TVET Research as an Enabler of Human Capital Development: Sharing of Experience from Malaysia

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Overview

• Introduction to UTHM
• TVET system in Malaysia
• Understanding research in TVET
• Key success factors
• Summary
TVET system in Malaysia

Technical Universities (MTUN)
- Diploma
- Advanced Diploma
- BTech
- MEng.
- PhD

Polytechnics
- 3 years Diploma / Advance Diploma

Community College
- 4 years Certificate / Diploma

Upper Secondary Education
- 3 years Form 6
- Malaysian Certificate of Education (Sijil Pelajaran Malaysia / SPM)

Lower Secondary Institutions, including religious institutions
- 3 years

Primary Education
- 6 years

Skill Training Institute
- SKIM / DKLM
- DUKLM (Malaysian Skills Diploma) Diploma Kewangan Malaysia

Lower Secondary (ISCED 2)

Upper Secondary (ISCED 3)

Post-secondary non-tertiary (ISCED 4)

Tertiary (ISCED 5-8)

TVET as an optional subject

Additional qualification

*Compiled by UNESCO-UNEVOC International Centre.
What is TVET?

• Education and training process that has **occupational direction** with major emphasis on **industry practices**.

• It aims to produce competent work force in related fields for socio and economic objectives of the country.
  
  • (Malaysian Qualification Framework)
What is TVET continues...

- TVET programmes
  - based on recognised occupational/industry standards;
  - contain 60%-70% practical component;
  - emphasis on psychomotor skills;
  - include industrial exposure
  - include industrial training component
  - Include TVET project(s) – technical, socio-technical, social project
    - Malaysian Qualification Framework
What is TVET continues...

• Cluster of learning outcomes
  • i. Knowledge and Understanding;
  • ii. Cognitive Skills;
  • iii. Functional Work Skills with a focus on:
    • Practical Skills, Interpersonal Skills, Communication Skills, Digital Skills, Numeracy Skills, Leadership, Autonomy and Responsibility
  • iv. Personal and Entrepreneurial Skills;
  • v. Ethics and Professionalism
TVET in the 11th Malaysia Plan (2016-2020)

- 60% of the 1.5 million jobs created require TVET-related skills
- Gradual increase in annual TVET intake 164,000 (2013) to 225,000 (in 2020), total enrolment of 655,000.
- TVET to be transformed; shift towards industry-led programmes
Issues and challenges in TVET

• uncoordinated governance
• fragmented delivery
• lack of recognition for technologists
• competency gaps among instructors
Propelling TVET forward

• Special committee-Technical and Vocational Education and Training Empowerment Cabinet Committee (JKKPTVET)

• Five pillars
  • Governance
  • Financing
  • Industry
  • Quality
  • Branding

What is the role of research in TVET?

• Helps in decision makings
  • Reducing the range of uncertainty in policy formulation
• Adjusting the course of policy implementation –
  • evaluating implementation
  • assessing the impact of new policy
• Addressing gaps between actual and TVET goals
Domains of TVET research

- Advancing teaching and learning
- Predict & control events in society (Social science research)
- Meeting work place needs (technical and social)
Research process

Research Problem leads to Research purpose dictates Research Methodology (Methods) validates

Achievement of research purpose

Conducts by researchers who have specialised knowledge
What are the challenges in TVET research?

• naturalistic settings - threats to the validity of the study (loss of subjects, selection bias, historical events or maturation’ (Black, 1999)).
• less control over samples (people)
• Need to draw on different research and theoretical paradigms (e.g. learning theory, motivation theory)
• Requires social science research skills
Examples of TVET research

• A small study of an educational / training intervention at institutions or workplace – new tools; new method

• Evaluate existing educational / training activities or curriculum change

• Evaluate a large-scale national initiatives
  • impact of recognition of prior experience
  • implementation of the National Dual Training System.

• Systemic literature reviews
Key success factors for TVET research

1. Knowledgeable and skilled researchers
2. Clear research focus
   - Alignment between TVET research and country goals
3. Financial support
Key success factor 1: Quality Researchers

- TVET Teachers
- PhD students
- Industry
Teacher researchers

New demands on workers, teaching demands

New challenges to teachers - prepare workers

TVET research - decision making

Motivated by:
Experienced problem - knowledge from classroom and industry experience
Top down – contract research
Teacher progression to TVET researcher

Teach as taught
Teacher

Effective teacher

Scholarly teacher

Scholarship of teaching and learning

TVET researcher

Conducts and publish research
TVET teacher researchers (in progress)

Ideal
• Possess occupational (job task) competence (experienced)
• Pedagogical content knowledge
• Posses knowledge on research methods in education /technical research

Reality
• Have limited work experience
• Limited knowledge of Pedagogical content knowledge
• Need to upgrade knowledge on research methods in education /technical research

Need developmental support
PhD students researchers

Opportunities (Scholarships), Personal factors

Respond to opportunities

TVET researcher (with supervisors)
PhD researchers (in progress)

Ideal
• Motivated to conduct research
• Occupational (job task) competence – knowledge, skills and attitudes
• Have teaching experience
• Have research knowledge and skills

Reality
• Other motivations
• Many have no work experience (e.g. engineering degree without work experience)
• Some have no teaching experience
• Limited (no) research knowledge and skills
Key success factor 2: Clear research focus

• Ensuring alignment between TVET research country goals

Mapping of multiple goals
Example of research in TVET

• Competency gaps among instructors
• Generate quantitative and qualitative data on competency gaps
• Identify possible reasons for gaps
  • Policy on TVET
  • Instructor preparations curriculum
  • etc
• Propose, implement and evaluate solutions

Potential research focus
Sources of potential research focus: An example

- From Call for proposals by government agency
- Call for knowledge sharing by government agency
  - Example: Indonesia development forum (2019) Call for Submissions
Potentials Topics to focus research on

1. Designing TVET curricula that will prepare the next generation for the nature of the future workforce;
2. Strategies to incentivize workers to undertake training;
3. Innovations in teaching and learning tools, including using technology to support better teaching and learning;
4. Strategies for improving apprenticeships and certification;
5. Successful TVET systems from other countries that can be adapted to the National context.
Potentials Research questions

• Pressing issues and challenges in engineering and TVET

1. Matching demand and supply between training institutions and industry

2. gender inequity – why are there very small percentages of women in engineering and TVET and how can it addressed?

3. Green construction/manufacturing – what are the opportunities available and how can they be addressed?
Key success factor 3: Financial support

• Malaysian Ministry of Education
• Malaysian Ministry of Science, Technology and Innovation
• L'Oréal-UNESCO for Women in Science National Fellowship
• Malaysian Communications and Multimedia Commission (MCMC)
• Newton-Ungku Omar Fund (NUOF)
• University grants for post graduate studies et
Current practice in academic research (involving grants)

• External grants (university practice)
  • prepare proposal

• Submit for evaluation (internal)

• Accept/reject

• Submit for evaluation (external)

• Accept/reject

• Conduct research, report progress
Summary

• TVET research is essential in ensuring TVET goals and nation goals for human capital development are achieved

• Development of competent TVET researchers who can integrate knowledge from diverse disciplines is essential

• Financial support is one of the key elements in the successful conduct of TVET research
References


Thank You