



Igniting a path for women to thrive in **STEM** careers



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In March 2020 PwC launched a three-year strategic, global collaboration with UNICEF in support of Generation Unlimited (GenU), which aims to help upskill millions of young people around the world. The collaboration brings together public, private, and civil society stakeholders to develop programmes and innovations that support young people on their path to productive futures and engaged citizenship, and to conduct research on the global skills challenge. Additionally, PwC and UNICEF, in support of GenU, are collaborating in India and South Africa to develop, expand, and fund education and skills programmes for young people. <https://pwc.to/UWY-2020>

New world. New skills

New world. New skills is PwC's global programme aimed at helping millions of people around the world to improve their understanding, knowledge, and skills for the digital world. There is an urgent need for organisations, governments, educators, and citizens to come together to address the growing problem of the lack of digital skills. We are convening discussions and working with a broad group of stakeholders to help find solutions that work in every country. We are helping organisations in the public and private sectors anticipate the skills they will need in the future and work together on comprehensive solutions. Furthermore, PwC is committed to upskilling its people—training our people, investing in technologies, and supporting clients, communities, and other stakeholders across our territories. www.pwc.com/upskilling

UNICEF

UNICEF works in the world's toughest places to reach and impact the most disadvantaged children and adolescents —and to protect the rights of every child, everywhere. Across more than 190 countries and territories, we do whatever it takes to help children survive, thrive and fulfil their potential, from early childhood through to adolescence. And we never give up. UNICEF | For every child www.UNICEF.org

Generation Unlimited

Launched by the UN Secretary-General in 2018, Generation Unlimited is a Public-Private-Youth Partnership on a mission to skill and connect the world's 1.8bn young people aged 10-24 to opportunities for employment, entrepreneurship, and social impact. Anchored by UNICEF, the partnership brings together global organisations and leaders including heads of state, CEOs, United Nations leaders, and civil society champions with young people to co-create and deliver innovative solutions on a global scale. www.generationunlimited.org

TechnoGirl Trust

TechnoGirl is an innovative programme for girls and young women who show an interest in Science, Technology, Engineering, and Mathematics (STEM). It was conceptualised in 2004 by founding partner Uweso Consulting in collaboration with the United Nations International Children's Emergency Fund (UNICEF) and the South African Department of Basic Education.

TechnoGirl enables girls to experience STEM careers and ultimately, make more informed career choices. The programme is built on the understanding that exposure to public and private sector workplaces can significantly contribute towards motivating girls to take up STEM careers that are in demand and where women are underrepresented.

TechnoGirl Trust aims to share the transformation burden with corporates by partnering with them to empower STEM-interested girls by educating, guiding, and supporting them towards STEM careers. The program will provide these girls with sustained employment and entrepreneurial opportunities, to help break the cycle of poverty.

<https://technogirltrust.co.za/>

Foreword

PwC South Africa CEO – Shirley Machaba



I'm so proud of PwC's collaboration with UNICEF, which has given us the opportunity to get involved in the TechnoGirl programme. Through this collaboration, PwC can stay true to our core values.

Today's world is not simple — we need to inspire, lead, motivate, encourage innovation, and bring in fresh and diverse perspectives to move beyond the tried and tested. At PwC we believe that we have a responsibility for the growth and development of our continent, as articulated in our global purpose of building trust in society and solving important problems.

Our global strategy, The New Equation, focuses on two interconnected needs that organisations face in the coming years: building trust across a wide range of areas that are important to stakeholders, and delivering sustained outcomes in an environment where the risk of disruption is more intense than ever before. Doing business in this fractured world is not easy, and finding the right organisations to partner with is vital for organisations to thrive. It's clear that our purpose and the mission and vision of TechnoGirl are aligned with this ambition. There are so many synergies between UNICEF, TechnoGirl, and PwC, and it's evident that we are all bound by common values and a strong sense of purpose.

UNICEF South Africa Representative – Christine Muhigana



The fact that millions of young people are not in employment, education, or training is one of the greatest challenges facing South Africa today. The COVID-19 shock, climate-change-related crises, rising living costs, and related poverty and inequality are all conspiring to further threaten future opportunities for the country's youth. But changing that narrative and reality is possible because of the very same young people, who can and will drive their futures. To help them thrive on their journey, UNICEF is committed to providing guidance and relevant opportunities needed for their transition from learners to earners.

This includes preparing children and young people to succeed in science, technology, engineering, and mathematics (STEM) subjects that are vital in the ever-evolving world of work. Today, fewer than 13% of students in South Africa graduate into STEM-related careers. That's why we need to deliberately leverage every opportunity to identify, incentivise and support young people in STEM, especially girls who are from marginalised communities. This year's International Women's Day recognises these challenges under the theme DigitALL – innovation and technology for gender equality. The UNICEF SA partnership with PwC and TechnoGirl Trust, under the Generation Unlimited Initiative, unlocks the full potential of girls in STEM. The talent that is identified and nurtured through this joint venture is proof of a brighter future, driven by the skills, energy, and creativity of today's young generation.

TechnoGirl Trust CEO – Staff Sithole



Bridging the gender divide in South Africa is a complex problem that requires all stakeholders to work together to make the country more resilient, capable, and inclusive. We are grateful for our collaboration with PwC, UNICEF, and Generation Unlimited in support of issues critical to the future of the country.

Our goal at TechnoGirl Trust (TGT) is to ensure equal access to all levels of education and especially so in the fields of science, technology, engineering, and mathematics (STEM). In these fields, many new digital careers are emerging which can empower young women and girls. Our organisation is making every effort to end all forms of discrimination and to ensure young women have full and effective participation and equal opportunities in leadership at all levels of decision-making in political, economic, and public life.

We aim to establish a talent pipeline that fosters economic growth among young women by prioritising inclusivity, empowerment, and employment. We address shortages for in-demand careers in growing the national economy, while contributing towards funders and donor organisations being seen as employers of choice. Through partnerships, we create economic opportunities for young women.

Our work is to reinforce the vital role that many women hold in society and increase the number of those empowered to make a significant contribution. TGT offers innovative programmes for girls and young women who show an interest in STEM. Young female learners from quantile one to three schools are earmarked to become beneficiaries of the programme. They gain access to knowledge and mentorship, in the process of becoming empowered to make the right choices.

Our goals are fully aligned with those of PwC and UNICEF in ensuring everyone has an equal opportunity to learn, work and participate in the future digital world. Collaboration is key. The model that we have developed at TGT is one of spreading the transformation burden with corporates such as PwC, partnering with them to develop girls so they become better equipped for entry into STEM careers.

Igniting a path for women to thrive in STEM careers

Many analysts agree that the job market is changing rapidly, but it is impossible to accurately predict the future. A 2016 World Economic Forum report¹ found that “in many industries and countries, the most in-demand occupations or specialties did not exist ten or even five years ago, and the pace of change is set to accelerate”. For a teacher whose task is to prepare young learners for these careers, keeping up with the breakneck pace of change can be daunting. **What can we do to ensure that future generations are ready?** Although the future is uncertain, we do have a few certainties to start with.

A solid grounding in STEM skills

It may be true that we have no idea what jobs young people will do when they grow up, but we do know that most of those new careers will be based on science, technology, engineering, and mathematics (STEM).

The role of technology in our daily lives is growing, but for now, technology needs humans to build it, program it, understand it, and repair it. Software developers create innovative apps and AI developers create, improve, and fix it when it malfunctions, but one thing is certain: those with a good STEM education will have a significant advantage in finding jobs and will probably be able to find them more easily and have a higher salary than those who lack the necessary STEM skills in a technologically advanced world.

Youth in action



Meet TechnoGirl SA alumni, **Amanda Magwaza**. Amanda was born in Umlazi, Durban KwaZulu-Natal, and went on to complete a Bachelor of Technology (BTech) (Hons.) Information Technology in Applications Development from the Durban University of Technology.

“Being part of TechnoGirl SA has been a great experience, I learned to be focused and understand what I wanted to study. I learned the importance of time management as well as budgeting and most importantly, how to do things on my own. I was motivated to do better and study hard to have more opportunities in the future. The experience gave me confidence as a girl to know that **anything is possible and that I can do anything as long as I put my heart and mind to it**”.

Inspiring women to pursue a career in tech starts as early as the classroom. By providing young women with the confidence to study STEM subjects and carry their studies through to matric and varsity, more female students are viewing tech as a natural career path after graduating with STEM degrees. Women in STEM careers have made significant progress in recent years. Women currently hold 19% of tech-related jobs relative to men who hold 81%². In leadership positions, women make up 24% and so there is still a significant gender gap in the STEM field. The answer to this gender gap is complex and education is one in a multifaceted interplay of drivers that will bring more women into STEM jobs.

Youth in action



Meet TechnoGirl SA alumni, **Nontokozi Sinthemba Ngcobo** who grew up in Umlazi, KwaZulu Natal, and achieved her grade 12 National Senior Certificate, specialising in Electrical Technology at Umlazi Comprehensive. She then went on to complete her N2, N3, and N4 in Electrical Engineering (Heavy current) at a Further Education and Training (FET) college. Most recently she completed her theoretical studies (S1, S2, S3, S4) for a National Diploma in Electrical Engineering (light current) at Mangosuthu University of Technology.

“I am a very determined and passionate individual. I enjoy solving problems so engineering was a natural choice for me, troubleshooting issues and finding solutions in as short a time as possible. I like to explore alternative solutions to problems.

Being a TechnoGirl was an opportunity I will forever be grateful for because I would not have uncovered the passion I have for engineering. I was among the girls who were picked to be TechnoGirls and during school holidays we would join the job shadowing program with Transnet SOC Ltd school of Engineering.

During that period, I was exposed to the world of engineering. Seeing women in the engineering sector working hard and being hands-on and involved in a way I had never thought women were able to, made me want to be just like them and overcome the hurdles of being a female in a male dominant field.”

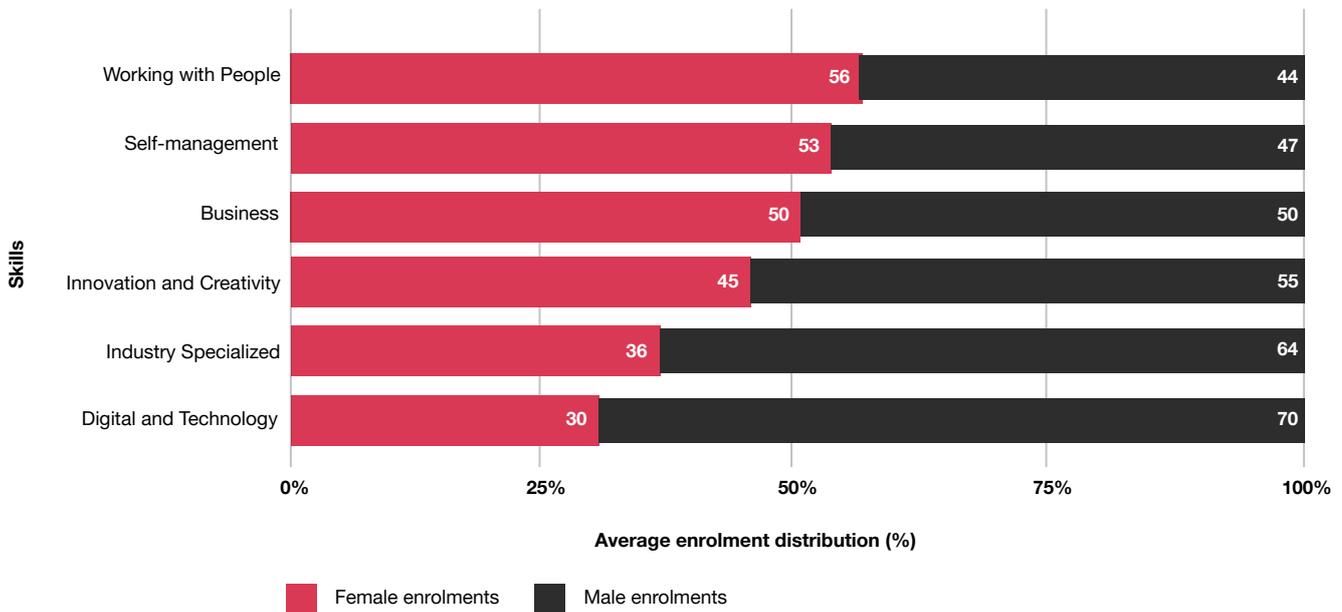
¹ World Economic Forum. 2016 “The Future of Jobs, Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution”. February, 2023. https://www3.weforum.org/docs/WEF_Future_of_Jobs.pdf

² World Economic Forum. 2022 “Global Gender Gap Report 2022”. February, 2023 https://www3.weforum.org/docs/WEF_GGGR_2022.pdf

Bridging the gender gap

In South Africa, not more than 13% of women choose to study in the STEM disciplines and globally, not more than 30% according to the graph below and this is where we need to start with closing the gap between males and females in the STEM disciplines.

Figure 1: Enrolment into Tertiary Education distribution



Source: WEF Global Gender Gap Report 2022

1. First, women should be educated about STEM careers and their impact on the world. Individual industries need to establish pathways with universities, colleges and high school learners to educate them about these careers. The education system needs to work with the industries to plan modules that will be conducted by lecturers/teachers.
2. Giving female learners easy access to role models in all industries through promoting women who are already thriving in the STEM disciplines. A personal connection like this inspires young girls to see it is possible for women to thrive in careers of this kind.
3. Assisting women to reach their full potential through career development, mentoring, sponsorship, and programmes that provide more support to help them succeed.
4. Increase access to technology careers by making job shadowing opportunities available for students. Companies need to reach out to universities/schools when opportunities arise. Apprenticeships in the STEM disciplines enable the development of experience and knowledge gained on-the-job.
5. STEM fields have traditionally been male-dominated fields; by addressing the above mentioned points and advocating for women in STEM fields, we can bridge the gender divide.

We hope that, through various initiatives and collaborations between the public, private, and civil society sectors, the proportion of female graduates entering STEM careers will increase significantly.

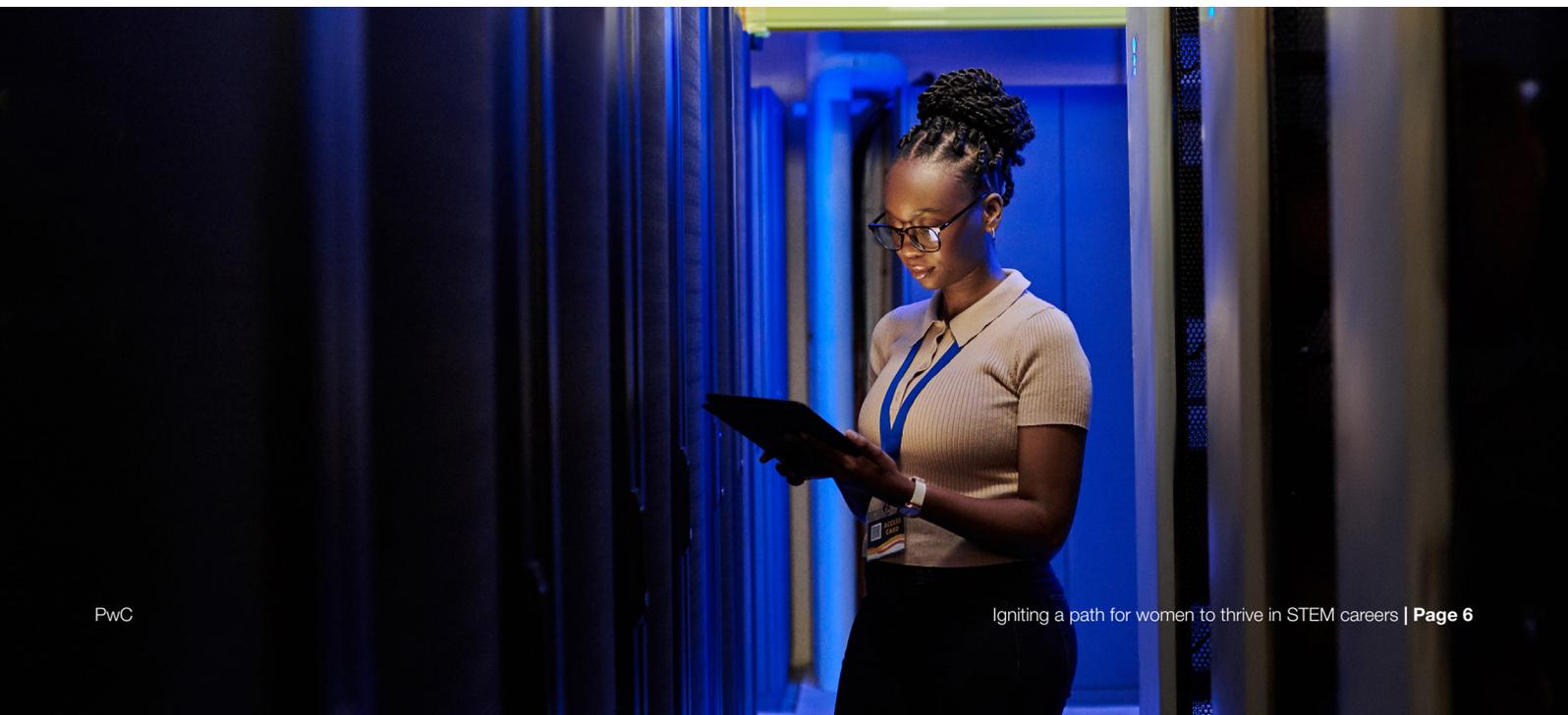
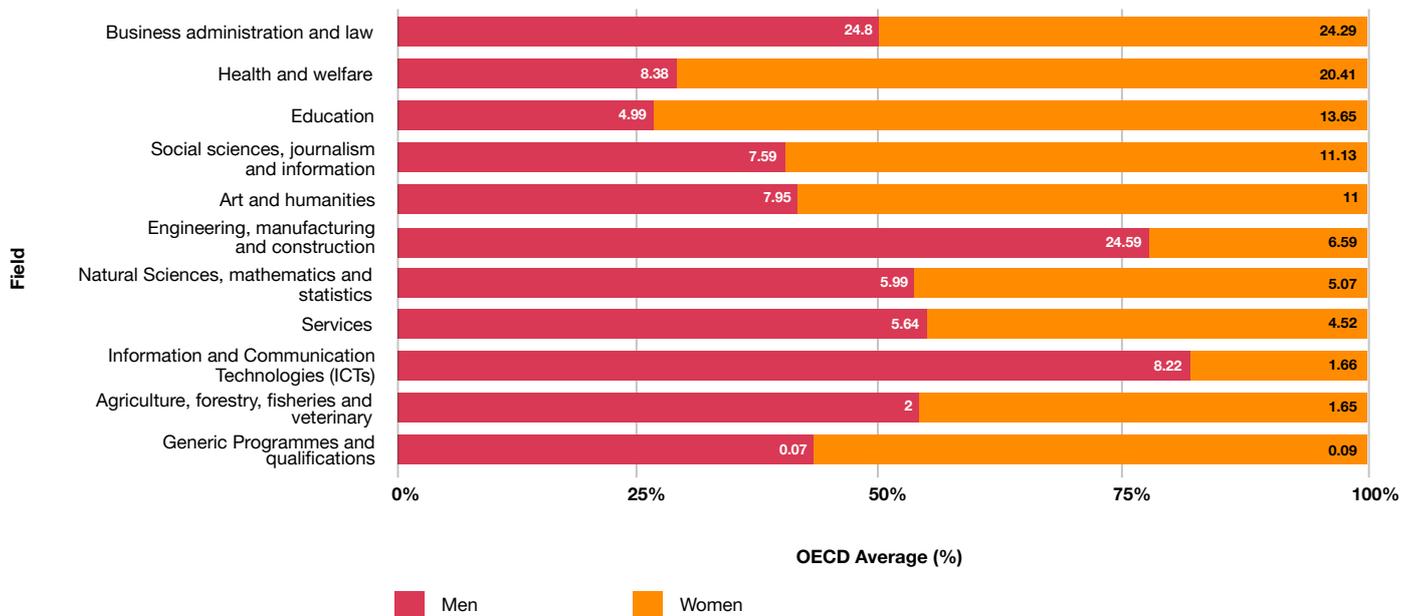


Figure 2: Share of graduates, by field and gender



Source: WEF Global Gender Gap Report 2022

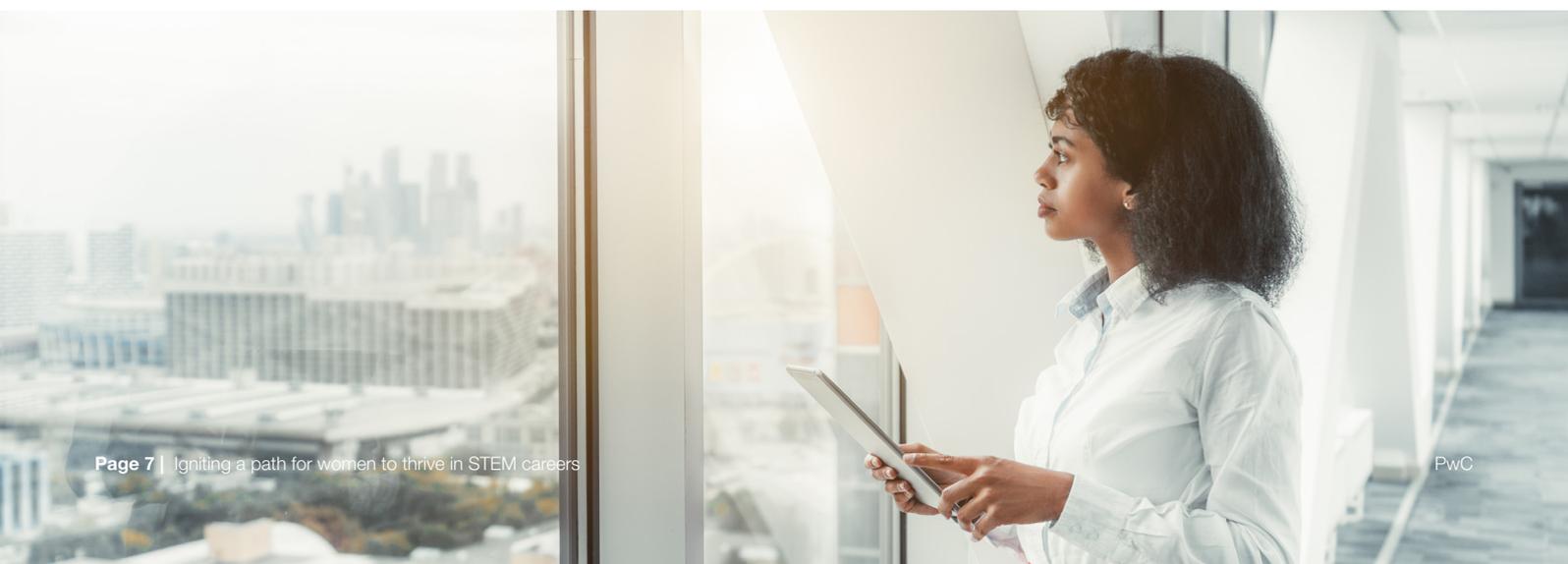
Youth in action



Meet TechnoGirl SA alumni, **Lesedi Queen Masina**, from Cosmo City, Johannesburg. Lesedi holds a Bachelor’s degree in Computer Science and Informatics from the University of Johannesburg.

“I joined the TechnoGirl programme in 2013 when I was in grade 11, which was life-changing for me because that was also the time when I had to decide what to study and what I wanted to do with my life. I grew up in a disadvantaged background where I didn’t see a lot of people succeeding or doing something productive with their lives, so job shadowing at a telecommunications company really opened my eyes to what was possible and all the opportunities that existed out there. Being around women that worked in IT and engineering helped me to believe in myself and in my abilities which is why I pursued a career in computer science.”

I think it was about a year ago when I was with my mom and we met a six year old girl, when my mom asked her what she wanted to be when she grew up. Her response is one I will never forget because she replied that she wanted to work as a cashier. This left us both shocked because at that age a child can dream to be anything but she didn’t have someone to look up to, and the one person she knew was working as a cashier. That’s when I realised the impact that TechnoGirl SA had in my life and career. TechnoGirl gave me something that I’m forever grateful for, it gave me a vision and a dream and showed me how to get there. Like that six year old girl, I needed a fresh perspective; to see the world in a new way; to see the opportunities and possibilities.”



Closing the skills gap

The way we work has changed. The rise of automation and new technologies has increased productivity, but it has also created a major societal problem: the stark mismatch of skilled people for available jobs at the heart of our economy. As technology continues to evolve rapidly, the skills required to succeed in the workforce are also changing. Here are some of the skills that are likely to be in high demand in the near future:

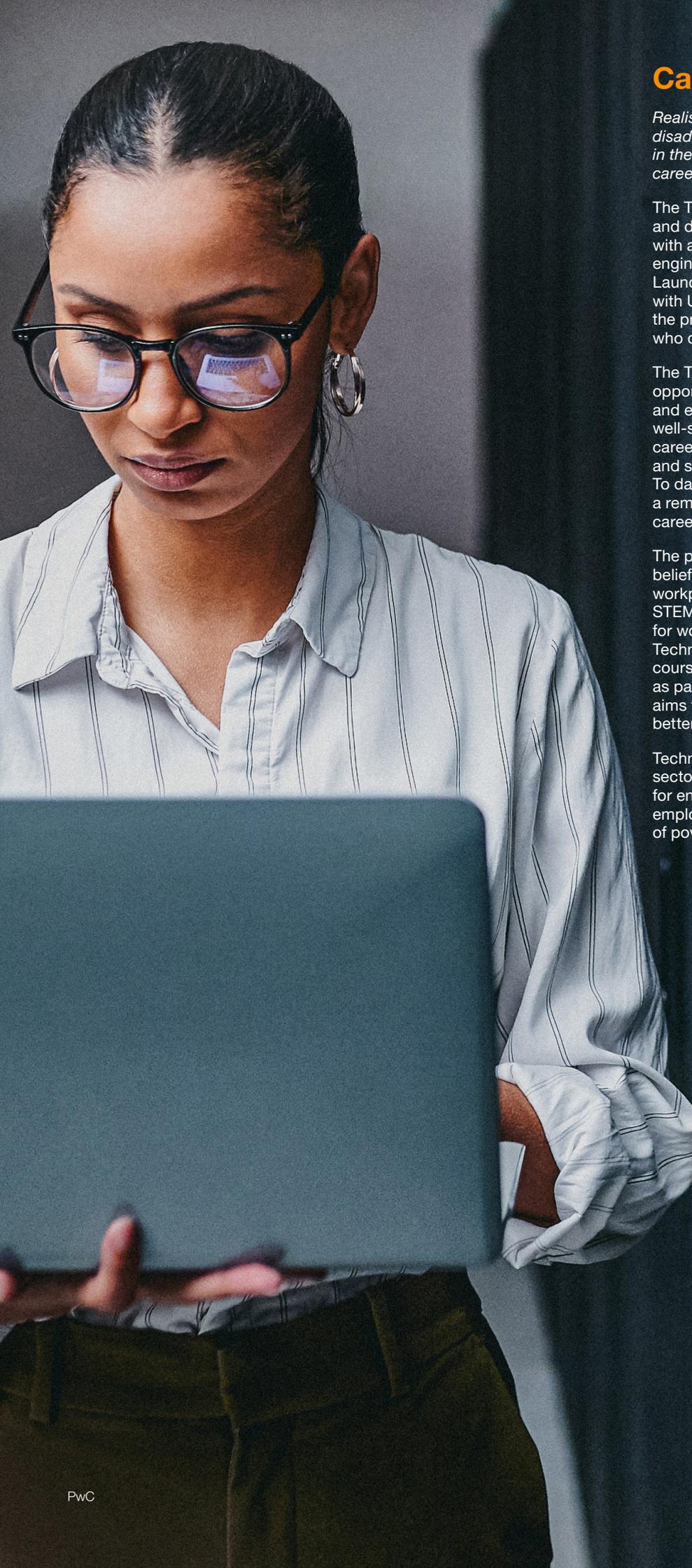
- **Artificial intelligence (AI) and machine learning:** As AI and machine learning become more prevalent, there will be a growing need for professionals who can develop, implement and manage these technologies.
- **Data analysis:** As more and more data is generated, there will be a growing demand for individuals who can collect, analyse, and interpret large amounts of data to make informed decisions.
- **Design thinking** is a human-centred approach to problem-solving that emphasises empathy, experimentation, and iterative prototyping. As organisations look for new and innovative solutions, there will be a growing demand for professionals with design thinking skills.

However, these technical skills will not get you far in a career without the understanding of how to work with people and leverage the human connection. Key to the development of technical skills is also the development of soft skills such as:

- **Communication and cooperation skills** to listen to needs and interact. With the rise of remote work, there is a greater need for professionals who can effectively communicate and collaborate with others, both in person and virtually.
- **Creative abilities** to solve problems and develop new ideas.
- **Leadership skills** to oneself as well as projects.
- **Organisational skills** to keep track of lots of different information in an ever-changing landscape.

These are just a few examples, but it is clear that the skills required for a successful future will be very different from those of the past. Keeping up with technological advancements and developing a range of skills will be critical for individuals and organisations alike.





Case Study: TechnoGirl Trust

Realising the full potential of marginalised and disadvantaged women and girls to access opportunities in the science, technology, engineering, and mathematics career fields.

The TechnoGirl Trust seeks to empower marginalised and disadvantaged women and girls by providing them with access to opportunities in science, technology, engineering, and mathematics (STEM) career fields. Launched in 2004 by Uwes Consulting in partnership with UNICEF and the Department of Basic Education, the programme aims to support girls and young women who demonstrate an interest in STEM.

The TechnoGirl program strives to narrow the gap in opportunities between men and women, promoting social and economic transformation. By offering well-structured and meaningful experiences in STEM careers, the programme equips girls with the knowledge and skills needed to make informed career decisions. To date, the programme has benefitted 15,019 girls, with a remarkable 75% of beneficiaries pursuing STEM careers.

The programme's philosophy is grounded on the belief that exposure to both public and private sector workplaces significantly motivates girls to pursue STEM careers, particularly in under-represented areas for women. In addition to STEM career exposure, the TechnoGirl programme offers personal development courses covering essential life skills and health awareness as part of its structured programmes. The programme aims to produce well-rounded young women who are better prepared for scarce careers and the world of work.

TechnoGirl Trust collaborates with the private and public sectors to produce young women who are well-equipped for entry into STEM careers. This will lead to sustained employment opportunities, ultimately breaking the cycle of poverty for girls in the programme.

Call to action

Giving women equal opportunities to pursue and thrive in STEM careers helps narrow the gender pay gap, enhances women's economic security, ensures a diverse and talented STEM workforce, and prevents biases in these fields and the products and services they produce. It is important to nurture all people's aspirations and help them to develop the kinds of skills they will need throughout their lives to keep them resilient and adaptable to change.

The TechnoGirl programme is an example of private-public collaboration that empowers marginalised and disadvantaged women and girls by providing them with access to opportunities in STEM career fields. Through initiatives like this, we can work towards the four key actions highlighted in PwC's Upskilling for Shared Prosperity Report³:

1. Governments, businesses, and educators should work together to build a strong and interconnected ecosystem committed to a comprehensive upskilling agenda.
2. Governments should adopt an agile approach to driving national upskilling initiatives, working with businesses, nonprofits, and the education sector. Such as providing incentives to create jobs in the green economy and supporting technological innovation.
3. Businesses should anchor upskilling and workforce investment as core business principles and make time-bound pledges to act.
4. Educators should reimagine upskilling and reskilling, and embrace lifelong learning to ensure everyone has the opportunity to participate in the future of work.

By taking these actions, we can create a more supportive and inclusive environment for women in STEM, which is critical for addressing the gender gap in STEM and building a more diverse and innovative workforce. As a responsible corporate citizen.

PwC in partnership with UNICEF and Generation Unlimited, is proud to contribute to growth initiatives such as TechnoGirl and to honour our values – which are to act with integrity, make a difference, care, work together and reimagine the possible.



³ PwC Upskilling for shared prosperity, February, 2023. <https://www.pwc.com/gx/en/issues/upskilling/upskilling-for-shared-prosperity.html>

Authors:



Shirley Machaba
Partner | PwC South Africa CEO



Marthle du Plessis
*Partner | PwC South Africa
Workforce of the Future
Platform Lead*



Christine Muhigana
*Representative,
UNICEF South Africa*



Muriel Mafico
*Deputy Representative
UNICEF South Africa*



Staff Sithole
TechnoGirl Trust CEO



Carla Greenland
*Manager | PwC South Africa
UNICEF project manager
& coordinator*

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