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Technical and vocational education as a pathway to social mobility: A systematic literature review of employment opportunities, income returns, and economic inequality

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Abstract

Technical and Vocational Education (TVET) has the potential to promote social mobility and equal economic opportunities, yet its benefits are not necessarily distributed equally across social groups. This study aims to examine the contribution of TVET to social mobility and economic opportunities and identify the factors that strengthen or constrain this contribution. A qualitative approach was employed through a systematic literature review of 12 relevant empirical research articles. The findings indicate that TVET can expand employment access, increase earnings, and support social mobility by developing skills relevant to labor market demands. However, these benefits are shaped by family socioeconomic background, gender, geographical location, educational financing, training quality, and qualification recognition. By integrating Human Capital Theory and Social Reproduction Theory, this study explains that TVET functions not only as an investment in competencies but also operates within opportunity structures that are not always equitable. These findings highlight the importance of inclusive TVET systems that promote a more equitable distribution of economic outcomes.

Keywords: Technical and vocational education; Social mobility; Equal economic opportunities; Educational access inequality; Wage returns.

Abstrak

Pendidikan Teknologi dan Vokasional (PTV) berpotensi mendorong mobilitas sosial dan pemerataan kesempatan ekonomi, tetapi manfaatnya tidak selalu terdistribusi secara merata antarkelompok masyarakat. Penelitian ini bertujuan menganalisis kontribusi PTV terhadap mobilitas sosial dan kesempatan ekonomi serta mengidentifikasi faktor-faktor yang memperkuat atau membatasi kontribusi tersebut. Penelitian menggunakan pendekatan kualitatif melalui *systematic literature review* terhadap 12 artikel penelitian empiris yang relevan. Hasil kajian menunjukkan bahwa PTV dapat memperluas akses ketenagakerjaan, meningkatkan pendapatan, dan mendukung mobilitas sosial melalui pengembangan keterampilan yang relevan dengan kebutuhan pasar kerja. Namun, manfaat tersebut dipengaruhi oleh latar belakang sosial-ekonomi keluarga, gender, wilayah, pembiayaan pendidikan, kualitas pelatihan, serta pengakuan kualifikasi. Kajian ini mengintegrasikan Teori Modal Manusia dan Teori Reproduksi Sosial untuk menjelaskan bahwa PTV tidak hanya berfungsi sebagai investasi kompetensi, tetapi juga beroperasi dalam struktur kesempatan yang tidak selalu setara. Temuan ini menegaskan pentingnya sistem PTV yang inklusif dan berorientasi pada pemerataan hasil ekonomi.

Kata Kunci: Pendidikan teknologi dan vokasional; Mobilitas sosial; Pemerataan kesempatan ekonomi; Ketimpangan akses pendidikan; Keuntungan pendapatan.

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Introduction

Technical and Vocational Education (TVET) plays a role in connecting learning with economic opportunities, but its outcomes extend beyond employment placement. A systematic review by Shi and Bangpan (2022) of 31 studies on TVET interventions in low- and middle-income countries identified benefits in terms of participants' cultural capital, social capital, aspirations, and health, in addition to economic outcomes. These benefits were influenced by curriculum quality, instructors, program management, learning environments, participant characteristics, and social norms. At the macro level, Asadullah (2019) analyzed 315 observations from 21 European OECD member countries over the period 2000–2014. Using the proportion of public expenditure allocated to short-cycle tertiary education as a measure of TVET, the study identified an indirect relationship with economic growth through employment, income, and poverty. However, this indirect effect diminished at higher levels of TVET expenditure.

The contribution of TVET to employment is also shaped by the mode of provision and the specific characteristics of programs. Choi et al. (2019) analyzed PIAAC data from 31,587 upper-secondary education graduates across 13 OECD countries. They found that vocational graduates had an employment advantage over general education graduates at the beginning of their careers, but this advantage diminished with age; the pattern also differed between school-based and work-based systems. At the program level, Muja et al. (2019) examined 114 vocational education programs in the Netherlands between 2010 and 2014 using graduate survey data and expert assessments of the programs. Multilevel analysis showed that program specialization was positively associated with the likelihood of obtaining employment, entering employment immediately after graduation, and securing a job that matched one's educational background. Thus, program relevance is an important mechanism connecting TVET with the labor market.

However, access to qualifications and the benefits of employment remain intertwined with social structures. Vogtenhuber (2018) compared workers aged 30–49 across 21 countries using PIAAC data. The findings showed that family background was strongly associated with inequalities in credential attainment and skills, whereas occupational placement was influenced more by formal credentials than by measured skills. Vocational specialization could also exacerbate educational inequality. A similar pattern was evident in transitions following training. Dummert (2024) analyzed administrative data on 2,680 apprenticeship graduates from households receiving unemployment benefits in Germany, 1,296 of whom were unemployed one month after graduation. Parents' vocational or university education was associated with graduates' risk of unemployment, while the length of time households had received benefits was associated with the duration of the first unemployment spell following

an unsuccessful transition into employment. These findings indicate that qualifications do not fully eliminate social vulnerability.

Previous studies have shown that inequalities can emerge both before and after individuals enter TVET. Using data from the German National Educational Panel Study, Dräger and Wicht (2023) found that students from low socioeconomic-status families tended to underestimate occupational earnings, particularly for high-status occupations. Differences in earnings expectations accounted for 4% of the gap in vocational aspirations and 2% of the gap in vocational attainment by parental socioeconomic status. Meanwhile, Vandenberg and Laranjo (2021) analyzed Philippine household data from 2015–2016 and found that TVET graduates earned higher wages and were more likely to be employed than individuals with secondary or lower levels of education. However, individuals who had pursued both TVET and higher education earned lower wages than those with secondary or lower levels of education. Vandenberg and Laranjo (2021) attributed this finding to the tendency of this group to complete TVET programs at lower qualification levels. These differences indicate that TVET outcomes depend on educational pathways and context.

In response to these gaps, this study aims to analyze the contribution of Technical and Vocational Education to social mobility and equal economic opportunities, while identifying the conditions that strengthen or constrain this contribution. Specifically, the study examines the relationship between TVET and employment access, income, and inequalities in benefits across social and geographical backgrounds. The study is important because it is necessary to move beyond the assumption that skills development automatically leads to economic equality. By integrating Human Capital Theory and Social Reproduction Theory, this study analyzes TVET from two complementary perspectives: as an investment in competencies with the potential to enhance productivity and economic opportunities, and as an educational institution whose outcomes and benefits are shaped by the distribution of resources, sociocultural capital, and opportunities across social groups.

Method

This study employed a qualitative approach using the Systematic Literature Review (SLR) method to examine the role of Technical and Vocational Education (TVET) in promoting social mobility and equal economic opportunities. The literature search was conducted through four databases: SCOPUS, DOAJ, Google Scholar, and Garuda, as well as four supplementary sources: the UNESCO Digital Library, UNESCO-UNEVOC, ILO Publications, and the World Bank Open Knowledge Repository. The search used combinations of English and Indonesian keywords, including *vocational education*, *technical and vocational education and training*, *TVET*, *social mobility*, *economic opportunity*, *employment*, *earnings*, *educational inequality*, *pendidikan vokasional*, and *mobilitas sosial*. The literature was restricted to publications from 2018 to 2025 to focus

on findings relevant to developments in vocational education and the dynamics of economic opportunities. The search and source selection strategies were systematically designed to ensure that the review process could be traced and evaluated (Snyder, 2019; Xiao & Watson, 2019).

The literature selection process involved several stages: identification, removal of duplicates, title and abstract screening, full-text assessment, and selection of articles that met the eligibility criteria. The inclusion criteria covered publications that examined PTV/TVET at the secondary or advanced vocational education levels, addressed aspects of social mobility or economic opportunities, had verifiable bibliographic information, and provided sufficient methodological and empirical details. Publications were excluded if they were irrelevant to the review focus, fell outside the specified publication period, contained unverifiable metadata, or lacked substantive information for analysis. Of the 130 records identified (118 from databases and 12 from supplementary sources), 20 were removed before screening, 60 were excluded during screening, five reports could not be retrieved, and 33 were excluded following the eligibility assessment. Consequently, 12 empirical research articles were selected as the core corpus. The selection process is presented in Figure 1, following the PRISMA 2020 reporting guidelines (Page et al., 2021).

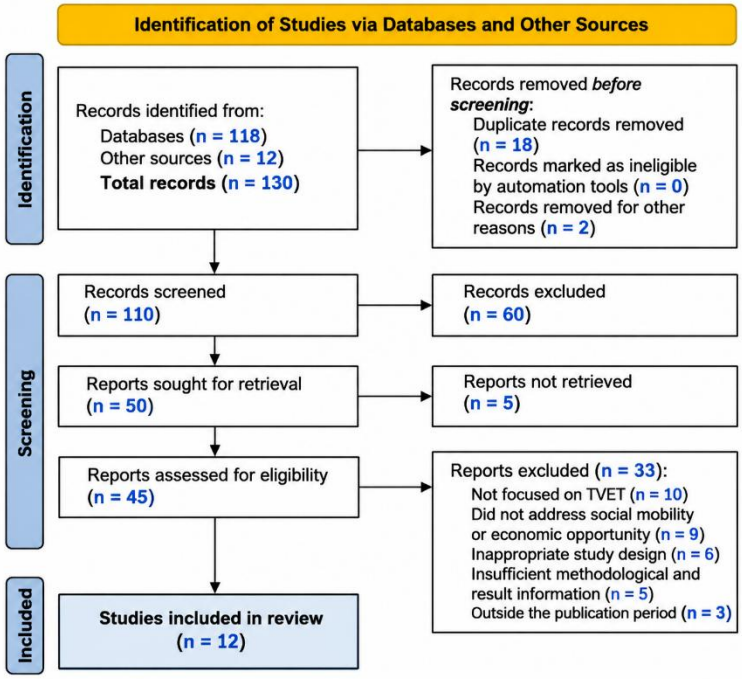


Figure 1. Literature selection flow diagram based on PRISMA 2020

Source: Adapted from Page et al. (2021).

All articles included in the core corpus were subsequently analyzed through data extraction, covering authors, publication year, country or research context, research design, sample characteristics, analytical methods, and main findings. The extracted information was compared to identify patterns, differences, and relationships across

the findings, which were then organized into three themes: characteristics of research on TVET and social mobility; the contribution of TVET to employment access, income, and social mobility; and inequalities in access and differences in benefits based on social and geographical backgrounds. The synthesis was conducted thematically rather than by summarizing each article individually, allowing the discussion to explain the conditions that strengthen or constrain the contribution of TVET. Theoretical books and institutional reports were used as supplementary sources to interpret the findings through Human Capital Theory and Social Reproduction Theory. This approach enabled the empirical synthesis to be connected with broader conceptual frameworks (Snyder, 2019; Xiao & Watson, 2019).

Results and Discussion

Mapping the literature and characteristics of research on technical and vocational education in the context of social mobility and economic opportunities

The literature analyzed in this review comprises 12 research articles examining the relationship between technical and vocational education and employment access, economic returns, and inequalities in social opportunities. These articles were published between 2018 and 2025 and represent research contexts in Indonesia, South Africa, Finland, Switzerland, China, India, the Philippines, and Germany. This diversity of contexts is important because the benefits of vocational education cannot be separated from the characteristics of national education systems, labor market structures, and the socioeconomic conditions of each country. In general, the selected studies address two main issues: the contribution of vocational education to employment opportunities and income, and the distribution of access to and benefits from education according to social background. The characteristics of the 12 articles are summarized in Table 1, particularly in terms of research approaches, data sources, sample sizes, and reported empirical findings.

Table 1. Research methods, data, and findings on technical and vocational education

Author(s) and year	Country	Method	Data and research findings
Majola (2025)	South Africa	Qualitative study using a *Participatory Action Research* (PAR) approach. Data were collected through *Learning Cycle Group Meetings* and *Critical Life Narrative* interviews.	The study involved 15 National Certificate (Vocational) graduates from Algoa TVET College, Gqeberha and Kariega campuses, in the Eastern Cape. Participants graduated between 2010 and 2019 and were selected through purposive and snowball sampling. The findings showed that graduates faced a mismatch between NC(V) qualifications, higher education admission requirements, and

			employer expectations. These conditions limited their opportunities to pursue further education and obtain meaningful employment.
Nogcantsi and Mbatha (2025)	South Africa	Mixed-methods approach. Quantitative data were analyzed using descriptive statistics, while qualitative data were analyzed thematically through interviews and focus group discussions.	The quantitative population consisted of 210 NATED Civil Engineering students at one TVET college, with a survey sample of 21 students representing N4, N5, and N6 levels. The qualitative component involved 19 stakeholders through three focus group discussions and in-depth interviews. More than 90% of the students in the research context received NSFAS funding, but this funding did not cover the required costs of *Work-Integrated Learning* (WIL). The lack of funding for WIL, difficulties in securing work placements, and administrative barriers hindered qualification completion.
Ariansyah et al. (2024)	Indonesia	Quantitative cross-sectional design. Ordinary least squares (OLS) regression and a two-step Heckman model were used to analyze the time taken to obtain the first job, while ordered probit regression was used to examine income changes.	The study used data from the 2021 National Labor Force Survey (SAKERNAS), comprising 171,945 respondents: 116,787 general upper-secondary school graduates and 55,158 vocational upper-secondary school graduates. The average time to obtain the first job was 33.4 months for the overall sample, 36.4 months for general school graduates, and 27.7 months for vocational school graduates. Regarding income changes during the pandemic, 46.3% of respondents experienced a decline, 45.9% reported no change, and 7.8% experienced an increase. The model results indicated that vocational school graduates obtained their first jobs more quickly and demonstrated greater income resilience than general school graduates.
Fachrizal et al. (2025)	Indonesia	Quantitative study using a two-step Heckman selection model.	The study used national data from the 2023 National Labor Force

		The first stage employed probit regression to estimate labor force participation, while the second stage estimated wage determinants with an *Inverse Mills Ratio* correction.	Survey (SAKERNAS) on graduates of vocational diploma programs (D1–D4). The number of observations included in the analysis was not reported in the verifiable abstract. The findings showed that higher vocational qualifications significantly increased the likelihood of employment and monthly wages. However, female graduates and rural residents faced lower employment probabilities and earnings.
Silliman and Virtanen (2022)	Finland	Quantitative study using a *Regression Discontinuity Design* (RDD), exploiting admission thresholds in the centralized upper-secondary education admission system.	The study used administrative data on Finnish lower-secondary school graduates from 1996 to 2000. The initial dataset included approximately 278,000 individuals, while the RDD analysis sample consisted of approximately 22,000 applicants in the relevant admission-threshold conditions. Admission to the vocational track increased annual earnings by approximately €1,800, or 7%, 15 years after admission. This earnings effect was not accompanied by an increased risk of working in occupations vulnerable to automation or offshoring.
Wang and Wang (2023)	China	Quantitative comparative study of the labor market outcomes of academic and vocational education graduates. Details of the estimation techniques and sample size require confirmation from the full text.	The article compared the labor market outcomes of academic and vocational education graduates in China. The verifiable abstract and metadata did not provide the sample size or the magnitude of differences in earnings or employment opportunities. Therefore, numerical findings are not reported to avoid making claims unsupported by the available source.
Korber and Oesch (2019)	Switzerland	Quantitative cohort design comparing employment and earnings trajectories over the working life course.	The study used the Swiss Labour Force Survey for 1991–2014 and the Swiss Household Panel for 1999–2015. The number of observations was not specified in the abstract examined. The findings showed that the employment prospects of

			vocational graduates remained comparable to those of general education graduates during the second half of their working lives. However, from their 30s onward, vocational graduates earned relatively less, with a larger earnings gap among women. Vocational education helped protect workers against unemployment but was associated with flatter earnings growth over the course of their careers.
Bahl et al. (2022)	India	Quantitative study using OLS corrected for sample selection, *Propensity Score Matching* (PSM), and a heteroskedasticity-based instrumental variable approach.	The study used the 2018–2019 Periodic Labour Force Survey (PLFS), conducted by the National Statistical Office. The survey covered 420,757 individuals from 55,812 rural households and 45,767 urban households. The study compared workers with no VET, formal VET, and informal VET. The main findings showed that workers with formal VET earned higher wages than those without VET and those with informal VET.
Choi (2021)	Philippines	Quantitative study estimating the wage returns to additional vocational education after formal education and comparing urban–rural differences across industrial sectors.	The study examined the wage returns to additional vocational education among formal-sector workers in the Philippines. The sample size, specific data source, and magnitude of the wage estimates were not reported in the verifiable abstract. The findings focused on differences in the wage benefits of additional vocational education between urban and rural workers and variations across industrial sectors. Numerical estimates of these differences are not reported because they could not be confirmed from the source examined.
Wang et al. (2023)	China	Quantitative study using OLS regression to compare the labor market outcomes of upper-secondary vocational and	The study used the 2018 wave of the China Labour-force Dynamics Survey (CLDS), comprising 1,302 rural respondents who had completed upper-secondary

		academic education graduates in rural areas.	education before 2018. Among workers in high-skilled blue-collar occupations, vocational graduates earned significantly higher incomes—32.1% more than general education graduates. Overall, the study found that rural vocational graduates earned more than general education graduates after accounting for socioeconomic, geographical, and family factors.
Wang and Guo (2019)	China	Quantitative study using probit regression and nationally representative data to identify the socioeconomic characteristics of students enrolled in upper-secondary technical and vocational education.	The study used national data from China. The number of observations was not reported in the verifiable source summary. The findings showed that students enrolled in technical and vocational education tended to come from less advantaged socioeconomic backgrounds, particularly in terms of parental education levels. Vocational education accounted for approximately 38% of upper-secondary students. The study also found that female students were more likely to enroll in secondary specialized schools, a more selective type of vocational institution.
Zabel and Kopf (2018)	Germany	Quantitative study using longitudinal administrative data and *entropy balancing* to estimate the effects of parents' further vocational training on their children's educational and employment outcomes.	The study used the Integrated Employment Biographies (IEB) and Unemployment Benefit II History (LHG) datasets. The sample comprised adolescents aged 14–17 from households receiving UB II benefits on June 1, 2007, whose parents were unemployed but eligible for employment. The sample size was not reported in the source summary examined. Parents' further vocational training increased the probability of their children entering an apprenticeship at ages 19–21 by 1.9–2.9 percentage points, equivalent to approximately 8–11% of the baseline rate.

Source: Compiled by the author based on the literature.

In terms of country characteristics, the studies in Table 1 show that the relationship between vocational education and social mobility is examined across different education systems and labor market contexts. Research in Indonesia and China provides evidence of the relationship between vocational education, employment opportunities, income, and students' social backgrounds. In Indonesia, Ariansyah et al. (2024) found that vocational upper-secondary school graduates obtained their first jobs more quickly than general upper-secondary school graduates, while Fachrizal et al. (2025) showed that higher vocational qualifications were associated with better employment prospects and wages. In China, Wang and Guo (2019) found that students enrolled in vocational education tended to come from families with lower levels of parental education. Meanwhile, studies in South Africa showed that barriers were not limited to access to education but also arose during qualification completion and the recognition of graduates' competencies (Majola, 2025; Nogcantsi & Mbatha, 2025). These findings indicate that institutional contexts and socioeconomic conditions influence the potential of vocational education to promote social mobility.

Methodologically, the literature is dominated by quantitative studies using national surveys, administrative data, and econometric techniques. These approaches enable researchers to measure differences in employment opportunities, income levels, and the returns to vocational education in a more systematic manner. For example, Ariansyah et al. (2024) used 171,945 observations from the 2021 SAKERNAS, while Wang et al. (2023) analyzed 1,302 rural respondents from the 2018 CLDS. Silliman and Virtanen (2022) also employed a *Regression Discontinuity Design* to estimate the effect of admission to vocational education on earnings. In contrast, Majola (2025) and Nogcantsi and Mbatha (2025) used qualitative and mixed-methods approaches to explain graduates' experiences and institutional barriers. These different approaches provide two complementary forms of evidence: quantitative evidence concerning the magnitude of economic outcomes and contextual evidence concerning the social mechanisms that influence the success of vocational education.

Thematically, the 12 articles can be grouped into two main strands. The first examines the contribution of vocational education to employment access, income, and economic resilience. Findings from Ariansyah et al. (2024), Silliman and Virtanen (2022), Bahl et al. (2022), and Wang et al. (2023) indicate economic advantages in several contexts, although the magnitude and nature of these benefits vary. The second strand focuses on inequalities in access to and the distribution of vocational education benefits according to social background, gender, and geographical location. Fachrizal et al. (2025), Choi (2021), Wang and Guo (2019), and Korber and Oesch (2019) demonstrate that the benefits of vocational education are not always distributed equally. Therefore, vocational education should not be assessed solely in terms of its capacity to provide work-related skills. The analysis must also consider who can access such education, who is able to complete it, and which groups obtain the greatest economic benefits.

The contribution of technical and vocational education to employment access, income returns, and social mobility

Technical and Vocational Education (TVET) contributes to social mobility through its capacity to connect educational processes with employment needs. Learning that combines technical competencies with practical experience can help graduates enter the labor market more quickly. In Indonesia, Ariansyah et al. (2024) found that vocational upper-secondary school (SMK) graduates took an average of 27.7 months to obtain their first job, compared with 36.4 months for general upper-secondary school (SMA) graduates. This difference indicates the relative advantage of the vocational track in the initial transition to employment, although it does not in itself demonstrate that all graduates obtain stable or high-quality jobs. From a human capital perspective, education and training constitute investments that can enhance productive skills and income-earning opportunities (Becker, 1964). Accordingly, the contribution of TVET should be assessed in terms of its ability to translate competencies into real and sustainable employment opportunities, rather than simply the number of graduates it produces.

This advantage in the transition to employment should be considered alongside employment prospects and variations in outcomes across social groups. Using 2023 SAKERNAS data and a two-step Heckman model, Fachrizal et al. (2025) showed that higher vocational qualifications were associated with an increased likelihood of employment and higher monthly wages. However, female graduates and rural residents continued to face lower employment probabilities and earnings. Ariansyah et al. (2024) provided further evidence that the vocational track could facilitate initial access to the labor market through their findings on the shorter job-search period among SMK graduates. Nevertheless, these results do not mean that structural barriers have been overcome. A joint report by the World Bank et al. (2023) emphasizes that inequalities in access to and the quality of training continue to undermine the effectiveness of TVET systems. Therefore, the success of TVET should be measured not only by graduate employment rates but also by the equitable distribution of employment opportunities across social groups.

The economic benefits of TVET become more tangible when acquired skills are translated into higher earnings. In a study employing a regression discontinuity design in Finland, Silliman and Virtanen (2022) found that entry into the vocational track increased initial annual earnings, with this advantage persisting at least into the mid-thirties. In India, Bahl et al. (2022) showed that workers with formal vocational training obtained higher wage returns than workers without training or those who had participated only in informal training. In Indonesia, Fachrizal et al. (2025) also found that higher vocational qualifications were associated with greater monthly wages. Taken together, these findings support the view that TVET can increase the economic

value of skills. However, these returns depend on training quality, the alignment of competencies with industry needs, and employer recognition; vocational qualifications alone do not guarantee higher earnings.

Comparisons between vocational and general education indicate that the advantages of TVET are context-dependent rather than universal. In Indonesia, SMK graduates tended to obtain their first jobs more quickly than SMA graduates (Ariansyah et al., 2024), while evidence from Finland indicates an earnings advantage for individuals entering the vocational track (Silliman & Virtanen, 2022). In China, Wang and Wang (2023) also compared the labor market outcomes of academic and vocational graduates, highlighting the importance of institutional contexts in evaluating these two pathways. Differences in outcomes across countries indicate that educational impacts are determined not only by curriculum type but also by economic structures, certification systems, school–industry relationships, and opportunities for further education. Therefore, TVET should not be regarded as a second-class pathway, but neither should it be assumed to be universally superior. The synthesis by Okoye et al. (2025) also emphasizes the importance of industry partnerships and policy support. Its effectiveness should be assessed based on the quality of employment, earnings, and opportunities for career development that graduates actually obtain.

The benefits of TVET should also be examined over the course of graduates' careers, since obtaining a first job does not necessarily lead to long-term economic advancement. Silliman and Virtanen (2022) found that the earnings advantage associated with the vocational track in Finland persisted at least into the mid-thirties. However, research by Korber and Oesch (2019) in Switzerland presents a more complex picture: the employment prospects of vocational graduates remained comparable to those of general education graduates during the second half of their careers, but their earnings tended to be lower after the age of 30, particularly among women. These findings indicate that TVET can facilitate entry into and retention in the labor market, but does not necessarily guarantee equivalent wage growth throughout working life. Accordingly, TVET systems need to provide lifelong learning, skills upgrading, qualification recognition, and pathways to further education so that graduates can adapt to technological changes and shifts in occupational structures.

The benefits of TVET are also influenced by geographical location and the availability of economic opportunities. Using data from the 2018 China Labour-force Dynamics Survey covering 1,302 rural respondents, Wang et al. (2023) found that upper-secondary vocational education was associated with earnings 32.1% higher than those associated with academic education among high-skilled blue-collar workers. Choi (2021) specifically examined differences in the wage returns to additional vocational education between urban and rural areas in the Philippines. Meanwhile, Fachrizal et al. (2025) found that vocational graduates living in rural areas faced lower

employment prospects and earnings. This evidence shows that skills do not operate in a vacuum: their benefits depend on the availability of industries, access to transportation, job information, and employment networks. Therefore, equitable access to TVET must be accompanied by a more equitable distribution of employment opportunities and supporting infrastructure, rather than relying solely on the establishment of training institutions in disadvantaged areas. Matu (2022) also emphasizes the role of social capital and inclusion in vocational education experiences.

At the intergenerational level, TVET has the potential to expand opportunities for families, but its influence depends on the support and progression pathways available. Using longitudinal administrative data from Germany, Zabel and Kopf (2018) found that parents' participation in further vocational training increased the likelihood of their children entering apprenticeship programs at ages 19–21 by 1.9–2.9 percentage points. This finding suggests that parents' investment in skills development may be associated with their children's participation in education and training. However, the experiences of TVET graduates in South Africa reveal another dimension: barriers related to qualification recognition, funding, and work placement can restrict access to higher education and meaningful employment (Majola, 2025; Nogcantsi & Mbatha, 2025). Hu and Qian (2023) provide a broader context by showing that intergenerational educational mobility is influenced by changes in educational opportunities and gender relations, while Afandi et al. (2026) discuss the relationship between education and economic inequality. Thus, TVET can serve as an instrument of social mobility only when further progression pathways and transition support are available.

Inequalities in access to and differentiated benefits of technical and vocational education by social and geographical background

Inequalities in Technical and Vocational Education (TVET) do not emerge only after graduates enter the labor market; they are already shaped when students choose and gain access to educational pathways. The social reproduction perspective explains that schools do not always neutralize differences in social background; under certain conditions, they reproduce the advantages of groups with greater economic, cultural, and social capital (Bourdieu & Passeron, 1977; Bourdieu, 1986). Ozer and Perc (2020) show that the separation of academic and vocational tracks can widen inequalities in opportunities, particularly when students from disadvantaged families are concentrated in pathways offering more limited options for further education and occupational mobility. Thus, the central issue is not merely who enrolls in TVET, but who can access high-quality programs, receive support throughout their studies, and use their qualifications to achieve social mobility. TVET should therefore be assessed in terms of the distribution of opportunities, rather than participation expansion alone.

Family background influences both educational pathway choices and the resources students can draw upon during their studies. Wang and Guo (2019) found that

vocational education students in China tended to come from families with lower levels of parental education. However, intergenerational relationships do not always involve the transmission of disadvantage. Zabel and Kopf (2018) showed that parents' participation in further vocational training increased their children's participation in apprenticeship programs by 1.9–2.9 percentage points. This contrast indicates that families can be a source of both constraints and support. These patterns of inequality are summarized in Table 2, which shows how family resources, gender, geographical location, institutional support, and qualification recognition shape differences in economic opportunities. Accordingly, equity in TVET requires support for learning, access to educational information, financial assistance, and pathways to further study, rather than merely equalizing student admission and access to further education.

Table 2. Dimensions of inequality in access to and benefits from technical and vocational education

Dimension of inequality	**Forms of inequality**	**Underlying mechanisms**	**Implications for economic opportunities**
Family socioeconomic background	Differences in access based on income, parental education, and family resources	Limited educational choices, learning support, and access to educational information	Unequal opportunities to obtain quality education and pursue further studies
Gender	Differences in access to fields of specialization, employment opportunities, and income	Gender stereotypes, occupational segregation, and unequal recruitment practices	Women may be concentrated in occupations with lower wages and weaker career prospects
Geographical location	Differences in opportunities between urban and rural areas	Unequal training facilities, industry availability, transportation, and employment information	Skills cannot always be translated into employment and decent earnings
Funding and institutional support	Differences in the ability to finance education, certification, and work placements	Limited financial assistance, practical training facilities, WIL funding, and industry partnerships	Students risk missing the practical experience and certification required by the labor market
Qualification recognition	Differences in the recognition of diplomas, competency certificates, and access to further education	Limited qualification equivalence and articulation pathways	Barriers to further education, career transitions, and obtaining jobs that match acquired competencies
Educational stigma and stratification	TVET is perceived as having lower status than academic education	Social labeling, educational tracking, and differences in aspirations	Effects on competency recognition, aspirations, and graduates' social mobility

Source: Compiled by the author based on a synthesis of research findings and the social reproduction framework.

Gender inequality demonstrates that expanding access to education does not necessarily produce equal economic opportunities. Fachrizal et al. (2025) found that female vocational graduates in Indonesia faced lower employment probabilities and earnings. In South Africa, Friderichs et al. (2024) used administrative and graduate tracer study data on TVET graduates and found that women experienced higher unemployment rates than men. Among employed graduates, women also earned approximately 22% less, even after field of study and qualification level were taken into account. These findings indicate that the gap cannot be explained solely by differences in specialization or education. Gender norms, occupational segregation, recruitment practices, and caregiving responsibilities also constrain women's employment outcomes. Dey and Devi (2019) showed that TVET can improve labor market outcomes and women's empowerment in rural India. However, the benefits of training need to be accompanied by access to decent employment and equal career prospects.

Geographical inequality determines the extent to which skills acquired through TVET can be converted into employment and income. Choi (2021) highlighted the importance of distinguishing the wage returns to additional vocational education between urban and rural areas in the Philippines. In China, Wang et al. (2023) found that upper-secondary vocational graduates in rural areas earned 32.1% more than general education graduates among high-skilled blue-collar workers. However, this finding does not mean that all rural graduates enjoy the same advantage, as the result applies to a specific occupational group. Fachrizal et al. (2025) also showed that rural residents in Indonesia faced lower employment probabilities and earnings. These differences demonstrate that skills do not operate in a vacuum: their benefits depend on proximity to industries, transportation, job information, and recruitment networks. Expanding access to training without improving the distribution of employment opportunities and supporting infrastructure produces only formal equality of access.

Inequality is also shaped by funding and institutional support, which determine whether students can complete their training and gain work experience. Nogcantsi and Mbatha (2025), in a case study at one TVET college in South Africa, found that more than 90% of students in the quantitative sample received NSFAS support, yet funding for mandatory *work-integrated learning* (WIL) remained a barrier. This finding reflects the circumstances of the institution studied, rather than the national prevalence of the problem. It indicates that financial assistance for education does not necessarily cover all the costs associated with gaining professional experience. Majola (2025), through interviews with 15 NC(V) graduates, also identified barriers involving qualification recognition, access to higher education, and meaningful employment. Because both studies are context-specific, their findings are more appropriately

interpreted as evidence of the mechanisms underlying these barriers. When work placements, certification, and articulation pathways are unavailable, students from disadvantaged families face greater risks.

The stigma attached to vocational education can reinforce stratification when this pathway is perceived as an option for students considered academically less capable. Chu et al. (2018), through a field experiment involving 11,624 students from 115 vocational high schools in China, examined the effects of activating educational-track identity before examinations. The results showed that this activation did not affect technical skills and instead slightly improved mathematics performance, contrary to the initial hypothesis. This finding is important: the experiment does not demonstrate that stigma does not exist, but rather that reminding students of their vocational identity does not automatically reduce their performance. Ozer and Perc (2020) nevertheless caution that early and rigid track separation can restrict opportunities for students from socioeconomically disadvantaged backgrounds. Sevilla and Polesel (2022) also show that within-school tracking arrangements do not automatically eliminate inequalities in access to higher education. Therefore, stigma needs to be analyzed alongside the design of selection systems and the flexibility of movement between educational pathways.

Overall, inequalities in TVET emerge through the interaction of family background, gender, geographical location, financial support, and qualification recognition. These factors operate at different stages: determining who enters vocational pathways, who can complete high-quality training, and who ultimately obtains decent employment and earnings. The social reproduction perspective explains why expanding the number of institutions or participants does not, by itself, reduce inequality. However, the findings of Dey and Devi (2019) show that training interventions can expand opportunities for women in rural areas when accompanied by relevant support. Thus, TVET does not inherently reproduce inequality; inequality arises when access, quality, support, and progression pathways are distributed unequally. TVET can become an inclusive instrument of social mobility only when policies actively address these barriers, strengthen protections for vulnerable groups, and ensure that qualifications open up opportunities for employment and further education.

Conclusion

The findings indicate that Technical and Vocational Education (TVET) has the potential to serve as an instrument of social mobility and equal economic opportunities by enhancing competencies, accelerating the transition to employment, and improving prospects for higher earnings. However, these benefits do not arise automatically, as their realization depends on the alignment of skills with labor market needs, training quality, qualification recognition, and the availability of employment and further education opportunities. At the same time, family socioeconomic background, gender,

and geographical location shape differences in students' ability to access quality education and benefit from training outcomes. Thus, TVET can have two possible outcomes: it can promote social mobility when supported by an inclusive system connected to the world of work, or reproduce inequality when resources, educational quality, and economic opportunities are distributed unequally. These findings underscore that TVET's contribution to equity depends not only on expanding access but also on ensuring fairness in educational processes and the distribution of outcomes.

This study contributes to the literature by integrating Human Capital Theory and Social Reproduction Theory to explain the relationship between vocational education, employment outcomes, and inequalities in economic opportunities. This integration demonstrates that skills development needs to be accompanied by policies addressing structural barriers to ensure that the benefits of education are accessible across social groups. Nevertheless, this study has limitations because its synthesis is based on 12 articles covering diverse national contexts, sample characteristics, and research designs; consequently, its findings cannot be directly generalized to all TVET systems. In addition, limitations in the documentation of the literature search and selection processes constrain the reproducibility of the review. Future research should broaden the coverage of countries and databases, adopt more transparent systematic review procedures, and develop longitudinal and comparative studies to examine the effects of TVET on intergenerational income mobility. From a policy perspective, governments and educational institutions need to strengthen training quality, equitable access to facilities, funding for work placements, industry partnerships, qualification recognition, and access to further education, particularly for groups facing structural barriers.

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