



The Future of **Engineering** Report 2022

The Future of Engineering Report

As we celebrate and reflect on 30 years of our Arkwright Engineering Scholarship programme, we want to ensure the young people we work with help close the skills gap and meet the industry requirements. Thank you to all of the schools, past scholars and companies that completed the research.

Changes over the last 30 years

The engineering skills landscape has seen significant change. Across all respondents the improvement in diversity and inclusion came out as the main change (73%), followed by the increased requirement for IT and programming skills (64%).

The past scholars that responded were more likely to focus on the focus on sustainability (69%), with other companies likely to pick up on the focus on key skills (48%).

A continued skills shortage

Four out of five respondents (80%) think there will continue to be a shortage of talent in the engineering industry and a more diverse workforce (80%). There is a belief that there will be a growing requirement for more engineers (90%).

Engineering would benefit greatly from increased participation from minority groups within the engineering workforce, that is, an increased presence of gender minorities, ethnic minorities and socio-economic background minorities. Not only does this create greater diversity of thought and leads to engineers producing better solutions as a result, having a more diverse workforce also means that retaining diverse talent is much more likely.

- Arkwright Alumni

The industry will continue to evolve with an increased focus on sustainability (34%) and more routes into engineering (23%).



Increasing diversity

97% agree that it is important to encourage young people from all backgrounds to be engineers. Around three quarters (74%) think that girls continue to face greater barriers than boys when accessing engineering careers.

To reach out to groups currently underrepresented in the workforce the majority (79%) think that increased exposure to engineering from a younger age is the key way to improve social mobility. Careers guidance and support in schools is thought to be an essential part of this (69%).

For girls, greater awareness of engineering career options in schools is felt to be an essential part of the solution (87%), followed by more visible female role-models and mentorship (76%).

Another way to increase girls in STEM is to make the STEM environment more inclusive and remove barriers to inclusion and progression. This requires an awareness from educational institutions and workplaces on their areas for improvement in their practices, to reach an ultimate culture change that makes an environment where girls can thrive as much as boys.

- Arkwright Sponsor

The skills requirement

There is general agreement that the requirement for soft skills (e.g. adaptability, teamwork) is likely to increase (72%). In fact, more than half of engineering businesses (59%) think soft skills are equally as important as technical skills in engineering.

In an increasingly automated world, engineering businesses see adaptability (77%), teamwork (68%) and communication (54%) as the most important soft skills for the future of engineering.



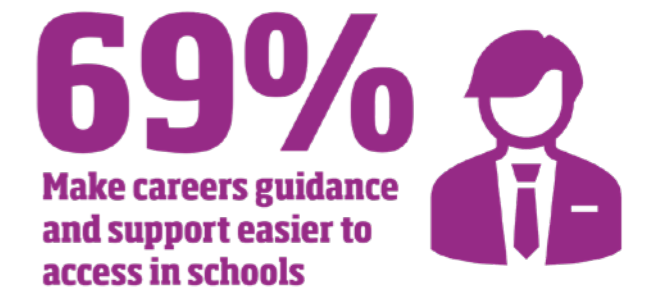
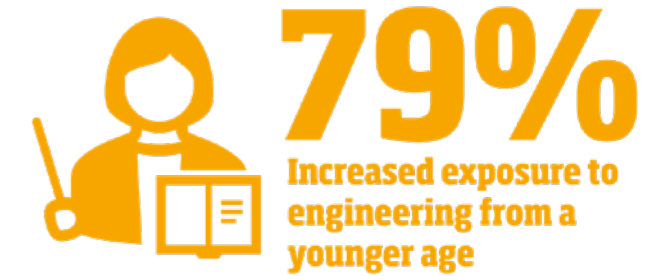
Many (74%) believe the rapidly evolving tech landscape will mean that engineers require more upskilling in coding and digital to keep pace.

Addressing the skills shortage

The research suggests the solution will need engagement outside the current school curriculum and careers advice. 88% of engineering businesses do not think the national curriculum provides secondary school pupils with an adequate understanding or appreciation of engineering skills.

These businesses (87%) do not think careers education in schools does enough to raise awareness of engineering-related careers pathways.

These businesses see that they have a role to play in addressing the skills shortage. 37% sees supporting young engineers as a priority to address the skills shortage and 26% want to help young people achieve their full potential.



Engineering is such a broad field. I think people need to be shown at a younger age that there is more to it than hard hats and steel cap boots. I think seeing the new emerging sectors could excite and encourage more people to pursue engineering.

- Arkwright Alumni

The role of Arkwright Engineering Scholarships

With the scale of the skills gap, businesses, charities and the public sector will need to work together to build the talent pipeline for the future. The Arkwright Engineering Scholarship programme can be part of the solution, with 6,000 scholars over the past 30 years.

90% of past scholars have seen the programme encourage them into engineering. With nearly two thirds (61%) saying it had a strong impact on their choice on career path. The three key benefits of the scholarship for past scholars were funding (73%), industry exposure (64%) and the opportunity to explore different engineering fields (43%).

The Arkwright Scholarship scheme was influential in me becoming an engineer and that is why I have been a mentor the last few years to help encourage more students to pursue a career in the engineering field.
- Arkwright Alumni

The sponsors for the programme have also seen the benefits of supporting the future engineering talent pipeline, with over two thirds (68%) currently employing past Arkwright scholars, and all sponsor respondents proud to support the programme (100%).

The partner schools see the impact of the programme, making students more employable (91%) and having a positive effect on students and school (89%). Schools are proud to be partnered with Arkwright Engineering Scholarships (95%), and see it as prestigious for their students and school (95%).

Partner schools see mentoring (73%), industry exposure (70%) and the prestige of the scholarship (67%) as the three key benefits that students gain over the two-year programme.



BETH SUCKLING - 2020 SCHOLAR Nuclear Engineering Degree Apprentice, EDF

"The Arkwright Engineering Scholarship has opened many doors for me and expanded my horizons. It gives me a lot of recognition as it is a very important, well respected award.

"As a result of applying and being awarded the Arkwright Engineering Scholarship, I have learnt to not underestimate yourself and to push yourself out of your comfort zone, to reach your full potential. My Arkwright Engineering Scholarship has also boosted my confidence in a huge way resulting in me doing things I wouldn't usually do, like putting myself forward for public speaking."



MAX MUNFORD - 2012 SCHOLAR Medical Engineer, Imperial College London

"Arkwright has given me countless opportunities and still continues to do so, 10 years on. I have always felt that the effort I put into making the most of Arkwright, the more I gained and this is what has compelled me to give back to Arkwright now, volunteering as a Mentor, promoting the scheme in my old school and helping where ever Arkwright can have me.

"Arkwright taught me about various engineering disciplines, what university could give me, why industry is so important and the value of a community of people who believe in inspiring future engineers."

Conclusions

Although there has been an improvement in diversity and inclusion over the last 30 years, this will continue to be a key growth area over the next 10 years in the engineering sector.

The skills shortage in engineering is set to continue, with a growing requirement for more engineers to support the industry. There will be an increased focus on sustainability within the industry, and a need to create more routes into engineering.

It is important to encourage young people from all backgrounds to consider engineering, this needs to start in schools with increased exposure to engineering from a younger age, better careers guidance, and greater awareness for engineering built into the national curriculum.

Soft skills are still very important, with the need for these likely to increase. Many businesses believe soft skills are equally as important as technical skills, with adaptability being a key soft skill as we look to the future of engineering. In terms of technical skills, coding and digital skills will be essential to support the evergrowing technological landscape.

To address the skills shortage in engineering there will be a continued need to focus on the talent pipeline by the public, private and third sectors, supporting Arkwright Engineering Scholarships can be one part of the solution.

Arkwright Engineering Scholarships is part of The Smallpeice Trust - an educational charity that inspires young people to pursue careers in science and engineering through events and workshops.

For over 50 years, The Smallpeice Trust has been giving young people everything they need to fuel their passion for engineering.

The Arkwright Engineering Scholarships programme is the most esteemed scholarship scheme of its type in the UK with over 6,000 Scholarships awarded to date.

Research methodology

From May - July 2022 we circulated questionnaires via email and social media to key audiences who have a direct link to our Arkwright Engineering Scholarships programme and/or the engineering industry. These key audiences included Arkwright alumni, sponsors, partnered school teachers and other engineering organisations.

A total of 666 questionnaires were returned across all key audiences, including 472 alumni, 143 teachers and 51 sponsors / engineering organisations.

Responses were analysed by our engagement team, with key learnings included in this report.

YIN KI FONG - 2006 SCHOLAR

Senior Engineer, Atkins

"The Arkwright Engineering Scholarship helped me achieve my dream of being an Engineer. Transforming me from a very homesick Year 9, who lacked self-confidence, to the competent Engineer I am today. Since then I have turned the tables, becoming an Arkwright Interviewer and Mentor.

"I hope to inspire the next generation of Engineers, especially those who are shy and lack confidence. An Arkwright Engineering Scholarship will not only act as a springboard to a career in engineering, it will also make you realise you are more capable than you think!"



The Smallpeice Trust is a company limited by guarantee, registered in England.
Company number 00882371. Registered Charity number 313719.

The Smallpeice Trust,
74 Upper Holly Walk,
Leamington Spa
CV32 4JL
info@smallpeicetrust.org.uk

www.smallpeicetrust.org.uk

