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Contribution of Germany

to the CSTD 2017-18 priority theme on 'Building digital competencies to benefit from existing and emerging technologies with special focus on gender and youth dimensions'

CSTD 2017-18 Priority Theme 2: 'Building digital competencies to benefit from existing and emerging technologies, with special focus on gender and youth dimensions'

1. Can you give examples of digital competencies projects/policies in your country and how they have contributed to benefit from existing and emerging technologies? What are the main challenges confronted while trying to implement these projects/policies in your country or region?

   The **Federal Ministry of Education and Research (BMBF)** supports a large number of initiatives to strengthen digital competencies. One example is its "Digital Media in Vocational Training" funding programme. The programme, which was launched in 2012, supports numerous projects focusing on vocational learning using digital media. It is due to run until 2019 and is partly financed by the European Social Fund (ESF). The following link provides an overview of the funding programme as well as further information in electronic formats: https://www.bmbf.de/de/digitale-medien-in-der-bildung-1380.html.

   The effective training/upskilling of teaching staff is seen as a challenge to the use of digital media in teaching. The successful application of digital media requires the teaching staff themselves to have sufficient expertise and experience in their use for teaching purposes.

   Federal Ministry for Economic Cooperation and Development: German Development Cooperation is committed to promote digital competencies at different education levels in its partner countries with a strong focus on women and girls.
   A key challenge is to involve the private sector in order to address labour market needs.

   For instance, the Federal Ministry for Economic Cooperation and Development (BMZ) supports the development of coding skills of children in Africa. In 2016, BMZ supported the Africa Code Week in Rwanda – a joint initiative by SAP, the Cape Town Science Centre and the Galway Education Centre. This initiative has provided coding lessons for 50,000 pupils and trainings for 800 teachers.

   In Rwanda, Ghana and Indonesia, the BMZ implements projects that aim at encouraging more women to pursue a career in the male dominated tech industry. To this end, the BMZ supports its partners in updating the quality of technical vocational education and training. These projects involve stakeholders from the private sector in order to allow for practice-oriented trainings.

   In the Palestinian territories, a BMZ funded programme qualifies women in non-traditional courses of higher education – such as IT or electrical engineering – through dual study courses. These courses link institutions of higher education and commercial enterprises as places of learning.

2. Can you provide examples of digital policies/projects/initiatives to benefit from existing and emerging technologies specially focused on gender and youth? How have the

policies benefited women and youth? What are the particular challenges confronted in implementing these projects?

Federal Ministry for Economic Affairs and Energy:
2016 the German Ministry for Economic Affairs and Energy presented a Mini-Computer called "Calliope" at the National IT-Summit which is being distributed to interested elementary schools in Germany since then. Young children can use it to build a roboter, transmit messages, make it communicate with other devices and transmit programmes generated by themseves to their Mini-Computer. Main donors of the project – besides the Ministry, which financed a prototype - are Google, Bosch, SAP, Cornelsen, Nordic an NXP Semiconductors. Calliope GmbH operates the roll-out which startet in Saarland last year; this year pilot projects are starting n Bremen and Hamburg, Saxony orders through Partners. Agreements on equipping pilot classes in Beriln, Lower Saxony, Mecklenburg-Western Pomerania and Rhineland made. The Project ist to be extended to all federal states installing Calliope pilot schools in every region in Germany. By activating small and medium sized businesses, a matching between schools and local industries will estabilsh an even bigger Calliope mini network. International distibution is planned: Sales agreement with Swiss intermediary, pilot projects in Mexico and Uzbekistan, single requests from Israel, Norway, Singapore, Poland, Egypt and Canada.
Producing hardware, confectioning, packing and distributing was challenging. The layout of the board was made even more ergonomic for children's hands. Distribution channels and suppliers were subject of discussions. Distribution to schools was sloer than expected due to the "Teach the Teachers first" distribution concept. In the mid term 75% of calliope minis are supposed to be bought by schools within a standardized prcurement progress via Cornelsen, Conrad, Amazon. Please see www.calliope.cc for further information.

The **BMBF** is funding, among other things, research projects and measures to involve women in the digital change under its "Success with MINT – New Prospects for Women" funding line. The aim is to increase the participation of women in science, research and industry, particularly in the MINT disciplines, in order to effect a gender-neutral culture of innovation. In the light of digital transformation and demographic change, it is essential to inspire young women with an enthusiasm for computer sciences and electrical engineering. These disciplines are decisive for understanding the key technologies of the digital age. "Success with MINT – New Prospects for Women" is part of the Federal Government's education campaign for the digital knowledge society under its Digital Agenda.
The research projects and measures receiving support include projects to help female students tackle the transition from higher education to professions in the MINT sector, thereby improving the opportunities for women to shape the Working World 4.0 and helping companies to take advantage of the work and innovative potential of MINT women for their digitization processes. Careers guidance programmes are a further priority under

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the funding line. They serve to foster girl pupils' interest in MINT subjects and MINT occupations at an early stage.

Some of the projects which are being funded profit from existing technologies. These include projects which offer virtual game courses via an online platform in order to interest girls in MINT subjects (e.g. the "Digital Me" and "PlayMINT" projects). A further project picks up on the development of smart homes and 3D printers to interest girls and young women in computer sciences (e.g. the "SMILE" project). Funding is also provided for projects which use an app to acquaint girls with MINT subjects (e.g. the "MINTcoach" project).

The projects face different challenges: The choice of a specific target group means that a greater effort is needed to address and recruit female participants than is the case with projects aimed at a wider group.

It is particularly important at the end of the project to ensure the long-term, sustainable implementation of the technical developments (e.g. apps) and the introduction of measures and tools for their employment (e.g. Internet platform for career orientation and skills development). The aim of the projects is to spread digital and technical developments beyond the original location.

Federal Ministry for Economic Cooperation and Development: Various initiatives from different stakeholders are already playing a key role in bridging the gender digital divide. However, there is a need to further raise awareness among policy makers about the importance of the digital inclusion of women and girls and to jointly commit to promote digital competencies. This is why the BMZ has developed the initiative #eSkills4Girls. This initiative aims at improving digital skills and employment perspectives in the digital economy for women and girls, particularly in developing and emerging countries. In 2017, the initiative was launched during Germany's G20 presidency, calling for more action at a global level. Numerous activities have been implemented as part of the #eSkills4Girls initiative, such as the #eSkills4Girls Africa Network, which was initiated in collaboration with UNESCO and SAP and which brings together female tech activists from different countries. Female tech mentors get the opportunity to network with each other, share lessons learned from their initiatives and are offered tailor-made trainings for their own capacity development.

3. How can the science, technology and innovation community contribute towards overcoming these challenges? Can you give any success stories in this regard from your country or region?

BMBF: One example is the "Web-Usability unter Gendergesichtspunkten. Netzwerk zum Auf- und Ausbau der interdisziplinären Forschung zur Genderperspektive im Usability-Engineering-Prozess (Gender UseIT)" (FKZ: 01FP1308/09) of the Competence Center Technology-Diversity-Equal Chances and Heilbronn University. The focus here is on the gender perspective of web usability because continuous attention to the gender

perspective is one of the challenges in the process of developing software. It was established that organizations should take account of social diversity when compiling teams. It should be an established team norm to question gender stereotypes. Consideration of the gender perspective can enhance the needs-orientation and quality of software, unleash new market potential and minimize development costs. The increased share of women working in the ICT sector ensures the participation of women in shaping and using digital products and applications.

Federal Ministry for Economic Cooperation and Development: Sex-disaggregated data on digital competencies and gender statistics are of utmost importance for evidence-based policy making. The science, technology and innovation community can contribute to develop targets, indicators and benchmarks to track the progress of women's and girls' access to and use of ICT as well as their digital competencies.

The science, technology and innovation community further needs to focus on existing efforts by a range of different stakeholders. EQUALS – the global partnership for gender equality in a digital age – is an important multi-stakeholder approach that should be strengthened in order to harmonise skills programmes for women and girls that help to tackle the gender digital divide.

4. Could you suggest some contact persons of the nodal agency responsible for digital competencies projects/policies, particularly those related to gender and youth, as well as any experts (from academia, private sector, civil society or government) dealing with projects in this area? We might contact them directly for further inputs or invite some of them as speakers for the CSTD inter-sessional panel and annual session.

The following Division of the **BMBF** and institutions are contact partners for questions regarding digitization in the context of gender / gender and youth:

- Division 124 "Equal Opportunities in Education and Research" at the Federal Ministry of Education and Research, Head of Division: Christina Hadulla-Kuhlmann

- The DLR project management agency "Equal Opportunities/Gender Research" monitors the project in the funding area of "Strategies to implement equal opportunities for women in education and research", supports the public relations side of the projects and the transfer of results and supervises the evaluation of the programmes. Head of Department: Dr Edelgard Daub

- Office of the National Pact at the Competence Center Technology-Diversity-Equal Chances, Director: Dr Ulrike Struwe

- Girls Day: National Coordination Office Girls' Day, Competence Center, Project Leader: Elisabeth Schöppner

The following researchers have successfully completed projects on digitization in the context of gender / gender and youth:

- Prof. Susanne Ihsen, Chair of Gender Studies in the Engineering Sciences, Munich Technical University

- Prof. Isabelle M. Welpe, Chair of Business Administration – Strategy and Organization, Munich Technical University

- Prof. Carmen Leicht-Scholten, Chair of Gender und Diversity in the Engineering Sciences, RWTH Aachen

- Prof. Sabine Hark, Director, Center for Interdisciplinary Women's and Gender Studies (ZIFG), TU Berlin

- Prof. Martina Schraudner, Chair of Gender and Diversity in Organizations, TU Berlin,

- Dr Kira Marrs, ISF Munich

Further suggestions:

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Saniye Gülser Corat, UNESCO, Director, Division for Gender Equality, SG.Corat@unesco.org

Doreen Borgan, ITU, Chief of Strategic Planning and Membership Department, doreen.bogdan@itu.int

Anna Falth, UN Women, Manager Empower Woman, anna.falth@unwomen.org

Prof. Dorothea Kleine, Research Theme Lead, Digital Technologies, Data and Innovation (DDI) at the Sheffield Institute for International Development (SIID), d.j.kleine@sheffield.ac.uk

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5. Do you have any documentation, references, or reports on the specific examples on digital competencies to benefit from existing and emerging technologies in your country or region?

   BMBF:

   - The central portal with information on the BMBF's "Digital Media in Vocational Training" funding programme is available in English at: https://www.qualifizierungdigital.de/english-1926.php

   - The homepage of the National Pact for Women in MINT Careers lists and describes the projects currently being funded by the BMBF under the call "Success with MINT – New Opportunities for Women": https://www.komm-mach-mint.de/MINT-Projekte/Komm-mach-MINT.-Projekte

   - Publications under the project "*Web-Usability unter Gendergesichtspunkten. Netzwerk zum Auf- und Ausbau der interdisziplinären Forschung zur Genderperspektive im Usability-Engineering-Prozess* (Gender UseIT)" (FKZ: 01FP1308/09) Marsden, Nicola/ Kempf, Ute (2014): "*Gender-UseIT: HCI, Usability und UX unter Gendergesichtspunkten. Leitlinien für die Praxis*"[1] (available as a downloadable PDF)

   - Bultemeier, Antje/ Marrs, Kira (2016): Brochure "*Frauen in der digitalen Arbeitswelt von morgen*"[2] (available as a downloadable PDF)

   - The Federal Government's funding catalogue (http://foerderportal.bund.de/foekat/) is a publicly available database with details of both current and previous projects funded by

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[1] Gender-UseIT: HCI, Usability and UX under gender aspects. Practical guidelines
[2] Women in the digital working world of tomorrow

the Federal Government. It enables interactive and individual research and provides access to selected statistics.

BMZ:

- www.eskills4girls.org
- BMZ (2017). Women's Pathways to the Digital Sector. Stories of Opportunities and Challenges. Available at: https://www.bmz.de/en/publications/type_of_publication/weitere_materialien/study_eSkills4girls.pdf
- Annex to the G20 Leaders Declaration: #eSkills4Girls – Transforming the future of women and girls in the digital economy. Available at:
- https://www.g20.org/Content/DE/_Anlagen/G7_G20/2017-g20-initiative-eskills4girls-en.pdf?__blob=publicationFile&v=4