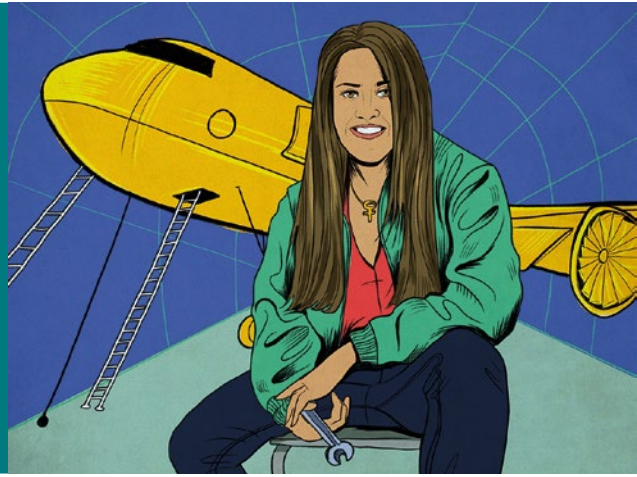# #eSkills4Girls – An initiative to promote digital skills for women and girls

Review and outlook

BMZ *in depth*

bmz.de

Content

Objective of the report

#eSkills4Girls is a key topic for the future. Women represent half of the global population but are still underrepresented in the digital world, especially in developing countries and emerging economies. Women are still four times less likely than men to use digital technologies to perform basic tasks. And the likelihood that women possess programming skills is also four times lower than for men.[1]

This report shows how important it really is to close the digital gap between men and women. How can it be that this gap has in fact widened in recent years? Why are women at a disadvantage when it comes to acquiring digital skills, and how does that affect their participation in the digital economy and society, especially in developing countries?

Supporting women in using the potentials of the digital world for themselves is a key task for the future in terms of development policy. Digital skills are one of the key factors in this context, along with access to technologies. The #eSkills4Girls initiative has brought the digital inclusion of women and girls increasingly to the attention of the international community. What has been achieved through the activities to date? What programmes have been established, and what remains to be done? What experience has been gathered, and where do structures need to be put in place to ensure that men and women have equal opportunities in the digital future?

This publication offers a review of activities to date and looks at prospects for the future. It addresses decision-makers in the fields of politics, the private sector and civil society, as well as interested members of the public. Each and every one of us can help to improve digital participation for women.

1   EQUALS (2019): I'd blush if I could. Closing Gender Divides in Digital Skills through Education
https://unesdoc.unesco.org/ark:/48223/pf0000367416/PDF/367416eng.pdf.multi

Foreword

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*Interview with Parliamentary State Secretary Dr Maria Flachsbarth,
Federal Ministry for Economic Cooperation and Development (BMZ)*

WHAT EXACTLY IS THE #ESKILLS4GIRLS INITIATIVE?

The #eSkills4Girls Initiative emerged during Germany's G20 presidency in 2017. Its purpose is to close the digital divide between men and women and, in particular, to create better employment prospects in the digital world for women and girls by giving them digital skills. In order to achieve this goal, we have combined three key priority areas of development cooperation: dismantling the barriers to access to education; seizing the opportunities of digitalisation; and improving the economic, political and social participation of women and girls. Many processes that affect our daily lives are already handled digitally, be it access to finance, the use of digital education platforms or the sale of products online. Women are in the minority at all levels of the technology sector. The differences are especially striking at executive level, where women account for only 21 per cent of managers. The lack of diversity in the tech industry also means that key technologies for the future do not fully reflect women's needs. One example is the programming of algorithms, which are already part of many everyday processes and products. That is why it is important to spark an interest in STEM subjects and IT jobs among women and girls from an early age. After all, only those who help design the digital world can change it and help to reduce the gender gap.

WHY IS DIGITAL EDUCATION FOR GIRLS A SUBJECT GERMAN DEVELOPMENT COOPERATION SHOULD ADDRESS? ISN'T IT MORE IMPORTANT TO FIGHT POVERTY, HUNGER AND INADEQUATE BASIC EDUCATION OPPORTUNITIES?

Digital education for girls is a topic of great relevance for German development cooperation because one of our concerns, in line with the principle of leaving no one behind, is to achieve greater equality of opportunity, especially in the field of education. Digital technologies in particular offer enormous potential for overcoming existing inequalities and making education accessible to those who have so far had no such opportunities. A good example is the story of Arlan Hamilton, who was homeless and had no formal education, and has meanwhile become an influential provider of risk capital in Silicon Valley. Examples like these are not restricted to the USA but can also be found in our partner countries, for example Kenya, Rwanda and Ghana.

WHY DO WE NEED AN INITIATIVE THAT EXPLICITLY TARGETS WOMEN?

We need it because otherwise there is a risk that women and girls won't be able to make full use of the enormous opportunities offered by digitalisation, and that existing gender stereotypes will be reinforced. Digital technologies are omnipresent and make digital skills a prerequisite for unrestricted participation in the economy and in society. Owing to discrimination when it comes to accessing the internet and receiving (digital) education, and because of gender stereotypes, women have poorer digital skills than men, especially in developing countries. Digital skills

make a key contribution to gender equality because they offer greater scope for action and choice in the digital world, e.g. through access to new forms of employment.

WHAT ARE THE GREATEST SUCCESSES OF THE INITIATIVE AND WHAT FURTHER ACTIVITIES ARE PLANNED?

From my point of view, the greatest success is that we have managed to make this issue a global concern, beyond the G20 presidency – one that is supported by many actors from a wide variety of fields. The G20 also reached a joint decision on this topic. At a time when multilateralism is in crisis, this shows that equal participation in digitalisation is an important issue, not just in terms of gender equality and education, but also from an economic point of view. Currently, our focus is on showing policymakers how they can make digital policies gender-sensitive. For this purpose, together with the World Wide Web Foundation, we are offering training for political actors at the national, regional and global levels under the slogan #eSkills4Policymakers.

WHAT CONTRIBUTION CAN POLICYMAKERS AND THE PRIVATE SECTOR MAKE TO OVERCOMING THE GENDER DIGITAL DIVIDE?

As a political player, we have expanded our portfolio to include projects that make a specific contribution towards promoting digital skills for women and girls. We are planning to further increase the number of such projects and make #eSkills4Girls an integral part of our work on education. By offering special support programmes for girls within the framework of their regular school or vocational education, the private sector can help to present careers in technology as an attractive option. Another important point is the use of gender-sensitive criteria when designing application and selection procedures for human resources and during career development.

HAS ANY STORY IN RECENT YEARS FROM THE #ESKILLS4GIRLS INITIATIVE STAYED PARTICULARLY IN YOUR MIND?

I was especially pleased that, beyond the support of the Development Ministry, German Chancellor Angela Merkel herself has welcomed the initiative. She mentioned it several times during the Women 20 Summit and took a selfie with the prizewinners after the closing event of our global #eSkills4Girls ideas competition.

LOOKING AHEAD, WHAT FUTURE DO YOU WANT TO SEE FOR THE #ESKILLS4GIRLS INITIATIVE?

My wish is for women and girls to enjoy, on equal terms, the benefits of the innovations and progress offered by digitalisation – as users, programmers and entrepreneurs –, and that then there will be no more need for an #eSkills4Girls initiative.

'Talent is universal, but opportunity is not. We ought to give women a platform to reach their full potential in technology because empowering women and girls is not a fairness objective but an economic imperative. Women's contribution is crucial to the country's sustainable development.'

Mary Munyoki, Youth for Technology Foundation, Kenya

German Chancellor Angela Merkel with the winners of the global #eSkills4Girls development competition

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1. Digital skills: Key to a digital world with equal opportunities

Digital technologies radically change the way we live, learn and work. The digital world opens up perspectives and opportunities, for example through access to education and information. Artificial intelligence, robotics, 3D printing and virtual reality give rise to new business models and professions. While we cannot be sure how the job market will develop in the future, already the demands made of employees in the digital world of work are changing. Besides traditional skills such as reading, writing and arithmetic, digital skills have long become one of the key areas of expertise for the 21st century, and are now vital building blocks for participation in the digital world. Only someone with digital skills can move with confidence and responsibility in the digital arena.

However, almost one billion girls around the world (i.e. 65 per cent of all girls and young women under 24) lack these skills, which are essential for participating in the world of work in the future[2]. In middle and low income countries, the figure is 75 or 93 per cent respectively. Access to digital technologies and the ability to help shape the digital world are crucial steps towards gender equality. Yet despite numerous initiatives on the part of the international community and by actors in the spheres of politics, business and civil society, there is still a long way to go before the digital inclusion of women and girls becomes a reality. How can that be?

The answer can be encapsulated in the concept of the gender digital divide between the sexes. This manifests itself in three main areas:

- Access to and use of digital technologies

- Development of digital skills for the use of digital technologies

- Women in crucial roles that shape the digital sector.

WHAT ARE DIGITAL SKILLS?

Digital skills are a combination of technical knowledge, attitudes, working methods and cross-cutting competencies. They include, for example, the ability to find, create and evaluate important content on the internet, to act responsibly when sharing and creating information and to use basic computer programs.

Advanced digital skills include professional knowledge of applications (such as programming languages) that are required to follow a career in the booming tech sector. The cross-cutting competencies include entrepreneurial thinking, the ability to work in a team, creativity and problem-solving skills. These also play an increasingly important role in many different occupations.

Further information: UNESCO, https://en.unesco.org/news/digital-skills-critical-jobs-and-social-inclusion

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2   Malala Fund, Full Force Report (2018): https://indd.adobe.com/view/dd1081b1-39b6-4637-9c61-ac0cbb275b45

(1) ACCESS is the key prerequisite for digital participation. However, inequalities in income, education and employment prevent equal access to the digital world. This affects women and girls to a disproportionate extent, especially in developing countries. 250 million fewer women than men have access to the internet. For them, this means restricted access to information, education and participation in the digital world.[3] According to data from the International Telecommunication Union (ITU), the gender digital divide between men and women has in fact widened: In 2016, 12 per cent fewer women than men had access to the internet. This divide exists all over the world, but is especially pronounced in developing countries (31 per cent). The biggest gaps exist in parts of South Asia and in Sub-Saharan Africa.

(2) DIGITAL SKILLS play a key role in digital participation for women, apart from access and use. Even if they have access to the internet and can afford it, women often lack the skills they need to put these technologies to use to improve their lives. In a study carried out in 10 low and middle income countries, women stated a lack of skills as a barrier to using the internet 1.6 times more frequently than men.[4]

Improving women's digital skills and competencies is not only a matter of equal opportunities, it is also an important economic factor. According to the World Economic Forum, even basic digital skills can significantly improve the economic participation of women and girls. This is particularly true in developing countries.[5] Women who produce items of handicraft or textiles, for instance, can drastically increase their income if they know how to use the internet to sell their goods. They also obtain better access to micro-loans and other financial services, even if the next bank is a day's journey away. Women in agriculture can use digital skills to learn new cultivation methods, research prices for agricultural products or call up weather forecasts. Digital skills enable women to use websites on health and legal issues to make better decisions for themselves and their families. Digital learning courses, either in apps or as massive open online courses (MOOCs), open up new educational pathways, especially for women in remote areas or outside formal education systems.

E-commerce platforms and new forms of digital paid employment (such as crowdworking[6]) may increase incomes and financial independence. This is important for women but also has advantages for society as a whole. Women usually invest a larger share of their incomes in their families and communities than do men.[7]

Schools, universities, vocational training institutions and further education centres play a key role in promoting digital skills. However, digital skills have yet to be adequately embedded in primary and secondary school education. Teachers and students often lack basic digital knowhow, which reduces their chances of benefiting from digital change.

In cross-country skills assessments, the basic digital skills of women (such as the use of spreadsheets) are 25 per cent lower than those of men. (UNESCO. 2017. Global Education Monitoring Report 2017/18).

3   ITU, ICT Facts and Figures (2016): https://www.itu.int/en/itunews/Documents/2016-04/2016_ITUNews04-en.pdf

4   World Wide Web Foundation (2015): Women's Rights Online: Translating Access into Empowerment. https://webfoundation.org/research/womens-rights-online-2015/

5   World Economic Forum (2014): Why Women Make the Best Investments. https://www.weforum.org/agenda/2014/01/women-technology-world-economy/

6   Paid work provided via platforms (crowdwork) is a part of the platform economy. Job orders are advertised on internet-based platforms and processed by undefined contractors (crowdworkers).

7   World Economic Forum (2014): Why Women Make the Best Investments. https://www.weforum.org/agenda/2014/01/women-technology-world-economy/

The higher the educational level of women and girls, the more likely they are to use digital technologies.[8] Girls therefore need to learn at primary school how to use technologies competently if they are to act with confidence and responsibility in the digital world. Various studies show that girls and boys are equally interested in STEM subjects in the early years of primary school, and their performance is comparable. But girls tend not to carry on with such subjects at secondary school. Even if they are good at STEM subjects at school, they are less confident in their own abilities than boys.

Since girls believe they have fewer opportunities than boys in STEM professions, they tend to choose other options. Whereas girls are most interested in these subjects at the age of 12, their interest dwindles between 17 and 19 – at precisely the moment they would usually be deciding what subjects to take for further study.[9] Women are also underrepresented in university education: Less than a third of IT students around the world are female. In this area, gender disparity is more pronounced than in other disciplines, including traditionally male-dominated fields such as medicine and the natural sciences.

Besides the lack of digital skills, widespread stereotypes (such as the idea that some professions are more suitable for men or women) also restrict women's access to STEM careers. Female role models from the tech sector help to dismantle such stereotypes and encourage girls to pursue their interest in STEM subjects at the very start of their education.
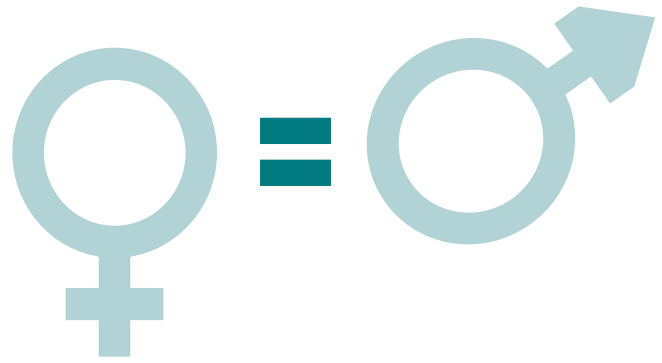
(3) ACTIVE ROLES IN SHAPING THE DIGITAL SECTOR and other higher-level activities in this industry presuppose the mastery of digital skills. Women are currently underrepresented at all levels of the technology industry. This places them at a disadvantage in accessing an attractive job market. Nor do they participate to a satisfactory extent in the development of future-ready digital products. According to a World Economic Forum study carried out in 2018, 78 per cent of experts on artificial intelligence are men.[10] The fact that virtual assistants (Siri, Alexa and Cortana) are usually female and the discriminatory recruiting mechanisms used are just two examples of the impacts that stereotypes from the male-dominated developer set-up have on actual practice.

Bridging the gender digital divide is a key challenge on the path to gender equality. That calls for joined-up action by policy-makers, the private sector and civil society. Given the dimensions of the issue and the speed at which digital technologies develop, it is all the more important to ensure that the potentials of the digital revolution are accessible to all. If we do not succeed in bridging the gender digital divide, there is a risk that digital technologies will exacerbate inequalities rather than reduce them.

In a survey of some 100,000 software developers that use the Stack Overflow development community, only four per cent of respondents were female. Source: EQUALS (2019): Taking Stock: Data and Evidence on Gender Equality in Digital Access, Skills and Leadership

8   EQUALS (2019): I'd blush if I could: closing gender divides in digital skills through education. https://unesdoc.unesco.org/ark:/48223/pf0000367416/PDF/367416eng.pdf.multi

9   Microsoft (2018): Girls in STEM. https://news.microsoft.com/features/why-do-girls-lose-interest-in-stem-new-research-has-some-answers-and-what-we-can-do-about-it/)

10 World Economic Forum: Global Gender Gap Report (2018): http://reports.weforum.org/global-gender-gap-report-2018/assessing-gender-gaps-in-artificial-intelligence/

2. What are German development cooperation organisations doing to promote the digital inclusion of women and girls?

'We welcome the launch of the #eSkills4Girls initiative to promote opportunities and equal participation for women and girls in the digital economy, in particular in low-income and developing countries.' This is a quote from the G20 Leaders' Declaration during the German presidency in 2017. The joint declaration was the highlight of the German presidency and is also an important political commitment to closing the digital gap between the sexes. The G20s' digital ministers, who discussed for the first time in 2017 what could be done to ensure that all people around the world can benefit from digitalisation, also included bridging the gender digital divide as an objective in their declaration. The nine-point plan of action serves as the guideline for implementation of the initiative. It also envisages expanding the project portfolio, setting up an online knowledge platform and organising high-ranking events to showcase the topic.

The #eSkills4Girls Initiative launched by the German Federal Ministry for Economic Cooperation and Development (BMZ) is the first joint initiative that brings together the development-related themes of empowering women, education and digitalisation, and thus raises attention to the digital inclusion of women and girls at the highest political level.

While the topic was already a concern for the community of gender experts, the #eSkills4Girls initiative went beyond this to create a public awareness of the problem and elicit a sustainable political response. This is made clear not least by the fact that digital ministers addressed the subject of bridging the gender digital divide. As a result, a number of political forums took up the theme of #eSkills4Girls and developed it further. Crucially, the topic is being discussed more as a cross-cutting issue, across sectors and from different sectoral perspectives (business, education, financial systems, rural development) with the involve-

At numerous events, #eSkills4Girls helped to reach over 2,000 representatives from the spheres of politics, academia, civil society and the private sector, thereby putting the topic on the political agenda: Women20 Summit, G20 Africa Partnership Conference, UN Women's Rights Commission, UNESCO conferences, Transform Africa, United Nations Commission on the Status of Women (CSW), EU events and the digital conference re:publica.

'Bridging the gender digital divide in the global South is a priority area of German development cooperation. We cannot tolerate a situation where half of the global population is excluded from digital transformation. Our efforts are geared to improving the participation of women and girls in the digital world by promoting the relevant education and employment opportunities.'

Birgit Frank, BMZ Division 402, Education

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ment of a variety of actors (policy-makers, private sector, civil society, research).

Under the Argentinian G20 presidency (2017/2018), the digital inclusion of women was taken up by the working groups on education and employment.

Over and beyond this, the summit of ministers and the digital ministers (in the final declaration) underlined the importance of education for sustainable growth and development, particularly of women and girls. The theme of digital inclusion was further pursued under the Japanese G20 presidency (2018/2019). Building on the #eSkills4Girls Initiative, in its final declaration the G20 working group on the G20 Initiative on Human Capital Investment for Sustainable Development affirmed that the active involvement of women and girls must be promoted in STEM fields and the technology sector since they offer them greater economic and professional opportunities.

In addition, the G20 dialogue group Women20, which advocates the economic empowerment of women and gender equality, now emphasises efforts to increase the proportion of women in future technologies, such as artificial intelligence, and in STEAM subjects.[11]

Link to video statement by Birgit Frank (BMZ): How can German development cooperation contribute to bridging the gender digital divide?

→ A) SUCCESS FACTOR: RAISING THE AWARENESS OF DECISION-MAKERS

The digital inclusion of women and girls has meanwhile found its place in political discussion forums. However, it is equally important to give a voice to policy-makers who advocate the promotion of digital skills for women and girls. The #eSkills4PolicyMakers workshops are there to achieve this goal. These workshops are carried out by the World Wide Web Foundation together with civil society experts and organisations such as UNESCO and the Alliance for Affordable Internet (A4AI), and are supported by BMZ. At the workshops, government representatives exchange information about their digital, broadband and education strategies. Together they discuss how the strategies can better accommodate gender-specific differences,

'The legislators and parliamentarians talk about technology, coding and apps, but they don't have the skills themselves. I would suggest trainings for them, so that when we come in to present our plans they have an actual understanding of what it means. This would also help a great deal in shaping the policy process.'

Aretha Mare, Co-Founder Impact Hub Harare, Zimbabwe

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11 Science, technology, engineering, arts and mathematics. The A stands for the integration of fine arts in STEM promotion (STEAM).

regarding access to and use of the internet, for instance, or digital skills. At the workshops, political strategies are linked up with the Sustainable Development Goals (SDGs). Policy-makers receive support in meeting their commitments to achieving the SDGs. The first #eSkills-4PolicyMakers workshop was held in Maputo, Mozambique, from 9 to 11 April 2019, in cooperation with the country's Ministry of Transport and Communications. This event brought together staff from eastern and southern African ministries of information and communication technologies, of education and women, and from the ICT regulatory authorities. Political actors from West Africa attended the second workshop in Accra, Ghana, on 22 July 2019. The cooperation partner in this case was Ghana's Ministry of Communications. There are plans to hold further workshops in Africa and Asia.

➲ B) SUCCESS FACTOR: MULTI-STAKEHOLDER PARTNERSHIPS

To ensure that the topic is sustainably addressed beyond the G20, there is a need to strengthen the global partnerships that deal with the practical political and technical aspects of the gender digital divide. In cooperation with various international organisations (e.g. International Telecommunication Union (ITU), UN Women, UNESCO), new formats are emerging that strengthen the topic of digital inclusion of women and girls beyond the established structures.

Examples can be found in connection with the World Economic Forum, the Internet Governance Forum or the EQUALS multi-stakeholder initiative.

EQUALS is a multi-stakeholder partnership that aims to promote gender equality in the digital age. It was set up in late 2016 by ITU, UN Women, UNU (United Nations University), ITC (International Trade Center) and GSMA, which represents the interests of mobile operators worldwide. The EQUALS initiative has already brought together over 90 key actors from the private sector, politics and civil society. They address various dimensions of the gender digital divide along three thematic strands: access, digital skills and leadership. Members of the network include Ernst & Young, Nokia, OECD, the World Economic Forum, the Mozilla Foundation and ONE. Up to 2019, BMZ and UNESCO led the working group on digital skills that focused on promoting the digital skills of women and girls. Among other activities, the group developed principles for the gender-sensitive design of digital skills training courses and set up the EQUALS Digital Skills Fund that is administered by the Web Foundation. This fund is used to support grassroots initiatives in offering more digital skills training especially for women. In the first round, ten initiatives from Africa, Asia and South America received support. Their work is presented in the info box.

Link to video statement by Nanjira Sambuli: What role does BMZ play in bridging the gender digital divide?

'#eSkills4Girls are critically important because they help us as women to get confident for the digital age, performing in the digital economy, exercising our political voice as well as our civic voice in the digitalizing space.'

Nanjira Sambuli, Senior Policy Manager, World Wide Web Foundation, Kenya

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EQUALS Digital Skills Fund:
Ten organisations from Africa, Asia and South America have received funding in the first call for proposals.

THE EQUALS DIGITAL SKILLS FUND PROMOTES GRASSROOT INITIATIVES

NAME OF ORGANISATION/COUNTRY	ACTIVITIES
→ **GHANA CODE CLUB,** *Ghana*	→ With its 'Code on Wheels' project, the Ghana Code Club will bring a mobile coding workshop for girls and women aged 12 to 24 to various parts of the country. The workshops acquaint participants in an entertaining and practical way with computer-based thinking and technical skills.
→ **SHE CODES FOR CHANGE,** *Tanzania*	→ Through the 'Her Digital' initiative, She Codes for Change supports young women and girls in acquiring digital skills, provides them with mentors who assist them in starting off in the tech sector, supports tech companies run by women and advocates a gender-equality policy. 'Her Digital' uses the fund money to teach digital and analytical skills to young female entrepreneurs aged between 18 and 35, and to help them use digital platforms to grow their business.

NAME OF ORGANISATION/COUNTRY	ACTIVITIES
→ **THE CENTRE FOR INFORMATION TECHNOLOGY AND DEVELOPMENT (CITAD),** *Nigeria*	→ CITAD is receiving support in expanding its 'Digital Livelihood' programme. It develops courses on online security, internet governance and key digital technologies for the personal and professional development of women aged between 18 and 30.
→ **UWANI FOUNDATION,** *Nigeria*	→ The Uwani Foundation's 'So, How Do You Tech?' programme carries out digital skills training that offers women and girls a protected space in which they can learn something about digital technologies and their possible uses. The programme is aimed at girls in secondary school, but also targets teachers as well as girls who have dropped out of secondary school.
→ **LABORATORIA CODING AC,** *Mexico*	→ Laboratoria Coding AC works to close the gender gap in South America's technology sector. Using the funding provided, Laboratoria will assist disadvantaged women to pursue practical training in digital skills. The so-called 'boot camp programme' is intended to reach over 1,000 women. Close cooperation with the technology sector should ensure that these women can quickly find a job after their training.
→ **GEM INSTITUTE,** *Lesotho*	→ The GEM Institute's SWIFT Codes project supports teachers in setting up girls' coding clubs at schools and stepping up cooperation between schools, girls' coding clubs and social enterprises. In addition, SWIFT Codes is developing a database in order to network women from the film and fashion industries, agriculture and technology, and is making a film about the Girl Tech Talk Conference.
→ **GIRLHYPE CODERS,** *South Africa*	→ Girlhype Coders is launching an initiative to create jobs that promote the employability of women under 35 by means of digital skills and programming knowledge. To this end, Girlhype is also working with private sector partners to ensure that participants gain professional experience after completing the training programme.
→ **LEBANESE LEAGUE FOR WOMEN IN BUSINESS,** *Lebanon*	→ The Lebanese League for Women in Business organises a one-day Girls Got IT event. With more than 20 practical workshops with experts, Girls Got IT offers girls aged between 13 and 17 the opportunity to learn directly from successful start-ups and entrepreneurs. The topics addressed are very diverse and include 3D printing, web development, software applications, robotics, engineering, graphic design, social media, mobile app development and other modern engineering and technology topics.

NAME OF ORGANISATION/COUNTRY	ACTIVITIES
→ **PERKUMPULAN IDEA,** *Indonesia*	→ Perkumpulan IDEA uses the funding to support the project 'Digital Literacy for Women to Advocate for Better Allocation of Village Funds'. It is geared particularly to women's organisations from agriculture, health and SMEs as well as women from the informal sector and youth organisations. The project strengthens the digital skills of women, especially their ability to call up data from governments or online portals. Building on this, the project supports women in advocating a gender- equitable budget policy.
→ **THE CODE TO CHANGE,** *Pakistan*	→ The Code to Change encourages women through boot camps, mentoring and events to develop their own technology products, start businesses and earn a living in the technology sector. The initiative offers a protected space for women working in the digital sector to cooperate, support and communicate with each other.

→ C) SUCCESS FACTOR: PARTNERSHIPS WITH THE PRIVATE SECTOR

Another important success factor of the initiative is cooperation with the private sector. Large IT corporations such as Google, Microsoft, Mozilla and SAP in particular are increasingly engaged, both financially and with their own projects, in promoting digital skills for women and girls in developing countries.

One example of successful cooperation with the private sector is the digital developer competition ('hackathon') that was carried out by BMZ with support from Google during the German G20 presidency. The competition was used to identify digital solutions offered by start-ups, social enterprises and NGOs that help promote women in the digital sector and show potential for scaling up. Former Parliamentary State Secretary Thomas Silberhorn and Jacquelline Fuller, Director of Giving at Google, awarded prizes for the three best solutions during the W20 Summit. The winner was the social enterprise Developers in Vogue from Ghana. Founder Ivy Barley and her team develop training courses for women in the field of web and mobile app development and in data processing. The prize, which includes money and mentoring, will allow them to successfully expand their solution. At the end of 2018, the team was involved in re:publica in Ghana and also contributed to the creation of training courses for a German development project in Ghana.

'More women on the workforce
is not a matter of fairness,
but an imperative for the economy.'

Mary Munyoki, Youth for Technology Foundation, Kenya

*Interview with Ivy Barley, co-founder of Developers in Vogue,
Ghanaian winner of the #eSkills4Girls hackathon*

➡ WHY ARE DIGITAL SKILLS IMPORTANT FOR WOMEN AND GIRLS?

Digital skills are important because women and girls are important. There is no better time to create more opportunities for African women and girls in the technology sector than right now. Digital skills empower women to be producers and not just consumers of technology. This is a really important issue.

➡ WHAT MOTIVATED YOU TO SET UP DEVELOPERS IN VOGUE, AND WHAT IS YOUR MISSION?

We set up Developers in Vogue to create an ideal environment for African women who want to have careers in the technology sector. We train them in the latest technologies and link them up with mentors and career opportunities.
Both are essential prerequisites for personal and professional development. Training women in technology alone isn't enough for us. We go the extra mile and set up a support community that is

passionately interested in using technologies that are revolutionising Africa and the whole world.

➡ WHAT PLANS DOES DEVELOPERS IN VOGUE HAVE FOR THE FUTURE?

In the coming years, Developers in Vogue will influence the lives of thousands of African women by opening up pathways for them in the technology sector that are already in high demand and are set to grow exponentially in the near future. These women will be everywhere: at Apple, Google and Microsoft, but also at Africa's own global technology companies.

Since 2016, BMZ has also been supporting the **Africa Code Week** initiated by the German software company SAP. The Africa Code Week is a digital education initiative that spans the entire continent and is geared to schools, teachers, governments and non-profit organisations. Twenty NGOs and grassroots initiatives received financial support from BMZ at each of the 2017, 2018 and 2019 Code Weeks in order to stage events on digital education and workshops for women and girls in 15 African countries. Over 27,000 women and girls learned the basics of programming at the workshops carried out by volunteer trainers. In 2018, BMZ, UNESCO, SAP and the Camden Education Trust also began designing the learning content of Africa Code Week in a gender-sensitive manner.
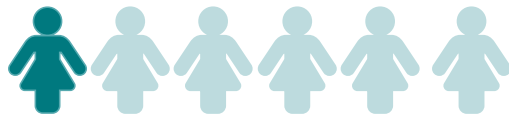
→ *Africa Code Week:*

2017: 7,948 girls in 17 countries;
2018: 14,184 girls in 15 countries;
2019: 5,603 girls in 12 countries

→ *#eSkills4Girls hackathon:*

over 100 participants in four regions

'When I learned how to code I realized that all of a sudden I had the power to tell my story to anyone anywhere and that no one could control what I write. If we let men tell our story, it will be from their perspective.'

Baratang Miya, GirlHype South Africa

Promotion of digital skills for women and girls during Africa Code Week
© SAP/Africa Code Week

D) SUCCESS FACTOR: MORE PROJECTS ON GENDER & DIGITALISATION

Positioning the topic of the gender digital divide on the political agenda was an important step to attract attention and call for action. Declarations of political intent are all very well, but they must be followed by specific implementation steps. To honour its commitment, the German Federal Ministry for Economic Cooperation and Development (BMZ) has specifically broadened its portfolio by adding more projects that promote the digital education of women and girls. Between 2017 and 2019, eight new #eSkills-4Girls projects were launched in Cameroon, Ghana, Morocco, Mozambique, Nigeria, Rwanda, Zambia and South Africa. The activities of the projects in Zambia, Cameroon and Rwanda are presented in the info box.

'Advocating for women doesn't mean being against men.
We are just saying 'Give us the playground, we want to play on the same field as you and contribute'.'

Agang Dithlogo, The Clicking Generation, Botswana

BMZ PROJECTS IN ZAMBIA, CAMEROON AND RWANDA

DIGITAL SKILLS STRENGTHEN THE POLITICAL AND SOCIAL PARTICIPATION OF WOMEN

A poster in Zambia promoting more political participation of women.
(© Stefan Erber/GIZ)

Zambia: Social norms, inadequate education, a lack of self-confidence and severely restricted access to the internet prevent women and girls in Zambia from using the opportunities offered by digitalisation.

Under the title 'KambaniAkazi – Giving women and girls a voice with digital media', women and girls are trained in digital skills, data security and personal rights on the internet so that they can become more involved in the political and social discourse. They are empowered to use ICT for their own concerns and to draw attention to their own perspective. The women learn how to use a mobile phone to write citizen's reports on everyday issues in their communities, such as waste disposal or health. These reports, which are shared over the radio or through social media channels, provide the population with an alternative source of news and give women and girls a voice. In addition, a network of mentors gives the women access to role models who assert their rights and are successful in the digital sphere.

→ DIGITAL SKILLS SUPPORT WOMEN'S PARTICIPATION IN THE ECONOMY

Three women discussing, how to use
their smartphones to promote their businesses.
(© Lem Akongnwi/GIZ)

Cameroon: The environmental and forestry programme supports women's networks in producing, processing and marketing non-timber forest products (NTFPs) in Cameroon. Digital solutions can help improve their professionalism and increase their incomes. But female entrepreneurs in rural areas often lack access to digital technologies and are inexperienced in using them. To enable women to make greater use of digital solutions in the future, some 300 women in four regions of Cameroon are training to act as local digital ambassadors, and they will be equipped with digital technology. In addition, digital solutions will be developed with these businesswomen that meet their needs and improve the value chain.
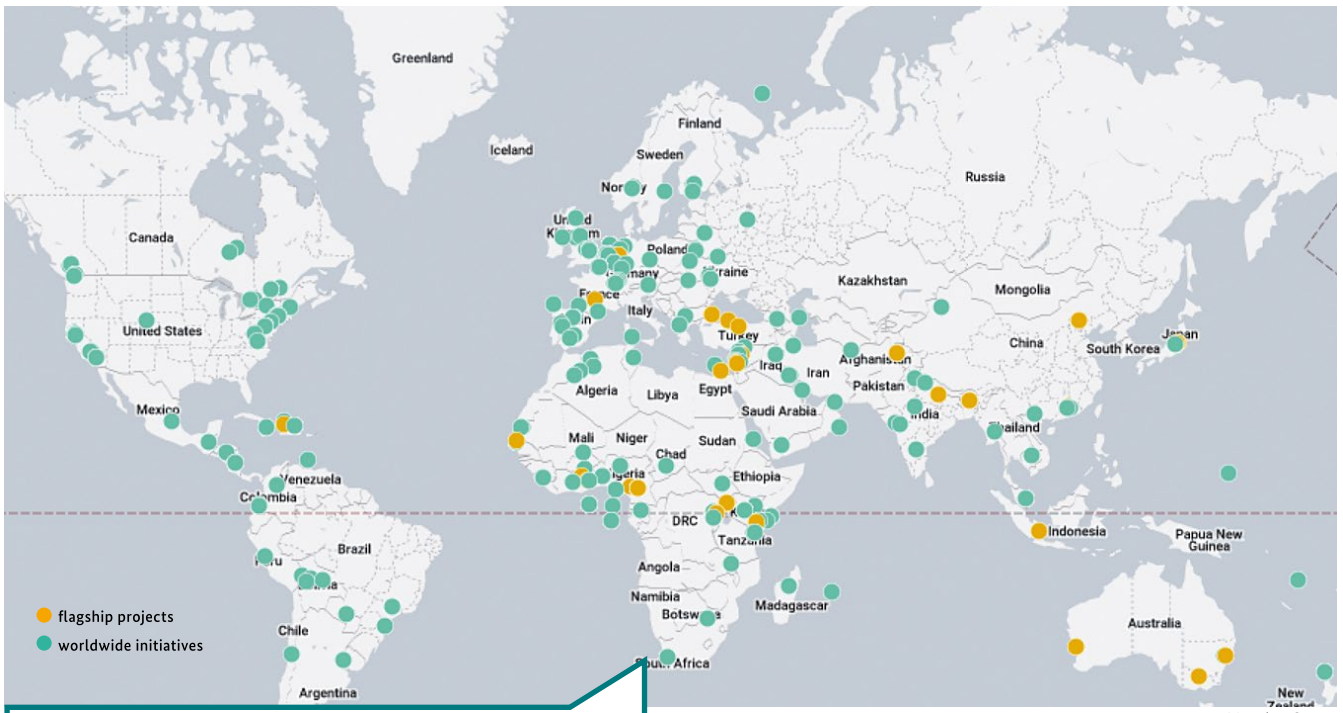
→ DIGITAL SKILLS EMPOWER WOMEN TO HELP SHAPE THE DIGITAL FUTURE

Young women in Rwanda are being
trained in Software Quality Assurance.
(© Karin Desmarowitz/GIZ)

Rwanda: Digitalisation can create new, well-paid jobs in Rwanda. WeCode is a software academy that promotes women in the IT sector and places them in employment. WeCode's courses rest on two pillars. At the national level they impart digital skills. Women learn to work as all-round developers or mobile app developers, and they are placed in employment in the local market. At international level, WeCode specialises in technical services that are increasingly being outsourced by companies. The participants are trained in quality assurance and software testing. Here, the focus is on soft skills such as cooperation and flexibility, which are in high demand in the dynamic IT sector.

Online

Map data©2020

There are around 900 gender tech projects worldwide.
Last updated in May 2018, EQUALS survey

- flagship projects
- worldwide initiatives

→ E) SUCCESS FACTOR: SHOWCASE FEMALE ROLE MODELS

Female role models and mentors from the digital sector can strengthen young girls' ambitions to take up a career in the tech sector and support those girls in pursuing their goals with self-confidence. At the same time, successful female IT entrepreneurs show that you can be successful, even in a sector that is presumed to be a male preserve, and thus help to overcome stereotypes. Schools can enter into contact with female role models in the STEM field and the technology sector and offer mentoring, career advice, training or placements in the sector. Teachers of STEM subjects may also be good role models. Studies show that girls who attend a school with a large number of female STEM teachers later select core subjects in STEM fields.[12] Using the #eSkills4Girls online platform, BMZ showcases female role models from all over the world and portrays their experiences in the two publications 'Women's Pathways to the Digital Sector: Stories of Opportunities and Challenges' and 'Women in Tech. Inspiration. No Fairy-tales'. The following three portraits of successful women are also taken from the 'Women in Tech' book.

A large number of other actors from the spheres of politics, business and civil society are participating in global initiatives to bridge the gender digital divide. The projects extend from innovative platforms for women's participation and women's rights, to digital skills training, mentoring activities and awareness-raising campaigns on prejudice against women in the tech sector.

In 2017, 2018 and 2019, BMZ supported the Miss Geek Africa initiative, created by successful women in tech professions as part of the African digitalisation conference Transform Africa. Miss Geek Africa is a competition for women and young girls between 13 and 25 that focuses on finding local solutions to everyday technology problems. In 2017, the competition was held in 16 African countries, and as of 2018 is now staged in 22 African countries. The winners in 2018 developed an app that provides emergency services with information on the type of assignment they will have to deal with, while they are on their way to the emergency site.

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12 UNESCO (2017): Cracking the code: Girl's and women's education in science, technology, engineering and mathematics (STEM). https://unesdoc.unesco.org/ark:/48223/pf0000253479

Ifftat Rose Gil, founder and CEO of ChunriChoupaal The Code to Change, Pakistan

As a child, Iffat would never have dreamed of a tech career. She wanted to study a traditional subject such as medicine or engineering. IT was an elective subject at school, nothing that would be any use for a career or an advisable profession. Iffat was born in Libya, grew up in Malta and only returned to Pakistan at the age of 17. 'I was shocked,' she recalls. In her home district, the rural district of Multan, most girls of her age had no choice. However talented or intelligent they were, after leaving school they stayed at home and 'waited to marry the man their parents had chosen.' It was then that Iffat realised how privileged she was to be able to choose her own profession. She made friends with the girls and tried to understand their problems. Even before completing her pharmaceutical studies, she knew she wanted to empower women. The girls from Multan became her life's work.

In 2003, Iffat began setting up a training centre in Multan where women could learn a trade or profession. 'Gradually, we moved away from traditional options and began introducing women to marketing and teaching them basic digital skills.' The women loved the courses, but the men were furious. Iffat laughs when she thinks of that: 'They accused us of corrupting their women.' Finally the centre had to be closed down.

During that time, Iffat completed a special course in internet governance. She never lost sight of her mission to empower women through information and communications technology. She moved to the Netherlands, where she founded ChunriChoupaal in 2013. The most important concern of this organisation is 'Code to Change', a five-month mentoring programme for women in digital technologies and entrepreneurship. The aim is to ensure that women are no longer prevented from finding a job due to an alleged lack of technical expertise, and that companies can no longer claim they couldn't find women to fill such vacancies. 'Code to Change' therefore places experts with companies that recruit IT staff. 'In this way we want to achieve gender equality in IT and related professions.'

In high places, Iffat has called for the digital inclusion of women: at the United Nations World Summit on the Information Society (WSIS) Forum, the UN Internet Governance Forum and at the European Parliament. Her company, Gil Non-Profit Consulting, advises, trains and coaches entrepreneurs, non-profit organisations and small and medium-sized enterprises in the field of digital media and social fundraising. She advises women who want to follow her example to work out a clear strategy and find a good mentor, and not to wait too long: 'Now is the perfect time.'

Iffat Rose Gil

*Dr Mmaki Jantjes,
IT lecturer, University
of the Western Cape,
South Africa*
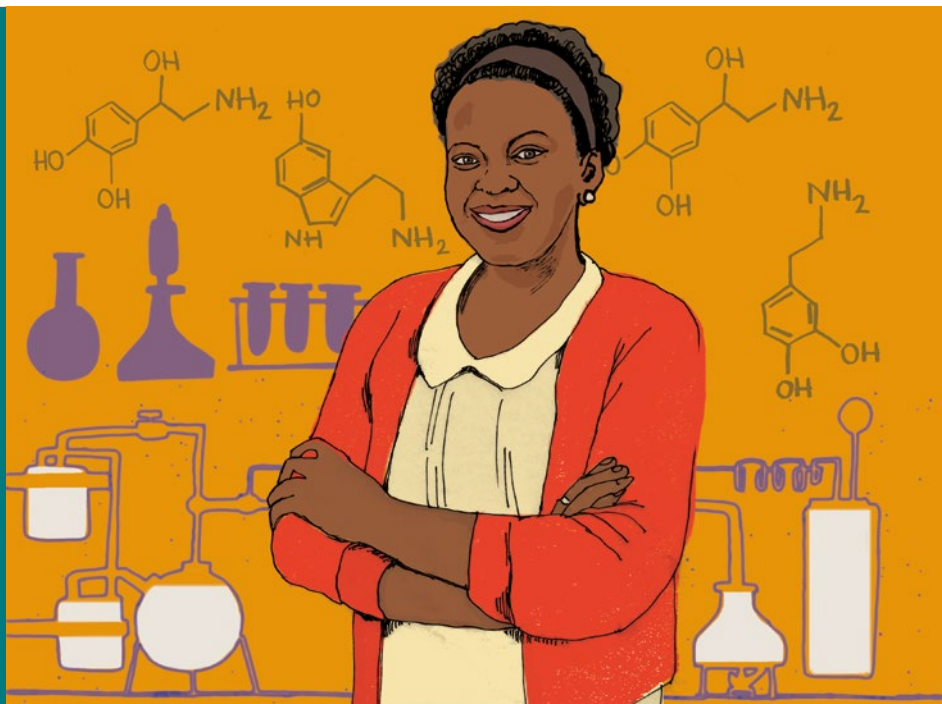
Mmaki's parents agreed that their children should become engineers. They did all they could to acquaint their four offspring with this sector. The children were to have the opportunities they themselves never had.

During apartheid, STEM subjects (science, technology, engineering and mathematics) were forbidden for black students. Sometimes their parents would invite white friends who were engineers to enthuse their children for this sector. And they succeeded: Mmaki and her brothers studied engineering, biochemistry and information technology.

'My parents recognised that these subjects would open many doors for us. At that time, you could still be the first one in these subjects', Mmaki says. She herself is probably South Africa's first black IT specialist with a doctorate. 'Or at least, I haven't met any others.' But the reason is probably more a financial one than anything else. After their studies, most IT students choose well-paid jobs in industry rather than an academic career. Mmaki was the exception: 'I love research work. I wanted to use my skills to improve society.'

Today, Mmaki teaches at the University of the Western Cape and researches how technology can be used in the classroom. With IT, it is much easier to give poor and disadvantaged children access to better education, especially when there is a need to cater to 11 different languages, as is the case in South Africa. 'It's quite easy to develop apps that contain school text books and learning games.' She is currently working on a virtual reality (VR) project that will use VR animations as a way of letting schoolchildren take part in chemistry experiments, even if their school has no chemistry lab.

Working as a woman in a male-dominated field sometimes leaves Mmaki feeling like she is immersed in a foreign culture. 'All IT experts love computer games. I don't. But conversations with colleagues often revolve around games.' And Mmaki never had any role models, especially as a mother wanting to reconcile her career with her family life. She has therefore come to appreciate all the more how important it is to network with other women and for them to support each other.

As part of a project run by UN Women and the Mozilla Foundation, a few years ago Mmaki set up tech clubs for girls in poor parts of the city. The teachers were all young IT experts who came from the same areas. She wanted to show the girls that they could achieve this too. Today, there are also tech clubs for boys. It's important for both boys and girls to have IT skills, she says: 'Innovations can arise everywhere nowadays. Even children in the remotest villages can programme apps and earn money with them.

Mmaki Jantjes

The #eSkills4Girls online platform contains over 30 portraits of female role models, https://www.eskills4girls.org/

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Ivy Barley, co-founder of Developers in Vogue, Ghana

'The future of tech is female and African,' says Ivy with conviction. She herself is part of this future, and was enthusiastic about IT even as a young girl. She soon realised she could influence the world from her own little home if she developed software herself. All she needed was a computer, a power supply and an internet connection. So she taught herself to code. In 2017, Ivy taught mathematics, statistics, physics and information technology at the African Science Academy (ASA), a girls' school for natural sciences and mathematics. She had often heard people say that women could not excel in tech subjects. But here she saw quite the opposite: 'The girls were crazy about coding and had great ideas. I was very impressed and decided to launch an initiative. I wanted to create an ideal environment where women can code together, network and collaborate.'

The very same year she founded Developers in Vogue, an alliance of African women from the tech sector that give themselves mutual support.

Ivy and her team have since held coding courses for women and placed them in projects and jobs where they can use their skills and earn money. 'As a woman in Ghana's IT sector, I have a lot of great opportunities,' Ivy says. But there are also plenty of challenges. 'People tend to underestimate my skills. That doesn't bother me, but I have to keep showing I can deliver the expected results.'

In Ivy's opinion, there has never been a better time to invest in women, especially on the African continent.

Promoting technology and innovations could substantially reduce many problems, she says.

'Equipped with the right skills, women could spearhead the digital revolution.'

In 2017, Ivy won first place in BMZ's #eSkills4Girls hackathon competition as part of the Women20 summit in Berlin. The prize came with EUR 15,000 in prize money. She also received a mentorship and was supported by the Accra Impact Hub, a digital network designed to improve conditions for African start-ups by enabling an innovative environment.

Ivy Barley

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One thousand print copies have been requested of the study on 'Women's Pathways to the Digital Sector', which portrays 22 women from the IT sector and presents recommendations for action to promote the digital inclusion of women and girls. Source: https://www.bundesregierung.de/breg-de/service/publikationen/women-s-pathways-to-the-digital-sector-stories-of-opportunities-and-challenges-736068

➡ F) SUCCESS FACTOR: SHARING & LEARNING

In the #eSkills4Girls projects supported by BMZ, we foster the sharing of experience and information among the projects. In the #eSkills4Girls network, we offer a discussion forum for women from Africa who work in their own projects to close the digital gender gap. Among other things, the network provides information about the latest events, about tenders for financial support and (inter)national specialist forums, and about the successes achieved by the various initiatives. As such, it offers an important point of reference for the women's work.

In the following section, staff at #eSkills4Girls projects in Ghana, Nigeria and Rwanda report on their successes and the challenges they face. The examples also show the different types of support #eSkills4Girls can provide, depending on the context.

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> *The #eSkills4Girls network initiated by BMZ links up some 40 women from 22 African countries who have themselves set up grassroots initiatives to teach digital skills to women and girls.*
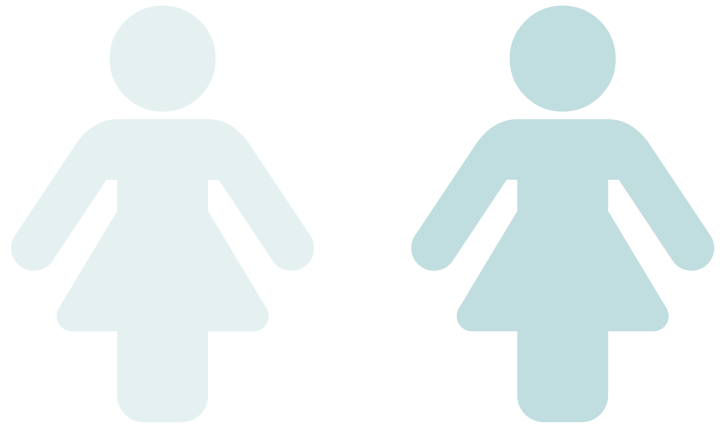
'My vision is simple. I think, in a couple of years, Women in Tech Africa should not exist because we have equity in the technology sector. We know that picking mathematics as a career or picking technology as a career is normal.'

Ethel Cofie, founder of Women in Tech Africa

© GIZ / Theresa Rooney

Link to video statement by Ethel Cofie (EDEL Technology Consulting): Why did she set up the 'Women in Tech Africa' network and what is her vision for the future of tech?

WECODE RWANDA

➡ WeCode is a pilot project of the Rwanda ICT Chamber, which receives support from BMZ through GIZ. The software academy for women was set up in 2018. Its training courses are practical in nature and based on the needs of the IT sector, in order to help the participants find employment as rapidly as possible.

WHAT HAS BEEN ACHIEVED? WHAT ELSE IS PLANNED?

WeCode's courses rest on two pillars: an international and a national approach.

The international approach consists of courses on quality assurance and software testing. They have been successfully completed by 87 per cent of participants. In addition, 41 graduates of the courses passed an exam by the International Software Testing Qualification Board (ISBQT) and thus acquired an international certificate in software testing. Thanks to WeCode, this exam was held for the first time in Rwanda.

Job placement on the Rwandan market is successful. With support from a regional partner, graduates of the coding courses that are part of the national approach have been successfully placed in jobs and internships.

WHAT (UNFORESEEN) CHALLENGES AROSE?

In the end it was difficult to find a reliable local partner for the recruiting process. Good English skills are key to learning coding and need to be given a higher weighting in the selection process. It is hard for vulnerable groups to take part in full-time courses. It might help them, for example, to receive grants that cover more than the course fees, or if the courses followed a modular part-time concept. Finding work for graduates on the international market and acquiring international projects calls for intermediaries with good knowledge of the sector and good networks.

HOW DO YOU GUARANTEE THAT WOMEN MANAGE TO ENTER THE JOB MARKET WITH THEIR IT SKILLS?

WeCode courses are designed in a way that lets participants get to know potential employers during the course, so they can forge contacts and build their own network. They also benefit from partners' networks and that of the Rwanda ICT Chamber. The regional partners also support them in finding jobs.

Participants in the training course
(© Karin Desmarowitz/GIZ)

#ESKILLS4GIRLS (PROGRAMME FOR SUSTAINABLE ECONOMIC DEVELOPMENT), GHANA

➡ #eSkills4Girls is part of the Programme for Sustainable Economic Development (PSED) supported by BMZ and implemented by GIZ. It promotes access and skills for women and girls in the ICT sector.

WHAT HAS BEEN ACHIEVED? WHAT ELSE IS PLANNED?

Formal training

As part of #eSkills4Girls, three ICT curriculums have been developed for vocational schools (secondary level II). These training courses are offered at six schools for 25 girls each (making a total of 150).

Non-formal training

150 self-employed women from the informal sector attended two months of digital literacy classes. By using digital applications for e-marketing, stock inventory and income monitoring, they should be able to increase their earnings. A further digital literacy course is being held for 170 self-employed women.

Support for entrepreneurship and start-ups

In cooperation with the local start-up centre Kumasi Hive, 90 young women benefited from training in IT and entrepreneurship and have developed business ideas. The best 15 women received support in a three-month incubation programme. During this time, they honed the technical aspects of their business ideas, but also attended business pitch and communication courses to learn how to present their ideas to potential investors.

A cloud-based health data system and an online courier service for stored blood were among the business ideas developed by 20 start-ups selected during the 'Flab' initiative. The local cooperation partner was Innohub, a business accelerator and SME platform. Over 50 per cent of participants were women.

The most promising projects receive additional support in the form of mentoring and training in business development and entrepreneurship.

Another course on business development and entrepreneurship for 10 start-ups led by women is being run in Ho city, together with the NGO Reach for Change.

Awareness-raising

The #eSkills4Girls project in Ghana is trying to interest more girls in a career in ICT by means of informative events and campaigns.

WHAT (UNFORESEEN) CHALLENGES AROSE?

Most of the challenges were known beforehand, such as the low level of societal acceptance of women who want to pursue technical careers. The inadequate IT equipment of state schools must also be taken into consideration during planning, as well as basic resources such as personnel. To start with, participants must first be convinced of the benefit they will gain from the training courses.

HOW DO YOU GUARANTEE THAT WOMEN MANAGE TO ENTER THE JOB MARKET WITH THEIR IT SKILLS?

A mentoring programme is intended to ease the transition to the job market for girls undergoing formal training. In addition, the training programme should promote contact with employers right from the start, e.g. by mandatory internships at companies.

Career orientation event at Girls in ICT Day 2019, Ghana (PSED/2019)

DUFUNA-FEM NYSC CODE CAMP: TRAINING FEMALE STUDENTS IN SOFTWARE PROGRAMMING, NIGERIA

→ The project financed by the ExpertTS Programme[13] trains students in three-month courses to programme software, to prepare them for a tech career. This generates a pool of talented software developers from which partner companies can recruit staff.

WHAT HAS BEEN ACHIEVED? WHAT ELSE IS PLANNED?

In this project, the Delegation of German Industry and Commerce in Nigeria (AHK) is cooperating with software and training company Cotta & Cush Ltd., which has already developed the Dufuna platform to support students in pursuing a career in software development. Thanks to a cooperation arrangement with CodeLagos, the project is able to use the training and programming centres of the Ministry of Education to train the female trainees.

Of the first 50 students from the National Youth Service Corps (NYSC), 31 (i.e. two thirds) have successfully completed the three-month programme and subsequently been placed in internships or junior management positions with companies.

The project strengthens women and fosters successful careers in a male-dominated sector. But the companies benefit too because they have a larger and more diverse talent pool at their disposal.

WHAT (UNFORESEEN) CHALLENGES AROSE?

The biggest challenge was to place course graduates with companies. It was more difficult than originally thought to find suitable internships or vacancies.

HOW DO YOU GUARANTEE THAT WOMEN MANAGE TO ENTER THE JOB MARKET WITH THEIR IT SKILLS?

A number of companies from the German AHK network had shown interest in graduates from the Dufuna Fem programme up front. A key component of the project was to place the students with companies during the training course itself.

IS THERE A PARTICULARLY MEMORABLE SUCCESS STORY OF ONE OF THE PARTICIPANTS?

One participant (originally a law graduate) had no experience of programming software before joining the Dufuna Fem training programme. She was very conscientious and didn't miss a single hour of training. She ended up being distinguished as the best participant.

She also secured herself a position as a junior software engineer at LawPavilion, a tech provider for the legal sector, where she now develops tech solutions.

13 The ExpertTS programme supported by BMZ is the link between development cooperation and foreign trade promotion, and creates the basis for sustainable economic development in the partner countries.
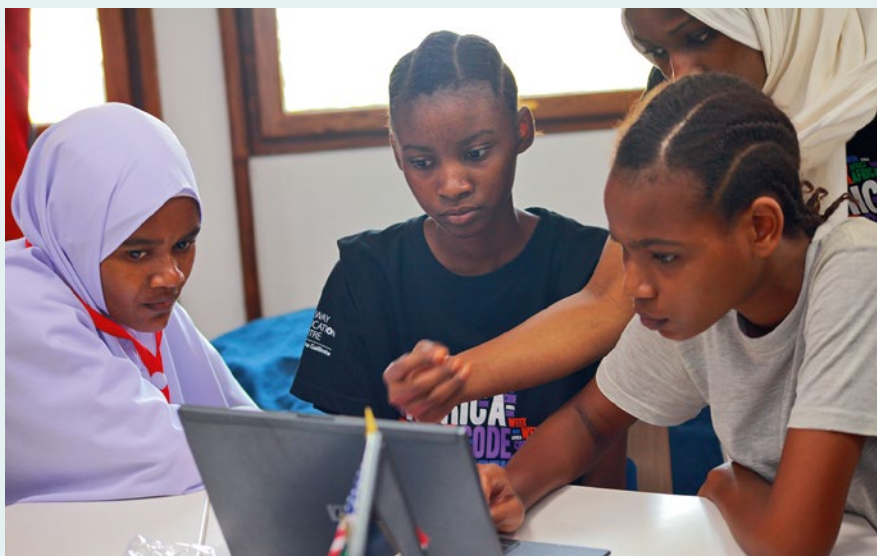
ExperTS
Economy. Transfer. Sustainability.

The project strengthens women and paves the way for them to have careers in software programming (DGIC).

The many things we've learned in three years of #eSkills4Girls

→ The gender digital divide is a global phenomenon that can only be solved through collective, long-term commitments on the part of the private sector, governments and civil society. While there now are many initiatives involved in this area, the different approaches should be evaluated in terms of their sustainable results. Successfully completing a programming course does not translate into an income, if the acquired skills cannot be used or the graduates lack technical equipment such as computers or because the demand for experts is not reflected on the labour market.

→ There is no 'one size fits all' approach to bridging the gender digital divide. The measures depend on the given context and must be adapted accordingly. Different factors play a role in this context, such as the level of digital skills, the objectives and priorities of skills acquisition (for example digital sale of products, work in the IT sector, addition of digital methods to the curricula) and sociocultural conditions.

→ There are already a large number of grassroots initiatives that promote digital inclusion, which usually have the best access to local needs and know where best to start promoting girls. However, some of them lack basic infrastructure, and a lot of work still has to be done to convince schools and parents of the relevance of digital education for the future. Instead of starting a raft of new initiatives, it makes more sense to support the existing ones and network them with each other.

→ Besides specific measures such as mentoring or programming courses for girls, it is equally important to place the issue on the political agenda and create a change in consciousness at the responsible ministries so that changes are not just apparent in the form of sporadic training measures for girls, but are also reflected in gender-sensitive digital education strategies.

→ Parallel to the debate on the greater integration of digital skills into formal education systems, many non-formal education providers have offered innovative methods of digital skills trainings in recent years. At boot camps, coding clubs or makerspaces, digital skills are usually taught in a short space of time and with high practical relevance. Even if the courses do not have the technical depth of formal training, and though there are not yet representative studies on their effectiveness, such initiatives offer an effective way of closing qualification gaps and raising awareness of technology themes.

Visit us at www.bmz.de