Education-Employment Linkage in Uzbekistan

Baseline Study

Report

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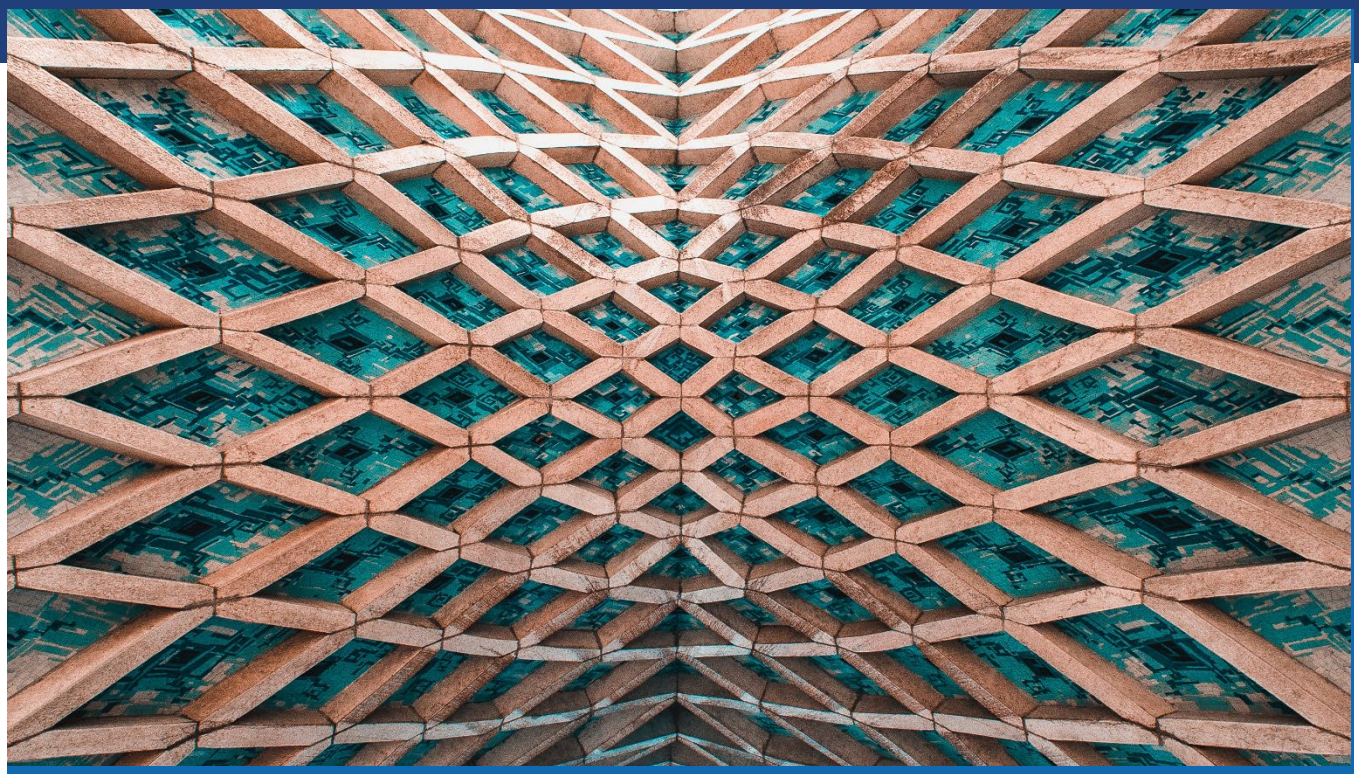

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Chair of Education Systems

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List of Abbreviations

CES ..... Chair of Education Systems
CVC ..... Curriculum Value Chain
EELI ..... Education-Employment Linkage Index
ESP……Educational Sector Plan
GSE ..... General Secondary Education
PE……Professional Education
SSVE ..... Secondary Specialized Vocational Education
TVET..... Technical and Vocational Education and Training

1 Introduction

The TVET sector in Uzbekistan has experienced large changes in recent years. One reform affects the education system, with a particular emphasis on Technical and Vocational Education and Training (TVET). According to UNESCO (2019), the Uzbek government aims to build a new, flexible TVET system that is more aligned with the labor market's interests. Under the "Education Sector Plan of Uzbekistan for 2019-2023" (ESP), TVET institutions should be modernized and enriched with up-to-date equipment to improve their quality as learning environments. Workplace training should also be increased and the skills taught to students should better match the needs of companies (GoU, 2019a, p. 111ff). TVET in Uzbekistan is the mainstream education pathway for young people, with 93% of students in upper secondary school choosing the TVET path in 2015 (EFT 2017, p. 57).

This study explores the strengths and weaknesses in Uzbekistan's TVET system using the education-employment linkage index (EELI) developed by the Chair of Education Systems (CES) at ETH Zurich. The main objectives of the index are to measure the intensity of interaction between actors from the education and employment systems when designing, applying, and updating the TVET curricula. The EELI serves as a baseline and helps highlight areas for TVET improvement.

Education-employment linkage is the degree of power sharing between actors from the education and employment systems in the areas where they may overlap during a TVET program. The EELI was developed and initially tested on 18 countries (Renold et al., 2016). Higher EELI scores are correlated with better youth labor market outcomes (Bolli et al., 2018). In addition, Bolli et al., (*forthcoming*) find that higher education-employment linkage causes improvements in specific youth labor market outcomes and helps reduce skills shortages and mismatches. In short, using the EELI to measure education-employment linkage is the best TVET program quality metric currently available and helps identify what reform leaders should focus on.

Terminology Note

TVET is an internationally applicable term that encompasses the entire pathway of technical and vocational education and training at the secondary, post-secondary, and tertiary levels (typically ISCED levels 3 upwards). In Uzbekistan, the sector is commonly referred to as PE (professional education). To avoid confusion with PET (professional education and training, a typical term for TVET at ISCED level 4 and higher), **we will use TVET in this report when speaking of the sector generally and specific program names when referring to individual programs specifically**.

2 TVET in Uzbekistan

Uzbekistan's education system has experienced some major reforms in recent years. As of 2017, the education system consists of three educational levels, summarized in Figure 1. It can be divided in pre-primary education, general secondary education (GSE), and higher education. GSE can further be divided into primary education, lower secondary school, and upper secondary school (GoU, 2019a, p.20). Before the new GSE model was introduced in 2017, compulsory education stopped after grade 9. The reform increased compulsory education to 11th grade and is slated to add a 12th year of compulsory education when preschool becomes mandatory in the next cohort.

While preschool is optional up to age five, six-year-olds must attend a compulsory year of preschool as of the 2021/22 school year. This was mainly introduced because of Uzbekistan's extremely low pre-school enrolment rate, shown in Table 1 compared to a selection of other countries (World Bank, 2018, p. 25). At age seven, children begin primary education (grades 1-4), then continue to lower secondary education (grades 5-9).

Table 1: Preschool enrollment in Uzbekistan compared to a selection of other countries

Country	Preschool Enrollment*
Uzbekistan	<30%
Kazakhstan	60%
Moldova	82%
Russia	85%
Japan	90%

**World Bank, 2018*

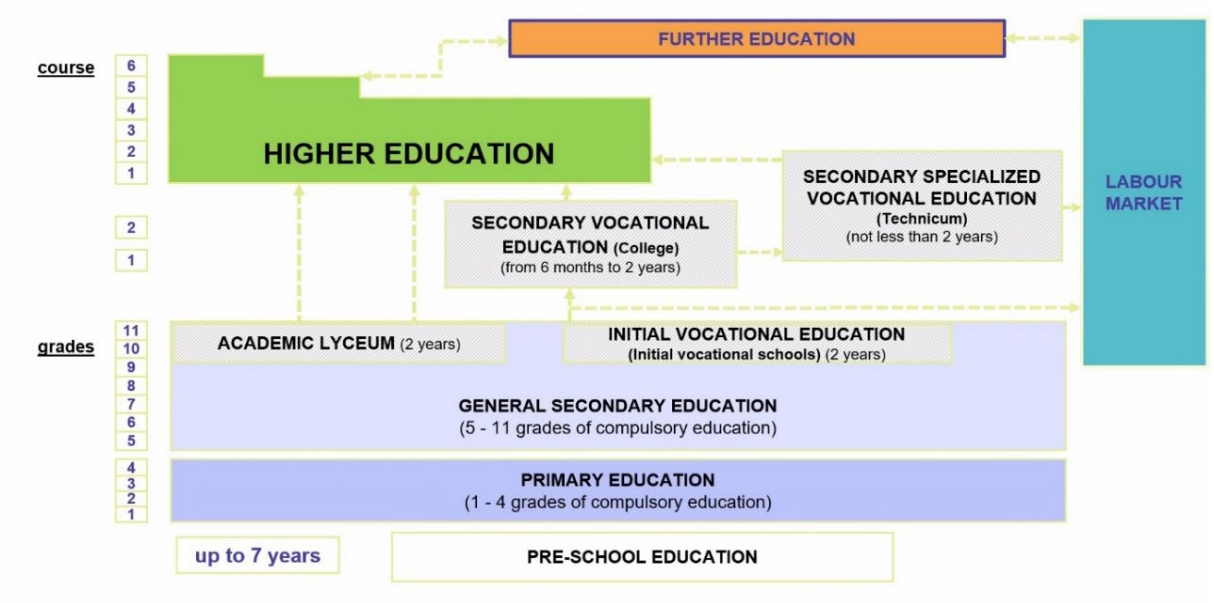
The 2017 reform increased GSE by two years to include grades 10 and 11 (GoU, 2019a, p. 22). These additional GSE years are now part of compulsory education. At the upper secondary level—grades 10 and 11—students can either choose an academic or TVET pathway. Under the new model, students can enter the labor market after their compulsory GSE or proceed with further education either via academic higher education or a TVET college. The reform was intended to make the education system more flexible (World Bank, 2018, p.12).

The 2017 implementation of 11-year GSE dramatically affected the scope of TVET. Under the old model, students attended a three-year Secondary Specialized Vocational Education (SSVE) program on the upper secondary level. Although called vocational education, SSVE could be either academic lyceum or TVET college (World Bank, 2018, p. 23). The TVET pathway in SSVE was very popular, with nine out of ten SSVE students enrolled there. (World Bank, 2018, p. 33).

In the new model of upper-secondary TVET, students stay at the same school where they attended lower secondary education (World Bank, 2018, p. 25). Usually, students get one day per week of vocational content with the main purpose of conveying practical training and skills (UNESCO, 2020, p. 18; World Bank, 2018, p. 11). After completing grade 11, they can either enter the labor market or go to a TVET college, which lasts half a year to two years depending on the skills required for each profession (GoU, 2019a, p. 22). As GSE has expanded, TVET college programs have been reduced to between six months and two years. The new flexibility has also led to a substantial shrinkage of the enrollment

in TVET colleges (World Bank, 2018, p. 34). As of January 2021, Technicums are also available to serve graduates from either the TVET or academic pathways in GSE.

Figure 1: Education system in Uzbekistan



Source: Uzbekistan CEMETS team 2021

In the academic pathway, students complete upper secondary school at an academic lyceum. After having completed these two years, students can enter higher education and start an undergraduate degree. To get accepted into a bachelor's university program academic lyceum graduates must also participate in the central nationwide high school exam (World Bank, 2018, p. 13). Uzbekistan has very low enrolment rates in higher education—below 10%—mainly due to low admission quotas. The number of places at universities was increased in 2008 and allowed access for 23% of prospective students, but has stagnated while applications have more than doubled, resulting in a 9% acceptance rate in 2017 (World Bank, 2018, p. 35). This results in a large mismatch between higher education supply and demand.

3 Method

The EELI assesses the degree of power-sharing across the education and employment systems at every point where the two systems may come into contact throughout the full process of a TVET program. The index focuses on measuring power-sharing when possible, but does not assess every single process involved in a TVET program because not all are related to linkage.

The index itself comprises 24 features that load into 11 processes, which themselves load into three phases. The phases are the three phases of the curriculum value chain (CVC): curriculum design, curriculum application, and curriculum updating. In the design phase, the key linkage-relevant processes are setting qualification standards, designing examinations, and the quality of employers' involvement. In the application phase, the key processes are students' learning place, workplace training regulations, cost-sharing to pay for education and training, the provision of equipment for training, the provision of teachers, and examinations. Finally, the updating phase has two processes: the gathering of information related to curriculum updating and the timing of such updates. Box 1 briefly describes each CVC phase for TVET in Uzbekistan.

Box 1: Curriculum Value Chain in TVET

Design: Education-employment linkage in the curriculum design phase is important to ensure that the skills and competencies in TVET curricula correspond to the needs of the labor market. Currently, in Uzbekistan the State Educational Standards (SES) are the predominant guide for curriculum design (EACEA, 2017, p.10).

Application: How the curriculum is implemented in the application phase is crucial for achieving desired learning outcomes. In the old education system before 2017, this phase was very inefficient. Training workshops were badly equipped, and institutions could not sufficiently adjust their teaching to the demands of the labor market (World Bank, 2018). With the 2017 reform, there is a clear goal to move from traditional classroom teaching to more workplace learning. This should enhance students' ability to acquire the skills they need for the labor market.

Updating: The processes in the curriculum updating phase are important for identifying gaps and new skills needs that should be integrated into TVET curricula. Uzbekistan has several bodies that collect data related to the results of the curriculum design and application phases. TVET data collection is mainly focused on enrolment rates and secondary graduates' outcomes. The Ministry of Labor and the Ministry of Economy are responsible for analysis (OECD, 2013, p. 93f). However, according to the OECD (2013, p.21), the data itself is insufficient and analytical capacity is limited.

To construct the EELI, we aggregate phases, processes, and features through a weighting scheme derived from empirical analysis of an 18-country pilot study (Renold et al., 2016, Bolli et al., 2018). Weights add up to 100% for all features together, all processes together, and all phases together. The weight of each process is the sum of its feature weights, and the weight of each phase is the sum of its process weights. Table 1 shows the features, processes, and weights in the index along with the weight assigned to each.

Table 2: EELI Phases, processes, features and associated weights

Index Component	Weight (%)*		
	Phase	Process	*Feature*
Overall Index	**100%**		
Design	**41.9%**		
Qualification Standards		15.8%	
Standards: Involvement			*15.8%*
Standards: Decision Power			*0%*
Examination Design		11.8%	
Examination: Involvement			*11.8%*
Examination: Decision Power			*0%*
Involvement Quality		14.3%	
Career vs Occupation vs Job			*0%*
Firms vs Employer Associations			*4.0%*
Represented Firm Share			*0.1%*
Legal Def. of Involvement			*10.2%*
Application	**34.4%**		
Learning Place		13.2%	
Classroom vs Workplace Share			*13.2%*
Legal Def. of Share			*0%*
Workplace Training Regulation		8.6%	
Work Contract			*1.7%*
Curriculum: Existence			*0%*
Curriculum: Implementation			*6.9%*
Workplace Trainer Requirements			*0%*
Cost Sharing		1.5%	
Classroom Education Costs			*1.5%*
Workplace Training Costs			*0%*
Equipment Provision & Quality		0%	
Equipment Provision & Quality			*0%*
Classroom Education Provision		3.2%	
Classroom Education Provision			*3.2%*
Examination		8.0%	
Practical Share of Examination			*0%*
Examination: Location & Supervision			*0.3%*
Examination: Employer Expert			*7.7%*
Updating	**23.7%**		
Information Gathering		1.2%	
Employer Surveys			*0.7%*
Labor Force Surveys			*0.5%*
Update Timing		22.5%	
Update Involvement			*15.7%*
Legal Def. Update Involvement			*6.7%*

Note: This table aggregates some items with 0% weight in the original formulation of the index.

We normalize all scores to a 1-to-7-point scale before aggregation, and the final scores are reported on the same 1-to-7-point scale. Low-linkage programs where the education system dominates decision-making have lower scores, and higher-linkage programs have higher numeric scores.

3.1 Survey

We used an online survey format to collect data. The EELI is constructed from a standardized survey tool that matches the survey delivered in other countries where we have measured education-employment linkage. In this case, the survey was translated into the Uzbek language by in-country experts. Sampled experts received the survey via a tokenized email link.

The survey focuses on the TVET colleges and Technicums in Uzbekistan specifically. These are the postsecondary-level TVET programs identified by in-country experts as the most relevant.

3.2 Sample and Data

The ideal sample for an EELI is not every TVET actor related to the program, but rather experts with the system-level perspective to understand processes throughout the CVC. Therefore, we prefer a smaller sample of high-quality experts over a less precise large sample. In-country experts identified a list of 71 experts with full contact information. We assign experts to four main categories: government and education institutions, employers and related associations, NGOs, and researchers. The sample includes 34 government/education representatives, 16 employer-related respondents, 16 individuals from NGOs, and 5 researchers.

Of the 71 individuals contacted, we had 12 sufficiently complete responses for analysis. This is a 16% response rate, which is quite high for an email survey. Due to technical problems, some respondents had to use an open link instead of tokenized links. Based on IP addresses we know that these respondents were part of the selected sample, but we cannot identify them specifically so we cannot report precisely how the respondents allocate into government, employer, and NGO categories.

4 Results

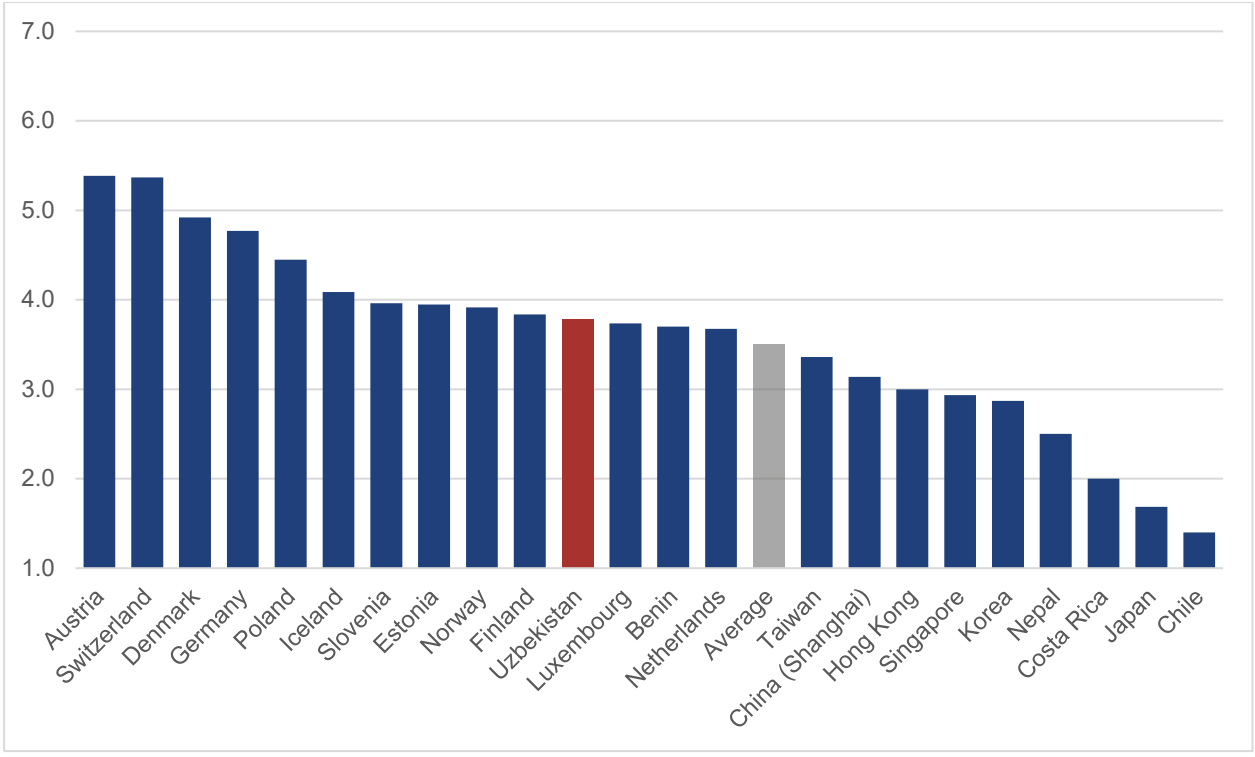
We will report linkage results overall at the index level, then move down through the aggregation layers. After the index-level results we will report phase-level, process-level, and feature-level results. Higher levels help establish a broad understanding of linkage in Uzbekistan's TVET colleges and Technicums, while the more detailed levels help identify specific strengths, weaknesses, and potential solutions.

4.1 Index Scores

Uzbekistan's overall EELI score for the College and Technicum TVET programs is 3.8. This moderate score puts Uzbekistan slightly above the average of all countries with EELI measurements to date. The score is shown in an international scoreboard in Figure 2, with Uzbekistan's score highlighted in red and the overall average shown in grey. The scoreboard is not representative as the countries included are highly selected, but it helps put Uzbekistan's score into context.

The highest scores—above five points—belong to Austria and Switzerland. Other countries known for their strong TVET systems are also found near the top end of the scale. The countries near the bottom end of the scale have TVET programs with scores as low as 1.4 on the 1-to-7-point scale. Uzbekistan's score puts it near Estonia, Norway, Finland, Luxembourg, and Benin. These countries all fall into the same moderate-linkage zone. However, each country and program is individualized by the specific details that make up the overall index score.

Figure 2: EELI Scoreboard



4.2 Phase Scores

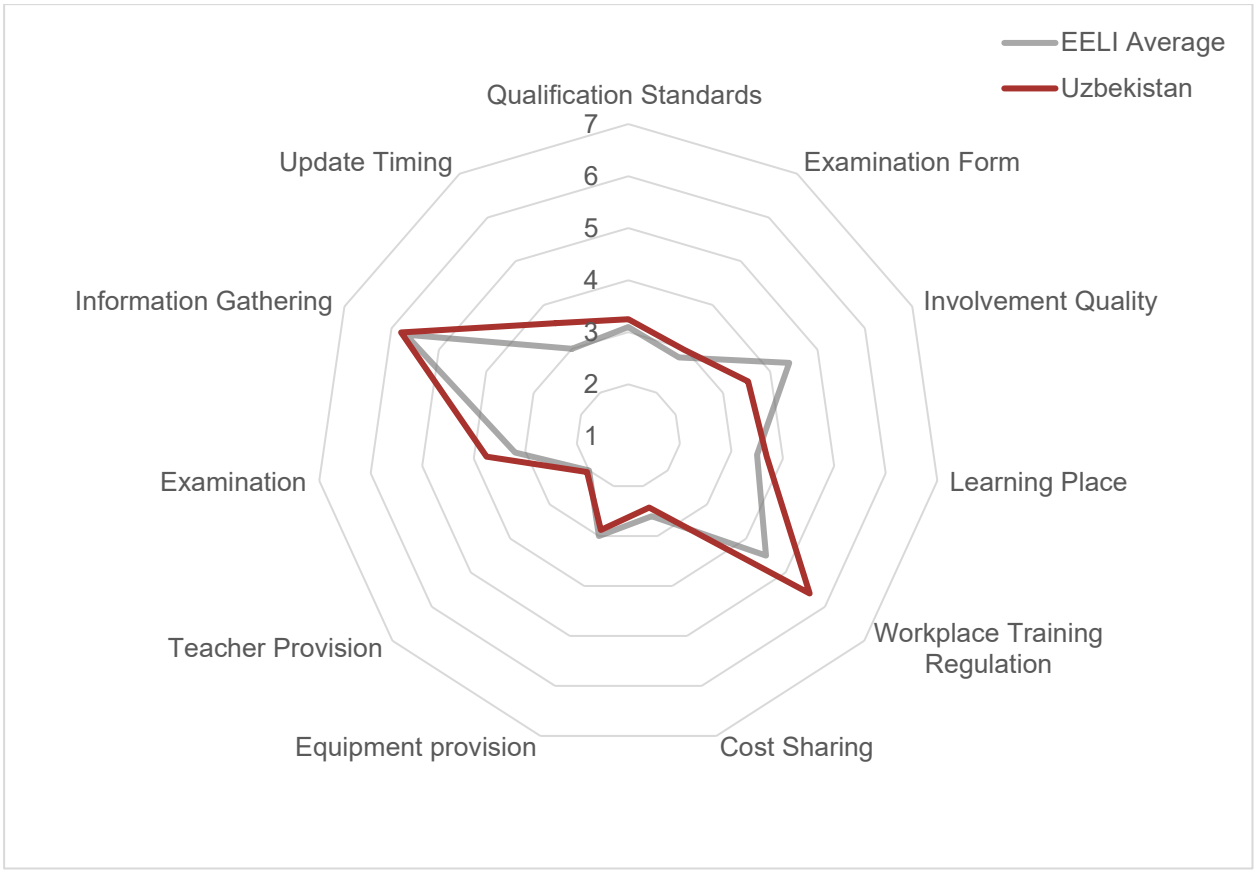
At the phase level, we are looking for any particularly high or low scores that show one phase of the CVC is emphasized or forgotten. Uzbekistan's TVET colleges and Technicum programs score relatively consistently across all three phases of the CVC. **Curriculum design scores 3.8, application 3.9, and updating 3.5**. All of these are relatively close together, indicating consistently moderate linkage throughout the CVC.

4.3 Process Scores

The next level of detail comprises the processes in each phase of the CVC. There are three processes in curriculum design, six in curriculum application, and two in curriculum updating. **Figure 3 shows Uzbekistan's process scores compared to the EELI average**. The overall pattern is quite similar, with Uzbekistan strong in workplace training regulations and information gathering, but weaker in teacher provision, equipment provision, and cost sharing.

While the three CVC phases are relatively similar in weight, the processes vary widely. The most important processes are qualification standards (15.8% weight), examination design (11.8%), the quality of employers' involvement (14.3%), learning places (13.2%), and update timing (22.5%). Although none of these is an extremely low score for Uzbekistan, they are also not notable strengths. Workplace training regulations are Uzbekistan's highest score, but that process has only moderate weight (8.6%). Information gathering for curriculum updating is also a high score, but has even lower weight (1.2%).

Figure 3: Process-level EELI scores compared to EELI average



4.4 Feature Scores

The scores at the feature level are perhaps the most policy-relevant due to their specificity but are best understood in the context of the higher-level scores just discussed. Linkage in Uzbekistan's TVET sector is generally moderate, and feature-level results can help prioritize steps for improvement.

Figure 4 shows linkage for key features only, omitting the features with very low or no weight in the overall linkage score. The size of each "slice" of the pie chart represents the weight of the feature, and the diameter of the colored section shows Uzbekistan's score relative to the seven-point maximum. A program with full linkage would have a fully filled circle, and the goal is to increase linkage in the most impactful areas that can contribute the most color.

The three features that contribute the most to linkage are companies' role in defining curriculum content and standards, the amount of workplace learning in a TVET program, and whether companies can decide when curriculum updates are necessary. These scores are moderate in Uzbekistan's TVET colleges and Technicums, ranging from 44%-52%. These are the first priority for increasing linkage, and Uzbekistan has room to improve.

Uzbekistan's strongest key features are that employers can participate in curriculum design in a variety of ways (89%) and that students always have contracts when they are working (100%; stipulated by Resolution #163). In addition, the legal definition of employers' role in curriculum design is relatively clear (74%). The weakest items relate to employers providing classroom education (34%) or paying for work-based learning (30%). If there is not much workplace learning, companies may be asked to participate by providing teachers or equipment for classroom education. Similarly, employers typically provide the trainers and wages that go with workplace learning. Further research on companies' specific costs and benefits of TVET participation can help clarify future directions in these areas, but these are relatively less important features so they are not a priority.

Figure 4: Feature-level EELI scores (key features only)

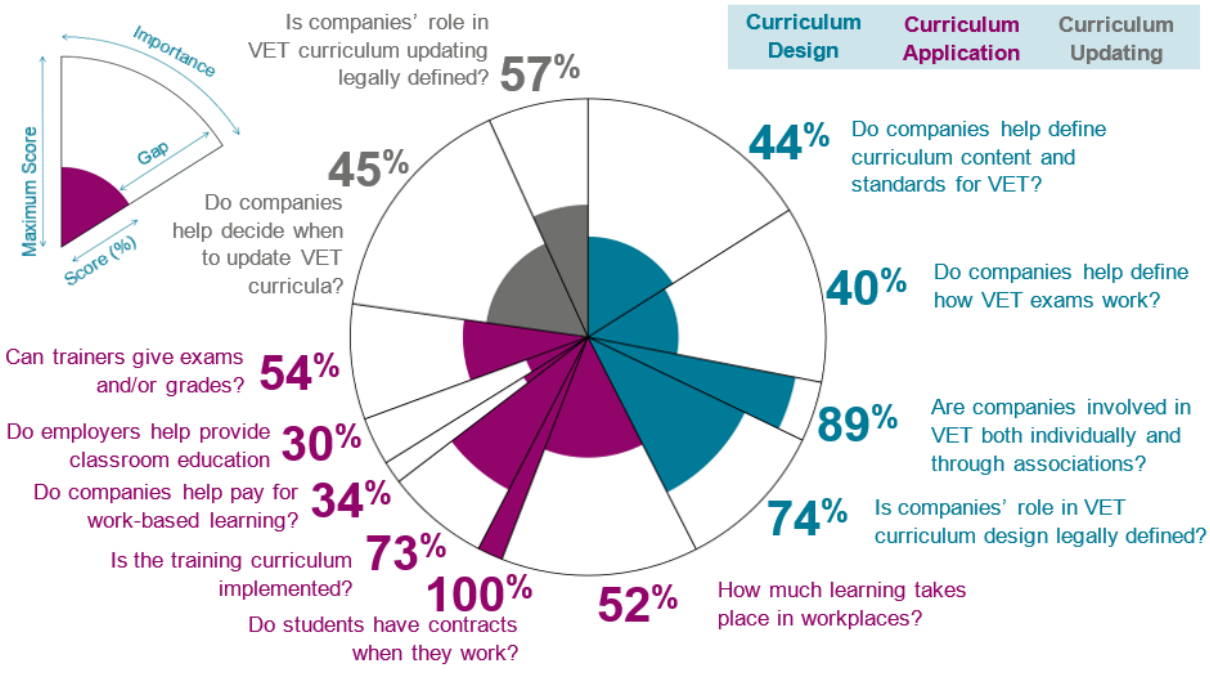
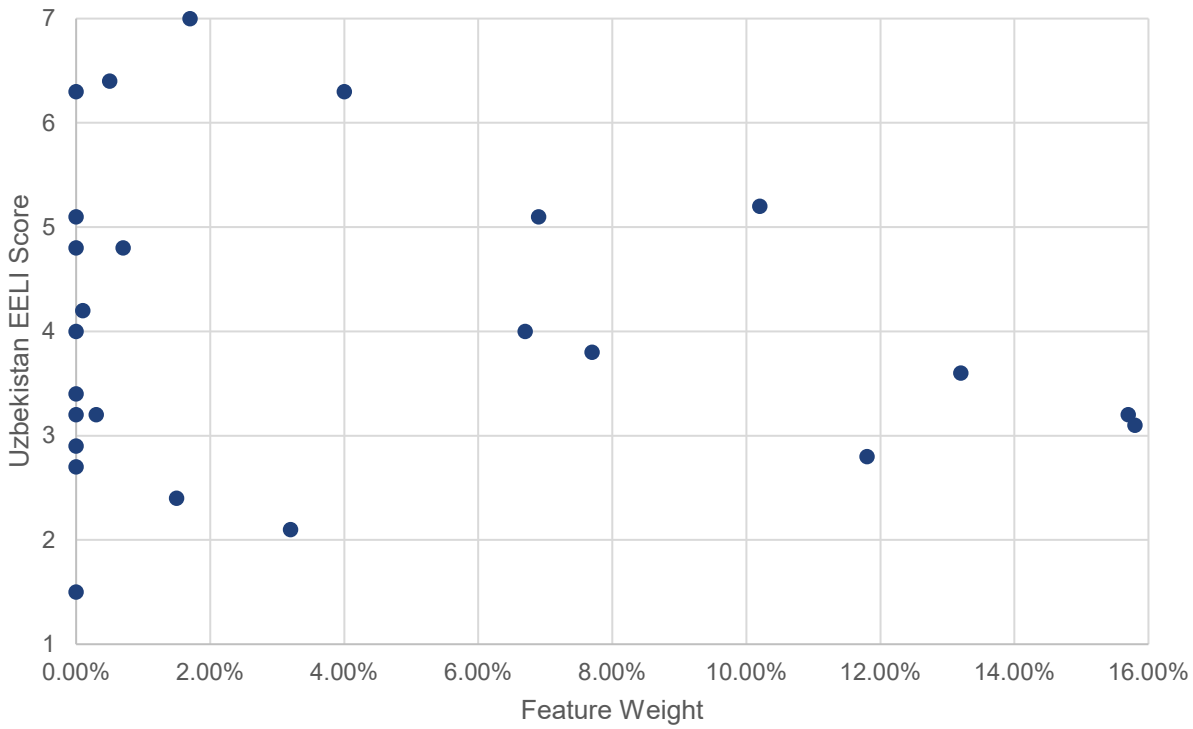


Figure 5 also shows feature-level EELI results, but in a slightly different way. In this chart, we plot the features' scores on the one-to-seven-point scale (y axis) against their weight (x axis). More important features are further to the right on the chart, and higher-scoring features are higher up. Ideally, the far-right features would be high up on the chart, and it is not very important where the far-left features are. The far-right features are important areas to invest resources and effort, while the far-left features will not have much impact on linkage and thus students' outcomes.

In Uzbekistan, we see that the less-important features have a wide range of scores while the more-important feature are generally low to moderate in score (for a fully labeled version of this chart, see Figure 6 in the Appendix). Reforms require effort and energy, which are limited resources. Therefore, this chart shows that Uzbekistan's TVET leaders can shift resources from left to right on the chart, focusing on the most important elements of linkage. These are work-based learning, companies' role in curriculum design, companies' role in deciding when an update should happen, and companies' involvement in examinations.

Figure 5: Feature-level EELI scores (all features, plotted by weight)



Finally, Table 2 shows the full scores for Uzbekistan's TVET colleges and Technicums for the EELI, CVC phases, processes within each phase, and individual features. The table also repeats the weight for each item to help keep results in perspective.

Table 3: Full EELI scores at all levels with weights

Index Component	Weight (%)*			UZ EELI Scores (1-7)
	Phase	Process	*Feature*	
Overall Index	**100%**			**3.8**
Design	**41.9%**			**3.8**
Qualification Standards		15.8%		3.3
Standards: Involvement			*15.8%*	*3.1*
Standards: Decision Power			*0%*	*3.4*
Examination Design		11.8%		3.0
Examination: Involvement			*11.8%*	*2.8*
Examination: Decision Power			*0%*	*3.2*
Involvement Quality		14.3%		3.5
Career vs Occupation vs Job			*0%*	*1.5*
Firms vs Employer Associations			*4.0%*	*6.3*
Represented Firm Share			*0.1%*	*4.2*
Legal Def. of Involvement			*10.2%*	*5.2*
Application	**34.4%**			**3.9**
Learning Place		13.2%		3.7
Classroom vs Workplace Share			*13.2%*	*3.6*
Legal Def. of Share			*0%*	*4.0*
Workplace Training Regulation		8.6%		5.6
Work Contract			*1.7%*	*7.0*
Curriculum: Existence			*0%*	*6.3*
Curriculum: Implementation			*6.9%*	*5.1*
Workplace Trainer Requirements			*0%*	*5.1*
Cost Sharing		1.5%		2.4
Classroom Education Costs			*1.5%*	*2.4*
Workplace Training Costs			*0%*	*2.7*
Equipment Provision		0%		2.9
Equipment Provision & Quality			*0%*	*2.9*
Classroom Education Provision		3.2%		2.1
Classroom Education Provision			*3.2%*	*2.1*
Examination		8.0%		3.8
Practical Share of Examination			*0%*	*4.8*
Examination: Location & Supervision			*0.3%*	*3.2*
Examination: Employer Expert			*7.7%*	*3.8*
Updating	**23.7%**			**3.5**
Information Gathering		1.2%		5.8
Employer Surveys			*0.7%*	*4.8*
Labor Force Surveys			*0.5%*	*6.4*
Update Timing		22.5%		3.6
Update Involvement			*15.7%*	*3.2*
Legal Def. Update Involvement			*6.7%*	*4.0*

5 Conclusions

Uzbekistan's education system leaders have recently made changes in an effort to increase the permeability and labor market relevance of TVET. These changes are relatively new, so this report establishes a baseline of moderate linkage upon which the system can continue to grow.

5.1 Limitations

This study is a baseline that can help assess the effectiveness of future TVET reforms in Uzbekistan by capturing a key component of TVET program quality before longer-term outcomes like students' employment, wages, or further education attainment are available. It is a useful diagnostic tool, comparable across countries, and comparable across time. However, this application uses a relatively small sample of experts to generate findings so we must allow for a relatively large margin of error around specific numbers.

A great deal of variation within and across the programs studied here will not be visible in these results. Because we focus on the TVET college and Technicum programs together, we cannot identify variation across those programs. Regional, occupational, or institutional variation in program design, delivery, and updating are not visible. We have asked respondents to describe the average situation when multiple situations exist, but the degree of that variation is unobservable. The Technicum programs are so new that their linkage will most likely stabilize over time.

5.2 Summary of Findings

The education-employment linkage of Uzbekistan's TVET colleges and Technicums is moderate, scoring just below the midpoint of the scale and close to the average of other countries that have been measured on the same scale. Linkage is relatively constant across the curriculum design, curriculum application, and curriculum updating phases.

At the process and feature levels, strengths and weaknesses are more apparent. In curriculum design, the three processes of designing qualification standards, designing examinations, and employer access to curriculum design are relatively constant just on the low side of moderate. In the application phase, workplace training regulations are quite strong while the presence of workplace learning and employers' role in examinations are weaker. In the curriculum updating phase, information gathering is strong while employers' role in timing curriculum updates is moderate.

The most important individual features defining education-employment linkage are workplace learning, employers' involvement in defining qualification standards and examinations, and employers' deciding when an update is necessary. On these, Uzbekistan is on the low side of moderate. The strongest features for Uzbekistan's TVET colleges and Technicums are the presence of work contracts, employers accessing the curriculum design process in a variety of ways, and the legal definition of employers' involvement in curriculum design. However, these are less important items.

5.3 Recommendations

Higher education-employment linkage is associated with better labor market outcomes for young people, and the EELI is at least correlated with these outcomes. It is a highly effective measure of program quality in terms of successfully identifying and transmitting the most important and relevant skills for TVET occupations. Therefore, improving linkage is a key step that will facilitate Uzbekistan's goals related to the value, relevance, and return on education of its TVET programs.

These results show that Uzbekistan's overall program quality—as represented by linkage—is moderate and identifies priorities for improvement. Specifically, the following will have the largest impact:

1. Increase work-based learning in TVET programs to at least 50% of total program time
2. Increase employers' role in the design of qualification standards and examinations
3. Increase employers' role in determining the timing of TVET curriculum updates

Taken together, these items represent approximately 60% of total linkage. Focusing on these items—and potentially de-investing in other less important areas—can help improve linkage as efficiently as possible.

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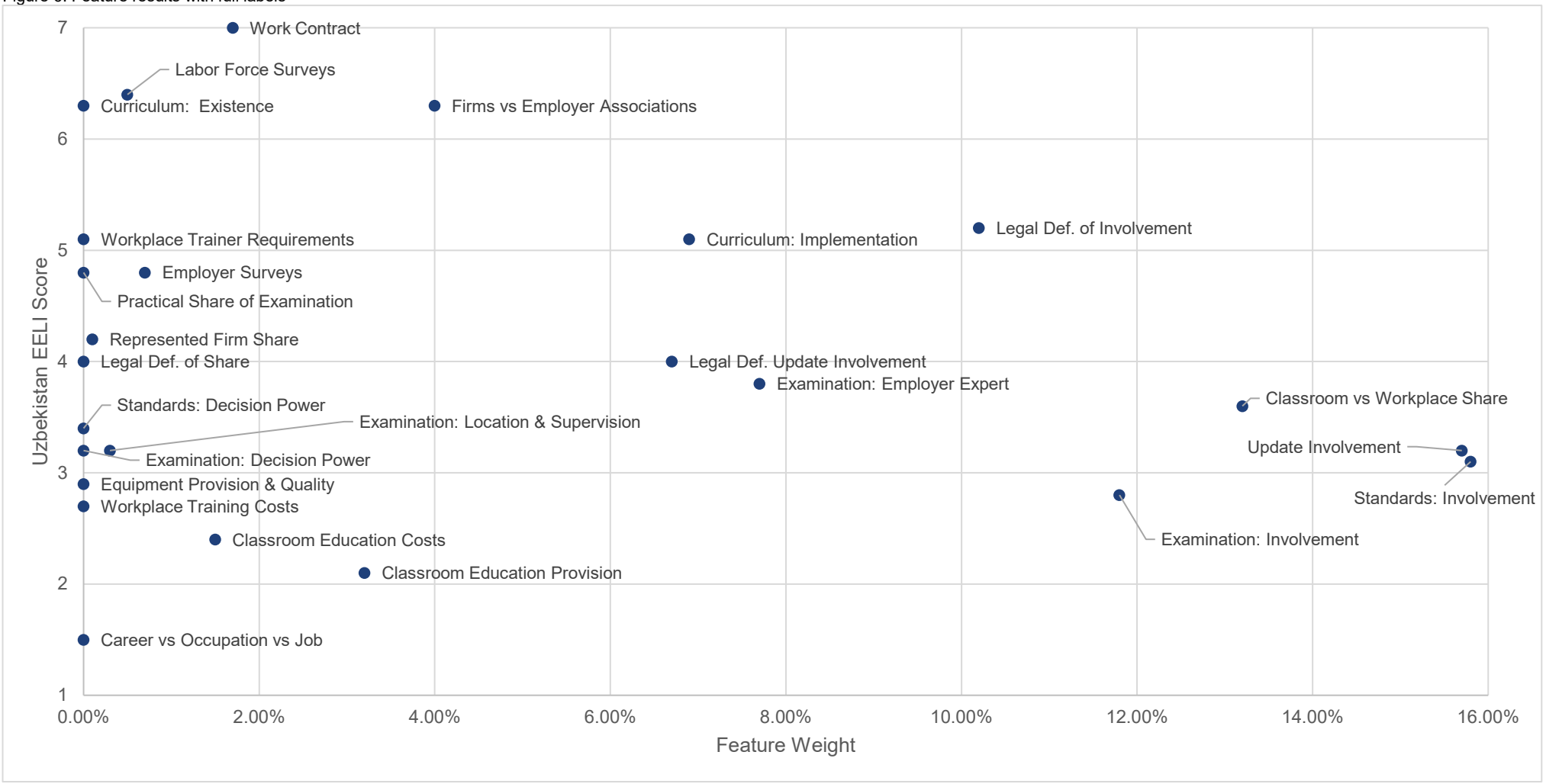
Appendix

Figure 6: Feature results with full labels



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