

TECHNEQUALITY Policy Brief No 3

Training for the Future: How to increase participation among vulnerable workers

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Key message

The three TECHNEQUALITY studies on the determinants of participation in job-related non-formal training demonstrate that workplace characteristics are more important than workers' skills background and motivation. As a result, certain subgroups—including routine and less-educated workers—are doubly vulnerable to the impact of automation on work as they: (1) are more likely to hold jobs that are at high risk of being replaced by machines and algorithms, and (2) have fewer opportunities at their workplace to participate in skills training.

The characteristics of education and labor market institutions impact whether workers in certain jobs participate in job-related non-formal training. Based on our studies, we have identified characteristics that promote inclusive access to continuous learning. Countries with comprehensive school systems that include vocational education offer more inclusive circumstances to prepare all workers for the repercussion of technological innovation. Besides, a focus on the development of general skills seems to offset skills-fertilizing training dynamics and furthermore equips workers with increasingly demanded and flexible competencies right away. Moreover, strong unions, little employment protection, and less wage inequality reduce differences in job placement and in turn foster inclusive training participation.

Considering though that such ideal-typical country cases do not exist in reality, policies that help to overcome the strong association between job placement and further training are more important than ever in order to avoid the manifestation of technological inequalities. Based on our findings, we derived several policy recommendations in this regard.

Non-participation in job-related training among vulnerable workers – Reasons and what can be done

The TECHNEQUALITY forecasting scenarios¹ indicate that automation technologies will continue to reshape the demand for labor and skills; and under some projections, the future impact of automation on labor markets may be even more disruptive than in the past. Thus, it is increasingly *imperative* for workers to update their skills to adapt to the changing nature of work, to protect against technological unemployment and ensure employers have an adequate supply of skilled labor. Providing access to training beyond initial education for all workers is therefore key to ensuring both workers and employers remain competitive in an ever-changing economy.

However, previous research shows that access to adult training is unequally distributed across the workforce. The very workers expected to experience the biggest changes in required skillsets are the same workers who are today less likely to participate in trainings, i.e., workers in routine jobs and those with low educational attainment. Yet we know little about why these workers are less likely to participate in adult training: is it due to the characteristics of these workers (e.g., initial education, skills, motivation) or is it because they are in workplaces that do not offer opportunities for training and skills enhancement? Moreover, why do some

workers participate in trainings continuously over their careers whereas others do seldomly or never?

In the TECHNEQUALITY project, we answer these questions by examining the relative importance of workers' job characteristics – e.g., job tasks, work hours, or industry sector – versus workers' own skills and motivation in explaining differences in training participation. We also examined whether “training begets training”, that is, whether past participation predicts future participation in training. The answers to these questions have direct implications for policy and provide actionable insights for how to target interventions.

This policy brief reports findings from three studies of TECHNEQUALITY addressing these questions. We focus on participation in job-related non-formal training (hereafter job-related NFT) as it is the most common form of adult training.

Definition: Job-related non-formal training (NFT) refers to intentional training activities to improve job-related skills, organized by an education provider, and typically provided in the form of classroom instruction, lectures, theoretical and practical courses, seminars and workshops. It does not lead to recognized qualifications of national or sub-national education authorities, although it can result in a certificate.

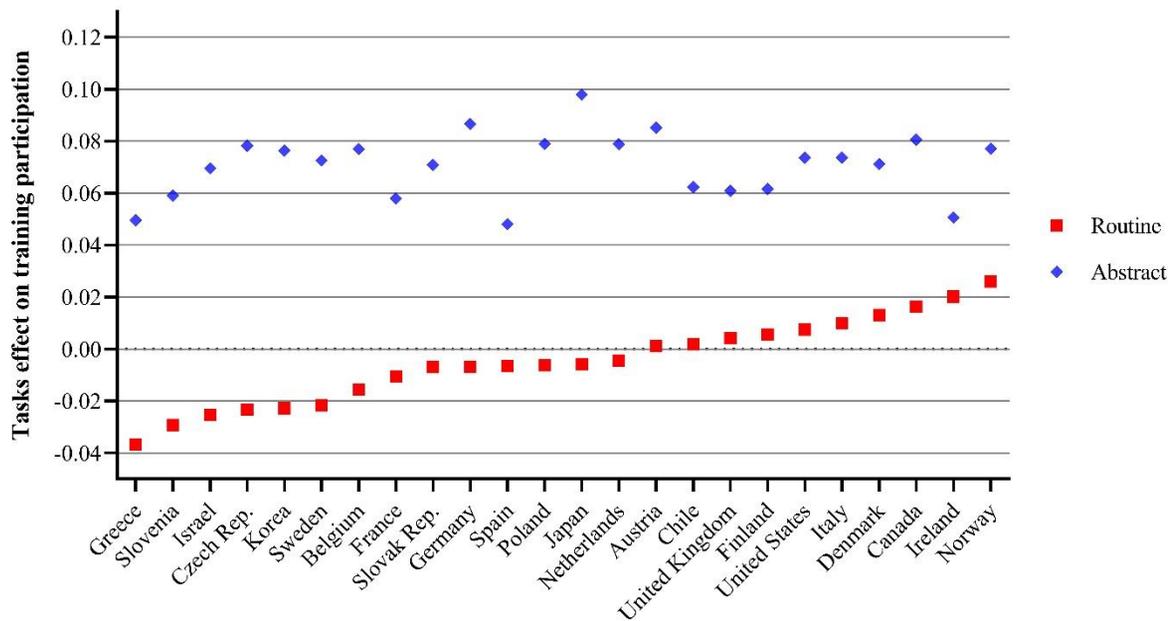
Educational and labor market institutions shape employers' decision to train routine and non-abstract workers¹

Routine jobs have a high substitution potential, i.e., are most likely to be replaced by machines; workers in these jobs therefore face the greatest threat from automation. To reduce the likelihood of technological unemployment, adult training is essential for these workers. We therefore conducted a study on the association between job tasks and training participation across 24 countries. We used the high-quality and comparable data from the OECD's *Program for the International Assessment of Adults Competencies* (PIAAC).

Figure 1 shows participation in job-related NFT across countries for workers performing 'routine' and 'abstract' tasks. The associations shown are pure task effects, i.e., net of measured individual and workplace characteristics. The red squares indicate that in 14 countries, including Germany, workers performing routine tasks are less likely to participate in job-related NFT; in the remaining countries, this association is either non-existent or positive. By contrast, the association between performing abstract tasks and participating in job-related NFT (as indicated by the blue diamonds) is positive in every country, although the strength of this association varies.

¹ TECHNEQUALITY Deliverable 3.6, Chapter 2: *Explaining cross-national variation in the effect of job tasks on training participation*; Dec. 2021.

Figure 1: The association between job tasks and participation in job-related NFT



Controlled for individual and workplace characteristics. **Interpretation example:** In Greece, performing routine tasks decreases the probability of participating in job-related non-formal training by 4 percentage points (for one standard deviation increase). Performing abstract tasks increases training probability by 5 percentage points (for one standard deviation increase).
Sources: PIAAC 2011/12, 2014/15, own calculations.

These findings confirm that participation in job training depends in part on the type of tasks workers perform. Yet the cross-national differences in whether workers performing routine tasks are more or less likely to participate in adult training contradicts the common

assertion that employers lack incentive to train these workers. It instead suggests that education and labor market institutional context is key to shaping employers' decisions about whether to invest in workplace training. Table 1 presents our main findings.

Table 1: How Institutional Characteristics Impact Association Between Job Tasks and Training Participation

Institutional characteristic	Impact on tasks effect	Possible explanations
Collective bargaining coverage	High coverage is associated with lower abstract tasks effects	... lower wage differentials and more labor power to equalize training chances among workers
Employment protection legislation (EPL)	High EPL increases routine and abstract tasks effect	... stronger labor market segmentation along the line of routine and abstract jobs and stronger "insider-outsiders" divide
Vocational orientation of upper secondary education	Stronger vocational orientation decreases abstract tasks effect	... higher skills levels and task complexity across jobs in these countries
Tracking in secondary education	Higher extent of tracking increases abstract tasks effect	... higher skills gaps and boundaries between abstract and non-abstract jobs

Policy Recommendations

Policies aimed at increasing training participation for routine and non-abstract workers must take into consideration employers' incentives to provide such training.

Aim: Increase participation in job-related NFT, particularly for workers performing routine and non-abstract tasks.

- **Provide guidance and financial incentives** for employers to train their workforce
- **Hold employers accountable** for training employees directly (or indirectly by granting and financing training/education leave) and for communicating opportunities for workers to receive career guidance, skill validation and learning opportunities by law, either via collective agreements or bilateral agreements. Governments could, for example, work with organized labor to craft these regulations.
- **Decrease skills gaps between occupational groups** by reforming educational systems toward more comprehensive systems with vocational elements.

Training disadvantages for less-educated workers due primarily to differences in workplace characteristics²

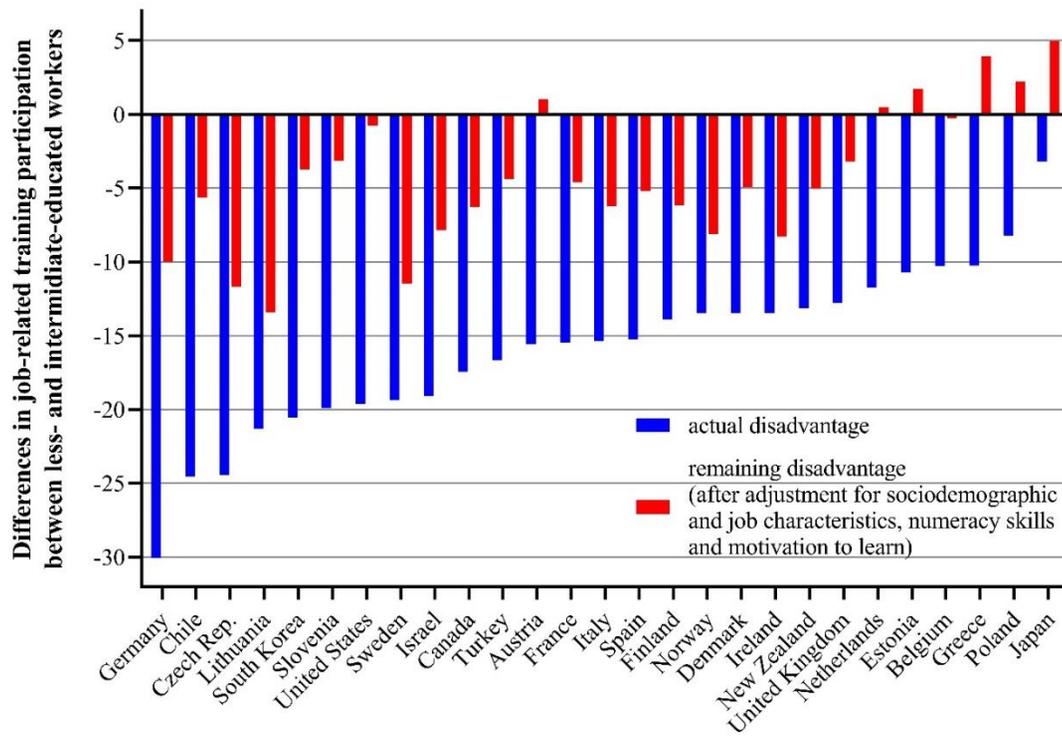
We examined whether differences in workplace characteristics (e.g., job tasks) or individual characteristics (e.g., workers' skills or motivation) explain the training disadvantage of less-educated workers, using PIAAC data for 27 countries. The blue bars in Figure 2 represent the observed within-country training disadvantage for less-educated workers, that is, the differences in job-related NFT participation rates between less- and intermediate-educated workers. Less-educated workers have lower participation rates in all countries. This is particularly pronounced in Germany.

The shorter red bars reveal the training disadvantage for less-educated workers is substantially smaller after adjusting for job and worker characteristics. In other words, the red bars show the training gap between less- and intermediate-educated workers if those workers were employed in the same jobs, had similar sociodemographic characteristics (e.g., age, gender, migration background), numeracy skills, and motivation to learn. Further analyses revealed that in every country (except Sweden) the training disadvantage primarily results from differences in the job characteristics of less- and intermediate-educated workers, not differences in worker demographics, skills or motivation to learn.

Definitions of educational groups: Less-educated workers are those who did not complete upper secondary education. Intermediate-educated workers are defined as those who hold an upper-secondary or non-tertiary post-secondary degree.

Definitions of job characteristics included in the analysis: (1) job tasks, (2) other job characteristics: firm tenure in years, occupational status, computer use and part-time employment, (3) firm characteristics: firm size, public vs. private firm, economic sector

Figure 2: Training disadvantage of less-educated workers



Interpretation example: In Germany, the training participation rate of less-educated workers is 30 percentage points lower than that of intermediate-educated workers. After adjusting for worker, job, and firm differentials between the two educational groups, this training disadvantage of less-educated workers decreases considerably to 10 percentage points.

Sources: PIAAC 2011/12, 2014/15, own calculations.

We also investigated the role of labor market and education context in explaining cross-national differences in the training disadvantage faced by less-

educated workers (displayed in Figure 2). Table 2 presents our main findings.

Table 2: How Institutional Characteristics Impact Training Disadvantage for Less-educated Workers

Institutional characteristics	Impact on training disadvantage	Possible explanations
Collective bargaining coverage	High coverage reduces differences in job allocation, which in turn decreases disadvantage	... allocation to “better” jobs, e.g., skill-intensive jobs and/or jobs in training-active firms, for less-educated workers
	High coverage increases disadvantage (net of job allocation)	... strategic focus on skilled employees in unions’ commitment to further training
Wage inequality	High wage inequality increases differences in job allocation, which increases disadvantage	... less profitable for companies to invest in less-educated employees’ training
Segregation in secondary education	High segregation increases differences in job allocation, which increases disadvantage higher skills transparency of educational degrees, which is consequential for job allocation
Skills gap btw. less- and intermediate-educated adults	High skills gap reflects differences in learning competencies, which increases disadvantage	

Policy Recommendations

Policies aimed at increasing less-educated workers' participation in job-related NFT should focus on workplace conditions and associated barriers.

Aim: Increase less-educated workers' access to skill-enhancing jobs and improve workplace training opportunities.

- **Identify existing skills of less-educated adults**, for example, by implementing a comprehensive legal framework for skills assessment and validation.
- **Provide targeted training measures** to close skills gaps. For countries with high skills differentials between educational groups, policies should also target reforms to formal education to reduce skills inequality as early as possible.
- **Intensify outreach activities** to increase awareness of adult learning among workers that have not participated in training before.
- **Regulate education leave and provide financial support and incentives** additionally for workers in atypical employment, by law, either via collective agreements or bilateral agreements with employers.

Early job placements drive long-term training (dis-)advantages³

To further our understanding of how job characteristics impact worker participation in adult training, we conducted a third study to analyze how these processes unfold over time, using longitudinal data from Germany (NEPS) and the UK (UKHLS – Understanding Society). This study explored whether training (dis-)advantages accumulate over workers' employment careers. Specifically, we examined whether past participation predicts future training participation, that is, *whether training begets training*.

Figure 3 presents findings for workers with low, medium and high educational attainment. To estimate the “training begets training” effect, we decompose the effect of (1) individual attributes (such as skills or early job placement) that influence training participation at all times from (2) the effect of previous training

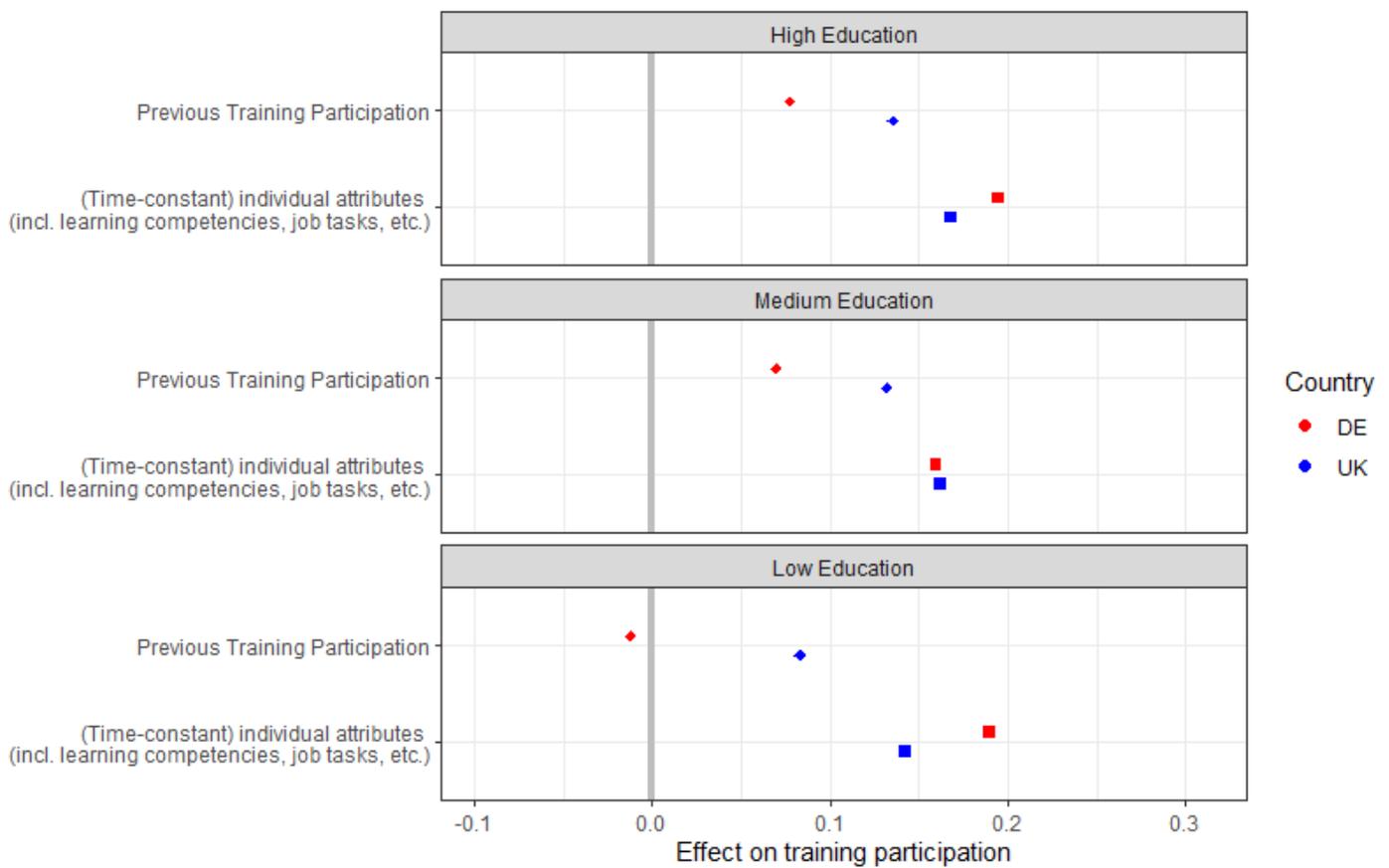
participation on subsequent training participation. The former is indicated by the rhombuses, the latter by the rectangles.

Figure 3 shows that, for workers with medium and high levels of education, prior training participation positively predicts future training participation. However, individual attributes are more strongly predictive of training participation than whether a worker has participated in the past; particularly in Germany relative to the UK. For less-educated workers, the effect of prior participation on subsequent participation is weaker although still positive in the UK whereas there is no effect of prior training among less-educated workers in Germany. Time-constant individual attributes matter in both national contexts.

Definitions of educational groups: Less-educated workers are those who did not complete upper secondary education. Intermediate-educated workers are defined as those who hold an upper-secondary or non-tertiary post-secondary degree. High educated workers are those who hold a tertiary education degree.

³ TECHNEQUALITY Deliverable 3.6, Chapter 4: *Causes of labor market careers without further training*; Dec. 2021.

Figure 3: Explanations for training accumulation



Interpretation example: Among high-educated workers, early training participation increases the probability of subsequent training participation by 7 percentage points in Germany and by 13 percentage points in the UK. Time-constant individual attributes, that have already influenced first training participation, increase subsequent training probability by 20 percentage points in Germany, and by 17 percentage points in the UK.

Sources: NEPS and UKHLS, own calculations.

Once again, these findings stress the importance of job characteristics in shaping workers' training participation. And underscore the double disadvantage of faced by workers with less-education who are often trapped in work environments that provide little opportunity for skills enhancement and continued learning. The differences between the UK and Germany, however, reveal how the effect of job characteristics vs. prior training on subsequent training varies across

different labor market and educational contexts. In the UK, where internal labor markets (ILM) are more common, workers seem to benefit more from the cross-fertilizing dynamic of skill formation than German workers, who are often part of occupational labor markets (OLM). This might be based on the more heterogeneous skill profiles of workers in ILMs that demand for more continuous training incidences and foster greater cognitive connectivity between courses.

Policy Recommendations

Policy efforts to increase training opportunities for less-educated workers should also account for the cumulative (dis-)advantage of training participation over the working life.

Aim: Foster skills training and reinforcement over the life-course.

- **Increase topic and skill complementarity across courses**, for example, by incorporating modular learning and partial qualifications into the structure of adult training. Module designs should be practical, problem-oriented and closely linked to the (work) context of the learner.
- **Build and maintain a positive foundation for meta learning** as part of education and training curricula to increase cognitive and meta-cognitive skills such as learning-to-learn.
- Educational reforms must contribute to **the vision and norm of "lifelong learning"**.