



REPROGRAMMING THE FUTURE:

CREATING AN INCLUSIVE DIGITAL TECHNOLOGY SECTOR FOR WOMEN IN WALES

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FOREWORD



I GREW UP WITH A LOVE OF LEARNING ABOUT SCIENCE AND IN PARTICULAR HOW THE HUMAN BODY WORKS.

Following a PhD and three years as a biomedical researcher, I stepped away from my STEM career. I didn't see any women in senior positions where I worked and when my confidence needed boosting I didn't have a network of women around me to support me. I thought the solution was to change career and make progress in a different sector.

I love the role I now occupy but often wonder how many other women are lost to STEM. And how many girls give up on science in school without realising their potential to make a real difference in the World. I want to do everything I can to ensure that Wales builds a diverse STEM workforce, that fully includes women. This means encouraging and supporting girls from an early age, at home and in school and challenging STEM employers to break down structural barriers and create inclusive environments where women can thrive.

Louise Bright
Pro Vice Chancellor for Enterprise Engagement and Partnerships

FOREWORD



REPROGRAMMING THE FUTURE ISN'T JUST A ROADMAP, IT'S A CALL TO ACTION.

Wales is being transformed by digital technologies, yet a portion of the population is still being excluded from shaping that transformation. By reprogramming the future, we will unlock the untapped brilliance of women and girls, creating an economy that works for everyone.

This roadmap is about dismantling the structural barriers that have held women back and building a system where every girl in Wales sees technology not just as something she can use, but as something she can shape.

Behind every barrier is potential untapped, innovation lost, and futures diverted. Futures that could help shape a stronger, fairer, and more prosperous Wales for us all.

We know that diverse teams build better products. We know that inclusive innovation drives stronger economies. And we know the future of Wales depends on harnessing all our talent, not just half.

We need to go beyond action from just women and girls themselves, but from employers, educators, policymakers, and communities, because when we all play our part, everyone benefits.

This is not just a women's issue, it's a Wales opportunity and one we cannot afford to miss.

Emma Tamplin
Founder and Director





A FUTURE REWRITTEN

Imagine a Wales where every girl sees the limitless possibilities of digital technology, where the next wave of innovation is powered by diverse minds, breaking down barriers and rewriting the story of our digital future. A Wales where women are not just present in the digital economy but shaping it, designing ethical AI, driving breakthroughs in cybersecurity, and building technology that serves everyone, not just the few.

The digital technology sector in Wales is a rapidly growing industry and worth an estimated £8.5bn to the Welsh economy, yet women remain underrepresented at all levels. With recent figures showing that women in Wales make up around 25% of the workforce in this sector, this underrepresentation not only leads to missed opportunities for women in high quality, well-paid roles in sectors with long term growth but also has broader economic implications for Wales.

By excluding a significant portion of the population from the rapidly expanding digital technology sector, Wales risks falling behind other regions that are building diverse and dynamic digital technology ecosystems. As global competition intensifies, regions with more inclusive talent pipelines will have an edge in innovation, economic growth, and attracting investment.

47%

of Welsh businesses are struggling with skills shortages, particularly in areas like AI and green technologiesⁱⁱⁱ.

5%

of leadership positions in the UK technology sector are held by women^{iv}.

Women make up

25%

of the ICT workforce in Wales^v.

Women make up

17%

of the cyber workforce in the UK^{vi}.

More than

70%

of the jobs deemed to be at high risk of digitalisation and automation are held by women^{vii}.

Wales Women in STEM Network, in collaboration with **Her Place**, an organisation building brighter futures for girls and women in Science, Technology, Engineering and Mathematics, has developed ***Reprogramming the Future***, a roadmap to create a more inclusive and equitable digital technology sector for women in Wales.

This Roadmap will:

- **Identify the key barriers and challenges** preventing girls and women from entering and progressing in Wales' digital technology sector.
- **Highlight opportunities and initiatives** that Girls, Women, Educators, Employers, Policymakers and families can access to drive forward gender equity in digital technology.
- **Showcase women** across a wide spectrum of roles within the digital technology sector in Wales.
- **Promote inclusive businesses** across Wales who are fostering equality, diversity and inclusion practices to create workplaces that are safe, flexible and inclusive environments where everyone can thrive.

By reprogramming the future, we will unlock the untapped brilliance of women and girls, and build a Wales where every woman sees herself in technology and where her voice, her skills, and her ideas are the power behind a better future, a Wales where she is not the only one, but one of many.



THE DIGITAL TECHNOLOGY SECTOR IN WALES

The digital technology sector in Wales plays a vital role in the economy and innovation landscape. It spans multiple areas, including cybersecurity, artificial intelligence (AI), data science, software development, fintech, and digital media. The sector benefits from strong government support, leading universities, and an expanding tech ecosystem that fosters both startups and established businesses.

KEY AREAS OF THE DIGITAL TECHNOLOGY SECTOR IN WALES

Cybersecurity

Wales is home to a thriving cybersecurity sector, with clusters of expertise in South Wales. The National Cyber Security Academy (NCSA) and partnerships with companies like Thales and Airbus make Wales a UK leader in cyber innovation.

Artificial Intelligence (AI) and Data Science

AI and big data are major growth areas in Wales, with investments across AI-driven healthcare, smart cities, and fintech. The rise in data centres, including key developments from major companies like Microsoft in Newport and Vantage in Bridgend are positioning Wales as a vital hub for data infrastructure. Cardiff's Data Nation Accelerator plays a pivotal role in fostering AI research and innovation, serving as a vibrant hub for startups, academics, and established companies.

Software Development and Technology Startups

Wales has a flourishing tech startup scene, with hubs across the nation. Tramshed Tech, Alacrity Foundation, and FinTech Wales support startups and entrepreneurs in software, mobile apps, and digital platforms.

Fintech

The Welsh fintech sector is expanding, with major companies like Admiral, Starling Bank, and Confused.com leading the way. Government-backed initiatives are helping drive growth in financial technology and blockchain solutions.

Digital Media and Creative Technology

Wales has a strong gaming, animation, and digital content industry, supported by companies like BBC Cymru Wales, Cloth Cat Animation, and Tiny Rebel Games. Cardiff is an emerging hub for digital media production and VR/AR innovation.

Compound Semiconductor Technology

Crucial for 5G, AI, healthcare, automotive and renewable energy, the semiconductor industry in Wales, particularly South Wales, is renowned for its focus on compound semiconductors and hosts the world's first compound semiconductor cluster, CSConnected, which includes leading research institutions and companies such as Catapult, IQE, Newport Wafer Fab (NWF) Vishay and Microchip.

Reprogramming the Future:

Creating an Inclusive Digital Technology Sector for Women in Wales



GENDER DISPARITY IN THE DIGITAL TECHNOLOGY SECTOR IN WALES

Like many regions across the UK, Wales has a long history of gendered occupations, with women traditionally more likely to work in caring, administrative, and service-based roles. The digital technology sector, historically dominated by men, is no exception. Societal expectations, alongside the influence of gendered role models in education and the media, play a significant role in shaping the career aspirations of young people.

The challenges girls and women face in accessing, thriving, and advancing careers in the digital technology sector are deeply rooted in structural gender inequalities. These include gender stereotyping within education, the historical division of sectors and occupations along gender lines and entrenched societal expectations around gender roles.

Women are significantly underrepresented in many high-growth areas of the labour market, including Wales' digital technology sector, while they are overrepresented in industries and roles most at risk from digitalisation and automation. These trends have been further accelerated by the COVID-19 pandemic, which has driven rapid technological adoption across workplaces and increased demand for digital innovation.

The lack of gender diversity in the sector risks creating technologies that fail to meet the needs of all users, particularly women. This is especially concerning as technologies such as AI, data analytics, and machine learning play an increasingly central role in shaping key sectors, from healthcare to transportation. If women are excluded from contributing to these innovations, there is a real danger that technological solutions will perpetuate existing gender biases or overlook the specific needs of women altogether.

Broadening the talent pool by encouraging more women to enter, stay, and progress in digital technology careers will not only help foster greater inclusivity, but will also drive innovation and support long-term economic growth in Wales.



REPROGRAMMING ASPIRATIONS: PRIMARY SCHOOL

Key Barriers and Challenges

Girls in primary school often face several barriers when pursuing a career in digital technology. These barriers can be influenced by societal, cultural, and educational factors and can significantly limit career aspirations and engagement in STEM fields later down the line. Addressing these issues from an early age is crucial in fostering an inclusive and diverse future workforce for the digital technology sector.

Gender Stereotyping

Gender stereotyping from an early age can significantly limit children's aspirations, reinforcing inequalities that persist into adulthood. Societal perceptions often frame technology and computer science as male-dominated fields, discouraging girls from exploring these areas because they don't see themselves represented.

Girls as young as 7 increasingly feel they must look and behave differently because they're a girl^{viii}

and when girls are repeatedly exposed to stereotypes, they may internalise the belief that certain interests are off limits for them.

Educational materials and curricula can unintentionally perpetuate these biases. Textbooks, resources, and classroom examples sometimes reflect outdated gender norms, making technology appear less accessible or relevant to girls. The ways in which subjects are taught and discussed in classrooms can further reinforce these stereotypes, limiting girls' engagement and confidence in STEM subjects.



69%

of girls aged 7-10 feel they're expected to behave differently because they're a girl.

Girlguiding: Girls Attitudes Survey 2024

Role Models

Access to relatable female role models in the digital technology industry is limited, which can make it harder for girls to imagine themselves in tech-related careers. This lack of representation can lead to feelings of isolation or disinterest.

Exposure to Technology

Many girls have limited exposure to digital technology in early education. If they are not encouraged or given opportunities to engage with coding, robotics, or other technical subjects, they may not develop an interest or confidence in these areas.

Unconscious Bias in Education

Teachers and caregivers may unconsciously favour boys when it comes to encouraging technology-related activities or subjects. This bias can result in girls receiving less encouragement or fewer opportunities to engage with digital technology.

Self-Confidence

Girls may have lower self-confidence when it comes to their abilities in subjects like mathematics and science, which are foundational to careers in digital technology. The belief that boys are 'better' at these subjects can undermine their efforts and ambitions.

Access to Resources

In some regions or communities in Wales, there may be limited access to resources, tools, or infrastructure that can spark interest in technology. If schools or homes do not have adequate computers or internet access, girls might be less likely to explore digital fields.

Girls-Only Initiatives

There are often fewer girls-focused STEM clubs or events at the primary school level that allow girls to explore technology in an environment free from societal pressures and gender biases. Without these girls may struggle to stay motivated in their STEM pursuits.

Early Career Discouragement

Even at a young age, girls may encounter discouragement in digital technology. If they don't perform as well as others or face criticism for their mistakes, they may internalise these negative messages, leading to reduced interest.

The influence of parents and caregivers can also have a negative impact where gendered perceptions of careers and job roles held by parents can steer girls in a different direction.

Inadequate Career Guidance

Schools might not provide adequate guidance on career paths in digital technology at a primary level. Girls may not be informed about the vast range of career opportunities available from coding and game development to cybersecurity and AI and be aware of the many opportunities available to them locally and across Wales and beyond.

JAVNI BRAHMBHATT

ASTROPHYSICIST, STEM EDUCATOR & DATA ANALYST

I am an astrophysicist who loves uncovering the mysteries of the universe and working with data to find hidden patterns. My journey into STEM was fuelled by a deep curiosity about how the world works, from the vastness of galaxies to the smallest details in scientific data. Alongside my passion for astrophysics, I also enjoy STEM education, breaking down complex ideas into engaging activities for students. At the same time, I find excitement in data analysis, where I use programming and analytics to make sense of research and real-world problems.



In many places, people expect women to choose careers like teaching or medicine, jobs seen as more “manageable” alongside family responsibilities. But I believe girls should have the freedom to explore and grow in every field, including science, engineering, and technology. One challenge I faced was the perception that my background in biology was a limitation for pursuing physics and astronomy, where mathematics plays a crucial role.

Many people assumed that because I didn’t originally choose math, I wouldn’t be able to succeed in a field that relies so heavily on it. But not taking math wasn’t a reflection of my abilities, it was simply a different path that led me to where I am today.

I never saw it as a barrier, and instead, I worked hard to bridge the gap, proving to myself and others that passion and determination matter more than a traditional route.

Don't be afraid to try new things, whether it's joining a STEM club, coding a project, or exploring a completely new subject. Most importantly, believe in yourself. The world needs more girls in STEM, and your unique perspective can make a difference.'

RECOMMENDATIONS



FOR GIRLS

Girls should be supported to:

Explore Technology in and out of School

Get involved with digital tech activities, including **Hwb** digital learning resources and STEM events offered through **Technquest** and **Xplore!**, local libraries and community groups.

Join Girls-Only and Mixed Clubs

Join after-school coding and robotics clubs and initiatives where available across Wales to build confidence and a support network.

Discover Welsh Role Models

Explore stories of Welsh women working in tech, from AI specialists to game developers, to see how technology careers are for everyone.

Challenge Gender Stereotypes in Wales

Speak to teachers, parents or caregivers who can help challenge those views.



FOR PARENTS/CAREGIVERS

Challenge Stereotypes at Home and in Society

By using inclusive language, challenging outdated gender norms in play and activities, and fostering open conversations about bias and ambition.

Support Home-Based Tech Exploration

Use **Hwb** resources, **BBC Bitesize**, and local library coding kits to help girls engage with technology at home.

Celebrate Local Female Role Models

Highlight stories of local Welsh women working in tech.

Encourage Community STEM Activities

Encourage local community centres, Family Information Services, and youth hubs to run tech workshops for girls, and ensure community groups champion gender inclusion in STEM.

Challenge Gendered Career Messages at Home

Use Careers Wales resources to open conversations about tech careers, helping girls and families understand the vast opportunities in Wales and beyond.

Engage with Schools

Work with parent forums, PTAs, and school governors to advocate for gender-equitable teaching practices and extracurricular tech opportunities for girls.

RECOMMENDATIONS



FOR EDUCATORS

Science Capital Teaching Approach

Adopt the Science Capital Teaching Approach to promote digital technology careers to girls. This approach connects science and technology concepts to students' everyday experiences, interests, and aspirations, making these subjects more relatable and inclusive.

Embed Digital and STEM into the Curriculum for Wales

Use the Curriculum for Wales' focus on cross-curricular skills, creativity, and digital competency to normalise girls' engagement in technology from a young age.

Use Gender-Inclusive Resources and Examples

Ensure Welsh language and English-medium teaching materials reflect gender diversity and highlight Welsh female role models in technology.

Deliver Early Exposure to Digital Skills

Integrate coding, robotics, and creative technology projects across Areas of Learning and Experience (AoLEs), particularly Science & Technology.

Training for Bias Awareness

Work with regional consortia (like EAS, GwE, ERW, and CSC) to deliver unconscious bias training for teachers, helping them spot and challenge gender bias in technology teaching.

Invite Female Role Models from Industry

Partner with organisations such as **EESW STEM Cymru, Her Place**, RoModels and See Science, together with local tech employers to bring female digital professionals into classrooms to talk about their work.

Develop Girls-Only and Inclusive Digital Clubs

Establish and promote girls-only and mixed-gender coding and STEM clubs.

Raise Awareness of Tech Careers

Use the **Careers Wales Primary resources** to embed early career awareness, ensuring girls see the wide variety of digital careers available across Wales and beyond.

Whole-School Gender-Inclusive Approach

Embed a whole-school culture of gender inclusion, ensuring tech isn't seen as a 'boys' subject' and girls see themselves reflected in all aspects of school life.

RECOMMENDATIONS



FOR EMPLOYERS

Strengthen School-Industry Links

Partner with schools through initiatives like **EESW STEM Cymru, Her Place**, See Science and STEM Ambassadors Cymru to showcase tech careers for girls.

Provide Welsh Female Role Models

Encourage female employees in to volunteer as STEM Ambassadors.

Support Wales-Based Girls' Tech Initiatives

Sponsor girls-only coding camps, digital competitions, and tech events.

Provide Resources to Underfunded Schools

Support schools, particularly in rural and economically disadvantaged areas of Wales, by donating digital equipment, offering industry mentors, or running outreach programmes.

RECOMMENDATIONS



FOR POLICYMAKERS

Strengthen Digital Competency and Gender Equity in Curriculum for Wales

Ensure that gender inclusion in digital and STEM education is prioritised within the Curriculum for Wales rollout, particularly at primary level.

Introduce National Primary-Level Career Awareness Programme

Expand Careers Wales' early career guidance pilot into a national programme, spotlighting tech careers and ensuring gender diversity is central.

Fund Teacher Training in Gender Bias and Inclusive Pedagogy

Fund mandatory training on unconscious bias and inclusive STEM teaching for all primary educators.

Support Girls-Only and Mixed-Gender Tech Clubs

Fund nationwide primary school coding and digital clubs, with targeted programmes for girls in both Welsh-medium and English-medium settings.

Bridge the Digital Divide Across Wales

Ensure schools in rural, deprived, and under-resourced areas receive priority funding for digital equipment, ensuring girls have equal access to tech resources.

Embed Gender-Inclusive Approaches in Welsh Digital Strategy

Align gender inclusion goals for girls in tech with the Welsh Government's Digital Strategy, ensuring diversity is a core principle across skills programmes.

Track and Report Gender Data

Require schools and local authorities to track participation rates of girls in STEM-related activities from primary level onwards to monitor progress and guide policy.

OPPORTUNITIES AND INITIATIVES



FOR GIRLS

BBC Bitesize

BBC Bitesize is a free online learning platform created by the BBC, designed to support students, parents, and educators across the UK. It offers comprehensive resources for learners from primary school through to post-16 education, covering STEM subjects Technology and more.

Girl Guiding Cymru

The Welsh branch of Girlguiding UK, providing opportunities for girls and young women to develop skills, build confidence, and have adventures in a supportive environment.

Urdd Gobaith Cymru

Urdd Gobaith Cymru is Wales' largest national youth organisation, offering Welsh-medium activities, outdoor residential centres, youth clubs, sports, magazines, and the annual Eisteddfod festival for young people aged 8 to 25.

Techniquest

A science discovery centre located in Cardiff, Wales. It offers interactive exhibits, workshops, and programmes designed to engage people of all ages in science, technology, engineering, and mathematics (STEM).

Xplore!

A Science Discovery Centre in Wrexham, North Wales, is an interactive hub that inspires curiosity through hands-on exhibits, live science shows, and educational workshops. Engaging with schools, families, and communities, Xplore! promotes STEM learning and encourages young people to explore careers in science and technology.

OPPORTUNITIES AND INITIATIVES



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Careers Wales

Careers Wales is a publicly funded organisation providing free, impartial careers information, advice, and guidance to people of all ages across Wales. It supports individuals to make informed decisions about their education, training, and employment options, helping them develop the skills and confidence to succeed in a changing job market. Careers Wales also works with schools, employers, and training providers to highlight career pathways, promote emerging opportunities, and ensure the workforce of the future meets the needs of the Welsh economy.

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CyberFirst Wales

CyberFirst Wales is part of the UK's CyberFirst programme, which supports and encourages young people to explore careers in cybersecurity. It works with schools, colleges, and businesses to provide training, competitions, and learning opportunities, helping to build digital and cyber skills across Wales. By engaging students from diverse backgrounds, CyberFirst Wales aims to broaden participation and strengthen the future cyber workforce.

EESW STEM Cymru

The Girls into STEM programme, run by EESW (Engineering Education Scheme Wales), encourages girls across Wales to explore careers in engineering and technology. Through hands-on workshops, projects, industry visits, and mentoring, the programme aims to challenge stereotypes, build confidence, and inspire more girls to consider STEM careers.

Her Place

Her Place is an organisation dedicated to creating brighter futures for girls and women in Science, Technology, Engineering, and Maths (STEM). Through mentoring, outreach, role models, and advocacy, Her Place helps remove barriers and create opportunities for women to succeed in STEM and digital careers. It also collaborates with businesses, educators, and policymakers to promote gender equity across the sector.

Institute of Physics Whole School Inclusion and Equity Network

The Whole School Inclusion and Equity Network, run by the Institute of Physics, supports Welsh schools to create inclusive learning environments where all students, regardless of gender, background, or identity, feel encouraged to pursue physics and other STEM subjects. The network provides training, resources, and guidance to help schools address bias and promote equal opportunities for all students.

Reprogramming the Future:

Creating an Inclusive Digital Technology Sector for Women in Wales

Neon

Neon Futures is an online platform that connects schools and educators with STEM outreach opportunities, including workshops, activities, and role model sessions across the UK, including Wales. By showcasing real-world STEM careers and highlighting diverse role models, Neon aims to inspire young people and broaden their understanding of the opportunities available in science, technology, engineering, and maths.

RoModels

RoModels is a Welsh initiative showcasing diverse role models across STEM, including digital technology. By highlighting real-life stories of women in science, technology, engineering, and maths, RoModels aims to inspire girls and women, break down stereotypes, and demonstrate the variety of career pathways available in STEM fields.

Science Made Simple

Science Made Simple is a science communication organisation based in Wales that delivers engaging shows, workshops, and outreach programmes to inspire young people about science, technology, engineering, and maths (STEM). Working with schools, communities, and festivals, they aim to make STEM accessible, exciting, and inclusive for all.

See Science

See Science is a STEM engagement organisation working across Wales to promote science, technology, engineering, and maths to young people, teachers, and the wider community. Through workshops, teacher training, events, and outreach, See Science helps inspire the next generation of scientists, engineers, and technologists, with a focus on inclusivity and widening participation.

Seren Academy

Seren Academy is a fully funded programme to support the aspirations and ambitions of the most able learners, helping to widen their horizons, develop a passion for their chosen field of study, and reach their academic potential. The Seren Academy is available to years 8 to 13 learners from state schools and further education colleges across Wales.

STEM Ambassadors Wales

The STEM Ambassadors network encourages professionals, including women in STEM, to volunteer their time to inspire and mentor young people in schools and communities across Wales. Many female STEM professionals volunteer to act as role models, especially in technology and engineering.

Technocamps

Technocamps is a Wales-wide programme that provides free workshops, training, and outreach to inspire young people, teachers, and communities to engage with digital technology and computing. Based at Welsh universities, Technocamps supports coding, robotics, and digital skills development, helping build confidence and pathways into technology careers.

Techniquet

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Code First Girls

Code First Girls is a social enterprise dedicated to increasing the number of women in technology through free coding courses, training programmes, and job opportunities. Working with employers across the UK, including in Wales, Code First Girls helps women develop the skills they need to enter and thrive in tech careers, supporting a more diverse and inclusive technology industry.

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CyberFirst Wales is part of the UK's CyberFirst programme, which supports and encourages young people to explore careers in cybersecurity. It works with schools, colleges, and businesses to provide training, competitions, and learning opportunities, helping to build digital and cyber skills across Wales. By engaging students from diverse backgrounds, CyberFirst Wales aims to broaden participation and strengthen the future cyber workforce.

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Reprogramming the Future:

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MiFuture

MiFuture is a digital careers platform designed to help young people in Wales find and apply for jobs, apprenticeships, and training opportunities. Through its app and online resources, MiFuture connects young people with employers, training providers, and career options, helping them navigate their next steps after school or college.

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Business Wales Business Class

Business Class is a programme that partners schools with businesses to provide students with insights into the working world, helping them understand different career paths and develop employability skills.

REPROGRAMMING EDUCATION: SECONDARY SCHOOL

Key Barriers and Challenges

Many of the key barriers and challenges girls face in primary school persist and become more pronounced as they progress through secondary school. At this stage, gender stereotypes, unconscious bias, and a lack of relatable female role models continue to affect girls, and they are compounded by additional pressures such as social expectations, limited career guidance, sexual harassment and the influence of peers.

The transition to secondary school often marks a period of heightened self-awareness, where girls may become more conscious of the gendered perceptions surrounding technology and STEM careers, leading to further disengagement from these subjects.

Addressing these obstacles at the secondary school level is crucial for shaping future aspirations and dismantling barriers that continue to hold girls back from realising and reaching their full potential.

Gender Stereotypes

Gender stereotypes remain a significant obstacle at the secondary school level. As girls enter their teenage years stereotypes often become more deeply ingrained, with technology and computer science increasingly perceived as 'masculine' fields.

The portrayal of male-dominated industries in media, combined with the reinforcement of traditional gender roles in many classrooms, discourages girls from continuing their engagement in STEM subjects.

The pressure to conform to these expectations, particularly as girls navigate adolescence, can make them less likely to pursue technology, even if they have demonstrated interest or ability in primary school.

Role Models

The lack of female representation in digital technology continues to be a significant barrier for girls at secondary school. Without visible role models who have succeeded in tech careers, it can be difficult for girls to envision themselves in these roles. While there are notable female figures in technology, their visibility in educational settings remains low.

Peer Influence and Social Expectations

As they transition to secondary school, girls are often more influenced by their peers and may face pressure to conform to social expectations. In many cases, the pressure to align with traditionally feminine interests, such as fashion or social activities, can conflict with pursuing subjects like technology, which are often still viewed as more suited to boys. The fear of being 'different' or not fitting in with their peers can dissuade girls from taking tech-related subjects, even when they have a genuine interest.

Additionally, in some regions, cultural and societal expectations place greater value on traditional or domestic roles for girls, steering them toward careers within health and social care, education, or retail, rather than STEM careers.

Unconscious Bias in Education

Unconscious bias continues to be a significant issue. Teachers may unintentionally direct more attention or resources toward boys in STEM subjects, assuming that boys are more naturally suited for subjects like mathematics and computing. This bias can result in girls receiving less encouragement or fewer opportunities to engage deeply with technology, which can negatively impact their confidence and interest in the subject.

Career Guidance

In secondary school, career guidance often focuses on traditional career paths and may overlook the broad spectrum of opportunities within digital technology. Girls may not be informed about the wide range of technical and non-technical careers available to them across Wales and within their own communities. The limited knowledge of these pathways can lead to girls feeling that the digital technology sector is not accessible or relevant to them.

Self-Confidence

Self-confidence remains a significant barrier for girls in secondary school when it comes to subjects like math, science, and technology. Although girls may show interest and aptitude in these areas, they often internalise the belief that they are 'not as good' as boys at these subjects due to societal conditioning. This lack of confidence can be exacerbated in competitive environments where boys are more likely to be recognised or celebrated for their achievements in tech-related subjects.

Access to Resources

The digital divide continues to affect girls, particularly in more disadvantaged areas where access to resources such as computers, high-speed internet, or technical tools may be limited. Without these resources, girls may be at a disadvantage when it comes to engaging with technology outside of the classroom, which further limits their exposure and opportunities in digital technology.

Girls-Only Initiatives

While many secondary schools offer extracurricular clubs or competitions in digital technology related fields, these spaces are often dominated by boys, making girls feel isolated or less motivated to participate. Few girls-only initiatives or STEM clubs exist at the secondary school level, which could provide a safe, encouraging environment where girls can engage in technology without facing gendered biases.

Sexual Harassment and Discrimination

Unfortunately, girls may also face sexual harassment and discrimination from their peers in secondary school. In male-dominated classrooms or at extracurricular tech activities, girls may encounter overt or subtle forms of harassment, making them feel unwelcome or unsupported. This environment can discourage girls from pursuing their interest in technology or even cause them to disengage from tech-related subjects entirely.

61%

of girls surveyed reported having personal experience of peer-on-peer harassment and 82% reported seeing others experience it. ^{ix}

Esytn report (December 2021)

Balancing School and Extracurricular Activities

Girls may find it challenging to balance the demands of schoolwork with extracurricular activities in digital technology. With increased academic pressure, girls may not have the time or resources to engage in extracurricular clubs, coding competitions, or hackathons. Additionally, extracurricular tech activities are often dominated by boys, which can make these spaces feel less welcoming for girls.

Technical Support or Training

Many girls may not receive the technical support or advanced training they need to excel in tech-related subjects. While boys may be more encouraged to pursue self-directed learning or engage in tech-related activities outside of school, girls often face barriers to accessing the same opportunities. Without adequate training or support, girls may struggle to keep up with their male peers, further hindering their confidence and interest in technology.

Media Representation

The portrayal of women in the media, particularly in the digital technology industry, remains skewed. Women are often underrepresented or misrepresented in popular media, which can perpetuate the stereotype that careers in tech are male-dominated. This lack of positive media representation can discourage girls from aspiring to careers in digital technology, as they fail to see relatable role models in mainstream media.

Industry Partnerships in Schools

Secondary schools often lack strong partnerships with the technology industry, which can limit opportunities for students to gain real-world exposure to the digital technology sector. Without these connections, girls may have fewer chances to participate in internships, job shadowing, or work experience programmes that could spark their interest in digital technology careers.

SAM CRICHTON

OGI

'As a Network Field Engineer at Ogi, my role is all about keeping our network running smoothly, maintaining, monitoring, and upgrading it. No two days are the same; one moment, I'm fixing faults or supporting large-scale projects, and the next, I'm out in all weather, working alongside civil engineers. I've tackled everything from accidental network damage caused by third parties to a car crashing into a street cabinet on New Year's Day!

My journey started with a five-year plan, I knew where I wanted to go and focused on building the skills to get there. I began in customer service, where my problem-solving skills stood out. That led to a secondment as a system analyst, where I designed a training platform to help agents troubleshoot router issues.

Later, I stepped into the unknown, taking on a quantity surveying role in Milford Haven without prior experience. It was there I met Gwyn, one of Ogi's Senior Construction Supervisors. Recognising my ambition, he encouraged me to apply for a role in Service Operations at Ogi and I got the job.

Once I joined Ogi, I realised my true passion was network engineering. I reached out to Doug, our Director of Engineering and Network Operations, for advice on the skills I'd need to make the move.



With his guidance, I put in the work and before long, I landed my dream role.

Being a woman in a male-dominated field comes with its challenges. Early in my career, a team leader questioned whether I was physically capable of surveying work, just because I'm 5ft 3. But I was quick to prove that size doesn't matter. In fact, there are things I can do that some of my male colleagues can't, like fitting into tight spaces to tackle the more intricate tasks.

If you're ready to get stuck in and get your hands dirty, nothing should hold you back, especially not outdated stereotypes.'

RECOMMENDATIONS



FOR GIRLS

Girls should be supported to:

Connect with Role Models

Engage with female tech professionals, helping girls see successful women working in Welsh digital careers.

Champion Welsh Girls in Tech

Celebrate achievements of girls in Eisteddfod STEM competitions, First Lego League Wales (**EESW STEM Cymru**), or National Coding Week Wales, to showcase girls excelling in tech locally.

Join Girls-Only Spaces

Take part in girls-only hackathons, coding camps and STEM sessions hosted by WISE Wales, or STEM Cymru, which create safe and inclusive spaces to explore technology.

Develop Digital Skills on Hwb

Use **Hwb**'s digital learning resources, particularly the Digital Competence Framework, to build tech skills in school and at home.

Peer Mentorship Networks

Set up girl-to-girl peer mentoring schemes, supported by Careers Wales, so older girls can encourage younger pupils to stay involved in tech subjects.

RECOMMENDATIONS



FOR PARENTS/CAREGIVERS

Challenge Stereotypes at Home and in Society

By using inclusive language, challenging outdated gender norms in play and activities, and fostering open conversations about bias and ambition.

Support Home-Based Tech Exploration

Use **Hwb** resources, **BBC Bitesize**, and local library coding kits to help girls engage with technology at home.

Celebrate Local Female Role Models

Highlight stories of local Welsh women working in tech.

Encourage Community STEM Activities

Encourage local community centres, libraries, Family Information Services, and youth hubs to run tech workshops for girls, and ensure community groups champion gender inclusion in STEM.

Challenge Gendered Career Messages at Home

Use Careers Wales resources to open conversations about tech careers, helping girls and families understand the vast opportunities in Wales and beyond.

Engage with Schools

Work with parent forums, PTAs, and school governors to advocate for gender-equitable teaching practices and extracurricular tech opportunities for girls.

Parent Awareness Campaigns

Access **Hwb**-hosted digital literacy guides for parents, explaining the importance of digital skills for future careers in Wales' evolving economy.

Challenge Peer Pressure and Social Norms

Work with schools, local councils, and third-sector organisations to deliver confidence-building workshops for girls navigating social pressures around STEM subjects.

RECOMMENDATIONS



FOR EDUCATORS

Science Capital Teaching Approach

Adopt the Science Capital Teaching Approach to promote digital technology careers to girls. This approach connects science and technology concepts to students' everyday experiences, interests, and aspirations, making these subjects more relatable and inclusive.

Embed Gender Equity in the Curriculum for Wales

Use the Curriculum for Wales focus on creativity and innovation to deliver inclusive STEM projects, ensuring girls see tech as a space for them.

Training for Bias Awareness

Work with regional consortia (like EAS, GwE, ERW, and CSC) to deliver unconscious bias training for teachers, helping them spot and challenge gender bias in technology teaching.

Role Model Visits and Mentoring

Partner with organisations such as **EESW STEM Cymru, Her Place**, RoModels, See Science and STEM Ambassadors together with local tech employers to bring female digital professionals into classrooms to talk about their work.

Use Gender-Inclusive Resources and Examples

Ensure Welsh language and English-medium teaching materials reflect gender diversity and highlight Welsh female role models in technology.

Raise Awareness of Tech Careers

Use the **Careers Wales Primary resources** to embed early career awareness, ensuring girls see the wide variety of technical and non-technical careers in digital technology available across Wales and beyond.

Whole-School Gender-Inclusive Approach

Embed a whole-school culture of gender inclusion, ensuring tech isn't seen as a 'boys' subject' and girls see themselves reflected in all aspects of school life.

Create Inclusive Tech Spaces in Schools

Establish girls-only coding clubs, but also focus on mixed-gender tech projects where girls take leadership roles, promoting gender equity in all STEM activities.

Zero-Tolerance Policies on Harassment

Work with Estyn and Welsh Government to ensure every school has a robust, enforced policy on sexual harassment, with staff trained to intervene and support girls in male-dominated spaces.

Welsh Context in Teaching Materials

Use examples of Welsh women innovators, tech start-ups, and tech-for-good projects in Wales, so girls see digital careers rooted in their own communities.

Flexible Extracurricular Scheduling

Schedule tech clubs and STEM competitions at times accessible to girls balancing academic, family, and cultural commitments.

RECOMMENDATIONS



FOR EMPLOYERS

Create Wales-Wide School Partnerships

Through Careers Wales, **EESW STEM Cymru**, **Her Place**, See Science and STEM Ambassadors, create a national programme linking Welsh tech companies with secondary schools, ensuring strong outreach to girls.

Sponsor Girls-Only Initiatives

Fund girls-only coding clubs, Welsh hackathons, and digital challenges in collaboration with Techniquist, Big Ideas Wales and **EESW STEM Cymru**.

Support Teacher CPD

Partner with regional schools to offer teacher placements in tech companies, so educators better understand career opportunities for girls in Wales' digital economy.

Highlight Local Female Talent

Promote stories of women in tech in Wales, ensuring girls see relatable role models.

Offer Work Experience Opportunities

Connect with local schools to offer visits, work experience, role shadowing, and mentoring opportunities. Opportunities could be offered virtually for Wales' more rural schools.

RECOMMENDATIONS



FOR POLICYMAKERS

Embed Gender Equality into Digital Strategy for Wales

Ensure the Welsh Government Digital Strategy has a gender equality strand, with clear targets for increasing girls' participation in digital skills pathways.

Statutory Gender-Inclusive Careers Guidance

Mandate that Careers Wales and CWRE frameworks include gender-equal representation of digital careers, ensuring digital opportunities are actively promoted to girls.

Expand Digital Equity Initiatives

Scale up Digital Communities Wales, focusing on targeted support for girls in deprived or rural areas, ensuring access to devices, internet, and mentors.

Data Monitoring and Accountability

Require schools and local authorities to track girls' participation rates in STEM subjects and digital extra-curricular activities, using Estyn inspections to monitor progress.

Strengthen School-Industry Links

Develop a national framework for school-industry partnerships under the Welsh STEM strategy, ensuring tech employers commit to long-term engagement with secondary schools.

Support Inclusive Digital Apprenticeships

Ensure digital apprenticeships promoted by Welsh Government (through Apprenticeships Wales) actively recruit girls, with mentoring support built in.

Tackle Sexual Harassment in Schools

Implement recommendations from Estyn's 2021 report on peer-on-peer sexual harassment, including mandatory sexual harassment prevention training for all school staff.

OPPORTUNITIES AND INITIATIVES



FOR GIRLS

BBC Bitesize

BBC Bitesize is a free online learning platform created by the BBC, designed to support students, parents, and educators across the UK. It offers comprehensive resources for learners from primary school through to post-16 education, covering STEM subjects Technology and more.

Girl Guiding Cymru

The Welsh branch of Girlguiding UK, providing opportunities for girls and young women to develop skills, build confidence, and have adventures in a supportive environment.

Urdd Gobaith Cymru

Urdd Gobaith Cymru is Wales' largest national youth organisation, offering Welsh-medium activities, outdoor residential centres, youth clubs, sports, magazines, and the annual Eisteddfod festival for young people aged 8 to 25.

Techniquest

A science discovery centre located in Cardiff, Wales. It offers interactive exhibits, workshops, and programmes designed to engage people of all ages in science, technology, engineering, and mathematics.

Xplore!

A Science Discovery Centre in Wrexham, North Wales, is an interactive hub that inspires curiosity through hands-on exhibits, live science shows, and educational workshops. Engaging with schools, families, and communities, Xplore! promotes STEM learning and encourages young people to explore careers in science and technology.

OPPORTUNITIES AND INITIATIVES



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Careers Wales

Careers Wales is a publicly funded organisation providing free, impartial careers information, advice, and guidance to people of all ages across Wales. It supports individuals to make informed decisions about their education, training, and employment options, helping them develop the skills and confidence to succeed in a changing job market. Careers Wales also works with schools, employers, and training providers to highlight career pathways, promote emerging opportunities, and ensure the workforce of the future meets the needs of the Welsh economy.

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CyberFirst Wales

CyberFirst Wales is part of the UK's CyberFirst programme, which supports and encourages young people to explore careers in cybersecurity. It works with schools, colleges, and businesses to provide training, competitions, and learning opportunities, helping to build digital and cyber skills across Wales. By engaging students from diverse backgrounds, CyberFirst Wales aims to broaden participation and strengthen the future cyber workforce.

EESW STEM Cymru

The Girls into STEM programme, run by EESW (Engineering Education Scheme Wales), encourages girls across Wales to explore careers in engineering and technology. Through hands-on workshops, projects, industry visits, and mentoring, the programme aims to challenge stereotypes, build confidence, and inspire more girls to consider STEM careers.

Her Place

Her Place is an organisation dedicated to creating brighter futures for girls and women in Science, Technology, Engineering, and Maths (STEM). Through mentoring, outreach, role models, and advocacy, Her Place helps remove barriers and create opportunities for women to succeed in STEM and digital careers. It also collaborates with businesses, educators, and policymakers to promote gender equity across the sector.

Institute of Physics Whole School Inclusion and Equity Network

The Whole School Inclusion and Equity Network, run by the Institute of Physics, supports Welsh schools to create inclusive learning environments where all students, regardless of gender, background, or identity, feel encouraged to pursue physics and other STEM subjects. The network provides training, resources, and guidance to help schools address bias and promote equal opportunities for all students.

M-SParc

Wales' first dedicated science park, located in Gaerwen on Anglesey. It fosters innovation by offering flexible office and lab spaces, alongside business support and networking opportunities for startups and established companies. With over 70 tenants and strong partnerships with industry leaders, M-SParc promotes collaboration and growth in sectors such as technology, renewable energy, and life sciences. The park hosts events and provides resources to help businesses scale and innovate, contributing to the regional economy and developing future talent.

Neon

Neon Futures is an online platform that connects schools and educators with STEM outreach opportunities, including workshops, activities, and role model sessions across the UK, including Wales. By showcasing real-world STEM careers and highlighting diverse role models, Neon aims to inspire young people and broaden their understanding of the opportunities available in science, technology, engineering, and maths.

RoModels

RoModels is a Welsh initiative showcasing diverse role models across STEM, including digital technology. By highlighting real-life stories of women in science, technology, engineering, and maths, RoModels aims to inspire girls and women, break down stereotypes, and demonstrate the variety of career pathways available in STEM fields.

Science Made Simple

Science Made Simple is a science communication organisation based in Wales that delivers engaging shows, workshops, and outreach programmes to inspire young people about science, technology, engineering, and maths (STEM). Working with schools, communities, and festivals, they aim to make STEM accessible, exciting, and inclusive for all.

See Science

See Science is a STEM engagement organisation working across Wales to promote science, technology, engineering, and maths to young

people, teachers, and the wider community. Through workshops, teacher training, events, and outreach, See Science helps inspire the next generation of scientists, engineers, and technologists, with a focus on inclusivity and widening participation.

Seren Academy

Seren Academy is a fully funded programme to support the aspirations and ambitions of the most able learners, helping to widen their horizons, develop a passion for their chosen field of study, and reach their academic potential. The Seren Academy is available to years 8 to 13 learners from state schools and further education colleges across Wales.

STEM Ambassadors Wales

The STEM Ambassadors network encourages professionals, including women in STEM, to volunteer their time to inspire and mentor young people in schools and communities across Wales. Many female STEM professionals volunteer to act as role models, especially in technology and engineering.

Technocamps

Technocamps is a Wales-wide programme that provides free workshops, training, and outreach to inspire young people, teachers, and communities to engage with digital technology and computing. Based at Welsh universities, Technocamps supports coding, robotics, and digital skills development, helping build confidence and pathways into technology careers.

Techniquet

A science discovery centre located in Cardiff, Wales. It offers interactive exhibits, workshops, and programmes designed to engage people of all ages in science, technology, engineering, and mathematics (STEM).

Urdd Gobaith Cymru

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Code First Girls

Code First Girls is a social enterprise dedicated to increasing the number of women in technology through free coding courses, training programmes, and job opportunities. Working with employers across the UK, including in Wales, Code First Girls helps women develop the skills they need to enter and thrive in tech careers, supporting a more diverse and inclusive technology industry.

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Reprogramming the Future:

Creating an Inclusive Digital Technology Sector for Women in Wales

MiFuture

MiFuture is a digital careers platform designed to help young people in Wales find and apply for jobs, apprenticeships, and training opportunities. Through its app and online resources, MiFuture connects young people with employers, training providers, and career options, helping them navigate their next steps after school or college.

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Business Wales Business Class

Business Class is a programme that partners schools with businesses to provide students with insights into the working world, helping them understand different career paths and develop employability skills.



REPROGRAMMING PATHWAYS: POST-16 EDUCATION AND TRAINING

Key Barriers and Challenges

As girls transition from secondary school to post-16 education and training, they continue to face many of the challenges encountered earlier in their educational journey that influence their decisions and limit their access to careers in digital technology. These barriers become even more pronounced as they enter specialised and competitive environments.

At this level, new barriers also emerge to include gendered career expectations, financial pressures, a lack of knowledge of post-16 education and training options, including alternative pathways such as apprenticeships and paid work placements and internships. Gender bias in academic settings, the underrepresentation of women in leadership roles, and the lack of industry connections also significantly hinder girls' pursuit of careers in digital technology.

Gender Bias and Stereotypes in Post-16 Education

Gender bias remains a persistent issue, even though many universities and colleges have implemented diversity initiatives. Technology and digital-related fields in further and higher education are still often perceived as male-dominated and gender stereotypes influence students' decisions to pursue courses related to technology and, once enrolled, can affect their academic experience.

In the UK, only

35%

of STEM students in higher education are women, with representation dropping to 19% for Computer Science and Engineering & Technology courses. ^x

This underrepresentation not only reflects societal gender biases but also contributes to the perception that these fields are primarily for men.

The belief that digital technology is primarily for men can discourage girls from enrolling in these courses or cause them to feel out of place in classrooms and labs dominated by male students. This bias is further reinforced by the male-centric culture that often exists within tech departments, where male students may receive more encouragement or recognition for their achievements in these areas. In some cases, women feel less capable in these disciplines, which may result in a reduction of female representation in technical roles.

Routes into Post-16 Education and Training

Apprenticeships, internships and skills bootcamps in Wales are often viewed as 'second-best' options compared to university, particularly for high-achieving girls. This cultural bias discourages girls from considering practical, work-based routes into digital technology careers.

Equity of Access

Equity of access to post-16 education and training is a significant concern in Wales, with girls from low-income households, rural and underrepresented communities facing additional barriers to accessing further education, apprenticeships, and training opportunities.

Many girls are deterred from applying to university due to concerns about debt, living costs, and the affordability of studying away from home. First-generation university applicants, particularly in rural areas, often lack confidence navigating complex applications and funding systems.

Gendered Career Expectations and Limited Careers Guidance

Despite some progress, careers advice in schools often reinforces traditional career pathways for girls, with digital technology rarely presented as a viable option. There is limited awareness of the diverse roles available in digital technology and even less focus on vocational and alternative pathways into the sector.

There is a significant lack of awareness about the wide range of technical and non-technical roles available in the digital technology sector, particularly for women. While technical careers like coding and engineering are often highlighted, roles in project management, user experience, digital marketing, and data analysis are equally vital to tech innovation. This limited visibility can discourage women from pursuing impactful careers in tech, despite possessing the skills needed for these roles.

Underrepresentation of Women in Leadership Roles

A key challenge for girls pursuing careers in digital technology in further and higher education is the continued underrepresentation of women in leadership roles, both in academia and within industry partnerships. The lack of female professors, researchers, and academic leaders within technology-related departments can make it difficult for female students to find mentors and role models who look like them.

Women who aspire to academic or leadership positions in digital technology may be discouraged by the gender disparities in faculty representation and the lack of visible role models. This gap in representation reinforces the idea that digital technology careers are primarily suited for men, which can deter girls from aiming for these roles.

Limited Industry Connections and Opportunities

The lack of strong partnerships between higher education institutions and the digital technology industry is another barrier. Girls entering further and higher education may find it difficult to access apprenticeships internships, work placements, or industry-related experiences that are crucial for developing the skills and networks needed to succeed in digital technology careers.

Wales' digital technology sector has been growing rapidly, and there are numerous job opportunities in fields like software engineering, cybersecurity, and data science, however, without adequate industry partnerships, many students, particularly women, remain unaware of the range of opportunities available or may lack the connections to access them.

The 'Leaky Pipeline' in Digital Technology

As girls progress through their higher education journey, many encounter a phenomenon known as the 'leaky pipeline' in digital technology, a high rate of attrition among women as they advance through academic programmes. This trend, which sees women leaving STEM-related courses or opting for alternative career paths, is particularly evident in fields like computer science, engineering, and technology.

Factors such as imposter syndrome, lack of support, and the absence of women in their cohort or faculty can make the environment feel isolating and unwelcoming, leading to lower retention rates.

Studies show that women who experience microaggressions, lack confidence, or feel excluded are more likely to leave technology programmes.

Work-Life Balance and Gendered Expectations

One of the more practical barriers faced by women in higher education, particularly in demanding fields like digital technology, is the challenge of balancing academic work with personal responsibilities. Women are often expected to take on more caregiving and domestic duties than their male counterparts, which can create additional stress and hinder their ability to fully engage in their studies. The digital technology sector itself is also notorious for its demanding work hours, which may discourage women who are juggling family or caregiving responsibilities.

Technical Support and Training

Even though women in post-16 education may have access to technical courses and resources, they may still face challenges due to the lack of specific technical support tailored to their needs. Female students may find that they are expected to have a certain level of prior knowledge or experience that is not always accessible to them, especially if they were not encouraged to pursue digital technology subjects in earlier years.

Moreover, some female students may lack confidence in their technical abilities, exacerbated by the perception that digital technology is a male-dominated field.

Peer and Social Pressures

Despite being in a more academically advanced setting, female students in higher education still face significant peer and social pressures that discourage them from pursuing digital technology. In some university environments, especially in male-dominated tech departments, women may feel pressured to conform to a gendered norm that discourages their involvement.

Furthermore, the stereotype that women are less capable in technical fields can make them more vulnerable to bias, either overt or subtle, from peers. This can manifest in everything from casual comments to more serious cases of exclusion.

KATE DAVEY

NEXT VENTURE TECHNOLOGIES

'After graduating from the University of South Wales in 2019, I initially worked in retail as I explored different skills, including entrepreneurship, project management, and technology. That curiosity led me to pursue a career in STEM, specifically in the tech industry. In 2022, I was offered an entry-level role with Next Venture Technologies, part of the pH Innovate Group, a Pontypool-based tech company. There, I began my journey in tech as a Projects and Operations Administrator.

Now, Projects and Operations Manager, I oversee the development of new customer products, manage schedules for our configuration and development teams, and maintain three company websites I developed. Each project brings new challenges, and I'm continually learning. I'm also working toward a Prince2 Certification to solidify my project management skills.

There's a common belief that you need to be a tech expert or have a computer science degree to succeed in this field. However, what's more important is curiosity, determination, and adaptability. Digital technology is a field for everyone, and there's no one path to success. I've learned that with the right mindset and willingness to learn, it's possible to thrive in tech, no matter where you start.

Breaking into the tech industry is a very real challenge, particularly as someone without direct experience. What set me apart was my commitment to learning. I took online courses to build relevant skills and show my dedication, which helped me land my first role and gain confidence in the field.



Imposter syndrome was another obstacle I faced. In a fast-paced, male-dominated field like tech, it's easy to feel out of place, however, over time I realised that no one has all the answers. It's about trusting your abilities, asking questions, and seeking support when needed.

My advice to anyone starting in STEM or considering a career in tech is to keep learning, whether it's through formal education, online courses, or just by diving into projects that excite you. Don't be afraid to make mistakes, they're part of the learning process, and the skills you pick up on the job are invaluable.'

RECOMMENDATIONS



FOR GIRLS AND WOMEN

Engage in Networks and STEM events

Research and connect with local networks and events such as **Wales Women in STEM**, **Women in Cyber** and **Wales Tech Week** to build connections, gain support, and learn from women in STEM positions.

Seek Mentorship and Role Models

Connect with female tech professionals and seek out mentoring opportunities, either through attendance at networking events or through LinkedIn.

Explore Alternative Pathways

Consider apprenticeships, internships, and skills bootcamps available in Wales that offer practical routes into digital careers.

Develop Digital Skills

Access free resources such as **Hwb** and **BBC Bitesize** to improve your digital knowledge and build confidence in technical abilities.



FOR PARENTS/CAREGIVERS

Promote Positive Role Models

Highlight successful women in digital technology to inspire girls at home and provide them with positive examples.

Encourage Digital Learning

Introduce girls to coding platforms, tech clubs, and competitions like to spark their interest in technology.

Support Alternative Pathways

Challenge traditional narratives by exploring apprenticeship routes and alternative career pathways with your child as equally valuable options.

RECOMMENDATIONS



FOR EDUCATORS

Inclusive Curriculum Design

Develop teaching materials that reflect diverse role models and demonstrate how digital technology careers can be inclusive and accessible to girls.

Promote Apprenticeships and Alternative Pathways

Collaborate with organisations such as Careers Wales, **EESW STEM Cymru** and MiFuture to improve awareness of non-university career routes in digital technology.

Employer Visits

Partner with organisations such as **EESW STEM Cymru, Her Place**, See Science and STEM Ambassadors together with local tech employers to arrange employer visits, connecting education and employment.

Role Model Visits

Partner with organisations such as **EESW STEM Cymru, Her Place**, RoModels, See Science and STEM Ambassadors together with local tech employers to bring female digital professionals into classrooms to talk about their work.

Provide Targeted Support

Implement mentoring schemes, coding clubs, and digital skill-building activities specifically designed for girls to build their confidence.

Address Bias in the Classroom

Train staff on unconscious bias and ensure teaching practices provide equal opportunities for girls to develop digital skills.

RECOMMENDATIONS



FOR EMPLOYERS

Strengthen Industry Partnerships with Education

Partner with Welsh universities and colleges to provide paid internships, work experience placements, career days, employer visits and mentorship opportunities for female students.

Promote Women in Leadership

Actively recruit and support women in senior roles to create visible role models and inspire girls in digital technology.

Offer Flexible Pathways

Ensure apprenticeship schemes and alternative pathways are clearly promoted as viable routes into digital careers.

Create Inclusive Environments

Develop inclusive workplace cultures that fosters equality, diversity and inclusion by embedding inclusive leadership training for all senior managers and leaders. Carry out climate surveys to identify any barriers to women's progression in the business. Deliver regular EDI training across the organisation and create mentoring and leadership programmes that promote development opportunities for women.

RECOMMENDATIONS



FOR POLICYMAKERS

Improve Access to Affordable Childcare

Review the access and affordability of childcare in Wales for working parents.

Promote Flexible Working Policies

Encourage tech employers to adopt flexible working arrangements, such as remote working, hybrid models, and job-sharing for leadership roles.

Embed Gender Equality into Industry Standards

Introduce sector-wide diversity and inclusion frameworks that set targets for female representation in leadership roles. Require tech companies bidding for public sector contracts in Wales to demonstrate robust gender diversity and inclusion policies.

Promote Inclusive Recruitment Practices

Develop toolkits for Welsh employers to support inclusive hiring practices, including anonymised CVs, gender-balanced interview panels, and unconscious bias training. Encourage organisations to publish transparent salary bands to address pay inequalities that may hinder women's progression.

Strengthen Financial Support

Expand access to grants, bursaries, and hardship funds to reduce financial barriers for girls from low-income or rural backgrounds.

Expand Apprenticeship and Bootcamp Opportunities

Increase funding for digital apprenticeships and bootcamps designed to provide practical pathways into digital careers for women.

Promote Regional Access

Invest in digital infrastructure in rural communities to ensure equal access to digital technology education for all girls across Wales.

Fund Mentoring and Outreach Programmes

Support initiatives that connect female industry leaders with girls and young women to provide guidance, networking, and role models.

OPPORTUNITIES AND INITIATIVES



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BBC Bitesize is a free online learning platform created by the BBC, designed to support students, parents, and educators across the UK. It offers comprehensive resources for learners from primary school through to post-16 education, covering STEM subjects Technology and more.

British Computer Society (BCS) Women in Wales

BCS (the Chartered Institute for IT) has a Women in IT network, including a regional group for Wales. It promotes gender diversity in tech, runs events, and provides mentoring and career development for women working in digital technology.

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Careers Wales is a publicly funded organisation providing free, impartial careers information, advice, and guidance to people of all ages across Wales. It supports individuals to make informed decisions about their education, training, and employment options, helping them develop the skills and confidence to succeed in a changing job market. Careers Wales also works with schools, employers, and training providers to highlight career pathways, promote emerging opportunities, and ensure the workforce of the future meets the needs of the Welsh economy.

Code First Girls

Code First Girls is a social enterprise dedicated to increasing the number of women in technology through free coding courses, training programmes, and job opportunities. Working with employers across the UK, including in Wales, Code First Girls helps women develop the skills they need to enter and thrive in tech careers, supporting a more diverse and inclusive technology industry.

Data Inclusivity Network

The Data Inclusivity Network is a Wales-based initiative that promotes diversity and inclusion within the data and technology sectors. It works to ensure underrepresented groups, including women and marginalised communities, have equal opportunities to pursue careers in data science, analytics, and technology, and fosters an inclusive data community through events, resources, and advocacy.

Girl Guiding Cymru

The Welsh branch of Girlguiding UK, providing opportunities for girls and young women to develop skills, build confidence, and have adventures in a supportive environment.

Hwb

The digital learning platform for Wales, provided by the Welsh Government. It offers a range of digital tools and resources to support teaching and learning for educators and learners in Wales.

Reprogramming the Future:

Creating an Inclusive Digital Technology Sector for Women in Wales

Jobs Growth Wales+

Jobs Growth Wales+ is a Welsh Government programme providing training, paid work placements, and career support for 16 to 19-year-olds who are not in education, employment, or training (NEET). It helps young people gain skills, experience, and qualifications, supporting them to progress into sustained employment or further learning, including in emerging digital and technology sectors.

MiFuture

MiFuture is a digital careers platform designed to help young people in Wales find and apply for jobs, apprenticeships, and training opportunities. Through its app and online resources, MiFuture connects young people with employers, training providers, and career options, helping them navigate their next steps after school or college.

Network She

Network She is a supportive community for women in business, entrepreneurship, and leadership across Wales and beyond. It offers networking events, training, mentoring, and a platform to showcase women's achievements, helping to connect, inspire, and empower women at all stages of their careers. Network She champions collaboration, confidence-building, and the celebration of female talent, creating opportunities for women to thrive personally and professionally.

Techniquest

A science discovery centre located in Cardiff, Wales. It offers interactive exhibits, workshops, and programmes designed to engage people of all ages in science, technology, engineering, and mathematics (STEM).

Urdd Gobaith Cymru

Urdd Gobaith Cymru is Wales' largest national youth organisation, offering Welsh-medium activities, outdoor residential centres, youth clubs, sports, magazines, and the annual Eisteddfod festival for young people aged 8 to 25.

Wales Tech Week

Wales Tech Week is an annual festival celebrating innovation, technology, and digital talent across Wales. The event brings together businesses, entrepreneurs, educators, and policymakers to showcase technology, share ideas, and inspire the next generation, with a focus on diversity, inclusion, and future skills.

Wales Women in STEM

The Wales Women in STEM Network connects women across science, technology, engineering, and maths (STEM) in Wales. It provides peer support, networking opportunities, events, and a platform to share experiences. The network works to increase the visibility of women in STEM, promote role models, and advocate for gender equality across all STEM fields.

WEN Wales

While not STEM-specific, WEN Wales advocates for gender equality across all sectors, including STEM and digital technology. They work with partner organisations to increase women's representation in male-dominated fields.

Women in Cyber Network (Wales)

The Women in Cyber Network Wales is a community supporting women working in cybersecurity across Wales. It offers mentoring, networking events, professional development, and advocacy to increase the representation of women in cyber careers and foster an inclusive cyber community.

Xplore!

A Science Discovery Centre in Wrexham, North Wales, is an interactive hub that inspires curiosity through hands-on exhibits, live science shows, and educational workshops. Engaging with schools, families, and communities, Xplore! promotes STEM learning and encourages young people to explore careers in science and technology.

OPPORTUNITIES AND INITIATIVES



FOR PARENTS/CAREGIVERS

BBC Bitesize

BBC Bitesize is a free online learning platform created by the BBC, designed to support students, parents, and educators across the UK. It offers comprehensive resources for learners from primary school through to post-16 education, covering STEM subjects Technology and more.

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OPPORTUNITIES AND INITIATIVES



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EESW STEM Cymru

The Girls into STEM programme, run by EESW (Engineering Education Scheme Wales), encourages girls across Wales to explore careers in engineering and technology. Through hands-on workshops, projects, industry visits, and mentoring, the programme aims to challenge stereotypes, build confidence, and inspire more girls to consider STEM careers.

Her Place

Her Place is an organisation dedicated to creating brighter futures for girls and women in Science, Technology, Engineering, and Maths (STEM). Through mentoring, outreach, role models, and advocacy, Her Place helps remove barriers and create opportunities for women to succeed in STEM and digital careers. It also collaborates with businesses, educators, and policymakers to promote gender equity across the sector.

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Institute of Physics Whole School Inclusion and Equity Network

The Whole School Inclusion and Equity Network, run by the Institute of Physics, supports Welsh schools to create inclusive learning environments where all students, regardless of gender, background, or identity, feel encouraged to pursue physics and other STEM subjects. The network provides training, resources, and guidance to help schools address bias and promote equal opportunities for all students.

M-SParc

Wales' first dedicated science park, located in Gaerwen on Anglesey. It fosters innovation by offering flexible office and lab spaces, alongside business support and networking opportunities for startups and established companies. With over 70 tenants and strong partnerships with industry leaders, M-SParc promotes collaboration and growth in sectors such as technology, renewable energy, and life sciences. The park hosts events and provides resources to help businesses scale and innovate, contributing to the regional economy and developing future talent.

Neon

Neon Futures is an online platform that connects schools and educators with STEM outreach opportunities, including workshops, activities, and role model sessions across the UK, including Wales. By showcasing real-world STEM careers and highlighting diverse role models, Neon aims to inspire young people and broaden their understanding of the opportunities available in science, technology, engineering, and maths.

RoModels

RoModels is a Welsh initiative showcasing diverse role models across STEM, including digital technology. By highlighting real-life stories of women in science, technology, engineering, and maths, RoModels aims to inspire girls and women, break down stereotypes, and demonstrate the variety of career pathways available in STEM fields.

Science Made Simple

Science Made Simple is a science communication organisation based in Wales that delivers engaging shows, workshops, and outreach programmes to inspire young people about science, technology, engineering, and maths (STEM). Working with schools, communities, and festivals, they aim to make STEM accessible, exciting, and inclusive for all.

See Science

See Science is a STEM engagement organisation working across Wales to promote science, technology, engineering, and maths to young people, teachers, and the wider community. Through workshops, teacher training, events, and outreach, See Science helps inspire the next generation of scientists, engineers, and technologists, with a focus on inclusivity and widening participation.

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Technocamps

Technocamps is a Wales-wide programme that provides free workshops, training, and outreach to inspire young people, teachers, and communities to engage with digital technology and computing. Based at Welsh universities, Technocamps supports coding, robotics, and digital skills development, helping build confidence and pathways into technology careers.

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Reprogramming the Future:
Creating an Inclusive Digital Technology Sector for Women in Wales



REPROGRAMMING THE WORKPLACE: EARLY CAREER

Key Barriers and Challenges

As women transition from further and higher education into the workforce, they encounter a new set of challenges and barriers in their early careers in digital technology. These challenges are often more pronounced due to the deeply ingrained gender stereotypes and systemic inequalities that persist in the industry.

Despite progress in many areas, the digital technology sector remains highly male-dominated, and women in the field must navigate both overt and subtle forms of discrimination and bias.

Overcoming these barriers requires action from employers, the government, and society at large to create a more equitable and inclusive tech ecosystem.

Gender Bias and Stereotypes in Post-16 Education

One of the most significant barriers women face in the early stages of their careers in digital technology is gender bias. This manifests in various ways, from assumptions about women's capabilities to the undervaluing of their contributions.

For example, women may be overlooked for high-profile projects or leadership opportunities in favour of male colleagues, regardless of their qualifications or performance. Furthermore, women in digital technology are often expected to prove their competence repeatedly, while their male counterparts may be given the benefit of the doubt.

In male-dominated environments, women may also experience imposter syndrome, the feeling that they don't belong or aren't qualified for their role. This can lead to a lack of confidence and reduced career progression as women hesitate to take risks or apply for promotions due to self-doubt.

The implementation of fair and inclusive recruitment practices is essential from employers, such as adopting blind recruitment processes, delivering gender bias training for hiring managers, and ensuring job descriptions use inclusive language.

Embedding structured, skills-based selection criteria and ensuring diverse recruitment panels will help remove unconscious bias, creating a more equitable hiring process where all candidates, regardless of gender, are evaluated fairly.

Underrepresentation in Leadership and Decision-Making Roles

The digital technology sector continues to be dominated by men, especially in senior roles. Women often face difficulties in climbing the career ladder due to limited access to leadership opportunities and a lack of relatable female role models in higher positions.

The absence of women in top leadership roles contributes to a cycle of underrepresentation, as there are fewer mentors, sponsors, and advocates for younger women in the field.

The visible underrepresentation of women in leadership positions also perpetuates the perception of 'if you can't see it, you can't be it', preventing women from aspiring to these positions or receiving the support they need to get there.



Hodge Bank is committed to driving positive change through its dedication to equality, diversity, and inclusion. By creating the Hodge Colleague Committee, they foster a strong sense of belonging for all employees. Their initiatives include sponsorship of the 2024 Pride Cymru Parade, promoting equity in STEM through the Data Inclusivity Network, and inspiring future leaders through school outreach programmes. With ongoing support for events like She Who's International Women's Day Event, Hodge Bank continues to champion diversity and inclusion, pushing for greater progress in the coming years.

Work-Life Balance and Family Responsibilities

Balancing work and family responsibilities is a barrier faced by many women, particularly as they enter the workforce. The unequal distribution of caregiving responsibilities, continue to disproportionately impact women entering the digital technology workforce, limiting their ability to progress in demanding roles and contributing to higher attrition rates for women in digital technology.

Networking Opportunities and Industry Connections

Limited networking opportunities and industry connections present a significant barrier for women. Professional networks are essential for career development, providing access to mentors, job opportunities, and industry insights. However, male-dominated networking events and exclusionary cultures at industry meetups can leave women feeling unwelcome or overlooked, restricting their access to valuable career-enhancing relationships. Without strong professional networks, women are less likely to hear about opportunities, be recommended for roles, or gain visibility with senior leaders, further widening the gender gap in the sector.

Gendered Expectations and Cultural Norms

Women in digital technology often face societal pressures and cultural expectations that may influence their career decisions and progression. Gendered expectations are reinforced in subtle ways, such as in recruitment practices, workplace interactions, or the types of roles women are encouraged to pursue.

LAURA ALEXANDER

HODGE BANK

'Now Head of Data Services at Hodge Bank, we ultimately aim to use Finance for good at the bank, and this ensures that 79% of our profits do just that, supporting the Hodge Foundation. As well as aligning to my core values, I also have the privilege of working with a highly skilled Data Services team, which has the highest proportion of females I've ever worked, currently 43% Female. This is a huge achievement given only 19% of UK Information Technology Professionals are women.

To develop talent, Hodge is currently trailblazing with Microsoft Fabric and some pretty impressive Data Science Solutions. Being such early adopters, we utilise the support offered by Microsoft and make use of any opportunity to learn through the Enterprise Skills Initiative, Seminars and funded courses.

When it comes to the next two to three years, there are of course the 'unicorn' roles in data, it was previously a data scientist, now it's a data architect. It's worth noting that when I was in school, none of these existed, and probably didn't as little as 10 years ago. But I'd urge everyone to remember that data is at the core of everything, it's not just the snazzy AI and chatbots, it's the governance, it's getting it right from the ground up and making sure your teams are literate in data, without this, good decisions will be hard to come by in any organisation.

Be yourself, learn, be a sponge, surround yourself with influencers and enablers of change and never be afraid to ask silly questions! Find your talent, and break through those glass ceilings, not just for yourself but for those who will follow in your footsteps.'



RECOMMENDATIONS



FOR WOMEN

Engage in Networks and STEM events

Research and connect with local networks and events such as **Wales Women in STEM**, **Women in Cyber** and **Wales Tech Week** to build connections, gain support, and learn from women in STEM positions.

Seek Mentorship and Role Models

Connect with female tech professionals and seek out mentoring opportunities, either through attendance at networking events or through LinkedIn.

Develop Skills and Confidence

Enrol in digital skills bootcamps and training programmes available in Wales, such as those delivered by organisations such as **Technocamps** and **Code First Girls**. Seek out career coaching, public speaking and leadership training to boost confidence and challenge any signs of imposter syndrome.

Advocate for Yourself

Actively pursue leadership and project opportunities, even if they feel outside of your comfort zone. Document your achievements and successes to ensure contributions are recognised and rewarded.

Embrace Flexible Working Options

Speak with employers about flexible work arrangements that support work-life balance, particularly when managing family or caregiving responsibilities.

RECOMMENDATIONS



FOR EDUCATORS

Develop Tailored CPD and Skills Training

Design CPD programmes that address the unique challenges women face in the early stages of their tech careers, such as overcoming imposter syndrome, building confidence in technical skills, and navigating male-dominated work environments.

Offer short courses, bootcamps, or micro-credentials focused on in-demand digital skills such as coding, data science, AI, and cybersecurity, with targeted support for women entering these fields.

Partner with organisations like **Her Place**, to deliver CPD sessions that focus on leadership development, workplace resilience, and networking strategies for women in tech.

Provide Flexible Learning Opportunities

Ensure CPD and digital skills programmes are designed to accommodate the varied needs of women balancing work, study, and caregiving responsibilities. This could include:

- Evening or weekend classes.
- Online or hybrid learning models.
- Bite-sized modules that allow women to upskill at their own pace.

Create Women-Focused Mentoring and Peer Support Networks

Establish dedicated mentorship programmes where female students and early career professionals are paired with experienced women in digital technology.

Develop peer support networks within university and college departments to create safe spaces for women to connect, share experiences, and build confidence in their skills.

Embed Inclusive Teaching Practices

Ensure digital technology courses actively address gender bias by using diverse case studies, ensuring female-led innovation is highlighted, and promoting collaborative learning environments where all students feel valued. Provide CPD for lecturers and course leaders on inclusive teaching methods and strategies to challenge unconscious bias.

Strengthen Industry Partnerships

Collaborate with Welsh tech employers to create industry-aligned CPD courses that meet the skill demands of the digital technology sector. Facilitate paid internships, work placements, and mentoring partnerships that connect female students and early career professionals with employers actively promoting diversity in tech.

Increase Visibility of Role Models

Actively promote the achievements of women in digital technology through guest lectures, student events, and outreach campaigns. Encourage alumni networks to engage with female graduates and offer guidance on career progression in digital technology.

RECOMMENDATIONS



FOR EMPLOYERS

Inclusive Recruitment Practices

Adopt anonymous recruitment practices to reduce unconscious bias, ensuring use of inclusive language in job descriptions and actively encourage women to apply. Provide gender bias training for hiring managers and implement diverse interview panels.

Promote Women in Leadership

Set measurable targets for improving gender diversity in leadership roles.

Establish women's leadership programmes that provide mentorship, sponsorship, and access to training. Showcase successful female leaders in your organisation to inspire others.

Flexible and Family-Friendly Policies

Develop flexible working policies that are inclusive for all employees, not just women. Provide enhanced parental leave policies that support shared caregiving responsibilities to reduce the burden on women.

Mentoring and Support Schemes

Establish mentoring programmes that pair women with senior leaders for career guidance and development. Create dedicated support groups or Employee Resource Groups (ERGs) to provide peer support and networking opportunities.

Inclusive Networking Opportunities

Collaborate with organisations like Wales Women in STEM, Women's Academy Wales, and Women in Cyber to deliver inclusive networking events that welcome women. Ensure networking events are held in accessible, welcoming environments with balanced representation.

RECOMMENDATIONS



FOR POLICYMAKERS

Improve Access to Affordable Childcare

Conduct a comprehensive review of childcare access and affordability in Wales, identifying gaps in provision, regional disparities, and barriers for parents in non-traditional work patterns. The findings should inform targeted reforms to expand access, improve affordability, and better support parents in sectors like digital technology.

Promote Flexible Working Policies

Encourage tech employers to adopt flexible working arrangements, such as remote working, hybrid models, and job-sharing for leadership roles.

Introduce Leadership Development Programmes

Fund dedicated leadership and management training and mentoring schemes for women in digital technology. Develop targeted programmes that support women returning to work after career breaks, with a focus on digital skills development and leadership pathways.

Embed Gender Equality into Industry Standards

Introduce sector-wide diversity and inclusion frameworks that set targets for female representation in leadership roles. Require tech companies bidding for public sector contracts in Wales to demonstrate robust gender diversity and inclusion policies.

Promote Inclusive Recruitment Practices

Develop toolkits for Welsh employers to support inclusive hiring practices, including anonymised CVs, gender-balanced interview panels, and unconscious bias training. Encourage organisations to publish transparent salary bands to address pay inequalities that may hinder women's progression.

OPPORTUNITIES AND INITIATIVES



FOR WOMEN

British Computer Society (BCS) Women in Wales

BCS (the Chartered Institute for IT) has a Women in IT network, including a regional group for Wales. It promotes gender diversity in tech, runs events, and provides mentoring and career development for women working in digital technology.

Code First Girls

Code First Girls is a social enterprise dedicated to increasing the number of women in technology through free coding courses, training programmes, and job opportunities. Working with employers across the UK, including in Wales, Code First Girls helps women develop the skills they need to enter and thrive in tech careers, supporting a more diverse and inclusive technology industry.

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Women's Academy Wales

An empowering collaboration designed to support and advance the personal and professional development of women across Wales. Offering a wide range of programmes, workshops and networking opportunities.

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Springboard

Springboard is a personal and professional development programme delivered by Academi Wales, designed specifically for women across Wales. The programme helps women at all stages of their careers to build confidence, develop leadership skills, and set personal and professional goals. Through workshops, coaching, and peer support, Springboard empowers women to take control of their careers, overcome barriers, and realise their full potential in both their workplaces and communities.

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REPROGRAMMING POWER: LEADERSHIP AND MANAGEMENT

Key Barriers and Challenges

As women in Wales advance in their digital technology careers, they face significant barriers that hinder their progression to senior management and leadership roles. While there has been some progress made in terms of participation and representation at the entry and mid-career levels, the number of women in leadership positions remains disproportionately low.

5%

of leadership positions in the UK
technology sector are held by women. ^{xi}

PWC Women in Tech: Time to Close the
Gender Gap

The challenges are multifaceted, involving both institutional and societal factors that require concerted action from employers, the government, and individuals to create an environment in which women can thrive at all levels of leadership within the digital technology sector.

Gender Stereotypes and Bias in Leadership

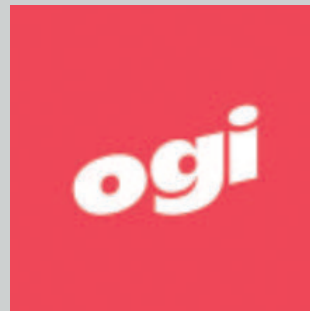
One of the most pervasive barriers to women progressing into senior management and leadership roles in digital technology is the persistence of gendered stereotypes.

Women are often perceived as less technical, less assertive, or less suited to leadership compared to their male counterparts, regardless of their qualifications, experience, or leadership potential.

These biases not only limit opportunities for promotion but also undermine women's authority and visibility in leadership settings, perpetuating a male-dominated leadership culture.

Mentoring and Sponsorship

Women in digital technology often have fewer opportunities for mentorship and sponsorship, particularly from senior leaders with the influence to open doors to promotions and high-profile projects, leaving many feeling isolated and excluded from the informal networks essential for career progression. Without visible mentors and sponsors advocating on their behalf, women's contributions and potential can go unnoticed, limiting their access to leadership pathways.



Ogi are building a business that reflects the diverse communities it serves and a workplace where everyone can thrive. Women make up just under a third of their workforce, mirroring a wider trend in telecoms. Ogi have created a Women in Mentoring programme pairing junior team members with senior leaders, providing guidance, peer-to-peer support, and the confidence to take the next step.

NIRMANI FONSEKA

OGI

A Data Analyst at Ogi, working closely with different teams to turn complex data into meaningful insights. Nirmani is an alumnus of Ogi's Women in Mentoring Programme, which she credits with helping her come out of her shell and giving her a sense of belonging among other women in the team working in typically male-dominated roles. Her team has been incredibly supportive, encouraging her to connect with other women in tech, and she believes that male allies play a key role in making the industry more inclusive, after all, we all have a part to play in creating equal opportunities.



Work-Life Balance and Flexibility

The challenge of balancing work and personal life is heightened for women in senior leadership roles, where expectations around availability and commitment are often intense. The digital technology sector has a demanding work culture, with long hours and expectations of constant connectivity. For women who are balancing caregiving responsibilities, whether for children, elderly parents, or others, this creates significant stress and can lead to burnout or the decision to step back from leadership roles.

80%

of women across industries feel that flexible working could benefit their career progression. ^{xii}

Even though many employers now offer flexible working options, women in senior positions may still feel that taking advantage of these options could damage their credibility or hinder their ability to be taken seriously in leadership roles.

The societal pressure to 'have it all' can result in women sacrificing their personal well-being or professional aspirations in order to meet unrealistic standards of productivity.

Gendered Expectations and the 'Glass Ceiling'

The 'glass ceiling' remains a persistent challenge in the digital technology sector, particularly as women approach the higher levels of leadership. McKinsey's research shows that women face significant barriers in accessing top management and executive roles, even when they have the qualifications and experience to do so. These barriers are often a result of both overt discrimination and unconscious bias that restrict women's access to top roles or promotions.

The glass ceiling also manifests in subtle ways, such as women being passed over for promotions in favour of male colleagues, being assigned lower-profile projects, or facing lower levels of recognition and reward. Even when women are able to break through this barrier, they are often the only woman at the table, which can lead to feelings of isolation and the burden of representing their gender in high-stakes decision-making situations.

CLARE JOHNSON

WOMEN IN CYBER

'Getting into the cyber security sector was accidental, as my initial studies were in music, but a passion for technology and keen interest in computing led me into teaching IT, firstly as a sideline, and later as a career. When an opportunity to lead a new information security programme at the college I was teaching at came up, I was encouraged to take it, and from there I gradually moved into a solely cyber security teaching role. Having worked in academia for approximately 20 years, I then moved into a commercial role, and I am now the Capability Lead for ITSUS Consulting, a small business specialising in IT and secure communications for the defence and public sectors. I also run a Women in Cyber network which now has around 600 members.

Cyber security and IT are fascinating areas to work in, as they change so rapidly, and I'm constantly amazed by the incredible technology that fills our lives. A highlight of my career to date has been combining my passion for education with my love of cyber security whilst doing my PhD, where I developed a tool to detect academic misconduct using digital forensics techniques, and in my current role I also get to see lots of really cool (and sometimes scary) technologies that most people aren't aware of.

The cyber security sector has terrible stereotypes associated with it, that of dark bedrooms, and young men in hoodies, tapping away at glowing computers. This can often seem off-putting to people looking to get into cyber, but it's way off the truth. Of course, there are those people, but there is so much more. As well as computing, cyber security includes management, leadership, strategy, risk, communication, psychology, maths, and you can adapt almost any skill set to the sector.



One of the main skills required is a love of problem solving, and a willingness to continue your learning, as it's a rapidly changing sector, and those who work in it need to be agile, responsive and motivated.

Diversity is also a real challenge, with women making up only 17% of the cyber security labour market. This is a big problem, as the threats we see in the sector are much better addressed by a diverse workforce, who will look at problems from many different angles and perspectives, and who bring a variety of skills and experience. With a limited demographic addressing cyber security challenges, we are limiting our ability to deal with threats in the most effective, innovative and robust ways.

I love working in this sector, there is never a dull moment, and I get involved in all sorts of things that would never have imagined when I was thinking about how my career would pan out. I can highly recommend it.'

RECOMMENDATIONS



FOR WOMEN

Engage in Networks and STEM events

Research and connect with local networks and events such as **Wales Women in STEM**, **Women in Cyber** and **Wales Tech Week** to build connections, increase visibility, gain support, and learn from women in STEM positions.

Seek Mentorship and Role Models

Connect with female tech professionals and seek out mentoring opportunities, either through attendance at networking events or through LinkedIn.

Develop Leadership Skills

Pursue CPD courses that focus on leadership, strategic decision-making, and confidence-building. Welsh universities and colleges can provide tailored programmes.

Advocate for Yourself

Proactively seek high-profile projects, leadership opportunities, and additional responsibilities to gain visibility within your organisation.

Become a Mentor

Seek out opportunities to mentor girls and women pursuing education or career opportunities in tech.



FOR EDUCATORS

Deliver Targeted Leadership Programmes for Women

Develop and promote leadership-focused CPD courses designed specifically for women in digital technology. Partner with Welsh industry leaders to offer mentorship schemes, guest lectures, and leadership workshops for women pursuing digital careers.

Showcase Role Models

Highlight successful Welsh women in digital technology leadership through speaker events, case studies, and alumni networks.

Offer Flexible Learning for Aspiring Leaders

Provide flexible CPD options, including online or modular leadership courses, to accommodate women balancing career progression with caregiving or other commitments.

RECOMMENDATIONS



FOR EMPLOYERS

Inclusive Recruitment Practices

Adopt anonymous recruitment practices to reduce unconscious bias, ensuring use of inclusive language in job descriptions and actively encourage women to apply. Provide gender bias training for hiring managers and implement diverse interview panels.

Promote Women in Leadership

Set measurable targets for improving gender diversity in leadership roles. Establish women's leadership programmes that provide mentorship, sponsorship, and access to training. Showcase successful female leaders in your organisation to inspire others.

Flexible and Family-Friendly Policies

Develop flexible working policies that are inclusive for all employees, not just women. Provide enhanced parental leave policies that support shared caregiving responsibilities to reduce the burden on women.

Mentoring and Support Schemes

Establish mentoring programmes that pair women with senior leaders for career guidance and development. Create dedicated support groups or Employee Resource Groups (ERGs) to provide peer support and networking opportunities.

Inclusive Networking Opportunities

Collaborate with organisations like Wales Women in STEM, Women's Academy Wales, and Women in Cyber to deliver inclusive networking events that welcome women. Ensure networking events are held in accessible, welcoming environments with balanced representation.

Establish Transparent Promotion Pathways

Develop clear, bias-free promotion criteria that identify and nurture female leadership talent. Implement structured leadership development programmes that provide women with the skills and confidence to progress into senior roles.

Celebrate and Showcase Female Leaders in Wales

Actively promote the achievements of female leaders within the organisation to inspire aspiring women leaders and normalise female representation in senior roles.

RECOMMENDATIONS



FOR POLICYMAKERS

Improve Access to Affordable Childcare

Conduct a comprehensive review of childcare access and affordability in Wales, identifying gaps in provision, regional disparities, and barriers for parents in non-traditional work patterns. The findings should inform targeted reforms to expand access, improve affordability, and better support parents in sectors like digital technology.

Promote Flexible Working Policies

Encourage tech employers to adopt flexible working arrangements, such as remote working, hybrid models, and job-sharing for leadership roles.

Introduce Leadership Development Programmes

Fund dedicated leadership and management training and mentoring schemes for women in digital technology. Develop targeted programmes that support women returning to work after career breaks, with a focus on digital skills development and leadership pathways.

Embed Gender Equality into Industry Standards

Introduce sector-wide diversity and inclusion frameworks that set targets for female representation in leadership roles. Require tech companies bidding for public sector contracts in Wales to demonstrate robust gender diversity and inclusion policies.

Promote Inclusive Recruitment Practices

Develop toolkits for Welsh employers to support inclusive hiring practices, including anonymised CVs, gender-balanced interview panels, and unconscious bias training. Encourage organisations to publish transparent salary bands to address pay inequalities that may hinder women's progression.

OPPORTUNITIES AND INITIATIVES



FOR WOMEN

British Computer Society (BCS) Women in Wales

BCS (the Chartered Institute for IT) has a Women in IT network, including a regional group for Wales. It promotes gender diversity in tech, runs events, and provides mentoring and career development for women working in digital technology.

Code First Girls

Code First Girls is a social enterprise dedicated to increasing the number of women in technology through free coding courses, training programmes, and job opportunities. Working with employers across the UK, including in Wales, Code First Girls helps women develop the skills they need to enter and thrive in tech careers, supporting a more diverse and inclusive technology industry.

Data Inclusivity Network

The Data Inclusivity Network is a Wales-based initiative that promotes diversity and inclusion within the data and technology sectors. It works to ensure underrepresented groups, including women and marginalised communities, have equal opportunities to pursue careers in data science, analytics, and technology, and fosters an inclusive data community through events, resources, and advocacy.

MiFuture

MiFuture is a digital careers platform designed to help young people in Wales find and apply for jobs, apprenticeships, and training opportunities. Through its app and online resources, MiFuture connects young people with employers, training providers, and career options, helping them navigate their next steps after school or college.

M-SParc

Wales' first dedicated science park, located in Gaerwen on Anglesey. It fosters innovation by offering flexible office and lab spaces, alongside business support and networking opportunities for startups and established companies. With over 70 tenants and strong partnerships with industry leaders, M-SParc promotes collaboration and growth in sectors such as technology, renewable energy, and life sciences. The park hosts events and provides resources to help businesses scale and innovate, contributing to the regional economy and developing future talent.

Reprogramming the Future:

Creating an Inclusive Digital Technology Sector for Women in Wales

Network She

Network She is a supportive community for women in business, entrepreneurship, and leadership across Wales and beyond. It offers networking events, training, mentoring, and a platform to showcase women's achievements, helping to connect, inspire, and empower women at all stages of their careers. Network She champions collaboration, confidence-building, and the celebration of female talent, creating opportunities for women to thrive personally and professionally.

Wales Tech Week

Wales Tech Week is an annual festival celebrating innovation, technology, and digital talent across Wales. The event brings together businesses, entrepreneurs, educators, and policymakers to showcase technology, share ideas, and inspire the next generation, with a focus on diversity, inclusion, and future skills.

Wales Women in STEM

The Wales Women in STEM Network connects women across science, technology, engineering, and maths (STEM) in Wales. It provides peer support, networking opportunities, events, and a platform to share experiences. The network works to increase the visibility of women in STEM, promote role models, and advocate for gender equality across all STEM fields.

WEN Wales

While not STEM-specific, WEN Wales advocates for gender equality across all sectors, including STEM and digital technology. They work with partner organisations to increase women's representation in male-dominated fields.

Women's Academy Wales

Women's Academy Wales empowers women across Wales through inclusive programmes, mentorship, and networking, fostering confidence, leadership, and connection. Committed to diversity, it supports personal and professional growth while nurturing the next generation of female leaders.

Women in Cyber Network (Wales)

The Women in Cyber Network Wales is a community supporting women working in cybersecurity across Wales. It offers mentoring, networking events, professional development, and advocacy to increase the representation of women in cyber careers and foster an inclusive cyber community.

OPPORTUNITIES AND INITIATIVES



FOR EDUCATORS

CyberFirst Wales

CyberFirst Wales is part of the UK's CyberFirst programme, which supports and encourages young people to explore careers in cybersecurity. It works with schools, colleges, and businesses to provide training, competitions, and learning opportunities, helping to build digital and cyber skills across Wales. By engaging students from diverse backgrounds, CyberFirst Wales aims to broaden participation and strengthen the future cyber workforce.

Her Place

Her Place is an organisation dedicated to creating brighter futures for girls and women in Science, Technology, Engineering, and Maths (STEM). Through mentoring, outreach, role models, and advocacy, Her Place helps remove barriers and create opportunities for women to succeed in STEM and digital careers. It also collaborates with businesses, educators, and policymakers to promote gender equity across the sector.

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Springboard

Springboard is a personal and professional development programme delivered by Academi Wales, designed specifically for women across Wales. The programme helps women at all stages of their careers to build confidence, develop leadership skills, and set personal and professional goals. Through workshops, coaching, and peer support, Springboard empowers women to take control of their careers, overcome barriers, and realise their full potential in both their workplaces and communities.

STEM Ambassadors Wales

The STEM Ambassadors network encourages professionals, including women in STEM, to volunteer their time to inspire and mentor young people in schools and communities across Wales. Many female STEM professionals volunteer to act as role models, especially in technology and engineering

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Women's Academy Wales

An empowering collaboration designed to support and advance the personal and professional development of women across Wales. Offering a wide range of programmes, workshops and networking opportunities.

OPPORTUNITIES AND INITIATIVES



FOR EMPLOYERS

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REPROGRAMMING ENTREPRENEURSHIP

Key Barriers and Challenges

In addition to corporate leadership roles, women in Wales face unique barriers when attempting to progress as entrepreneurs or founders in the digital technology sector.

Underrepresentation of Women in Technology

Despite growing awareness and initiatives designed to encourage women to pursue STEM (science, technology, engineering, and mathematics) fields, the pipeline of women

entering digital technology entrepreneurship remains limited. This is partly because the tech industry is still largely perceived as a male-dominated field, which can discourage women from entering the sector or make them feel isolated once they do. In Wales, where there are fewer large-scale tech hubs compared to other parts of the UK, this issue is even more pronounced, as women have fewer role models and fewer opportunities for mentorship and networking in the tech community.

SARAH KOCIANSKI

CEO, FINTECH WALES

At FinTech Wales we believe strongly in supporting as diverse a range of founders and entrepreneurs as possible in order to create an equally diverse fintech community and wider ecosystem. Specifically related to women entrepreneurs, we run our Women in Fintech networking breakfast events in order to provide a dedicated space for women in the industry to network. We are part of the **She Who** initiative, which is a dynamic community where people of all genders come together to uplift, inspire, and take meaningful action.

I am passionate about the provision of dedicated support to women entrepreneurs to enable them to overcome obstacles entrepreneurs from other groups don't face. That's because I believe that for the fintech industry to thrive, and for it to solve as wide a range of problems as possible, we need far greater diversity in our founder and entrepreneur communities. The way to enable that diversity, is to understand why it doesn't already exist and put in place tangible solutions.



Funding

Female tech entrepreneurs often encounter difficulties in securing funding, as venture capital remains highly male-dominated. Investors may be less likely to take women-led startups seriously, and women often struggle to access the same networks, resources, and opportunities as their male counterparts.

This funding gap is compounded by a broader lack of diversity in tech spaces, where biases can influence decisions about whose ideas and leadership are deemed valuable.

Scrutiny

Women-led startups often experience higher levels of scrutiny and may be forced to work harder to prove their business models' viability compared to male founders, who benefit from entrenched networks and more favourable perceptions of their capabilities.

Cultural and Social Norms

Cultural and social norms around gender roles can further hinder women's entrepreneurial aspirations. In Wales, as in many other regions, there are still expectations placed on women to balance their professional and personal responsibilities, often disproportionately affecting their ability to pursue entrepreneurship full-time. Women with caregiving roles, in particular, may face greater difficulty finding time and support to focus on growing their businesses, leading to slower growth or stunted ventures.

Tailored Business Development Support

The lack of access to business development resources tailored to women, as well as limited female representation in mentorship roles within the startup ecosystem, further compounds these challenges.

While there are initiatives aimed at supporting women in tech, these often face challenges around scalability, reach, and sustained impact. More programmes are needed such as 'The Female Founder Investor Readiness Programme', a 6-month programme supported by the British Business Bank, provided Welsh female tech founders with the skills, mentorship and support required to raise capital. Supporting partners included **AberInnovation, Welsh ICE (Innovation Centre for Enterprise)**, AccelerateHER and M-SParc.

Women entrepreneurs may find it harder to navigate the complexities of scaling a business, whether due to a lack of technical expertise, business acumen, or experience in navigating the often male-dominated corporate landscape.

LESLEY WILLIAMS

CEO, WELSH ICE

'At Welsh ICE, we're committed to not just inspiring more women to start businesses but also supporting them through sustainable growth. A big part of this work is done via relatable role models and ensuring inclusivity, not just within our hub, but by actively taking our support into the heart of communities that need it most.

By showing up in marginalised communities, in local spaces, and literally on people's doorsteps, we meet incredible women who are looking to start businesses for flexibility, a side income, or to tackle community challenges based on their lived experiences. Women are still at the heart of our communities, and when we support them, we uplift so many others in the process.



Inequality and Bias

System inequalities and unconscious biases present in the broader Welsh business ecosystem can discourage women from pursuing their entrepreneurial aspirations in the digital technology sector. The stigma of failure, which disproportionately affects women due to heightened expectations and scrutiny, may cause them to hesitate in taking risks or innovating. These challenges highlight the need for continued investment in policies and initiatives that support women's access to capital, networks, education, and resources, ultimately fostering a more inclusive entrepreneurial landscape in Wales.

DR MABROUKA ABUHMIDA

UNIVERSITY OF SOUTH WALES

'As a senior lecturer in computing and mathematical sciences at the University of South Wales (USW), and the research and innovation leader for computing, cyber, maths and informatics, my expertise lies in Artificial Intelligence (AI), Cybersecurity, and the medical applications of deep learning. As the course leader for the MSc Artificial Intelligence course, I am passionate about shaping the next generation of AI professionals.

My journey into STEM began with a deep curiosity about technology and its potential to drive change. After earning a PhD in the field, I dedicated my career to advancing AI research and education. Throughout my career, I have led and contributed to cutting-edge projects, including:

- Developing AI-driven solutions for cybersecurity and digital forensics.
- Using LLM models to support mental health interventions.
- Exploring AI's role in misinformation detection and credibility analysis.
- Enhancing digital transformation strategies for SMEs.

STEM and digital technology are powerful tools for solving real-world problems, and AI is at the heart of many transformative solutions. One of the most impactful areas I have worked on is bridging the gap in mental health therapy using AI. Mental health care often faces barriers of availability, accessibility, and affordability, leaving many without the support they need. Through my research, I have developed AI-driven therapeutic solutions that provide support in diverse cultural and social contexts.



My work has taken me across the world, from Qatar, Saudi Arabia, and Vietnam, where I have showcased how AI can be adapted to different communities to provide culturally sensitive mental health support.

Beyond mental health, AI and digital technology impact daily life in ways people may not even realise, from healthcare advancements and cybersecurity to environmental sustainability and personalised learning. The more we embrace diversity in STEM, the better we can develop inclusive, ethical, and effective solutions that address the needs of people from all backgrounds.

The future of technology needs diverse minds, why not yours?'

RECOMMENDATIONS



FOR POLICYMAKERS

Build Networks

Engage in mentoring programmes and connect with female peers, investors, and industry leaders to build partnerships and enhance visibility. Actively participate in both local and international networks to access funding opportunities and collaborative projects that elevate women-led ventures.

Access Tailored Support

Seek out initiatives like the Female Founder Investor Readiness Programme and engage with organisations such as **Welsh ICE (Innovation Centre for Enterprise)**, **Fintech Wales**, and **AberInnovation** for tailored advice, legal guidance, and business strategy support. These resources are designed to help women overcome the unique challenges of scaling businesses in male-dominated sectors.

Champion Leadership

Develop and confidently communicate your startup's value proposition, recognising that diverse leadership styles strengthen the tech sector. Craft a compelling narrative that highlights your business's impact and innovation to challenge biases that may undervalue women-led startups.

Advocate for Change

Use your experiences to influence policy reforms that support female entrepreneurs. Engaging with policymakers, industry groups, and advisory boards can help create a stronger voice for women in tech leadership.



FOR EDUCATORS

Promote STEM Engagement

Actively encourage girls to explore STEM subjects by providing targeted career pathways, hands-on workshops, and female-focused competitions such as hackathons. Offering real-world exposure to entrepreneurship can build confidence and aspirations among young women.

Offer Skills Training

Embed entrepreneurship modules into STEM curriculums, equipping young women with business knowledge alongside technical skills. Providing leadership training and practical business development support can empower women to pursue entrepreneurial pathways with confidence.

Highlight Role Models

Showcase successful female tech entrepreneurs, particularly those from Wales, to inspire students and demonstrate viable career opportunities. Engage female faculty and industry leaders as mentors to offer guidance and support for young women interested in entrepreneurship.

RECOMMENDATIONS



FOR BUSINESS SUPPORT HUBS

Create Inclusive Programmes

Develop accelerator and incubator programmes that address the needs of women entrepreneurs, providing mentorship, technical training, and networking opportunities in supportive environments. Ensure these programmes foster inclusive spaces where women feel valued and empowered.

Foster Mentorship

Establish mentorship initiatives that connect aspiring female entrepreneurs with experienced women leaders in tech. Recruiting female mentors ensures guidance is accessible, relevant, and tailored to the challenges faced by women in the sector.

Strengthen Investor Networks

Collaborate with investors committed to supporting women-led businesses. Facilitate pitch events that prioritise women-led startups and ensure investor panels are gender-diverse.

Ensure Accessibility

Provide childcare support, flexible working hours, and tailored resources to help women balance entrepreneurship with caregiving responsibilities. Ensuring events and programmes accommodate these needs will improve participation.

Promote Women in Tech

Highlight the achievements of female entrepreneurs through campaigns, speaking opportunities, and women-focused tech events. By celebrating their success, business support hubs can inspire more women to pursue tech entrepreneurship and leadership roles.

RECOMMENDATIONS



FOR POLICYMAKERS

Improve Funding Access

Establish dedicated investment funds for female tech founders and expand financial support programmes. Work with banks, venture capitalists, and government initiatives to create accessible financial products for women seeking to scale their businesses.

Develop Support Programmes

Fund dedicated accelerators, incubators, and readiness programmes that provide practical advice, networking opportunities, and access to industry-specific knowledge for women entrepreneurs. Sustaining initiatives like the Female Founder Investor Readiness Programme will ensure long-term support.

Address Bias

Deliver training for investors, mentors, and decision-makers to reduce unconscious bias and improve gender diversity in funding decisions and leadership appointments.

Enhance Flexibility

Introduce policies that enable women to balance caregiving with entrepreneurship by supporting flexible workspaces, remote working options, and childcare support. Providing tax incentives for women-led startups can help mitigate the financial strain linked to caregiving responsibilities.

Promote Visibility

Actively promote and celebrate the achievements of female entrepreneurs through campaigns, media features, and dedicated events that showcase Wales-based women in tech.

OPPORTUNITIES AND INITIATIVES



FOR WOMEN

AberInnovation

Based at Aberystwyth University, is an innovation and enterprise campus offering advanced facilities and expert support for businesses in biotechnology, agri-tech, and food and drink sectors. It provides lab, office, and workshop spaces, along with access to specialized equipment and technical expertise.

Big Ideas Wales

Big Ideas Wales is a Welsh Government programme that inspires and supports young people aged 5 to 25 to develop entrepreneurial skills and explore starting their own business. Through workshops, mentoring, and online resources, Big Ideas Wales helps young people turn their ideas into reality, build confidence, and develop the skills needed to thrive in business and the world of work. The programme also works with schools, colleges, and youth organisations to promote entrepreneurship as a career option across Wales.

British Computer Society (BCS) Women in Wales

BCS (the Chartered Institute for IT) has a Women in IT network, including a regional group for Wales. It promotes gender diversity in tech, runs events, and provides mentoring and career development for women working in digital technology.

Business Wales Business Class

Business Class is a programme that partners schools with businesses to provide students with insights into the working world, helping them understand different career paths and develop employability skills.

Careers Wales

Careers Wales is a publicly funded organisation providing free, impartial careers information, advice, and guidance to people of all ages across Wales. It supports individuals to make informed decisions about their education, training, and employment options, helping them develop the skills and confidence to succeed in a changing job market. Careers Wales also works with schools, employers, and training providers to highlight career pathways, promote emerging opportunities, and ensure the workforce of the future meets the needs of the Welsh economy.

Code First Girls

Code First Girls is a social enterprise dedicated to increasing the number of women in technology through free coding courses, training programmes, and job opportunities. Working with employers across the UK, including in Wales, Code First Girls helps women develop the skills they need to enter and thrive in tech careers, supporting a more diverse and inclusive technology industry.

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Tech Valleys

Tech Valleys is a Welsh Government initiative investing £100 million to transform the economy of Blaenau Gwent and the South Wales Valleys. It aims to attract investment, support innovation, and create high-quality jobs in advanced manufacturing, digital technology, and emerging industries. By fostering skills development, business growth, and partnerships, Tech Valleys is helping to build a more resilient, technology-driven economy in the region.

Tramshed Tech

Tramshed Tech is a collaborative co-working space, innovation hub, and startup ecosystem based in Wales, supporting tech, digital, and creative businesses. It offers flexible workspaces, business incubation, and a wide range of events, workshops, and networking opportunities. Tramshed Tech also provides tailored support for entrepreneurs and startups, including mentorship, access to funding opportunities, and connections with industry experts to help businesses start, scale, and thrive in Wales' growing digital economy.

Wales Tech Week

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Welsh ICE (Innovation Centre for Enterprise)

A business incubator based in Caerphilly, Wales, supporting startups and entrepreneurs across various industries. It offers affordable office space, mentoring, networking opportunities, and access to resources to help businesses grow and thrive. Welsh ICE fosters a collaborative environment where businesses can innovate, scale, and connect with a wider community of professionals, contributing to Wales' vibrant entrepreneurial ecosystem.

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Careers Wales is a publicly funded organisation providing free, impartial careers information, advice, and guidance to people of all ages across Wales. It supports individuals to make informed decisions about their education, training, and employment options, helping them develop the skills and confidence to succeed in a changing job market. Careers Wales also works with schools, employers, and training providers to highlight career pathways, promote emerging opportunities, and ensure the workforce of the future meets the needs of the Welsh economy.

Code First Girls

Code First Girls is a social enterprise dedicated to increasing the number of women in technology through free coding courses, training programmes, and job opportunities. Working with employers across the UK, including in Wales, Code First Girls helps women develop the skills they need to enter and thrive in tech careers, supporting a more diverse and inclusive technology industry.

Reprogramming the Future:

Creating an Inclusive Digital Technology Sector for Women in Wales

CyberFirst Wales

CyberFirst Wales is part of the UK's CyberFirst programme, which supports and encourages young people to explore careers in cybersecurity. It works with schools, colleges, and businesses to provide training, competitions, and learning opportunities, helping to build digital and cyber skills across Wales. By engaging students from diverse backgrounds, CyberFirst Wales aims to broaden participation and strengthen the future cyber workforce.

Data Inclusivity Network

The Data Inclusivity Network is a Wales-based initiative that promotes diversity and inclusion within the data and technology sectors. It works to ensure underrepresented groups, including women and marginalised communities, have equal opportunities to pursue careers in data science, analytics, and technology, and fosters an inclusive data community through events, resources, and advocacy.

Her Place

Her Place is an organisation dedicated to creating brighter futures for girls and women in Science, Technology, Engineering, and Maths (STEM). Through mentoring, outreach, role models, and advocacy, Her Place helps remove barriers and create opportunities for women to succeed in STEM and digital careers. It also collaborates with businesses, educators, and policymakers to promote gender equity across the sector.

M-SParc

Wales' first dedicated science park, located in Gaerwen on Anglesey. It fosters innovation by offering flexible office and lab spaces, alongside business support and networking opportunities for startups and established companies. With over 70 tenants and strong partnerships with industry leaders, M-SParc promotes collaboration and growth in sectors such as technology, renewable energy, and life sciences. The park hosts events and provides resources to help businesses scale and innovate, contributing to the regional economy and developing future talent.

STEM Ambassadors Wales

The STEM Ambassadors network encourages professionals, including women in STEM, to volunteer their time to inspire and mentor young people in schools and communities across Wales. Many female STEM professionals volunteer to act as role models, especially in technology and engineering.

Tech Valleys

Tech Valleys is a Welsh Government initiative investing £100 million to transform the economy of Blaenau Gwent and the South Wales Valleys. It aims to attract investment, support innovation, and create high-quality jobs in advanced manufacturing, digital technology, and emerging industries. By fostering skills development, business growth, and partnerships, Tech Valleys is helping to build a more resilient, technology-driven economy in the region.

Reprogramming the Future:

Creating an Inclusive Digital Technology Sector for Women in Wales

Tramshed Tech

Tramshed Tech is a collaborative co-working space, innovation hub, and startup ecosystem based in Wales, supporting tech, digital, and creative businesses. It offers flexible workspaces, business incubation, and a wide range of events, workshops, and networking opportunities. Tramshed Tech also provides tailored support for entrepreneurs and startups, including mentorship, access to funding opportunities, and connections with industry experts to help businesses start, scale, and thrive in Wales' growing digital economy.

Wales Tech Week

Wales Tech Week is an annual festival celebrating innovation, technology, and digital talent across Wales. The event brings together businesses, entrepreneurs, educators, and policymakers to showcase technology, share ideas, and inspire the next generation, with a focus on diversity, inclusion, and future skills.

Wales Women in STEM

The Wales Women in STEM Network connects women across science, technology, engineering, and maths (STEM) in Wales. It provides peer support, networking opportunities, events, and a platform to share experiences. The network works to increase the visibility of women in STEM, promote role models, and advocate for gender equality across all STEM fields.

Welsh ICE (Innovation Centre for Enterprise)

A business incubator based in Caerphilly, Wales, supporting startups and entrepreneurs across various industries. It offers affordable office space, mentoring, networking opportunities, and access to resources to help businesses grow and thrive. Welsh ICE fosters a collaborative environment where businesses can innovate, scale, and connect with a wider community of professionals, contributing to Wales' vibrant entrepreneurial ecosystem.

WEN Wales

While not STEM-specific, WEN Wales advocates for gender equality across all sectors, including STEM and digital technology. They work with partner organisations to increase women's representation in male-dominated fields.

Women in Cyber Network (Wales)

The Women in Cyber Network Wales is a community supporting women working in cybersecurity across Wales. It offers mentoring, networking events, professional development, and advocacy to increase the representation of women in cyber careers and foster an inclusive cyber community.

OPPORTUNITIES AND INITIATIVES



FOR BUSINESS SUPPORT HUBS

AberInnovation

Based at Aberystwyth University, is an innovation and enterprise campus offering advanced facilities and expert support for businesses in biotechnology, agri-tech, and food and drink sectors. It provides lab, office, and workshop spaces, along with access to specialized equipment and technical expertise.

Big Ideas Wales

Big Ideas Wales is a Welsh Government programme that inspires and supports young people aged 5 to 25 to develop entrepreneurial skills and explore starting their own business. Through workshops, mentoring, and online resources, Big Ideas Wales helps young people turn their ideas into reality, build confidence, and develop the skills needed to thrive in business and the world of work. The programme also works with schools, colleges, and youth organisations to promote entrepreneurship as a career option across Wales.

British Computer Society (BCS) Women in Wales

BCS (the Chartered Institute for IT) has a Women in IT network, including a regional group for Wales. It promotes gender diversity in tech, runs events, and provides mentoring and career development for women working in digital technology.

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Neon

Neon Futures is an online platform that connects schools and educators with STEM outreach opportunities, including workshops, activities, and role model sessions across the UK, including Wales. By showcasing real-world STEM careers and highlighting diverse role models, Neon aims to inspire young people and broaden their understanding of the opportunities available in science, technology, engineering, and maths.

Network She

Network She is a supportive community for women in business, entrepreneurship, and leadership across Wales and beyond. It offers networking events, training, mentoring, and a platform to showcase women's achievements, helping to connect, inspire, and empower women at all stages of their careers. Network She champions collaboration, confidence-building, and the celebration of female talent, creating opportunities for women to thrive personally and professionally.

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CONCLUSION

This structured roadmap outlines a comprehensive approach to promoting gender equity in digital technology, addressing the barriers encountered by girls and women at various stages of their educational and career journeys, from early childhood to leadership positions and also entrepreneurship. These obstacles stem from systemic inequalities, cultural biases, and missed opportunities for fostering inclusive environments where everyone can succeed.

By removing these barriers, Wales has the opportunity to establish a digital technology sector that is stronger, fairer, and more innovative, drawing on the full spectrum of talent and creativity within its population. When women and girls see themselves represented in digital careers, and when workplaces and educational settings welcome and value their contributions, the entire nation stands to gain.

The digital technology sector offers a wide range of technical roles for women, from software engineering and data science to cybersecurity and AI development. Equally important are non-technical roles such as project management, UX design, marketing, and policy development, which drive innovation and ensure technology meets real-world needs. By valuing both technical and non-technical roles, the digital technology sector can unlock diverse talent, perspectives, and skills, creating more inclusive and effective solutions. Women in these roles are essential to shaping the future of technology.

Achieving gender equity in Wales' digital technology sector requires more than isolated programmes or short-term interventions. It demands sweeping cultural and systemic change, addressing deeply embedded structural inequalities, societal biases, and barriers across the entire education, employment, and policy landscape.

To truly reprogramme the future, this roadmap calls for collaboration between girls, women, educators, employers, policymakers and the influencers girls have in their lives to create a future where girls and women are visible, valued, and thriving within Wales' digital economy, whether they enter through traditional academic routes, apprenticeships, vocational training, or career changes later in life.

By working in collaboration, we can reprogramme the future and build a digital economy that leaves no one behind.

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ENDNOTES

- i This is Tech: Fintech Industry
- ii Official Census and Labour Market Statistics
- iii The Business Barometer report from The Open University
- iv PWC Women in Tech: Time to Close the Gender Gap
- v WEN Wales State of the Nation
- vi UK Government's Cyber Security Skills in the UK Labour Market 2023 report
- vii ONS 20219 Study: Which roles are at highest risk of being automated?
- viii Girlguiding: Girls Attitudes Survey 2024
- ix "We don't tell our teachers" Experiences of peer-on-peer sexual harassment among secondary school pupils in Wales
- x Unlocking gender equality in STEM | Frontier Economics
- xi PWC Women in Tech: Time to Close the Gender Gap
- xii CBI Wales: Unlocking Women's Leadership Potential Report
- xiii Women in the Workplace archive reports (2015-2022) | McKinsey