Vocational and skills training programs to improve labor market outcomes

Last updated: Maret 2023

While vocational and skills training programs have had mixed results, those that included practical experience, soft-skills training, and job referrals often increased the likelihood of being employed and earnings of people who were targeted. Vocational training programs often helped trainees acquire hard skills, certify and communicate those skills, and find a job.



Summary

Many employed people experience poverty when they cannot get enough hours of work or when they are not paid sufficiently for the work they do. In low-, lower-middle-, and upper-middle-income countries in 2019, nearly 147 million people, were underemployed based on the number of hours they could find work. Worldwide, nearly seven percent of employed people live below the extreme poverty line (US$1.90 purchasing power parity per day). Vocational and skills training programs aim to build a strong labor force with in-demand skills by preparing people for jobs in a specific occupation or sector, often with better benefits, more stability, and/or higher pay. Vocational trainings, which can be supplemented by practical work experience, usually lead to a certification or diploma—this certification can help people get a job by providing a credible skills signal to employers. Vocational training programs are often expensive, however, ranging from a few hundred US dollars to more than US$10,000 per person trained. Apprenticeships are often informal training under the supervision of a master craftsperson working in a small firm.

This policy insight reviews findings from 28 randomized evaluations of apprenticeships and vocational training programs.[1], [1], [2], [3], [4], [5], [6], [7], [8], [9], [10], [11], [12], [13], [14], [15], [16], [17], [18], [19], [20], [21], [22], [23], [24], [25], [26], [27], [28] The programs evaluated varied greatly in their duration, target population, design, content, cost, implementer, and implementation context. The evaluations found mixed evidence. Many of the evaluated training programs increased people's

employment and earnings at least modestly. Some interventions were successful in helping workers move into higher quality jobs, including through formal employment. When designing vocational training programs, policy makers should consider incorporating practical work experience, skills certification, financial support, soft-skills training, job placement support, and a focus on sectors with strong demand for labor as these features have driven positive outcomes of many training programs.

Supporting evidence

Vocational and skills training programs are generally successful in providing job seekers with new skills. In nine of the ten evaluations that measured skills acquisition, people offered these trainings gained technical knowledge and improved their cognitive ability along the dimensions measured compared to those who were not offered the training.[4], [5], [6], [9], [16], [17], [19], [21], [25], [28], In Ghana, young job seekers who completed on-the-job training in small firms with experts in specific industries tested higher on reading, calculating, computing skills, and trade-specific skills than those who were not offered the training.[25], In Sierra Leone, an intervention combining technical skills training and on-the-job training increased the memory and impulse control of participants.[15], Similarly, in Rwanda, vocational trainees tested about half of a standard deviation higher on a business knowledge test than the comparison group.[5]

Though many of the training programs evaluated increased people's employment[2], and earnings at least modestly at some point in time after training completion, programs have had varying impacts in both the short and long term.[3], [4] Some programs increased earnings or likelihood of working in the short term, but impacts faded over time, while some programs had no impacts in the short term but positive impacts over time. For example, the US Job Corps program had a limited impact on employment shortly after its completion, but the labor market outcomes of participants significantly improved two to three years later.[19], In Colombia, individuals who were offered a classroom training program combined with on-the-job training had formal earnings that were about twelve percent higher on average than those in the comparison group several years after the program.[23] One theory for why some program impacts are worse in the short term is that they often crowd out time and other resources from other income-generating activities, so it takes a while for trainees to "catch up" to peers who were advancing in the labor market while they were occupied with training.

To date, there is not a very clear understanding of what influences whether an intervention works in the short run in comparison to the long run, so more research would be valuable to understand the nuanced impacts of vocational training programs over time. There are a few studies that do explain this dynamic impact, however. For example, in Uganda, vocational trainees saw lower employment in the short run compared to trainees who received firm-provided training. In the long run, however, employment for vocational trainees increased and surpassed those of firm-provided trainees, and the authors cite the certifying of skills in the vocational training program as a likely reason for these dynamic impacts (see below). [17]

Table 1. Impacts of Vocational and Skills Training Programs on Earnings and Employment Across Time

TIME HORIZON OF REPORTED RESULTS	**Earnings**				**Employment**			
	Number of Impact Estimates Reported*	Positive (%)	Negative (%)	Null (%)	Number of Impact Estimates Reported*	Positive (%)	Negative (%)	Null (%)
Short run (12 months or less)	38	29	5	**66**	36	**53**	11	36

TIME HORIZON OF REPORTED RESULTS		Earnings				Employment		
Medium run (13 to 24 months)	25	**52**	0	48	24	**58**	0	42
Long run (25 months or more)	23	38	0	**62**	22	45	0	**55**

*We include here the total number of impact estimates reported for all intervention arms across the 28 referenced studies within each of the respective time horizons. For a full view of which studies did and did not report impact estimates, see Detailed Table below. If you have any questions about assumptions we made in order to standardize this data, please contact the J-PAL Labor Markets sector staff.
**Statistical significance reported at the 10% level or higher.

Combining classroom‐based technical training with practical experience such as apprenticeships or internships led to positive outcomes in most cases where measured. Seven of twelve vocational training programs that had an on-the-job component or an internship led to positive results on the employment and/or the earnings of participants.[3], [7], [8], [10], [14], [23], [28], Programs that matched trainees with employers, including by providing internships, reduced information barriers and improved the quality of matches between trainees and employers. In Kenya, young men offered participation in a private sector labor force program were fifteen percent more likely to be employed, while results were inconclusive for females. The program combined life skills training with sector-specific training and provided participants with a three-month internship in the private sector.[7], In Côte d'Ivoire, combining a formal apprenticeship with both a short period of classroom training and a stipend had a sustained impact on skills and earnings. Positive effects on employment and earnings persisted after four years.[28]

In Bangladesh, young people living in rural areas who were offered vocational training, a cash stipend, and paid internships experienced larger increases in employment and earnings than their counterparts who were offered the same training and cash stipend but did not get exposure to the workplace. Researchers suggest that the paid internships helped people secure better jobs by giving them the cash they needed for job search and migration, eroding gender norms that discouraged women from working in factories, and helping job seekers gain information about job opportunities and working conditions in urban factories. [3]

However, purely on-the-job programs were sometimes less effective. Three programs evaluated provided only on-the-job training, and just one showed significant positive effects on key outcomes.[4], [25], [17], Apprenticeship training within small firms in Ghana resulted in negative impacts on the earnings and other labor market outcomes of participants one year after the program. The training encouraged participants to shift away from wage employment and toward self-employment, which reduced wage earnings without increasing self-employment earnings enough to compensate.[25]

An evaluation conducted in partnership with the nongovernmental organization BRAC compared the efficiency of a six-month vocational training at a private training institute to a subsidized in-firm apprenticeship in Uganda.[17] The gains for vocational trainees were both larger and sustained over a longer period, likely because they acquired more certifiable skills and could move back into employment from unemployment more easily than firm apprentices.

Preliminary evidence suggests a strong complementarity between hard- and soft-skills training. When comparing different curricula that were offered to vocational trainees, programs that taught a mix of hard and soft skills had the greatest impact on employment outcomes, especially in the long run. In Egypt, a training that mixed hard and soft skills led to better employment outcomes than trainings that focused on either hard skills or soft skills 18 months later.[2], Similarly, soft-skills training helped applicants sustain employment and monthly wages over the longer term in Colombia.[11] More research is needed to understand how soft skills and socio-emotional skills interact with hard skills and impact labor market outcomes.

Providing career counseling or referrals to real-world employers alongside training led to better employment outcomes for trainees in three out of five evaluations.[10], [14], [16], [19], [26], A referral may have motivated trainees to work harder during the training program either by helping them connect their effort with future positive labor market outcomes or by helping participants overcome difficulties in signaling their skills. A study in Kenya compared the effect of offering an AI-informed digital skills training course to the effect of providing the same course plus a job referral after trainees completed the program. Earnings

for participants with the job referral were 40 percent higher than those of the comparison group. There is some evidence that the promise of a job referral induced additional effort during the training.[10]

Training provider quality can have a meaningful impact on important program results. In Ghana, among participants in an on-the-job training program, those who trained under more experienced or profitable small business owners had higher earnings than those who trained under less experienced or profitable small business owners, suggesting important variation in outcomes that depend on trainer quality.[25], In the United States, an evaluation of the WorkAdvance program showed differences in trainees' earnings within the same program when it was run by different providers. Researchers suggest some providers' training programs were less effective because they were newer to running the program and had fewer connections to local employers.[12]

In three of four evaluations, supplementing vocational training programs with cash transfers seemed to increase their effectiveness. Credit constraints often prevented participants from taking up training programs or fully participating in them. In Bangladesh, for example, providing a stipend alongside vocational training helped participants earn more.[3], In some cases, offering financial support increased the effectiveness of the training by covering foregone income and/or facilitating transportation.[28], However, further research is needed to understand how human and financial capital complement one another. For example, in Rwanda, researchers did not find additional positive impacts of providing both a training and a cash transfer, but this might have been because the cash transfer was not thoroughly integrated into the program and the benefits of combining both may arise in the longer term.[5], In Côte d'Ivoire, a government program that offered youth an apprenticeship, vocational training, and a subsidy had a large impact on youths' decision to enter apprenticeships. The subsidy helped cover large foregone earnings associated with low apprenticeship pay; however, researchers found no evidence that covering foregone earnings alleviated underlying credit constraints.[28]

There are strong connections between people's expectations about their labor market prospects, their decisions to participate in training, and their post-training employment and earnings. Expectations can be instrumental in the impact of training. In Uganda, researchers compared the effects of vocational training, vocational training combined with a job interview referral, and just a job interview referral on young job seekers. They found that participants overestimated the likelihood of receiving a job offer from a high-quality firm. Young people who were offered vocational training and job referrals adjusted their expectations down, closer in line with reality, after callback rates were lower than expected. Young people who were offered vocational training but not job referrals adjusted their expectations up, further from reality. However, their optimism may have helped them in the labor market since job seekers who received only vocational training saw higher and longer employment six years later than their peers who were offered vocational training and job referrals.[26]

In India, participants in a government-funded training were invited to attend information sessions about placement opportunities and course content. These information sessions increased the probability that male participants stayed for at least five months in their assigned job than the comparison group.[27]

In Kenya, an information session on the benefits of vocational training programs did not lead to higher levels of enrollment. Even with updated information about the benefits of training, young people often lacked the financial means to participate.[1]

These findings connect to the literature on job search and expectations, . For example, in rural India, parents were willing to invest more in girls in anticipation of greater employment opportunities far in the future. More research is needed on the role of job seeker optimism and expectations in their job search.

Women face specific barriers to joining vocational training programs and thriving in them. Several of the barriers women sometimes face included additional family and community responsibilities, worse treatment by trainers and potential employers, and less financial support during training. In Malawi, for example, this was compounded when women's lower average training attendance rate led some master craftspeople to favor male trainees even more during and after the training.[4], In some

contexts, it is also rarer for women to receive a written, formal work contract.[7]

Women benefited from vocational training programs that addressed gender-specific barriers. All six vocational training programs that were designed for women exclusively or had an "empowerment" component, such as individual coaching or soft-skills training, improved labor market outcomes for women.[7], [9], [10], [16], [20], [22], For example, in the Dominican Republic, women benefited from the soft-skills components of a youth vocational training more than men. They had higher self-esteem, were more optimistic, and exhibited substantially higher levels of personal skills in the long run.[16], In Kenya, participation in a six-month vocational training starting with a two-week soft-skills training led to significant increases in earnings for women only.[7]

Sectoral employment programs are a very promising model of training programs as a path to high-paying jobs. Evidence from the United States showed that these programs led to substantial earnings increases in the year following training completion and persisted in the long run. The most effective sectoral employment programs were those that included a combination of upfront screenings of participants, training targeted to high-wage sectors, certification, soft-skills training, support services, and strong connections to employers. These findings from the United States seem in line with the program elements that tend to help in the training programs we have discussed throughout this insight. Further research on training that focuses on high-paying and in-demand growing sectors would be valuable outside of the high-income country context.

Additional Materials: Vocational Training Studies

Simplified Table (updated version coming soon).

Detailed Table.

Sector chair(s) or Academic lead(s)

Bruno Crépon Marianne Bertrand

Insight author(s)

Victoire Fribourg

Simon Cooper

Natalie Valent

---

1. This policy insight includes evidence from both high- and low-to-middle-income countries. However, this insight is not comprehensive of literature from high-income countries. Please see this systematic review for additional insight on vocational training in high-income contexts.
2. For the purpose of this policy insight, we primarily define employment as probability of working or hours worked.
3. For the purpose of this policy insight, we define short term results as results collected 12 months or less after program completion, medium term results as results collected from 13 to 24 months, and long term results as results collected after 24 months.
4. Importantly, many of the included studies do not measure employment and earnings across multiple time horizons. And when they do, they often do not measure at the same time intervals. This makes it hard to directly compare results across studies.

---

1. Hicks, Joan Hamory, Michael Kremer, , Isaac Mbiti, , and Edward Miguel. "Impact Evaluation Report 37 Evaluating the Impact of Vocational Education Vouchers on Out-of-School Youth in Kenya." The International Initiative for Impact Evaluation (3ie), Technical Report, August 2016.Research Paper, | J-PAL

Evaluation Summary

2. Osman, Adam, and Jamin D. Speer. "Are Soft Skills Enough? Experimental Evidence on Skill Complementary for College Graduates." Working Paper, July 2022.Research Paper

3. Shonchoy, Abu, Tomoki Fujii, and Selim Raihan. "Barriers to Labor Migration for the Rural Poor: Experimental Evidence from a Vocational Training Program in Bangladesh." Available at SSRN 3395229, February 2018.Research Paper

4. Cho, Yoonyoung, Davie Kalomba, Ahmed Mushfiq Mobarak, and Victor Orozco. “Gender Differences in the Effects of Vocational Training: Constraints on Women and Drop-Out Behavior.” The World Bank, Policy Research Working Papers, July 2013Research Paper

5. McIntosh, Craig, and Andrew Zeitlin. “Using Household Grants to Benchmark the Cost Effectiveness of a USAID Workforce Readiness Program.” *Journal of Development Economics*, April 2022.Research Paper, | J-PAL Evaluation Summary

6. Field, Erica M., , Leigh L. Linden, , Ofer Malamud, Daniel Rubenson, and Shing-Yi Wang. "Does Vocational Education Work? Evidence from a Randomized Experiment in Mongolia." NBER Working Paper #26092, July 2019. Research Paper, | J-PAL Evaluation Summary

7. Honorati, Maddalena. “The Impact of Private Sector Internship and Training on Urban Youth in Kenya.” The World Bank, Policy Research Working Papers, August 2015.Research Paper

8. Diaz, Juan Jose, and David Rosas.“Impact evaluation of the job youth training program Projoven,” Inter-American Development Bank, Working Paper No. IDB-WP-693, April 2016.Research Paper

9. Aramburu, Julian, Ana Goicoechea, and Ahmed Mushfiq Mobarak. "Coding Bootcamps for Female Digital Employment: Evidence from an RCT in Argentina and Colombia." The World Bank, Policy Research Working Paper No. 9721, June 2021.Research Paper

10. Atkin, David, , Antoinette Schoar, and Kiara Wahnschafft. "Evaluating Sama’s Training and Job Programs in Nairobi, Kenya." Working Paper, May 2021. Research Paper, | J-PAL Evaluation Summary

11. Barrera-Osorio, Felipe, Adriana D. Kugler, and Mikko I. Silliman. “Hard and Soft skills in Vocational Training: Experimental Evidence from Colombia.” National Bureau of Economic Research, Technical Report, July 2020.Research Paper

12. Schaberg, Kelsey. "Can Sector Strategies Promote Longer-Term Effects? Three-Year Impacts from the WorkAdvance Demonstration." MDRC, September 2017.Research Paper

13. Bandiera, Oriana, , Markus Goldstein, Imran Rasul, , Robin Burgess, , Selim Gulesci, and Munshi Sulaiman. 2011. "Intentions to particiate in adolescent training programs: Evidence from Uganda." *Journal of European Economic Association* 8, no. 2-3(January): 548-560. Research Paper, | J-PAL Evaluation Summary

14. Elsayed, Ahmed, Kevin Hempel, and Adam Osman. "Overcoming Youth Unemployment in Egypt: Randomized Evaluations Showcase the Promise of Active Labor Market Programs." Working Paper, October 2018.Research Paper, | J-PAL Evaluation Summary

15. Rosas, Nina, Maria Cecilia Acevedo, and Samantha Zaldivar. "They got mad skills: the effects of training on youth employability and resilience to the Ebola shock." The World Bank, Policy Research Working Paper, April 2017.Research Paper

16. Acevedo, Paloma, Guillermo Cruces, , Paul Gertler, and Sebastián Martínez.“Living Up to Expectations: How Vocational Education Made Females Better Off but Left Males Behind.” Working Paper, March 2018. Research Paper

17. Alfonsi, Livia, Oriana Bandiera, , Vittorio Bassi, , Robin Burgess, , Imran Rasul, Munshi Sulaiman, and Anna Vitali. 2020. “Tackling Youth Unemployment: Evidence from a Labor Market Experiment in Uganda.” *Food Security* 8, no. 4 (June): 74. Research Paper, | J-PAL Evaluation Summary

18. Calero, Carla, Veronica Gonzalez Diez, Yuri S.D. Soares, Jochen Kluve, and Carlos Henrique Corseuil. 2017. "Can arts-based interventions enhance labor market outcomes among youth? Evidence from a randomized trial in Rio de Janeiro," *Labour Economics*, vol. 45(C): 131-142.Research Paper

19. Schochet, Peter Z., John Burghardt, and Sheena McConnell. 2001. "Does job corps work? Impact findings from the national job corps study." *American Economic Review* 98, no. 5: 1864-86.Research Paper

20. Maitra, Pushkar, and Subha Mani. 2017. “Learning and Earning: Evidence from a Randomized Evaluation in India.” *Labour Economics* 45 (August): 116–30. Research Paper

21. Alzúa, María Laura, Guillermo Cruces, and Carolina Lopez. 2016. “Long-Run Effects of Youth Training Programs: Experimental Evidence from Argentina.” *Economic Inquiry* 54 (4): 1839–59.Research Paper

22. Attanasio, Orazio**,** , Arlen Guarín, Carlos Medina, and Costas Meghir. 2011. “Subsidizing Vocational Training for Disadvantaged Youth in Colombia: Evidence from a Randomized Trial.” *American Economic Journal: Applied Economics* 3, no. 3 (July): 188–220.Research Paper**,** | J-PAL Evaluation Summary

23. Attanasio, Orazio**,** , Arlen Guarín, Carlos Medina, and Costas Meghir. 2017. "Vocational Training for Disadvantaged Youth in Colombia: A Long-Term Follow-Up." *American Economic Journal: Applied Economics* 9, no. 2 (April): 131-43.Research Paper**,** | J-PAL Evaluation Summary

24. Hirshleifer, Sarojini, David McKenzie, Rita Almeida, and Cristobal Ridao-Cano. 2014. “The Impact of Vocational Training for the Unemployed: Experimental Evidence from Turkey.” Economic Journal 126, no. 597: 2115–46.Research Paper

25. Hardy, Morgan L.**,** , Isaac Mulangu Mbiti, Jamie Lee McCasland, and Isabelle Salcher. "The Apprenticeship-to-Work Transition: Experimental Evidence from Ghana." World Bank Policy Research Working Paper, May 2019.Research Paper**,** | J-PAL Evaluation Summary

26. Bandiera, Oriana**,** , Vittorio Bassi**,** , Robin Burgess**,** , Imran Rasul, Munshi Sulaiman, and Anna Vitaliy. "The Search for Good Jobs: Evidence from a Six-year Field Experiment in Uganda." Working Paper. December 2021.Research Paper

27. Chakravorty, Bhaskar, Wiji Arulampalam, Clément Imbert**,** , and Roland Rathelot. "Can Information about Jobs Improve Effectiveness of Vocational Training? Experimental Evidence from India." IZA Discussion Paper No. 14427, May 2021.Research Paper

28. Crépon, Bruno and Patrick Prémand."Direct and Indirect Effects of Subsidized Dual Apprenticeships." Working Paper, June 2021.Research Paper**,** | J-PAL Evaluation Summary