

Vocational Education and Training, Skilled Workers, and Transformation from an International Perspective

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Conference Report

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Researching, shaping and overcoming the challenges of transformation together – key area of vocational education and training

The ecological and digital transformation is leading to far-reaching changes in all areas of society. Climate change, resource consumption, the energy transition and digitalisation require concepts that need to be developed and implemented not only by individual countries, but increasingly beyond national borders. But how can transformation processes in different countries be structured in a future-proof and sustainable way? And what contribution can skilled workers make as important agents of change?

Vocational education and training is of central importance when it comes to empowering skilled workers to shape change. It must provide answers to fundamental questions: What consequences do changing ecological, economic and social conditions have on the world of work and careers? Which qualifications and competencies will be important for the individual sectors in the future? Around 60 VET researchers from Africa, Asia, Europe, the Gulf region and the Middle East met in Bonn on 30 November to 1 December 2023. The conference, organised by the Federal Institute for Vocational Education and Training (BIBB), offered researchers the opportunity to present and discuss findings from their research projects on specific aspects of transformation. The shaping of socio-ecological and digital transformation plays a key role in BIBB's work. The event helped to place BIBB's various research and development projects on this topic in the context of international VET research and to draw inspiration for research and development at BIBB from the results.

BIBB President Professor Dr Friedrich Hubert Esser opened the first day of the conference with a keynote speech, in which he outlined the often neglected, yet significant role of VET in transformative processes.

The second day began with a keynote speech by Dr Kirak Ryu, Head of the Employment, Skills Development and Qualification Research Department at the Korea Research Institute for Vocational Education and Training (KRIVET) in Sejong, Korea. KRIVET is one of over 30 partner institutions worldwide with which BIBB cooperates in VET research and development. In his presentation, Dr Ryu focused on training policies to address digital transformation and social inequality in Korea. At the start of his keynote speech, Mr Ryu impressively described the connection between digital transformation and social inequality. Increasing job polarisation is influenced by the combination of skill-oriented technological progress, routine and task-oriented technological progress, and the outsourcing of jobs, which can vary from country to country. In addition to the key facts about digital transformation, Mr Ryu presented his research project which predicts the effect of different digital transformation scenarios on income distribution in Korea. A particularly noteworthy conclusion of the keynote was that the positive

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effects of educational and social policies can mitigate the polarising effect of digital transformation on income distribution to the benefit of the lower income brackets.

Researchers then presented their work and projects in three different working groups. The separate working groups were intended to approximate the complexity of transformation. The working groups covered the sub-topics “Organisational aspects of transformation”, “Technological side of transformation” and “Ecological challenges and transformation”. Conference participants were able to assign themselves to one of the working groups in advance.

In working group 1, presentations were given by Dr Brunetti and Dr Biagetti from INAPP, Dr Nyen and Mr Steen from the Fafo Institute, Oslo, as well as Professor Lehnert from the University of Zurich. Working group 1 was introduced by a short contribution from the BIBB research project “Vocational tasks in international comparison” by Professor Grollmann, TU Dortmund.

Presentations in working group 2 were given by Dr Tiemann from BIBB, Professor Dhondt from TNO Leiden, Professor Cirillo from the University of Bari Aldo Moro, and Dr Whelan from ESRI Dublin. Working group 2 was introduced by a short contribution from Dr Yoon from KRIVET and Mr Ulbrich, a former BIBB employee and project affiliate.

Professor Zimmermann from the Wissenschaftskolleg (WiKo), Dr Díez from CaixaBank Dualiza, Professor Clarke from the University of Westminster. and Dr Schröder from TU Dortmund gave presentations in working group 3. The group was moderated by Ute Hippach-Schneider, a senior researcher at BIBB.

The results of the working groups were then presented in the plenary session by Professor Cirillo for working group 2, Professor Hogarth for working group 3. and Dr Markowitsch for working group 1. Researchers in working group 2 focused their projects on the following points.

- While the relationship between technology and employment is a crucial factor in the transformation of labour markets, it is not the sole driver of employment dynamics in Europe.
- Robotisation alone is unlikely to be the primary force affecting employment. Considering structural and demand-related factors is also essential.

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- Investments in robots have had varied effects in Europe, with an on average “labour-friendly” robotisation regime. However, the employment gains are unevenly distributed, favouring managers while disadvantaging manual workers. This “labour-friendly” regime is predominant in core and southern countries, characterised by stronger technological capabilities and high-end activities and is not significant in eastern, Baltic, and southern peripheral countries.
- Therefore, robotisation is not necessarily a threat if countries or sectors have the appropriate capabilities to adapt.
- Additionally, it is important to approach conclusions based on social media and real-time data with caution as they require (or should be bolstered with) more theoretical interpretation.

The main research results of working group 2 consisted primarily of four points. First, skilled workers are more favoured by technological change than manual workers. Second, highly skilled workers encourage the adoption of new technologies by firms. Third, the type of technology matters, as different types of technology affect work organisations differently. Last, there were heterogeneous effects of technologies on the autonomy of workers.

In working group 3, which examined ecological challenges and transformation, one clear result was the realisation that ecology and sustainability, in all their complexity, have not yet been sufficiently integrated into the world of work, neither conceptually nor thematically. The central role of human agency in transformation processes is particularly important if sustainable solutions are to be found for the challenges of the ecological crisis. A broader perspective on work, which also integrates unpaid work, for example, is necessary. With regard to VET systems, it was noted that learners’ opinions should be given greater consideration, as well as the fact that the aim of VET, is to create not only competencies, but also responsible citizens..

Key results of working group 1 were as follows.

- There is a reciprocal relationship between investments in new technologies and skills.
- Evidence at the micro-level that more training/highly skilled workers lead to more investment in technology and Industry 4.0.
- Factors conducive to innovation at the company level include high levels of discretion and autonomy, open and flat communication across different occupational groups, and clear improvement channels. While formal industrial relations structures are significant for manufacturing, they play a smaller role in the service sector.

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- Updating VET curricula can accelerate the diffusion of new technologies. This is particularly effective when VET is defined and binding at a national level, systematically updated, and involves all relevant stakeholders.
- VET graduates contribute to the overall workforce productivity and facilitate bi-directional innovation spillovers, extending from VET to tertiary education.

Furthermore, based on their expertise and research results, working group 1 gathered and discussed several policy advisories. Above all, VET must stay an attractive option for young adults. This may be achieved by increasing the existing education system's permeability. Further, it was pointed out that VET must become an integrative element of innovation policy, and that skills eco-systems need to include VET schools, universities of applied sciences, higher education, and so on. Finally, more effort should be made to avoid skills mismatches in terms of VET supply and demand.

The conference ended with a panel discussion. Experts from several national and international VET research organisations and networks (BIBB, Cedefop, INAPP, KRIVET and VETNET) discussed the role of skilled workers, research and development needs, and cooperation prospects.