Industrial skills development
Challenges and opportunities in developing countries

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The structure of presentation

Why is the industrial skills development necessary?
• **The node** to link and achieve various developmental goals
• Skills ⇔ SDGs, poverty reduction, and economic growth

What does it mean to be competent at work?
• Do we really know the exact contents of “skills” to be developed?
• The latest global discussion on the concept of “knowledge”

Why does skills gap occur?
• “Live together but in different worlds” – Why is the coordination among stakeholders so difficult?
• **Twin gaps** of supplies and demands in the labor market
• Fluidity and multi-dimensionality of targets and contents

Who demands for TVET?
• The skilled workers are necessary but should they be trained at TVET?

Any impact of COVID on skills development?
Skills are the foundation of economic growth and poverty reduction.

Formation of knowledge/skills for decent work and sustainable entrepreneurship.

Training for middle level technicians.

Education for high level expert to lead the economy of the country.

Poverty Reduction

Industrial Development

Informal sector

Formal sector
Social investment for the growth of developing countries

**Capital**
- **Human capital**
  - Capacities of individual workers. Its improvement will enhance the workforce’s productivity
- **Physical capital**
  - Infrastructure (road, railway, etc.)
  - Machineries and equipment
  - Land, facilities
- **Financial capital**
  - Cash, stock, bond
- **Social capital**
  - Human relationship which promote the business partnership

**Investment**
- <<Education>>
  - Vocational training; school education
- <<Health>>
  - Health services
- Construction
- Procurement of materials
- Acquisition of land
- Bond issuance
- International development aid
  - Grant aid, loan

Many governments, particularly those aiming to achieve rapid economic growth, increase the budget for education. Budget increase does not necessarily guarantee the improvement of productivity or employment.
Countries depending on labor-intensive industries tend to increase the number of employment but with low productivity.

**<Macro-economic viewpoint>**

To depart from the “competition to the bottom”, highly skilled workforce is key to improve productivity.

**<Viewpoint on poverty reduction>**

Improved abilities will lead to secure jobs and income growth for the individuals.

Human resources are the key.
Effects on the side of developing countries

Node of development needs

SDGs and Industrial Skills Development

Global actors

Overseas Development Cooperation

Localized production of FDI companies

Global Value Chain

CSR
What causes the skills gap?
“Live together but in the different worlds”

Our national plan is to be a middle income country by 2030. To achieve it, we need more high skilled workers in ZZ industry.

Our school has XX major and the graduates will have specialist certificate.

We invest in Country A but cannot find competent people to be local managers.

We need workers who can work accurately and efficiently.

School teacher

Government officials

Employers

Youths

I want to be an IT engineer

I will be a fashion designer!
Twin gaps of supplies and demands of skills in the labor market

**Supply side**

- **Educator/Trainer**
  - Skills they teach
- **Workers**
  - Actual skills they have
  - Self-efficacy, motivation

**Demand side**

- **Employer**
  - Skills they expect to workers

Supply-Demand Gap (1)
Supply-Demand Gap (2)
Do we know what “employable skills” are?

• **Skills to solve problems** in the context of work
  
  Identify problems → find causes of problems → find solutions → apply techniques to solve problems

• **Problem-solving skills** are the comprehensive whole of vocational skills, cognitive skills (literacy, numeracy and theories) and non-cognitive skills (attitudes and values)

Increasing attention to the noncognitive skills in
Problem-solving at work ≠ getting high score in exams

Cognitive skills can explain only a minor part of the effects of education on labor market outcomes such as employment or income (Bowles et al. 2001)

Skills assessed as the competencies developed at school

The domain considered as work-related skills conventionally

Cognitive skills
- Language skills
- Mathematical skills
- Information skills
- Technical skills

Meta-cognitive skills
- Problem-solving, discovery, creativity
- Logical and critical thinking
- Adaptive learning

Socio-emotional skills
- Interpersonal skills
- Team work
- Autonomous activities

Noncognitive skills

Katsuno 2013 adopted from Bloom
Schooling ≠ Skilling

Does the increased investment in TVET solve the problem of skills mismatch??

• How does the supply-demand gap occur?
  
  1. The government planned the resource allocation among different education levels mistakenly → created many workers with “Over-education” and “Under-education”
  
  2. The criteria of evaluating the quality of workforce is often not the education qualification but skills ← there is no established benchmark of assessing skills
  
  3. There are significant gaps of perception between the employers and the trainers/educators, but demand side data is often unavailable → The skills development plans are made without demand side information
When, where, and what kind of skills do they need to develop?

Learning is a lifelong process

Skills/Knowledge specific to the workplace

Pre-employment

Higher ed
Secondary
Primary

TVET

Off-JT (Off-site)
Off-JT (On-site)
OJT
Apprenticeship

General skills/knowledge

Upskilling after employment

Source: author
First thing we need to do is to diagnose the causes and nature of skills gap first.

What are the contents of skills which cause the mismatch?
- Abilities to conduct specific tasks → Vocational/operational skills
- Personalities and attitude? → Noncognitive skills
- Basic cognition which enables continuous learning? → Cognitive skills
- Educational certificate → Expansion of the school system

Are there any system-level deficits?
- Asymmetry of information on employment → Matching job opportunities
- The fast pace of change of the employers’ skills needs → Routinized needs assessment and enhanced flexibility and responsiveness of the training system
- Legal and financial framework to promote skills development does not exist or malfunctional → Skills development act, Occupational standard, accreditation, skills development fund, subsidies
- Low quality of training contents and delivery → Improvement of training materials and trainers
<table>
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<th>Objectives</th>
<th>Interventions</th>
<th>Role of government</th>
<th>Role of employers</th>
<th>Role of training institutions</th>
<th>Role of learners/workers</th>
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<td>Enhanced coordination among actors</td>
<td>Public-private partnership (PPP) to fill the supply-demand gaps</td>
<td>• To establish the coordination agency for skills development, involving multiple government bodies, industries, and training institutions</td>
<td>• To enhance the partnership for various forms of skills development, such as in-firm training, apprenticeship, and public and private TVET</td>
<td>• Modernization of the apprenticeship system</td>
<td>• To pay the tuition for training</td>
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<td>• To bridge the training gaps between formal and informal sectors</td>
<td>• To acquire opportunities of suited training using vouchers and other government services</td>
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<td>Resource utilization for effective skills development system</td>
<td>Establishment of the financial incentive mechanism to vitalize the training market</td>
<td>• To introduce the levy for skills development</td>
<td>• To provide opportunities of skills development, both on-site and off-site, for employees utilizing the subsidies and loans from the government (SMEs)</td>
<td>• To provide matching funds to the government subsidies (large companies)</td>
<td>• To demand for loans and scholarships for continuous learning</td>
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<td>• To establish the skills development funds</td>
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<td>• Provide subsidies for companies and training institutions</td>
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<td>• Scholarships for students</td>
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<td>Formation of quality skilled workers</td>
<td>Skills assessment and certification based on the problem solving skills required in the world of work</td>
<td>• Establishing the occupation standard for respective industries and levels of skills</td>
<td>• To input the needs of employers in developing the occupation standard</td>
<td>• To provide education and training along with the occupation standard</td>
<td>• To sit for the skills assessment on the national occupation standard, in addition to the TVET certification</td>
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<td>• Establishing the mechanism to accredit training providers who follow the occupation standard</td>
<td>• To take part, as the examiner, in the skills assessment following the occupation framework</td>
<td>• To be accredited by the government according to the occupation standard (accredited institutions will have subs)</td>
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<td>Strengthening the practical training</td>
<td>• Matching the TVET interns with the companies through the skills development coordination agency</td>
<td>• To accept interns (practical trainees) from TVET</td>
<td>• Finding companies at which students intern</td>
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<td>• Improve the conditions for in-school practical training</td>
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<td>• Teacher training to catch up with the latest techniques of the industry</td>
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<td>Direct provision of TVET to supplement the training by private TVET and employers</td>
<td>• Direct management of public TVET</td>
<td>• Make the info of students and graduates available for recruiters</td>
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<td>• Proactive job search</td>
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<td>Promotion of employment</td>
<td>Matching recruiters and job searchers</td>
<td>• Establishment of an employment agency</td>
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**Types of intervention to promote skills development and actors’ involvement**

**Direct provision of TVET is only a minor part of the government’s role in skills development**
Who demand for the government-led skills development most?

• The recent neo-liberal conception of skills development demands the government more coordinative role than direct involvement in training provision
  – To mitigate the asymmetry of information between the supply and demand
  – To incentivize the skills development by reducing the financial and system barriers

• Large companies (e.g. factories of the global multinationals) have their own priorities and strategies of workers’ skills development and promotion driven by their own internal labor market

• TVET demands are higher among SMEs and informal sectors which do not have the capacity to internalize their workers’ training

• Linkage between the plans for industrial development and skills development is a key
COVID and the new demands for skills development

• Vocational training without contact?
  – Increased inequality of learning opportunities ← aggravation of existing problem
  • Lack of access to school, alternative tools of learning, or learning support
  – Restriction of practice-based training ← New challenge
  • Despite TVET reforms to increase relevance, a large part of the practical training and internship were suspended

• Changed mode of business operation
  – Enhanced transfer of goods without human interactions
    ← More reliance on IT and indirect communication skills

• Problem-solving skills in the era of with-COVID
  – Performance evaluation will be more outcome-oriented than sharing the process
  – Attentive and accurate work without visible outcomes will not appeal to the supervisor
  – Capacities to verbalize (= express in written or spoken words instead of actions or feeling) the work-related concerns and achievements will become more important
We can diagnose the skills of workers from multiple angles

- Our module provides pictures about the complex relationships among cognitive, non-cognitive (behavioral), and vocational skills
- We can compare the perspectives of different stakeholders and identify the exact nature of gaps
- We can provide evidence-based proposals for improving the skills development plan
1. Identify the exact contents of gaps among multiple stakeholders

- Trainer/Educator (Supply side of skilled workers)
  - Expectations on skills

- Employer (Demand side of skilled workers)
  - Expectations on skills
  - Same questionnaire on skills expectation

- Actual performance of workers
  - Skills assessment of workers

- Workers’ self-estimation of skills
  - Questionnaire for worker
2. Diagnosis of Overall Performance of workers and students

**Overall Performance**

**Cognitive skills**
- Basic mathematics
- Reading comprehension
- Integrated problem-solving

**Behavioral (non-cognitive) skills**
- Leadership, teamwork, tidiness, obedience, punctuality, etc.

**Personality traits**
- Extraversion, conscientiousness, emotional stability, openness, agreeableness

**Vocational skills**
3. Identification of factors which influence the performance

What makes their performance different??

- Educational background?
- Years of experience?
- Home background?
- Gender?
- Commuting distance?
- Absenteeism?

Worker A: High performance
Worker B: High performance
Worker C: Low performance
Worker D: Low performance
Worker E: High performance
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