

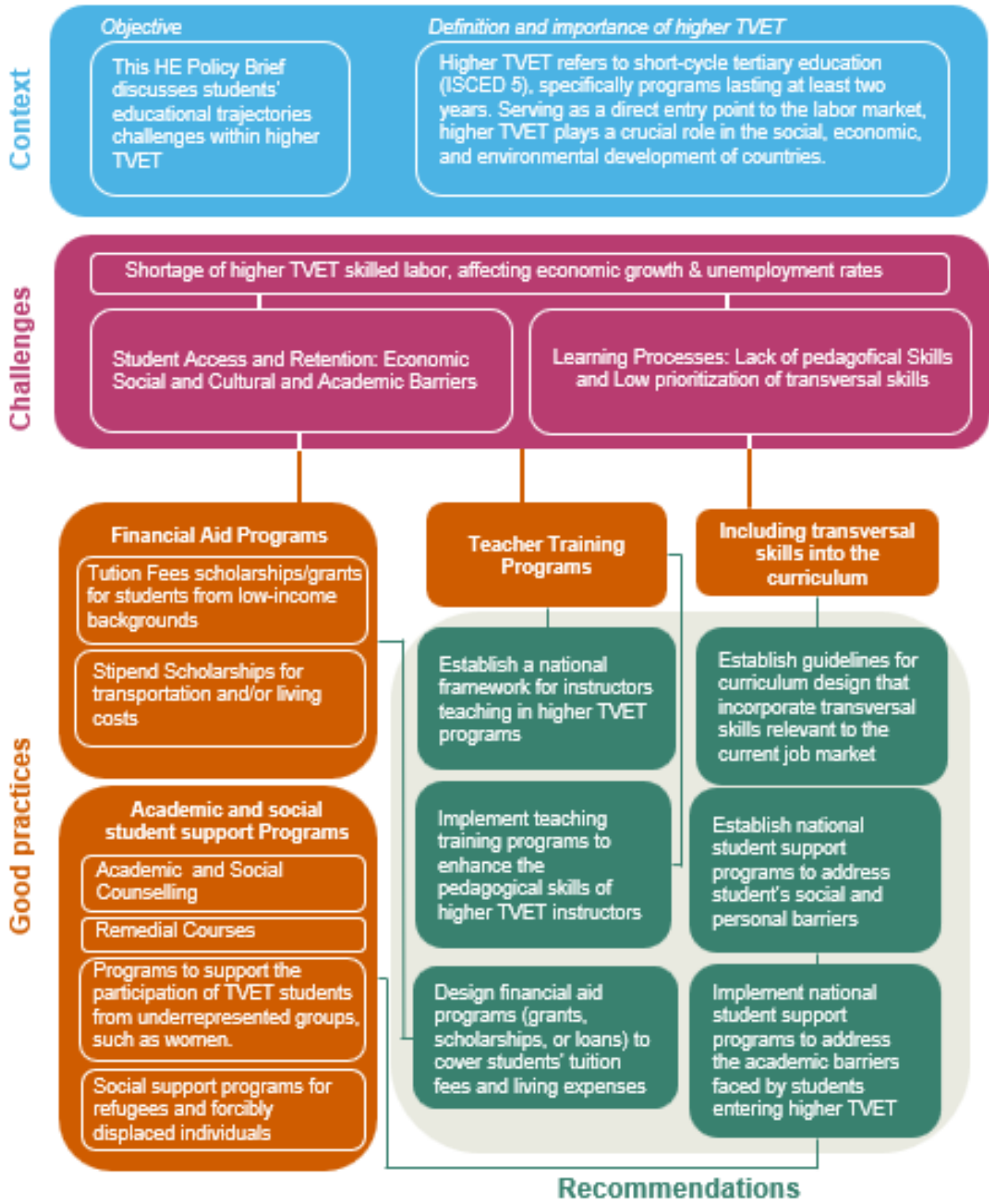
POLICY BRIEF

Strengthening Technical and Vocational Education and Training in Higher Education: Challenges in Access, Retention and Learning Processes

Executive Summary

- This Policy Brief explores how higher Technical and Vocational Education and Training (TVET) systems can be strengthened to increase the number of graduates and support their successful integration into the labor market.
- Higher TVET contributes to the social, economic, and environmental development of countries. However, it faces challenges in fulfilling these roles, especially when it comes to students' success. This is relevant considering that enrollment in higher TVET has doubled in the last two decades
- Challenges are identified in the areas of access, retention, and learning processes. Economic, social, cultural, and academic barriers that impede access and persistence in higher TVET programs are particularly evident among disadvantaged groups, including low-income individuals, women, migrants, and displaced persons. Additionally, weaknesses are noted in the pedagogical quality of lecturers, the alignment of classroom content with industry needs, and the insufficient prioritization of transversal skills.
- To address these challenges, this Policy Brief recommends the implementation of financial aid policies, including national scholarship programs, government-supported retention initiatives, student support services, and vocational guidance programs, with a particular focus on disadvantaged groups facing additional barriers.
- In addition, it recommends enhancing the pedagogical training of higher TVET faculty, promoting ongoing professional development, and advancing the creation of relevant and up-to-date curricula that integrate the transversal skills essential for comprehensive education.

STRENGTHENING TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING IN HIGHER EDUCATION: CHALLENGES IN ACCESS, RETENTION AND LEARNING PROCESSES



Context

This HE Policy Brief¹ addresses the challenges of Higher Technical and Vocational Education and Training (TVET) related to students' educational trajectories, including access, retention, and preparation for the labor market. Technical and vocational education and training' (TVET) is understood as comprising education, training and skills development relating to a wide range of occupational fields, production, services and livelihoods. UNESCO believes in the role of TVET to address multiple demands of an economic, social, and environmental nature by helping youth and adults develop the skills they need for employment, promoting inclusive and sustainable economic growth and supporting transition to digital and green economies (UNESCO, 2022).

TVET, as a part of lifelong learning, can occur at secondary, post-secondary, and tertiary levels. It includes work-based learning, continuing training, and professional development, which may lead to qualifications. TVET also offers a broad range of skills development opportunities aligned with national and local contexts. Integral components of TVET include learning to learn, literacy and numeracy skills, transversal skills, and citizenship skills (UNESCO, 2015).

TVET programs can cover ISCED level 2 (lower secondary) through ISCED level 5-8 (tertiary education), depending on the specific education system and the scope of the program (UIS, 2012). Higher TVET is

defined differently across systems and countries. In this document, it is referred to short-cycle tertiary education (ISCED 5), characterized by practically based, occupationally specific programs lasting an average of two years, which prepare students to directly enter the labor market. An earlier report analyzed the structural challenges of higher TVET, focusing on the misalignment between the supply of higher TVET programs and national socio-economic needs, the low societal perception of this educational level, and the lack of articulation between educational pathways (Ricaurte, et al., 2024). This document complements these previous analyses by addressing the following question: How can we strengthen higher TVET systems to produce more graduates with the adequate training to succeed in the labor market?

Higher TVET is highly relevant as it contributes to the social, economic, and environmental development of countries. However, it faces challenges in fulfilling these roles, especially when it comes to students' success. This is relevant as enrollment in higher TVET has doubled in the last two decades, going from 4% to 8% between 2000 and 2021 (UIS, s.f.). In this context, various studies and reports have highlighted the benefits of higher TVET, suggesting that it promotes upward social mobility, enhances economic productivity, and, through its adaptability to changes in the labor market, plays a key role in supporting green transitions (CEDEFOP,

¹ Higher TVET is understood as mainly short-term programs in tertiary education (ISCED 5) focused on preparation for direct access to the labor market. Although there are countries where higher TVET

has also been developed in programs of longer duration (ISCED 6), this is not the predominant trend. This is the reason why ISCED 5 cases are generally presented in the analyses carried out.

2011; INACAP, 2023; UNESCO 2016; UNESCO-UNEVOC, 2021a; Webb, 2022).

Problem Statement

The challenges faced by higher TVET educational processes are closely tied to the broader issue of skilled labor shortages. This shortage poses significant barriers to the development of countries for various reasons, including technological advancements—where the automation of certain tasks has created a need to redefine specific roles—and demographic shifts, as aging populations drive the need to reconsider the skills that older groups should acquire (UNESCO-UNEVOC, 2024; World Bank, UNESCO & ILO, 2023).

This labor shortage is also exacerbated by persistent difficulties in ensuring access, retention, and sufficient academic preparation for students. It has been argued that the shortage of technicians and professionals is not merely a result of the low number of individuals entering and completing higher-level TVET programs, but also due to the fact that a significant proportion of graduates lack the competencies required to successfully transition into the labor market (European Commission, 2024a). The following section explores these challenges in greater depth, focusing on the educational trajectories of students and emphasizing how these issues disproportionately affect certain groups.

Challenges to Student Access and Retention

Students face a range of economic, social, cultural, and academic barriers that can impede both their access to higher TVET programs and their retention once

enrolled. Even after overcoming initial access challenges, many students encounter significant obstacles in progressing through these programs. Studies conducted in TVET institutions across diverse contexts reveal that these retention gaps often stem from a combination of social, economic, and academic factors (Eichelberger et al., 2017; Van der Bijl & Lawrence, 2019; Venegas-Muggli, 2020; Zulu & Mutereko, 2020).

Economic Barriers

Given the non-selective nature of higher TVET institutions, their potential applicants predominantly come from lower socioeconomic backgrounds, which poses significant challenges in financing their studies. Many students interested in enrolling in higher TVET might be unable to do so due to the financial burden this place on their families (Goodman, 2022). For example, in Nepal, access to higher TVET is severely restricted by the high fees charged by private institutions, disproportionately impacting students from disadvantaged socioeconomic backgrounds. This barrier is linked to government policies that have prioritized the privatization of education over the strengthening of public institutions (Dahal, 2020).

Economic barriers also hinder student retention, as higher TVET students are often the first in their families to access higher education and typically come from more disadvantaged socioeconomic groups. As a result, the costs associated with study

materials, transportation, and food can create significant challenges (Nzembe, 2018; Tinto, 2008; World Bank, UNESCO, & ILO, 2023). For example, in Malaysia, the high dropout rate among higher TVET students is strongly associated with their socioeconomic profile. A lack of financial resources often leads to family pressure for students to enter the workforce, forcing many to abandon their studies (Had Sabtu et al., 2016).

Social and Cultural Barriers

Social and cultural barriers are often rooted in expectations about students' futures, shaped by family environments or secondary educational institutions, which significantly influence educational decisions. For example, family pressures for students to join the workforce immediately after completing secondary education to provide economic support for their households can deter higher education pursuits. Similarly, students may develop low aspirations or a lack of self-efficacy, doubting whether higher education is a viable option for them. Other challenges include unclear vocational guidance and environments that question students' decisions about which fields of study to pursue (Aird et al., 2010; Groener & Andrews, 2019). For instance, in Australia, beyond financial constraints, access for low-income groups is significantly limited by students' low aspirations, as many do not perceive the relevance of continuing their studies after secondary education (James & Johnston, 2016).

When it comes to vocational decisions, women are particularly affected. In many countries, gender stereotypes limit

women's participation in certain academic areas within higher TVET. These stereotypes often classify specific fields, such as STEM areas, as male-dominated, hindering the academic and professional trajectories of female students. These societal biases are reinforced by family and social environments, significantly restricting women's access to programs traditionally associated with male roles (Sevilla et al., 2019).

Social gaps in TVET are even more pronounced for migrants and displaced persons, who face greater challenges in continuing and completing their programs (Alla-Mensah et al., 2021; Martin & Stulgaitis, 2022). In a globalized world marked by geopolitical conflicts, migration and forced displacement create significant hurdles for nations. Education and economic inclusion are key to fostering self-reliance and building more inclusive societies (UNHCR, 2020; Wedekind et al., 2019). In this context, TVET stands out as an effective form of education to enhance the sense of belonging for displaced persons, promoting social integration, job-oriented training, and lifelong learning. However, this potential often goes untapped due to the lack of targeted policies designed to include displaced persons and address their specific needs (UNESCO-UNEVOC, n.d.; UNHCR, 2023; Wedekind et al., 2019).

Displaced persons frequently face additional administrative, linguistic, and practical barriers that limit their access to formal education and hinder their progression within TVET programs (Giordano et al., 2021; FAC, GIZ, ILO & UNHCR, 2023; UNESCO-UNEVOC, n.d.).

Academic Barriers

The inclusive nature of TVET plays a vital role in promoting the social development of countries by providing educational opportunities to disadvantaged groups, often referred to as non-traditional students, who may otherwise have limited access to higher education. However, this inclusivity comes with the challenge of educating a large proportion of students who face significant gaps in both academic competencies and socioemotional skills.

As a result, dropout rates in higher TVET are particularly concerning, as many students enter these programs with inadequate preparation during their secondary education (Kersánski et al., 2022). This issue becomes even more pronounced in higher education, where academic demands and responsibilities are greater, exacerbating the educational gaps accumulated throughout earlier stages of learning (Kersánski et al., 2022).

Challenges in learning processes

A second type of challenge pertains to factors within the classroom that directly impact student learning. Often, these learning processes fall short, encompassing issues such as low teaching quality, insufficient emphasis on the development of transversal skills, and outdated or poorly aligned content that fails to meet the needs of modern industries².

Lack of pedagogical skills

The search conducted for this Brief revealed that few countries establish minimum

national requirements for hiring higher TVET faculty. While individual institutions often set their own criteria, the lack of a national reference framework for faculty profiles creates a gap that can adversely affect the educational quality of these institutions.

Moreover, addressing the academic and social gaps faced by higher TVET students requires faculty with advanced pedagogical skills who are both sensitive and inclusive regarding learning differences related to gender, culture, or socioeconomic background. Given the close connection between higher TVET and workforce development, many faculty members are also expected to maintain direct ties to the industries relevant to their teaching areas. However, a lack of updated practical and digital skills among some lecturers undermines the quality of student learning, resulting in fewer technicians and professionals equipped to meet workforce demands (Han et al., 2024; Taylor & van der Bijl, 2018; UNESCO-UNEVOC, 2020).

Low prioritization of transversal skills

Another challenge in learning processes in higher TVET is the lack of prioritization of transversal skills. This issue is particularly pressing in a context of rapid technological advancement, where it is increasingly essential for students to complement their technical knowledge with transversal skills, including non-cognitive, socioemotional, digital, and entrepreneurial competencies. Key transversal skills include creativity, innovation, critical thinking, problem-

² This brief will focus on the challenges of insufficient pedagogical skills and the low prioritization of transversal skills, as the issue of outdated curricula was thoroughly

examined in the previous brief on the structural challenges of higher TVET.

solving, decision-making, communication, collaboration, information literacy, ICT literacy, global and local citizenship, and personal and social responsibility (UNESCO, 2015; UNESCO-UNEVOC, 2020; World Bank, UNESCO & ILO, 2023). Without regular updates to integrate these skills into curricula, the future workforce may struggle to adapt to emerging technologies and engage in continuous learning cycles (Binkley et al., 2012; Global Partnership for Education, 2020). In this context, transversal skills are considered essential for producing employable graduates in higher TVET (Dogara et al., 2019).

Incorporating transversal skills into higher TVET programs is a complex task, as these institutions often focus primarily on teaching technical knowledge and

competencies, rather than the transversal skills required by students and industries (World Bank, UNESCO & ILO, 2023). For example, in Thailand, companies report that the skills of TVET graduates fail to meet their needs, citing irrelevant curricula and a lack of necessary competencies (OECD, 2021). Similarly, in India, digital skills curricula have been noted to lag behind industry demands (ILO, 2019; World Bank, UNESCO & ILO, 2023).

In addition, a European Union study on transversal skills in TVET revealed that 70% of companies reported a lack of digital skills among employees as a significant barrier to investment, while 65% of small and medium-sized enterprises emphasize the importance of flexibility and critical thinking for employability (EAfA, 2024).

Policy Analysis

Policies designed to support students' access, retention, and learning trajectories serve multiple purposes; they can provide financial assistance, enrich social and academic experiences, enhance the learning process, and improve the quality of faculty.

Financial aid programs

Governments implement financial aid programs, such as scholarships and stipends, to promote students' access and retention in higher TVET programs by reducing the financial barrier of students coming from disadvantaged backgrounds. These measures can vary on the amount, duration, criteria, and are often limited to fields strategically important for the

country. Regarding scholarships, in Ecuador, the Secretariat of Higher Education, Science, Technology, and Innovation (SENESCYT) has established the National Scholarship Program for Third-Level Technical and Higher Technological Education. This program fully funds higher TVET fees, prioritizing historically marginalized groups, including women who have been victims of gender-based violence, students from low-income backgrounds, and others (SENESCYT, n.d.). Similarly, in Australia, the Commonwealth Government has partnered with states and territories to implement the 'Fee-free TAFE Skills Agreement,' which offers 20,000 free seats in TVET programs. This only applies to certain programs, which may vary by region

depending on local needs. Priority groups for this program include women facing economic difficulties, as well as people with disabilities or unemployed (DEWR, 2024).

In other countries, national scholarships are designed specifically for students from low-income backgrounds. For example, in Argentina, the National Bicentennial Scholarship Program for Scientific and Technical Careers is aimed at increasing the enrollment of young people from low-income households who aspire to pursue a university or higher TVET degree in fields considered strategic for the country's economic and productive development. It also aims to encourage the retention and completion of undergraduate and technical studies in the key areas for development (Ministerio de Educación de Argentina, n.d.). Similarly, in Chile and Uruguay, scholarships are awarded to low-income students who are beginning or continuing higher TVET studies through the Subsecretary of Higher Education and the Solidarity Fund, respectively (Fondo de Solidaridad, n.d.; Subsecretaría de Educación Superior, s.f.).

In Thailand, scholarships for low-income students are allocated across specific sectors, including emerging industries, areas facing skill shortages, as well as fields in STEM and digital technology (EEF, 2023; EEF, n.d.). Likewise, in Slovenia, the State Social Scholarship aims to benefit higher TVET students from low-income families. Depending on the family's economic status, the scholarship varies in value. In addition, Slovenia offers scholarships based on academic merit, professions with a shortage of qualified personnel, and corporate affiliation (CEDEFOP, 2021).

Corporate scholarships, co-funded by the government and employers, strengthen the link between education and the labor market. Under this program, employers support students' education and commit to hiring them upon graduation (CEDEFOP, 2021).

Providing stipends to help cover transportation or living expenses is another measure to support students in continuing and completing their higher TVET studies. In Bangladesh, the Directorate of Technical Education offered stipends to all female students in both public and private polytechnics through the World Bank-funded Skills and Training Enhancement Project (STEP, 2010-2019). Every female student enrolled in a diploma program received a monthly stipend of BDT 800 (approximately 25 USD) throughout their four-year course (World Bank, 2017). To ensure the retention of female students, students receiving a stipend must maintain 75% annual attendance and 45% pass marks in the annual examinations (World Bank Group, 2014). During 2010-2013, approximately 16,000 female students benefited from these stipends under the STEP initiative (ILO, 2013).

Similarly, in Ecuador, the SENESCYT awards scholarships that provide stipends of up to 795 USD per year to students from marginalized groups in higher TVET programs (SENESCYT, n.d.). Moreover, in Germany, TVET students who are over 18 years old, married or living with a partner, or who have children and do not reside with their parents, can receive financial support through the Vocational Training Allowance. Asylum seekers may also be eligible for this

allowance once they no longer receive asylum benefits (Luckhardt, 2024).

Academic and social student support programs

Student support programs are essential for helping students complete their higher TVET studies by providing academic guidance, financial assistance, emotional support, and access to resources that address potential challenges. These services help students stay motivated, manage difficulties, and make informed decisions about their future, which ultimately reduces dropout rates and enhances their readiness to enter the workforce. In the United States, the TRIO Student Support Services program provides funding to HEIs through a competitive grant process. The goal is to foster academic growth, help students meet essential college requirements, and encourage them to complete their TVET studies successfully. The program requires the provision of several key services, including academic tutoring in various subjects, guidance on course selection, and detailed information on the full spectrum of student financial aid options, including help with scholarship searches and financial aid applications. In addition, the program provides educational and counseling services to improve students' financial and economic literacy, supports their applications to graduate and professional programs, and assists those in two-year colleges in transferring to four-year institutions and securing financial aid for this transition. Furthermore, the program

includes support for homeless youth and students in foster care, such as arranging temporary housing during school breaks (U.S. Department of Education, 2024).

Similarly, the Public Employment Service in Germany offers various support measures at all levels of TVET to assist apprentices during their training. For example, the "Training Related Assistance" initiative, provides remedial courses tailored to vocational training, exam preparation, language support, help with everyday challenges, and mediation between apprentices, instructors, etc. In 2016, the program was expanded to include asylum seekers with good prospects of staying in Germany and individuals with a tolerated stay³. By 2017, approximately 36,000 people participated in the program, and 81% of them were employed six months after its completion (Bergseng et al., 2019; CEDEFOP, 2022).

Regarding TVET student support programs for marginalized groups, Germany has implemented two programs specifically designed to assist refugees and forcibly displaced individuals, with the aim of facilitating their social integration and enhancing their access to the labor market. The first is the Coordination Agency for Training and Migration, a program that helps migrants and refugees, especially young people, access TVET opportunities. This program offers guidance, personalized advice, and support, assisting migrants and refugees in navigating the German education and training system (BMBF, 2023; Bergseng et al., 2019). The second program,

³ Defined by the UNHCR as "Temporary suspension of removal of a third-country national who has received a return decision but whose

removal is not possible either for humanitarian reasons or for technical reasons".

"Career Guidance for Refugees", is designed to assist refugees in integrating into the labor market by providing career orientation and guidance (BMBF, 2024; Bergseng et al., 2019). This program introduces refugees to the German TVET system, helps them explore potential career paths, and provides them with the necessary skills and knowledge to enter TVET programs. This program may include language courses, internships, workshops, and mentoring to help refugees understand the qualifications needed for various professions and to make informed career decisions (Luckhardt, 2024). Other countries focus their efforts on language training, which is integrated alongside regular instruction to support refugees. For example, in Sweden, language courses are offered within higher TVET programs, where approximately 20% of the students are migrants (Kuczera & Jeon, 2019).

Similarly, specific national plans have been developed to support the participation of TVET students from underrepresented groups, such as women. For example, in Costa Rica, the National Training Institute of Costa Rica established a Policy for Gender Equality based on a diagnosis of gender gaps in TVET in the country that showed that women faced higher dropout rates in programs where they were underrepresented, primarily due to the absence of role models and curricula that were not adequately adapted to their needs (Eimermacher et al., 2022). In response, the implementation of this gender policy has fostered access, retention, and success for both women and men in non-traditional fields (INA, 2013). Key actions within this strategy included creating mutual support

networks for female and male students, providing financial assistance to female students for dependent care and safe transportation in high-risk areas, and integrating a gender perspective into the institute's curriculum development (INA, 2013). Currently, in Costa Rica, the National Policy for Equality between Women and Men in Training, Employment, and Access to the Benefits of Science, Technology, Telecommunications, and Innovation 2018–2027 advocates for increased female representation in the STEM sector. Although women's participation is generally high in higher TVET programs, it remains low in STEM fields. The policy seeks to improve women's access to and graduation from all levels of tertiary STEM education, including higher TVET programs. It specifically advocates for the inclusion of gender criteria in the accreditation process for Science and Technology programs at the National Training Institute. Additionally, it promotes affirmative action initiatives and offers incentives to institutions to encourage greater female participation in these areas (MICITT, 2017).

Teaching training programs

Up-to-date teaching methods, combined with modern pedagogy, equip students to meet the demands of the labor market and their future careers. At the regional level, the "Professional Education and Training in Central Asia" program, aimed at enhancing vocational education in the food industry across Kyrgyzstan, Kazakhstan, Uzbekistan, and Tajikistan, focuses on improving the training of general TVET teachers in specific didactics, modern pedagogy, and practical, hands-on approaches (GIZ, 2018). The program places a strong emphasis on both

the didactical and technical aspects of food technology education, aiming to enhance specialized teaching methods and professional pedagogy for TVET teachers at all levels (GIZ, 2020). By the end of the project (2016-2019), 98% of teachers and 94% of students reported improved teaching skills, demonstrating the effectiveness of the implementation (GIZ, 2020).

At the country level, the Office of the Vocational Education Commission in Thailand has implemented the National Strategy for Vocational Education and Training 2017–2036, aiming to enhance the quality of TVET teaching and learning to boost global competitiveness (Department of Education, Skills and Employment, n.d.). Currently, TVET teachers undertake a two-year program in Teacher College, which is organized by this office and focused on specific subject areas like ICT or Business Administration, rather than on general VET teaching pedagogy. This program is available for those who have completed upper-secondary education and awards graduates a Higher Diploma in Technical Education (UNESCO-UNEVOC, 2015).

In Paraguay, the project titled “Enhancing Educational Quality in Paraguay through Learning Outcomes; Technical and Vocational Training; and the National System of Professional Qualifications,” supported by the European Union and the Organization of Ibero-American States for Education, Science, and Culture, offers extensive training in pedagogical competencies for TVET educators (OEI, n.d.). By 2023, 240 teachers and instructors from 33 teacher TVET institutes underwent training in professional teaching and

tutoring in TVET. This blended course combines theory and practice and is designed to equip participants with the necessary tools to plan and develop effective teaching strategies, assess student learning outcomes, utilize information and communication technologies in the educational process, and facilitate meaningful and contextualized learning in the workplace (SINAFOCAL, 2024). Upon completion, they earned the title of “TVET Teaching Technician” (Agencia IP, 2023).

Including transversal skills into the curriculum

Transversal skills are crucial in higher TVET curricula because they equip students not just with the technical knowledge but with the flexibility, adaptability, and interpersonal abilities needed to succeed in dynamic and complex work environments. Integrating the development of these skills into the curriculum enhances the overall quality of the workforce and significantly increases the likelihood of a successful transition to employment after graduation. At the regional level, this is considered by the 2025 annual work program for the implementation of Erasmus+ in the European Union, which prioritizes agile TVET curricula that includes not only solid basic skills, but digital, languages, transversal, green and other life skills to promote resilience, lifelong learning, employability and personal development (European Commission, 2024b).

At the country level, the Organic Law 3/2022 in Spain mandates that higher TVET programs include modules related to transversal skills relevant to productive sectors and professional development, such as digitalization applied to the sector,

entrepreneurial skills, foreign languages, expanded knowledge of humanities, advanced scientific-technical knowledge, or social skills. For instance, the National Digital Skills Plan in Spain proposes the TVET Digital Program (“Programa FP Digital” in Spanish), which considers an applied digitalization module within the curriculum of each higher TVET program (Spanish Government, n.d.). Similarly, in Nigeria, the NBTE model integrates entrepreneurship training into all levels of TVET, which is aimed at developing entrepreneurial skills, self-employment abilities, and capacity to seize opportunities in students’ personal and professional lives.

Recommendations

This section provides recommendations for policymakers in tertiary education, encompassing both higher TVET (ISCED 5) and higher education (ISCED 6 -8).

Design and implement financial aid programs, including grants, scholarships, or loans, to cover students' tuition fees and living expenses such as accommodation, materials, transport or meals. These programs should be based on evidence-driven data that allows the country to identify critical fields in need, recognize underrepresented groups relative to their population and address the main obstacles these individuals face in accessing and progressing through higher TVET. Financial aid should cover the expenses to ensure that students are not compelled to work outside of their studies to meet their basic needs. In addition, governments should promote innovative financial mechanisms, such as income-share agreements or employer-sponsored

It consists of three mandatory modules distributed across the second, third, and fourth semesters that include both theory and practice (UNESCO-UNEVOC, 2021b).

In Chile, the Technical and Professional Qualifications Framework was developed as a national tool to recognize and structure learning across the curriculum, incorporating essential transversal skills such as communication, autonomy, and problem-solving. This framework offers detailed guidance on how these skills are expected to progress as the level of TVET advances, serving as a valuable reference for institutions in designing their programs (Ministerio de Educación de Chile, s.f.).

programs, while encouraging higher TVET institutions and businesses to establish their own financial aid initiatives.

Implement national student support programs to address the academic barriers faced by students entering higher TVET with gaps in their education that may impede their success. Academic barriers can include insufficient foundational knowledge and skills in essential subjects such as mathematics and literacy, as well as a lack of effective study habits and unfamiliarity with digital skills or resources.

To address these challenges, programs can focus on training foundational skills, conducting workshops on study habits and exam preparation, offering peer tutoring and providing personalized advising. These programs should consider the difficulties these students face based on their backgrounds, as well as any additional obstacles that may arise during their

studies. For example, placement tests can be useful for identifying students with academic gaps, allowing institutions to provide tailored support and resources to meet their individual needs effectively.

In addition, governments can implement early interventions in secondary education by establishing partnerships with schools to introduce TVET-aligned curricula. For students from under-resourced schools or challenging backgrounds, these interventions can be essential in closing academic gaps, building confidence, and preparing them for the demands of advanced study.

Establish national student support programs to address social and personal barriers that students may encounter when entering higher TVET, facilitating their progression and graduation. Some social and personal barriers include a lack of support from family or peers, gender stereotypes that discourage females from entering certain programs, limited awareness about available opportunities and cultural stigmas associated with enrolling in higher TVET programs. Additional challenges may include inadequate communication skills and self-confidence. For refugees and forcibly displaced individuals, language barriers and cultural differences can significantly impact their educational experiences, often hindering their ability to engage fully in their studies.

Programs aimed at addressing these barriers can focus on providing counseling services, wellness initiatives and workshops that enhance communication skills and teamwork. Moreover, establishing

mentorship and peer support groups will allow students, particularly from marginalized backgrounds, to discuss challenges and share experiences. These programs should consider the cultural and social context of the country or region, as well as the specific needs of certain groups that may require tailored strategies based on their unique challenges. For example, support groups for women in STEM can provide a valuable, safe space for women to share their thoughts, experiences, and insights in a field historically dominated by men. Such groups can foster community, boost confidence, and offer mentorship opportunities, helping women navigate common barriers, build networks, and succeed in their studies and careers. Similarly, programs could provide additional resources for first-generation students or those from underrepresented backgrounds, offering personalized advising and community-building activities that address their specific challenges.

Establish a national framework for instructors teaching in higher TVET programs to ensure high-quality education and provide institutions with clear guidelines regarding the expected knowledge and pedagogical skills of instructors. This framework should encompass foundational competencies in instructional design, effective teaching methodologies and assessment strategies, considering the specific methods and techniques relevant to each field of study. Moreover, the requirements should include ongoing professional development to ensure instructors remain informed about evolving industry standards and educational practices. By implementing

these standards, institutions can better prepare students with the technical and transversal skills needed to succeed in the workforce. Governments should also incentivize adherence to this framework by providing financial support to institutions that meet or actively verify these teaching requirements.

Implement teaching training programs to enhance the pedagogical skills of higher TVET instructors, which can occur both pre-service and in-service. Many instructors may lack formal pedagogical training or rely on outdated curricula and assessment methods, leaving students unprepared for the job market as they fail to acquire the technical and transversal skills sought by employers. Programs designed to prepare instructors should emphasize effective teaching methodologies, innovative assessment techniques, instructional design, and ICT-mediated teaching and learning strategies. Partnerships with local industries can

facilitate training initiatives that keep instructors updated on current practices, technologies, and industry standards.

Establish guidelines for curriculum design that incorporate transversal skills relevant to the current job market, such as critical thinking, digital literacy, or entrepreneurship. These guidelines should also encourage flexibility, allowing programs to adapt content based on emerging industry trends and specific local or regional workforce needs. For example, national qualifications frameworks can be useful for standardizing curriculum requirements across institutions while providing space for tailoring programs to specific industry needs and regional workforce demands. This ensures that transversal skills are consistently integrated into program design and aligned with industry standards.

References

- Agencia IP. (2023, Agosto 25). *Unos 860 docentes se capacitan para potenciar la formación técnica y profesional. Agencia de Información Paraguaya*. <https://www.ip.gov.py/ip/2023/08/25/860-docentes-del-eftp-se-capacitan-a-traves-del-proyecto-impulsando-la-educacion/#>
- Aird, R., Miller, E., Van Megen, K., & Buys, L. (2010). *Issues for students navigating alternative pathways to higher education: Barriers, access, and equity*. Literature Review Prepared for the Adult Learner Social Inclusion Project. Queensland University of Technology, Brisbane. <https://www.voced.edu.au/content/ngv%3A52482>
- Alla-Mensah, J., Henderson, H., & McGrath, S. (2021). *Technical and Vocational Education and Training for Disadvantaged Youth*. UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training. https://unevoc.unesco.org/pub/tvet_for_disadvantaged_youth.pdf
- Bergseng, B., Degler, E., & Lüthi, S. (2019). *Overview: Unlocking the Potential of Migrants in Germany, OECD Reviews of Vocational Education and Training*, OECD Publishing, Paris, <https://doi.org/10.1787/82ccc2a3-en>
- Binkley, M., Erstad, O., Herman, J., Raizen, S., Ripley, M., Miller-Ricci, M., & Rumble, M. (2012). *Defining twenty-first century skills*. Assessment and teaching of 21st century skills, 17-66. https://link.springer.com/chapter/10.1007/978-94-007-2324-5_2
- BMBF. (2023, April 3). *KAUSA – Ausbildung und Migration. Bundesministerium für Bildung und Forschung*. https://www.bmbf.de/bmbf/de/bildung/integration-durch-bildung-und-qualifizierung/kausa/kausa_node.html
- BMBF. (2024, March 6). *Berufliche Orientierung für Personen mit Flucht- und Migrationserfahrung (BOFplus). Bundesministerium für Bildung und Forschung*. https://www.bmbf.de/bmbf/de/bildung/integration-durch-bildung-und-qualifizierung/berufliche-orientierung-fuer-zugewanderte/berufliche-orientierung-fuer-zugewanderte_node.html
- CEDEFOP. (2021). *Vocational education and training in Slovenia: short description. Luxembourg: Publications Office of the European Union*. <http://data.europa.eu/doi/10.2801/195991>
- CEDEFOP; BIBB - Federal Institute for Vocational Education and Training. (2022). *Vocational education and training in Europe - Germany: system description* [From Cedefop; ReferNet. Vocational education and training in Europe database]. <https://www.cedefop.europa.eu/en/tools/vet-in-europe/systems/germany-u2>
- Dahal, S. K. (2020). *Unequal access to TVET programmes in Nepal: Impact of neo-liberalism. Journal of Education and Research*, 10(1), 81-99. <https://orcid.org/0000-0002-8058-2383>
- Department of Education, Skills and Employment. (n.d.). *Thailand: Vocational Education and Training. Australian Government*. <https://internationaleducation.gov.au/international->

network/thailand/PolicyUpdates-

Thailand/Documents/Thailand%20Education%20Policy%20Update_VET_FINAL.pdf

Department of Employment and Workplace Relations DEWR. (2024, May 15). *Fee-Free TAFE. Australian Government*. <https://www.dewr.gov.au/skills-reform/fee-free-tafe>

Dogara, G., Saud, M.S., Kamin, Y.B., Hamid, M.Z., & Nordin, M.S. (2019). Developing Soft Skills through Project-Based Learning in Technical and Vocational Institutions. *International Journal of Recent Technology and Engineering* 8(3): 5872–5877. <https://doi.org/10.35940/ijeat.a9803.109119>

EafA. (2024). *Transversal skills in apprenticeships*. <https://ec.europa.eu/social/BlobServlet?docId=27514&langId=en>

EEF. (2023). *High Vocational Innovation Scholarship Program. Equitable Education Fund*. <https://en.eef.or.th/2023/06/01/high-vocational-innovation-scholarship-program/>

EEF. (n.d.). *High Vocational Innovation Scholarship Program. Equitable Education Fund*. <https://en.eef.or.th/portfolio-items/high-vocational-innovation-scholarship/>

Eichelberger, B., Mattioli, H., & Foxhoven, R. (2017). Uncovering Barriers to Financial Capability: Underrepresented Students' Access to Financial Resources. *Journal of Student Financial Aid*, 47(3), 5. <https://doi.org/10.55504/0884-9153.1634>

Eimermacher & Theissen Consulting and Chu Thi Lan. (2022). *Gender Equality in Technical and Vocational Education and Training (TVET) in Viet Nam*. https://www.tvet-vietnam.org/wp-content/uploads/2023/12/220706-CTL-Gender_TVET_Viet-Nam_EN.pdf

European Commission. (2024a, March 20). *Tackling labour and skills shortages in the EU. Directorate-General for Communication, European Commission*. https://ec.europa.eu/commission/presscorner/detail/en/ip_24_1507

European Commission. (2024b). *The 2025 annual work programme for the implementation of Erasmus+: the Union Programme for Education, Training, Youth and Sport*. https://erasmus-plus.ec.europa.eu/sites/default/files/2024-10/awp-erasmus-oct-2025_en.PDF

FCA, GIZ, ILO & UNHCR. (2023). *Economic and labour market impacts of TVET for refugees in LMICs*. <https://www.kirkonulkomaanapu.fi/wp-content/uploads/2023/12/Refugee-TVET-Final-Report-Dec-2023.pdf>

Fondo de Solidaridad. (n.d.). *Fondo de Solidaridad: Beneficiarios*. <https://becas.fondodesolidaridad.edu.uy/beneficiarios/>

Giordano, N., Ercolano, F., & Makhoul, M. (2021). *Skills and Labour Market Transitions for Refugees and Host Communities: Case Studies and Country Practices on Including Refugees in Technical and Vocational Education and Training (TVET) and Employment*. UNHCR. https://iloskillskspstorage.blob.core.windows.net/development/resources/5194/2021_joint%20TVET%20study_FINAL_WEB.pdf

GIZ. (2018). *Professional Education and Training in Central Asia. Deutsche Gesellschaft für Internationale Zusammenarbeit*. http://www.donors.kg/images/Factsheet_PBBZ_EN.pdf

GIZ. (2020). *Central Project Evaluation Programme Professional Education and Training in Central Asia. Deutsche Gesellschaft für Internationale Zusammenarbeit.* <https://www.mainlevel.de/insights/article-5-2-2>

Global Partnership for Education. (2020). *21st-Century Skills: What potential role for the Global Partnership for Education? A Landscape Review* <https://www.globalpartnership.org/node/document/download?file=document/file/2020-01-GPE-21-century-skills-report.pdf>

Goodman, M. A. (2022). *Student Government and Student Fees as Preparation for Post-College Public Office. Journal of College Student Development*, 63(3), 338-342. <https://doi.org/10.1353/csd.2022.0028>

Groener, Z., & Andrews, P. (2019). *Agency, access and barriers to post-school education: The TVET college pathway to further and higher learning. Journal of Vocational, Adult and Continuing Education and Training*, 2(2), 43-60. <https://doi.org/10.14426/jovacet.v2i2.71>

Had Sabtu, H., Wan Mohd Noor, W. S., & Mohd Isa, M. F. (2016). *Student attrition at technical and vocational educational training (TVET) institutions: the case of XCel Technical College in Malaysia. Asian Social Science*, 12(12), 197-204. https://commission.europa.eu/news/tackling-labour-and-skills-shortages-eu-2024-03-20_en

ILO. (2013). *Learning and earning: Overcoming low education levels through skill development. International Labour Organization.* https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@asia/@ro-bangkok/@ilo-dhaka/documents/publication/wcms_234533.pdf

ILO. (2019). *Skills shortages and labour migration in the field of information and communication technology in India, Indonesia and Thailand.* <https://www.ilo.org/publications/skills-shortages-and-labour-migration-field-information-and-communication-0>

INA. (2013). *Política de Igualdad de Género del INA. Instituto Nacional de Aprendizaje, Costa Rica.* https://www.ina.ac.cr/APIEG/Enfoque/Politica/Politica_Igualdad_Genero_I_Plan_Accion_2013-2018.pdf

James, R., & Johnston, C. (2016). *Equity in Australian higher education: The effects of national policy to expand access for people from lower socio-economic status backgrounds. Occasional Papers Issue 01 May 2016-Widening Participation in Higher Education: International Perspectives.* https://www.newcastle.edu.au/_data/assets/pdf_file/0010/253882/ONLINE-SINGLE-PG.pdf

Kersánszki, T., Holik, I., & Sanda, I. D. (2022, August). Causes and possibilities of reducing student drop-out in Hungarian technical higher education. In *2022 IEEE 26th International Conference on Intelligent Engineering Systems (INES)* (pp. 000169-000174). IEEE. doi: 10.1109/INES56734.2022.9922627

Kuczera, M., & Jeon, S. (2019). *Vocational Education and Training in Sweden, OECD Reviews of Vocational Education and Training*, OECD Publishing, Paris. <https://doi.org/10.1787/g2g9fac5-en>

Ley Orgánica 3/2022, de 31 de marzo, de ordenación e integración de la Formación Profesional (España). https://www.boe.es/diario_boe/txt.php?id=BOE-A-2022-5139

Luckhardt, B. (2024). *Berufliche Orientierung und Begleitung auf dem Weg in Ausbildung für ukrainische Geflüchtete. berufsbildung*, 78 (1) 23-26. Bielefeld: EUSL bei wbv Publikation. <https://doi.org/10.3278/BB2404W007>

Martin, M., & Stulgaitis, M. (2022). *Refugees' access to higher education in their host countries: Overcoming the 'super-disadvantage'. International Institute for Educational Planning (UNESCO)*. <https://unesdoc.unesco.org/ark:/48223/pf0000381505/PDF/381505eng.pdf.multi>

MICITT. (2017). *Política Nacional para la igualdad entre mujeres y hombres en la formación, el empleo y el disfrute de los productos de la Ciencia, Tecnología, las Telecomunicaciones y la Innovación 2018-2027*. Ministerio de Ciencia, Tecnología y Telecomunicaciones, Costa Rica. [https://repositorio-](https://repositorio-snp.mideplan.go.cr/bitstream/handle/123456789/92/PP.008.pdf?sequence=1&isAllowed=y)

[snp.mideplan.go.cr/bitstream/handle/123456789/92/PP.008.pdf?sequence=1&isAllowed=y](https://repositorio-snp.mideplan.go.cr/bitstream/handle/123456789/92/PP.008.pdf?sequence=1&isAllowed=y)

Ministerio de Educación de Chile(s.f.). *Marco de Cualificaciones Técnico Profesional*. <https://marcodecualificacionestp.mineduc.cl/>

Ministerio de Educación de Argentina. (n.d.). *Programa Nacional de Becas Bicentenario para Carreras Científicas y Técnicas. Argentina*. https://www.infoleg.gov.ar/basehome/actos_gobierno/actosdegobierno06-10-2008-1.htm#:~:text=El%20Programa%20Nacional%20de%20Becas,incentivar%20la%20permanencia%20y%20la

Nzembe, A. (2018). *Access, participation, and success: The tri-dimensional conundrum of academic outcomes in a South African TVET college*. *Academic Journal of Interdisciplinary Studies*, 7(2), 31-31. <https://www.richtmann.org/journal/index.php/ajis/article/view/10277>

OECD. (2021). *Vocational Education and Training in Thailand, OECD Reviews of Vocational Education and Training*. Paris: OECD. https://www.oecd.org/en/publications/vocational-education-and-training-in-thailand_cc20bf6d-en.html

OEI. (n.d.). *Impulsando la Educación. Organización de Estados Iberoamericanos para la Educación, la Ciencia y la Cultura*. <https://oei.int/oficinas/paraguay/impulsando-la-educacion/componentes>

Sevilla, M. P., Sepúlveda, L., & Valdebenito, M. J. (2019). *Producción de diferencias de género en la educación media técnico profesional*. *Pensamiento Educativo, Revista de Investigación Latinoamericana (PEL)*, 56(1), 1-17. <https://doi.org/10.7764/PEL.56.1.2019.4>

SINAFOCAL. (2024, March 11). *El curso de docencia en EFTP es un éxito en su primera convocatoria*. Ministerio de Trabajo, Empleo y Seguridad Social. <https://www.sinafocal.gov.py/index.php/noticias/el-curso-de-docencia-en-eftp-es-un-exito-en-su-primera-convocatoria>

Spanish Government. (n.d.). *Plan Nacional de Competencias Digitales*. https://portal.mineco.gov.es/recursosarticulo/mineco/ministerio/ficheros/210127_plan_nacional_de_competencias_digitales.pdf

Subsecretaría de Educación Superior de Chile. (n.d.). *Becas de Arancel. Beneficios Estudiantiles Educación Superior*. <https://portal.beneficiosestudiantiles.cl/becas/becas-de-arancel>

Tinto, V. (2008). *Moving beyond access: College Success for low-income, first generation students*. New York: Pell Institute for the Study of Opportunity in Higher Education.

U.S. Department of Education. (2024, March 5). *Student Support Services Program*. <https://www2.ed.gov/programs/triostudsupp/index.html>

UNESCO. (2015). *Unleashing the Potential: Transforming Technical and Vocational Education and Training*. <https://unesdoc.unesco.org/ark:/48223/pf0000233030>

UNESCO. (2018). *Pathways of progression: linking technical and vocational education and training with post-secondary education*. <https://unesdoc.unesco.org/ark:/48223/pf0000265943>

UNESCO. (2019). *Gender-responsive STEM education: empowering girls and women for the jobs of today and tomorrow*. <https://unesdoc.unesco.org/ark:/48223/pf0000366803>

UNESCO-UNEVOC. (2015). *World TVET Database Thailand*. https://unevoc.unesco.org/wtdb/worldtvetdatabase_tha_en.pdf

UNESCO-UNEVOC. (2020). *Study on the Trends Shaping the Future of TVET Teaching*. UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training. <https://doi.org/10.54675/MMQE7367>

UNESCO-UNEVOC. (2021a). *Technical and vocational education and training for disadvantaged youth*. https://unevoc.unesco.org/pub/tvet_for_disadvantaged_youth.pdf

UNESCO-UNEVOC. (2021b). *Formación al emprendimiento para entidades de EFTP*. https://unevoc.unesco.org/pub/entrepreneurial_learning_guide_es.pdf

UNESCO-UNEVOC. (2024). *TVETipedia Glossary*. UNESCO International Centre for Technical and Vocational Education and Training. <https://unevoc.unesco.org/home/TVETipedia+Glossary/lang=en/show=term/term=Skills+mis+match>

UNESCO-UNEVOC. (n.d.). *The Impact of Migration on TVET*. <https://unevoc.unesco.org/home/Migration+and+TVET>

UNHCR. (2020). *Key Considerations on Education and Transition to Employment for Refugees*. <https://www.unhcr.org/sites/default/files/legacy-pdf/5fc8f28d4.pdf>

UNHCR. (2023). *15by30 Roadmap: Expanding Higher Education, Skills and Self-Reliance for Refugees*. <https://www.unhcr.org/media/15by30-roadmap-expanding-higher-education-skills-and-self-reliance-refugees>

Van der Bijl, A., & Lawrence, M. (2019). *Retention and attrition among national certificate (vocational) civil and construction students in South African TVET*. *Industry and Higher Education*, 33(2), 127-134. <https://doi.org/10.1177/0950422218800649>

Venegas-Muggli, J. I. (2020). *Higher education dropout of non-traditional mature freshmen: The role of sociodemographic characteristics*. *Studies in Continuing Education*, 42(3), 316-332. <https://doi.org/10.1080/0158037X.2019.1652157>

Wedekind, V., Fakoush, H., & Alla-Mensah, J. (2019). *Human migration and TVET. Human migration and TVET*. <https://unevoc.unesco.org/pub/30002-eng.pdf>

World Bank, UNESCO & ILO. (2023). *Building Better Formal TVET Systems: Principles and Practice in Low-and Middle-Income Countries*. International Bank for Reconstruction and Development / The World Bank, UNESCO and the International Labour Organization. <https://unesdoc.unesco.org/ark:/48223/pf0000386135>

World Bank. (2014. April 11). *Bangladesh: Skills and Training Enhancement Project*. <https://www.worldbank.org/en/results/2014/04/11/bangladesh-skills-and-training-enhancement-project>

World Bank. (2017). *Breaking The Glass Ceiling: Challenges to Female Participation in Technical Diploma Education In Bangladesh*. South Asia Region, Education Global Practice. The World Bank.

https://mofa.portal.gov.bd/sites/default/files/files/mofa.portal.gov.bd/page/c82bf223_4735_4288_a73a_28df1fb2c6cb/Bangladesh-Female-participation-in-TVET.pdf

Zulu, W. V., & Mutereko, S. (2020). *Exploring the causes of student attrition in South African TVET Colleges: A case of one KwaZulu-Natal Technical and Vocational Education and Training College*. *Interchange*, 51(4), 385-407. <http://dx.doi.org/10.1007/s10780-019-09384-y>

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POLICY BRIEF

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