PUBLIC PERCEPTIONS OF CAREERS IN AEROSPACE AND AVIATION AMONG MILLENNIALS
About the Royal Aeronautical Society (RAeS)

The Royal Aeronautical Society (RAeS) is the world’s only professional body and learned society dedicated to the entire aerospace community. Established in 1866 to further the art, science and engineering of aeronautics, the RAeS has been at the forefront of developments in aerospace ever since.

The RAeS seeks to; (i) promote the highest possible standards in aerospace disciplines; (ii) provide specialist information and act as a central forum for the exchange of ideas; and (iii) play a leading role in influencing opinion on aerospace matters.

The Careers and Skills department at the RAeS was established in 1997 and works to support people seeking employment in the aerospace and aviation community and provide a programme of outreach activities for all ages. The RAeS work with young people broadly fits around the following objectives:

• Encourage those with an early interest in aerospace and aviation
• Spread the word about what being involved in the industry can offer
• Support and retain talent within the industry

The RAeS is an associate member of the Aviation Industry Skills Board (AISB) and participant in the Aerospace Growth Partnership (AGP), including the Skills Working Group.

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FOREWORD

Aerospace is one of the most vibrant and important sectors in the global economy. The UK benefits from having the second largest civil aerospace industry in the world, generating £32bn of turnover\(^1\), the biggest aviation network in Europe, and the third largest in the world, while London has the busiest airport system in the world\(^2\).

The availability and continuous development of skilled workers is the lifeblood of any industry wanting to maintain and increase its market share and to remain a leader in the fiercely competitive global marketplace. UK aerospace and aviation is no different.

Furthermore, as a generation reaches retirement, it is vital to attract more people into the industry and highlight the rewarding careers that aerospace and aviation offer, from designing, manufacturing and maintaining complex civil and defence aircraft and equipment, to the management of global programmes and operations – a career in aerospace and aviation offers a truly global experience. However, the industry faces continued challenges to overcome, which in turn present opportunities for today’s young people, including sustainable and quieter aircraft, cleaner fuels, deeper exploration into space, digitalisation, new applications of aerospace products, and more besides.

Inspirational people and events can be instrumental in capturing the imagination of the next generation. Just last year British ESA astronaut Tim Peake’s mission to the International Space Station proved that the sky is most certainly not the limit when it comes to Britain’s reach in aerospace. In 2018, the RAeS looks forward to the centenary of the Royal Air Force which will showcase the depth of its talented personnel and use the anniversary to help to encourage the engineers and scientists of the future. The Government’s Year of the Engineer campaign, aimed at inspiring young people into engineering, will also play a vital role in building awareness and highlighting opportunities in the sector.

The provision of accurate, informed but impartial careers advice is essential in helping to increase the number of young people making aerospace their career of choice. We all need support from time to time, especially when making big decisions such as which career path to follow, and young people and their key influencers need to be able to easily find resources which will steer them in the right direction and help them make informed choices.

Based largely on new research, this paper aims to explore the perceptions of aerospace and aviation among today’s millennials, and identify where careers support, advice and information is best applied during a young person’s formative years. We also make recommendations for the Government as it completes its careers information and industrial strategies, to what more both the RAeS, employers and Government can do to support the future of the sector.

Over the last 20 years, the RAeS has been at the forefront of helping and inspiring young people about the depth and breadth of aerospace and aviation with dedicated outreach and careers programmes. We plan to develop and strengthen these programmes so they are fit for purpose for the next two decades, and will work with Government and industry alike to ensure we are all pulling in the right direction.

Air Chief Marshal Sir Stephen Dalton
GCB LLD (Hon) DSc (Hon) BSc FRaS C MMI
President Royal Aeronautical Society

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\(^2\) Department for Transport (2017) Beyond the horizon; The future of UK aviation. London, HMSO.
About this Paper

Over the past 20 years, the RAeS has worked to inspire young people throughout their education with outreach programmes and resources, all aimed at encouraging young people into the aviation and aerospace sector. These include:

Cool Aeronautics
The RAeS programme of one-day events for primary schools at interesting places related to aerospace including airports, aviation museums, university departments, aerodromes and employer sites. Supported by AAR, the events consist of fun, inspirational careers talks by aerospace and aviation professionals, introduction to Science Technology Engineering Mathematics (STEM) and interactive workshops with all children receiving their ‘Cool Aeronautics wings’ and goodies to take home and share.

Amy’s Aviation
Three, free fully-animated downloadable series produced in partnership with Fun Kids Radio available on iTunes and Youtube. Children, parents and teachers can join Amy on her journey through aerospace, engineering and flying.

Ballantyne event
The Society’s annual careers awareness event for 14-18 year-olds provides an insight into university and apprenticeship routes into aerospace and aviation, with talks from early career professionals to industry leaders on aerospace aviation and key themes for the future.

Schools Build-a-Plane Challenge
The RAeS, supported by Boeing and assisted by the Light Aircraft Association (LAA), launched an ambitious and innovative programme to provide six secondary schools the opportunity to gain hands-on experience of building a real-life aircraft to Permit to Fly status, with the chance to fly in the completed aircraft as well as showcase their achievements to the general public through air shows and public events. On 20 June at the Corporate Engagement Awards 2017, which recognises successful and innovative corporate partnerships and sponsorships, the Royal Aeronautical Society and Boeing won Gold for Schools Build-a-Plane Challenge in both categories for which the programme was nominated: Best Educational Programme and Most Innovative Collaboration.

The Falcon Initiative
The sister project to SBAP, also supported by Boeing UK, was launched in 2015 to encourage schools to design and build their own prototype flight simulator. Inspired by SBAP school Ernesford Grange Community Academy - who built a simulator from scratch - the programme offers young people the chance to put their design and build skills into practice, bringing in elements such as science, maths and computing.

Printed careers materials
The RAeS produces a range of free printed careers materials for all ages including our Cool Aeronautics booklet for children, Career Flightpath magazine, a biennial free aerospace and aviation careers and professional development magazine and an eye-catching poster for schools highlighting the many people involved in making a commercial flight happen. The RAeS also supported the development of ‘Reach for the Sky’ by the Yorkshire Air Museum, a booklet for children capturing the history of British aerospace and aviation.
Careers in Aerospace website
A website dedicated to providing independent and impartial information, advice and guidance on career pathways, education and training routes in the aerospace and aviation community in partnership with ADS Group.

Careers in Aerospace LIVE
A recruitment fair dedicated to aerospace and aviation offering organisations the opportunity to promote their careers and/or training opportunities to 700-800 highly motivated visitors from across the UK and beyond, all seeking employment or training opportunities in aerospace and aviation.

1-2-1 Careers guidance and On-campus Careers workshops
The RAeS provides free, on-campus workshops for aerospace and aviation students seeking work placements and employment with advice on job search, networking, CV-writing, articulating soft skills, online applications and interviews followed by optional ‘speedy’ CV 1-2-1s for attendees. In addition, the RAeS also runs a free in-person and by-telephone 1-2-1 Careers Guidance service from the London office providing individual guidance and support.

Centennial Scholarship Fund
Established in 2003, the RAeS fund provides individual awards to students studying aerospace and aviation-related courses at university as well as ‘team’ awards for external organisations running youth programmes to encourage young people’s interest in the sector, including the UK Rocketry Challenge, YES, British Gliding Association and more.

Based largely on new research, this paper aims to explore the perceptions of careers in aerospace and aviation among the general public aged 18-30 year olds, to identify where careers support, advice and information is best applied and can achieve maximum effectiveness.

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Executive Summary

The aerospace and aviation industry is a key component of the UK’s economic success. It is therefore important for employers, the Government, and industry bodies, including professional bodies such as the RAeS, to work together to attract people with the right skills and knowledge in sufficient numbers to join the industry before sizeable skills gaps emerge which could undermine the economic performance of the sector in a highly competitive global market.

Careers Awareness

New polling and survey data published in this paper reveals that millennials have at least some awareness of the jobs available. This suggests a solid foundation on which we can all build. Nonetheless, the results suggest that better information during school age would help build greater awareness and knowledge.

Importance of STEM

The survey also revealed that four in five (82%) 18-30 year-olds have an awareness of the importance of Science, Technology, Engineering and Mathematics (STEM) qualifications to joining the industry. Furthermore, a majority of those surveyed (58%) see apprenticeships as a route into the industry.

Industry Diversity

When it comes to diversity within the industry, aerospace, engineering and manufacturing often grapples with the notion that the sector is seen as being a ‘job for the boys’; however, the results of our survey reveal this is far from the truth in the minds of millennials and so is unlikely to deter young people from entering the industry. Young men are more likely than women to disagree that you require academic qualification to work in the aerospace and aviation sector, while men also have a greater conviction that apprenticeships are a route into the industry. While the Government is targeting 3 million more apprentices and introducing a levy on employers to pay for more apprenticeships across all sectors, more will need to be done to raise awareness of the apprenticeship options amongst women.

Furthermore, young women in our survey indicated that work experience was the most important factor in choosing a career path, so ensuring girls can access work experience opportunities may help increase the numbers of women looking to work in the aerospace and aviation sector.

While aerospace and aviation employers have a good reputation for encouraging young women to enter the industry, the numbers of women in technical roles such as engineering and flying remain low, therefore careers information and supporting activities needs to be more appealing and effective for girls too.
Sources of Careers Advice

So, who did millennials look to for careers advice? Government, schools, teachers or employers? Or a combination of all? Our polling results reveal that the millennials first and foremost looked to their schools and teachers for careers advice. After this, friends and family are often seen by the public as the most important source of guidance, while employers and businesses themselves are lower down the list. Clearly, much effort needs to be put into spreading the word about careers in the sector in general and ensuring clear, accessible and impartial careers advice is easily available and signposted for teachers, parents and family members who may have little knowledge of the sector.

Information and Experiences

The survey tells us that young people value real-life interaction and experiences with an industry, particularly through work experience, not just static resources – a majority (52%) rank these in their top three most helpful sources of careers advice.

The RAeS welcomes the recent success of programmes such as the AGP’s Aerospace Industrial Cadet Programme in partnership with the Engineering Development Trust. The RAeS will also continue to help the industry in providing real-life engineering experience opportunities through programmes such as Cool Aeronautics, the Ballantyne, and Falcon Initiative, which offer real-life experiences of people and networks involved in aviation.

Good reputational foundations

Overall, the polling results paint a positive picture of the industry. It has a good reputation on which to build upon and attract many more people into the sector. However, detailed awareness of career pathways remains low and stakeholders need to do more to raise awareness in schools at all levels of the opportunities and routes into the sector, through activities, experiences and information which appeals to young men and women from all backgrounds.

Priorities for government

Firstly, the Government’s final Industrial Strategy and Careers Strategy, long overdue, should set out what role it will play with schools and other education institutions, in partnership with employers, through mechanisms such as the AGP and AISB. Secondly, the Government’s Aviation Strategy should also be well integrated with these policies to ensure Government departments are all working together. Thirdly, Government awareness campaigns, such as the Year of Engineering 2018 and the centenary of the RAF in the same year, provide a golden opportunity to inspire the next generation; however, these programmes should be reinforced by sustained effort over the long-term.

And what role for the RAeS? The findings from our research will help us to play the fullest role we can in helping the industry to sustain the talent pipeline. The RAeS itself will play a key role in continuing to offer and support specialist schools outreach programmes for all ages to achieve these goals in addition developing our careers programmes and support for the next 20 years.
Methodology

The RAeS aimed to explore the perceptions of a career in aerospace among the young British public who are outside of the industry and identify where careers support, advice and information is best applied during a person’s formative years. The RAeS contracted ComRes to interview 424 British adults aged 18-30 online between 28 and 29 June 2017. Data was weighted to be representative of all GB adults aged 18-30 by age, gender, region and socio-economic grade. A summary of the ComRes poll results and the full data sets are available here: http://www.comresglobal.com/polls/royal-aeronautical-society-careers-poll/
Background

There is often talk of skills shortages affecting engineering and technology sectors in the UK. There has also been much discussion of a likely pilot shortage in aviation. A ‘skills crisis’ is now common currency. In 2014, the Royal Academy of Engineering published its 15-year review of its original The Universe of Engineering study which states that the UK requires ‘over a million engineers and technicians by 2020’ with a ‘doubling of annual graduates and apprentices’.

The RAEng’s more recent report – Closing the STEM skills gap (2017) – highlights an engineering skills demand with the need to recruit ‘more people with higher skills in the next 3-5 years’ and how ‘supply is unable to keep up with demand’. The report identifies how schools, colleges and universities have worked hard to encourage young people to take up STEM subjects but there has been a ‘limited growth in the number of young people taking up subjects leading to engineering careers’.

There is a significant proportion of today’s industry employees over 45 and successors must be found but outdated and inaccurate perceptions of manufacturing industries, like aerospace, often discourage young people and their parents and teachers from exploring opportunities. According to the joint UK Government/industry Aerospace Growth Partnerships the ‘situation is exacerbated by a lack of specialist careers advice and support available in schools’.

A Business, Innovation and Skills and Education Committees report from 2016 found ‘careers education, information, advice and guidance in English schools is patchy and often inadequate. Too many young people are leaving education without the tools to help them consider their future options or how their skills and experiences fit with opportunities in the job market. This failure is exacerbating skills shortages and having a negative impact on the country’s productivity’.

There is a relationship between careers advice and skills gaps and work experience. A CBI/Pearson Education Skills Survey 2017 found that 35% of employers (not specifically aerospace and aviation) are uncertain how to make work experience ‘worthwhile for young people’ where they find little guidance from schools. Employers want young people to gain a better awareness of businesses but views careers advice in schools as not being ‘good enough’. It is encouraging that 75% of business in the UK are willing to work with schools and colleges in offering work experience and careers talks.

The aerospace and aviation sectors are competing with many other industries to attract the attention of young people. The RAeS, as well as many employers and other organisations, are investing heavily into programmes to promote the sector to schools and young people. The Department for Education (DfE) has stated that it will publish a careers strategy which will develop the Government’s aims for careers guidance to 2020. How can the experience of young people shape this strategy?

Our survey looked at the perceptions of the sector among today’s 18-30 year-olds, often referred to as ‘millennials’, to find out what awareness they have about careers in the sector and understand which activities would have had the most impact on their career choices.

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3 Redressing the balance, Bill Read, AEROSPACE magazine, January 2017, published by the Royal Aeronautical Society
4 The Universe of Engineering: A call to action; Royal Academy of Engineering and Engineering the Future, 2014, p. 8
5 Closing the STEM skills gap, Royal Academy of Engineering and Engineering the Future, 2017, p. 2
6 Ibid, p. 3
7 Means of Ascend The Aerospace Growth Partnerships Industrial Strategy for UK Aerospace 2016, p. 27
9 Helping the UK Thrive CBI/Pearson Education and Skills Survey, July 2017, p. 37
10 Ibid, p. 37
ComRes Survey:
Key findings

• The survey revealed that four in five millennials (82%) have an awareness of the importance of Science, Technology, Engineering and Mathematics (STEM) qualifications to joining the industry. Furthermore, a majority of those surveyed (58%) see apprenticeships as a route into the industry.

• Today’s 18-30 year-olds have some awareness of the career opportunities available but do not have a detailed understanding. For example, three in five (58%) report having no knowledge of careers in the aerospace and aviation sector. The results tell us that better information during school age would build greater awareness and knowledge of aerospace and aviation.

• Our survey indicates that people look to their schools and teachers for advice, with seven in ten 18-30 year-olds (70%) ranking these in their top three most important sources of careers advice for young people while a further third (35%) rank this as their most important source of information. Thus, schools must have easy access to readily available, informative and impartial advice on a range of careers. Friends and family are also key with one in five (19%) reporting this group is most important, so raising public awareness more generally is also important.

• When asked about their times at school, respondents say they would have found work experience in aerospace and aviation companies as most helpful in informing them about a career in aerospace and aviation, with the highest proportion ranking this in their top three (52%). Women are also more likely than men to rank work experience in aerospace and aviation companies in their top three most helpful (60% vs. 46%). A slightly lower proportion of respondents say the same of practical workshops in schools that provide real-life experience of working in aerospace and aviation. Reading case studies about people already working in aerospace and aviation is ranked as the least helpful.

• Those with up to a primary /secondary level of education are significantly more likely than those with a university level of education or above to say they have never heard of careers in this sector (21% vs. 11%). This is indicative of a greater need for awareness in schools.
Appendix

PUBLIC PERCEPTIONS OF CAREERS IN AEROSPACE AND AVIATION: DETAILED RESULTS

Q1. Before today, which of any of the following, if any, were you aware that a career in aerospace and aviation could involve? Were you aware that it could involve...?

<table>
<thead>
<tr>
<th>Career Option</th>
<th>Percentage Aware</th>
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<tbody>
<tr>
<td>Flying aircraft (e.g. pilot)</td>
<td>66%</td>
</tr>
<tr>
<td>Air Traffic Control (e.g. managing aircraft during flight)</td>
<td>58%</td>
</tr>
<tr>
<td>Designing, building and maintaining aircraft</td>
<td>57%</td>
</tr>
<tr>
<td>The Military (e.g. join the Royal Air Force)</td>
<td>56%</td>
</tr>
<tr>
<td>Working for an airline or airport (e.g. being part of a cabin crew, assisting passengers)</td>
<td>50%</td>
</tr>
<tr>
<td>Space programmes (e.g. satellites and space vehicles)</td>
<td>50%</td>
</tr>
<tr>
<td>Academia (e.g lecturer/researcher in aeronautical engineering in a university)</td>
<td>39%</td>
</tr>
<tr>
<td>'Don't Know'</td>
<td>12%</td>
</tr>
<tr>
<td>None of the Above</td>
<td>11%</td>
</tr>
</tbody>
</table>

Base: all British adults aged 18-30 (n=424)

Flying aircraft is the most recognisable role within aerospace and aviation; two thirds (66%) of 18-30 year olds say they are aware that a career in aerospace could involve flying aircraft. Three in five (58%) report being aware that a career in aerospace could involve Air Traffic Control, or designing, building and maintaining aircraft (57%), or the military (56%).

Younger respondents aged 18-24 are significantly more likely than those aged 25-30 to say they were aware that each of the options tested could be involved in a career in aerospace and aviation, most significantly when considering the military (65% vs. 46% respectively). The only option where there was no significant difference is when considering space programmes (54% vs. 47%).

Respondents with a university degree or above are significantly more likely than those with up to a primary/secondary education to say they know that a career in aviation and aerospace could involve working in air traffic control (64% vs. 50%). Indeed, university educated respondents are generally more likely to be aware of all the options tested. Promoting pathways in schools is thus essential. There are no significant differences by gender.
Knowledge of a career in aerospace and aviation is low. Adults aged 18-30 are most likely to say that they have heard of but know nothing about a career in the aerospace and aviation sector (43%) while three in ten (28%) say they know just a little about careers in this sector. A further 16% say they have never heard of careers in this sector.

Those with up to a primary/secondary level of education are significantly more likely than those with a university level education or above to say they have never heard of careers in this sector (21% vs. 11%). This is again indicative of a greater need for awareness in schools.
Q3. Thinking about a career in aerospace and aviation, to what extent do you agree or disagree that each of the following are important in being able to work in aerospace and aviation?

A majority of Britons aged 18-30 agree that each of the options tested are important in being able to work in aerospace and aviation, with approaching nine in ten (87%) agreeing that attention to detail is important. Three in five (61%) report that they agree strongly with this statement.

Respondents aged 18-24 are more likely to agree than those aged 25-30 that the ability to work as a team is important in being able to work in aerospace and aviation (90% vs. 83% respectively).

British adults aged 18-30 with a university level education or above are broadly more likely than those with up to a primary/secondary level education to agree with each of the statements tested. While a majority of men agree with each of the statements tested, they are more likely than women to disagree that qualifications in STEM are important in working in aerospace and aviation (8% vs. 3% respectively).
Three in five (59%) agree that they would not consider a career in aerospace and aviation because they do not know enough about it. A similar proportion (58%) agree that apprenticeships are a route into the aerospace and aviation sector.

Women are more likely than men to agree that working in aerospace and aviation requires academic ability and less likely to be aware of aerospace routes than men. 64% of women also said they would not consider a career in aerospace and aviation as they knew less about it compared with 55% of men.
Q5. Which of the following, if any, do you think are the most important in providing careers advice for young people?

Seven in ten (70%) rank their teachers and schools in their top three most important in providing careers advice for young people, while a third (35%) say this is most important.

Women aged 18-30 are more likely than men to say that teachers and schools are most important (41% v 30% respectively) in providing careers advice for young people and rank them in their top three most important (77% v 63%).

Those aged 18-24 are more likely than those aged 25-30 to rank the government / local authority in their top three most important (62% vs. 52% respectively).
Over half of millennials surveyed (52%) rank work experience in aerospace and aviation companies in their top three most helpful sources of careers advice for young people, while one in five (18%) rank this as their most helpful. A similar proportion (17%) say that practical workshops in schools that provide real-life experiences of working in aerospace and aviation would be most helpful, with nearly half (47%) ranking it in their top three.

Those with a university level degree or above are more likely than those with up to a primary/secondary level education to rank talks by aerospace and aviation businesses in schools in their top three most helpful in informing them about a career in aerospace and aviation (40% vs. 29% respectively).

Women aged 18-30 are more likely than men to rank events for young people about aerospace and aviation as the most helpful in informing them about a career in aerospace and aviation (17% vs. 8%). They are also more likely to rank work experience in aerospace and aviation companies in their top three most helpful sources (60% vs. 46% men). However, men are more likely to rank websites in their top three most helpful (28% vs. 18% women).

Respondents aged 18-24 are more likely than those aged 25-30 to rank events for young people about aerospace and aviation in their top three most helpful sources of information to inform them about a career in aerospace and aviation (43% vs. 33%). In comparison, those aged 25-30 are more likely than those aged 18-24 to rank reading case studies about people already working in aerospace and aviation in their top three most helpful sources of information (23% vs. 13%).