

Comparing International Vocational Education and Training Programs



Policy Brief

This report was commissioned by the Center on International Education Benchmarking® of the National Center on Education and the Economy®. For a complete listing of the material produced by this research program, please visit www.ncee.org/cieb. It was produced by the KOF Swiss Economic Institute in Zurich. For more information about KOF, visit www.kof.ethz.ch

This work may be cited as:

Ursula Renold, Thomas Bolli, Katherine Caves, Jutta Bürgi, Maria Esther Egg, Johanna Kemper and Ladina Rageth, "Comparing International Vocational Education and Training Programs: The KOF Education-Employment Linkage Index" (Washington, DC: National Center on Education and the Economy, 2018).

The National Center on Education and the Economy was created in 1988 to analyze the implications of changes in the international economy for American education, formulate an agenda for American education based on that analysis and seek wherever possible to accomplish that agenda through policy change and development of the resources educators would need to carry it out. For more information visit www.ncee.org.

The Center on International Education Benchmarking®, a program of NCEE, conducts and funds research on the world's most successful education and workforce development systems to identify the strategies those countries have used to produce their superior performance. Through its books, reports, website, monthly newsletter, and a weekly update of education news around the world, CIEB provides up-to-date information and analysis on the world's most successful education systems based on student performance, equity and efficiency. Visit www.ncee.org/cieb to learn more.

Copyright© 2018 by The National Center on Education and the Economy.
All rights reserved.

Comparing International Vocational Education and Training Programs

Policy Brief



Ursula Renold, Thomas Bolli, Katherine Caves,
Jutta Bürgi, Maria Esthler Egg, Johanna Kemper
and Ladina Rageth

February 2018

Table of Contents

STUDY DESIGN	1
DEFINING EDUCATION-EMPLOYMENT LINKAGE	1
MEASURING EDUCATION-EMPLOYMENT LINKAGE	3
METHODOLOGY	3
FINDINGS	4
KEY CHARACTERISTICS	5

Vocational education and training (VET) is a major policy topic for countries all over the world, who are eager to learn from the best examples where participation in VET is high and youth unemployment is low. Policymakers want to know how strong VET systems manage challenges like rapid technological change, matching labor market demand for skills, attracting enrollment, and creating high-status VET programs.

There is a perception that the secret lies in the intended curricula of successful VET programs, and a curriculum comparison of better and worse programs could uncover it. The hope seems to be that such a comparison would yield a simple solution—incorporate more STEM subjects perhaps, or make sure all students learn soft skills. However, our study found that that is not the case. What differentiates the strongest and weakest VET programs is the level of linkage between actors from the education and employment systems. In this brief and the accompanying report, we define and measure that linkage, then use it to compare countries’ largest upper-secondary VET programs.

Study Design

This study compares the biggest VET programs in 20 top-performing countries (Table 1), selected based either on the strength of their youth labor markets as measured by the percent of young people who successfully enter the labor market after post-compulsory education or on their general education systems as measured by their performance on the OECD PISA assessment. (Renold et al, 2015). One-page descriptions of each country and the program we studied are in Appendix 2. We then use the KOF Education-Employment Linkage Index (KOF EELI)—which measures powersharing through curriculum design, application, and updating phases—to determine which systems have the strongest linkage between employers and the VET system, and compare this across countries.

Table 1: Country List

Focus Countries	Secondary Countries
Switzerland	Austria
Denmark	Canada
Hong Kong	China (Shanghai)
South Korea	Estonia
Netherlands	Finland
Singapore	Germany
	Iceland
	Japan
	Lithuania
	Luxembourg
	Norway
	Poland
	Slovenia
	Taiwan

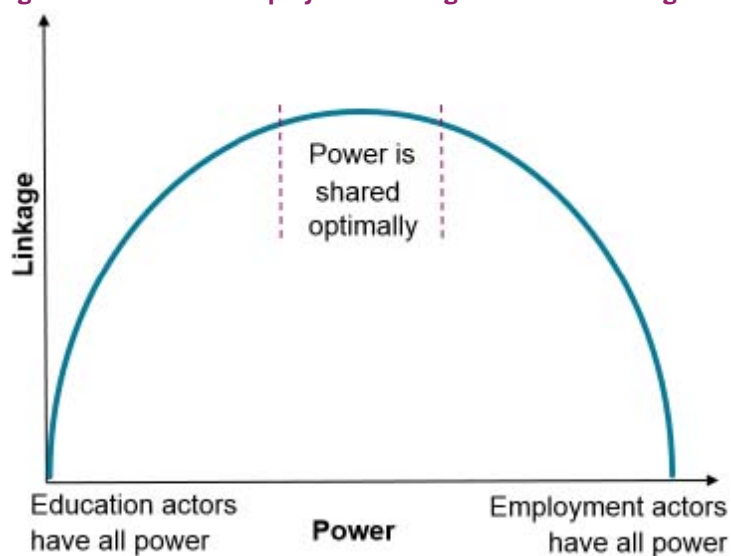
We find that countries with higher linkage tend to have stronger youth labor market outcomes, and lower youth unemployment. However, this correlation holds only for countries with more data reported to international statistical organizations. Among countries that do not report such data, the relationship is unclear. And, because of the small sample size in this feasibility study, no correlation is statistically significant.

Defining Education-Employment Linkage

We define the optimal education-employment linkage as an ideal balance of power between actors from the education system and actors from the employment system on decisions related to all processes of VET, from curriculum design through application and updating.

Achieving this balance can be challenging, because there is an asymmetry in the information and resources available to educators and employers. For example, educators can develop curriculum and teach general education subjects, while employers know what skills matter and have skilled workers to train them. Similarly, schools have teachers, classrooms, and student-oriented infrastructure. Employers have state-of-the-art equipment, money for wages, and real production environments. While educators operate in subjects, employers work in projects and processes on products and services.

Figure 1: Education-Employment Linkage is Power-sharing



When education-system actors have all the power, the result is school-based career education or VET that ignores the needs and opinions of employers. This leads to a number of common VET-program struggles, such as a mismatch between the education students receive and the job market. In one egregious example, a major American city offered VET in horse-shoeing; the city was not known for its horse population. This mismatch can also lead to an over- or undersupply of certain occupations, usually far too many hairdressers or personal trainers and never enough skilled welders or cybersecurity technicians.

Most commonly, though, fully education-side programs tend to be unrelated to the current state of the field, with limited opportunity for practical experience and major challenges finding skilled teacher-trainers. Students learning practical content in classrooms might not get the right mix of skills, or find out too late that they do not enjoy working in their occupation. Educators cannot know how and when to update as technology and demand changes—nor should they, since their job is education, not business-cycle and technology monitoring.

At the other end of the spectrum in Figure 1 (above) are programs dominated by employment-system actors, or on-the-job training. These programs can help employers fill jobs and offer plenty of practical experience, but they are unlikely to connect with further education pathways or offer permeability with general education programs at the same level. A further risk is that employers will underinvest in on-the-job training programs, get participants only to the level where they are just productive enough for current jobs, and stop training. This creates a low-quality program that is not attractive for potential applicants and probably not aligned with the goals of the education system.

Education-side programs are, in economic terms, too general, and employment-side programs are too specific. Optimal linkage is in the middle, with education- and employment-system actors both having power in key decisions.

Measuring Education-Employment Linkage

We measure linkage throughout all VET processes, divided into the three phases of the Curriculum Value Chain (Renold et al., 2015): curriculum design, curriculum application, and curriculum updating. Processes and phases are summarized in Table 2 (below).

Strong linkage in the curriculum design phase is based on shared power over defining qualification standards and deciding how mastery should be evaluated, as well as on how many companies participate in the curriculum design process and in what ways. In the curriculum application phase— or program delivery—there are a number of processes that relate to where students learn, what regulations protect them at work, how costs are divided and shared, and what the examination is like. Finally, in the updating phase, employers need to be involved in information-gathering on graduates and current demand, as well as in deciding when to trigger a curriculum update.

Table 2: Curriculum Phases of VET Programs in the KOF EELI

CURRICULUM DESIGN PHASE

Qualification Standards: Who defines the contents of and standards for qualification?

Examination Form: Who gets to decide how, where, and by whom material is tested?

Involvement Quality: How many firms are represented? Are intermediary organizations involved?

CURRICULUM APPLICATION PHASE

Learning Place: How much time do participants spend at work and in the classroom?

Workplace Training Regulation: How are training quality and working conditions ensured?

Cost Sharing: Do firms participate in funding classroom and workplace education?

Teacher Provision: How many classroom teachers have practical experience?

Examination: How much of the exam is practical? Where does it take place? Who is allowed to grade exams?

CURRICULUM UPDATING PHASE

Information Gathering: Do surveys measure firms' and employees' satisfaction and success?

Update Timing: Who defines when curricula should be revised?

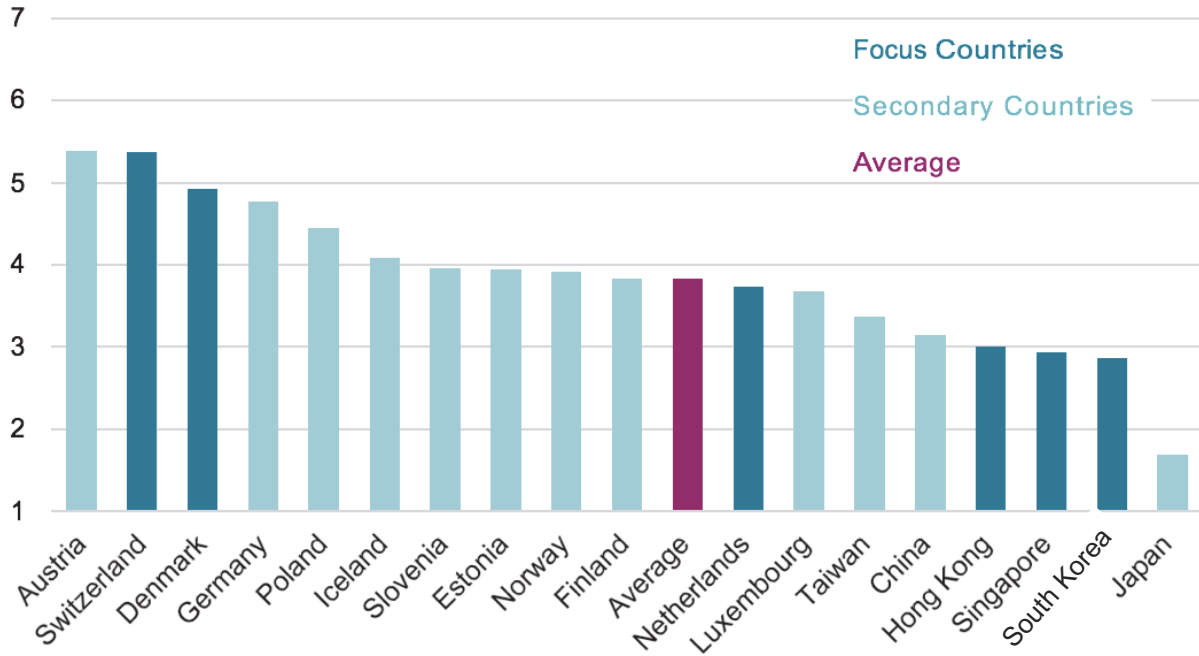
Methodology

We developed an index that measures education-employment linkage, the KOF EELI. It addresses linkage throughout the Curriculum Value Chain at all observable processes where education-system and employment-system actors might come into contact. We developed a survey to measure the index, and sent the survey to VET experts from the education, employment, and research sectors in the twenty countries identified as top youth labor market or PISA performers. The top three from each group make up our six focus countries.

Findings

Overall KOF EELI scores are on a one-to-seven point scale, where seven is the best possible score. Figure 2 shows all scores by country, with focus countries in dark teal and secondary countries—with less reliable data—in light teal. The top-scoring countries are Austria (5.4) and Switzerland (5.4), followed by Denmark (4.9). The average score among these countries is 3.8. The lowest scorers are Hong Kong (3.0), Singapore (2.9), South Korea (2.9), and Japan (1.7). When we later ran the KOF EELI in the state of Colorado, its high school CTE programs scored 2.7.

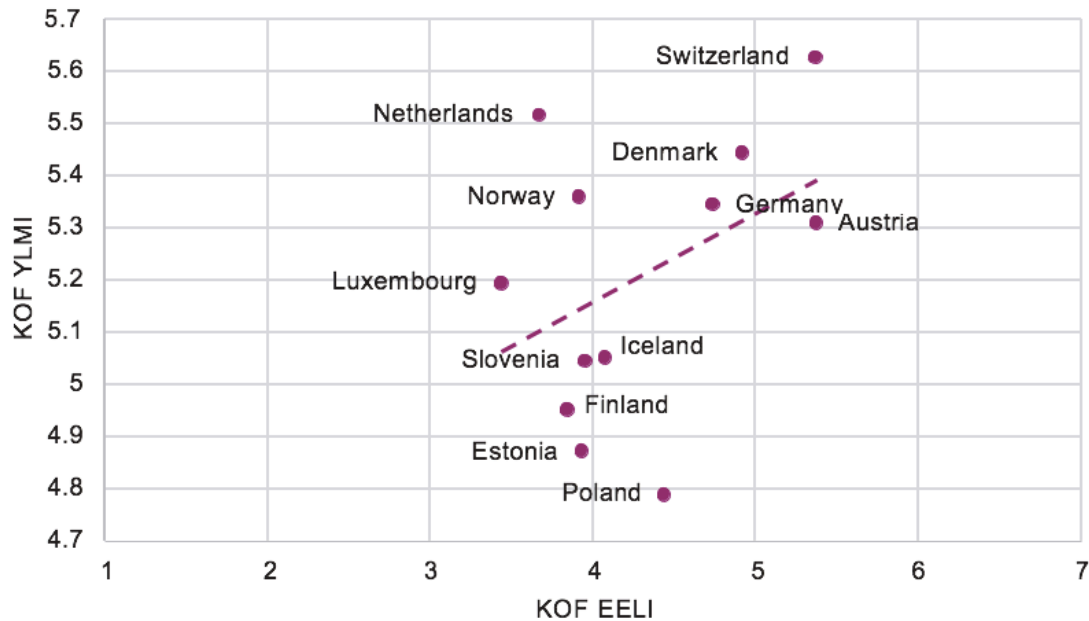
Figure 2: KOF EELI Scores by Country



We also find that countries with higher KOF EELI scores have better youth labor market outcomes as measured by the KOF Youth Labor Market Index (KOF YLMI) and shown in Figure 3. That index looks not only at unemployment, but also at other measures of young people’s activity state, working conditions, education matching, and transition smoothness. The correlation, however, is not quite significant due to small sample sizes and only applies to countries that report enough data for the KOF YLMI.

¹ <https://www.kof.ethz.ch/en/forecasts-and-indicators/indicators/kof-youth-labour-market-index.html>

Figure 3: Countries with Better KOF EELI Scores Have Better Youth Labor Market Outcomes



Key Characteristics

Because the KOF EELI includes a weighting scheme derived from the answers of experts, we can tell which features, processes, and phases are most important for strong VET programs. The key characteristics of the best programs are these:

Key Characteristics of Strong VET Programs

Employers involved in:

- Setting qualification standards
- Deciding when to update
- Setting the examination form.

Students spend most of their time in the workplace instead of the classroom.

The most important phase is the curriculum design phase (41.9 percent), followed closely by the curriculum application phase (34.4 percent) and the curriculum updating phase (23.7 percent). Among processes, the most important by far is update timing: employers must be able to say when the curriculum of a VET program needs a change (22.5 percent). Other important processes are involvement in defining qualification standards (15.8 percent) and in deciding how the examination should work (11.8 percent). Features are similar to processes, led by employer involvement in deciding qualification standards (15.8 percent), in deciding when to update (15.7 percent), and acting as the learning place the majority of the time (13.2 percent).

These findings are all in line with the research in the field, but the KOF EELI version lets us quantify the relative importance of different factors and help policymakers prioritize.