapore illustrates the role of institutional development and formal work-study options. These models operate in different institutional and labour-market contexts and should not be treated as interchangeable templates.

For Malaysia, the evidence supports prioritising coordination, reliable programme information, quality-assured work-based learning, transparent qualification pathways, and stronger reporting of graduate outcomes. This

evidence-led approach would make future policy recommendations more defensible and provide a stronger basis for assessing whether reforms improve skills development and employment outcomes.

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