fly higher

Shaping the new evolving generation of aeronautic professionals

Teachers' Guide to Fly Higher Tutorial 5

Aircraft in the Air: Keeping them there!

Opportunities for All

About this document

This document is part of the fifth and final Tutorial of the Fly Higher Project *"AIRCRAFT IN THE AIR: Keeping them there! - Opportunities for all"* and supports the accompanying PowerPoint. It is aimed at giving students an appreciation of the vast aeronautics/aviation industry that underpins the more public, glamorous roles of the Pilot or Air Steward and steering them to investigate the aviation facilities (both large and small) in their locality. This leads, further, to their investigation of the career opportunities that may be open to them.

It can be presented as part of a sequence of Fly Higher Tutorials (but does not depend upon any knowledge of that previous work), as a stand-alone or as part of a careers programme.

The Tutorial draws upon the "Career Kits" available on the Fly Higher website (www.flyhigher.eu) but aims to introduce the materials (rather than replicate them) and invites the students to explore them further.

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Disclaimer

Table of Contents

Summary of the Tutorial

Target Age Range:

The tutorial is designed for students 14+ at a point when they may be considering optional pathways in their schooling.

Target Ability:

All abilities

Target Time:

For full discussion: 50+ minutes

Possible minimum: 35 minutes

Materials Required:

Computer and classroom display

Lesson Outline

Introduction (Slides 1 and 2)

Tutor's Informal Statement of Aims *and* identification of pictured aircraft
(Suggested timing: 1- 2 mins)

Phase 1. Well understood roles

Being a pilot (Slides 3 – 5)

Brief discussion of the types of pilot.
Group work on the attributes that these three types of pilot (a civilian airline pilot, a helicopter pilot and a fighter pilot) would have in common and the differences between them according to their context.
(4 – 6 mins)

Being an Air Steward (Slides 6 – 7)

Brief discussion of the other high profile role in aviation – the cabin crew.
Group discussion about the differences in life style for those working long-haul and short-haul and the attributes required.
(*3 – 4 mins)*

Phase 2. A HUGE Industry with many different aspects

Review of Industry's size and importance (Slides 8 – 10) *(2 mins)*

Operating a busy airport (Slide 11 - 13)

Activity: In pairs or small groups, students try to think of as many different roles that would be required to operate a busy airport.
Class plenary to follow through.
The list is endless and the timing therefore very flexible.
(4 – 8 mins)

Locating international airports, regional airports and local airfields (Slide 14)

Research Activity: For individuals or possibly small groups out of class or, possibly, in a school/college computer room. Brief introduction necessary, at least.
Could be more elaborate discussion depending on what the students already know and the time available.
(1 – 2 mins)

Engineering and manufacturing aircraft (Slides 15 – 18)

Activity: In their pairs or small groups, students try to think of as many different roles that would be required to operate a factory that designs, engineers and builds aircraft. The list is more specialist, but

again very large, so timings can be very flexible. Class plenary to follow through, stressing that the *range* of people required is also *very*, wide.
(3 – 6 mins)
Slide 18 can be passed over quickly or used to generate a discussion of the location of the major contributors to aeronautics engineering.
(1 – 2 mins)

Three jobs in rather greater depth (Slides 19 - 26)

1. Air Traffic Controller

2. Aircraft Mechanic

3. Aircraft Painter

Discussion of the responsibilities in each role; brief video from someone doing the job; further outline of the work and the requirements placed upon the person doing it. *(10 – 15 mins)*

Phase 3: Summary and End (Slides 27 - 28)

Recap stressing the many roles open to young people in such a large and growing industry and their final task – **to investigate for themselves the roles that would interest and suit them**. *(2 – 3 mins)*

All timings are approximate; they are offered only as a guide. Obviously class discussions can be shortened or allowed to develop at greater length, particularly if the students work in smaller groups first, ahead of a plenary discussion. The programme can be lengthened further if the tutor introduces some finer details about the opportunities in the local region.

Following the minimum times suggested here would fill a lesson of 30 - 35 minutes, but would possibly not allow time for satisfactory discussion. Following the longer timings should enable the presentation to fit neatly into a 50 - 55 minute slot, but a mature more able class with a lot of ideas might be given longer to ensure the suggested discussion topics are fully explored.

This Tutorial is different from its predecessors as it seeks to inform a conversation that then motivates the students to make their own investigation into local facilities and opportunities. It cannot provide definitive answers, and timings can be varied considerably in the light of the students' response.

The Teacher or Careers Adviser making the presentation is strongly advised to prepare the requisite local knowledge ahead of the class in order to prompt class discussion, and steer the students' personal investigations.

Furthermore, a follow-up session in which the students feedback upon their out-of-class investigations could be very effective and is recommended.

PowerPoint - Supplementary Notes

Slides 1 and 2: Introduction and Starter Activity

Depending on the students' background and ability, you might first informally test the class, by show of hands, to see their level of interest in aircraft and air travel and the possibility of a career working in the field. Also some may well have parents or other relatives working in some aspect of the civilian industry, or, of course, in the military. If so, it would be worth having those students share their impressions of the work that their relative(s) does. If this Tutorial is presented as part of the Fly Higher series, ask them what they remember from earlier Fly Higher Tutorials they have seen.

Main centre picture on Slide 2: Airbus A380

Slides 3 - 5: Pilots

The first two of these three slides can be glossed over quickly, as simple asides, if time is short. However, the point to be made is that the context in which the pilot works is crucial to his/her life style.

The military make extensive use of aircraft of all sorts, not just fighter aircraft, but transport aircraft and helicopters. However, military life is not for everyone. In the civilian world, the aviation industry is huge and there is demand for both airline pilots and helicopter pilots too. Many helicopters are deployed in the Emergency Services (most obviously with the police, rescue and medical services) that attract former military pilots; the reality, however, is that there are fewer jobs flying helicopters than flying aeroplanes.

The students will probably have a good number of ideas about the attributes required of a pilot and some thoughts on how military and civilian lives differ. Welcome any non-facetious suggestions, for the objective is to encourage the students to think a little more deeply about flying as a possible career.

They may be surprised by Slide 5, however. Becoming a pilot is not that easy – even for the hobbyist, flying light aircraft simply for fun; he or she will need to commit a lot of time (and money!) to build up an authorised log that would enable the issue of a private pilot's licence. Necessarily, in the commercial and military world, the training is considerably more rigorous. Pilots cannot afford to make mistakes!

Nonetheless, different contexts and different countries will make different demands. (For example, to even be considered for training as an Air Force pilot in the United States you must first have a university degree.)

Picture Acknowledgements Slide 3

1) Picture on the left: Airline Pilot (Source:http://www.flickr.com/photos/jetstarairways/6767906077/in/photostream/ | Jetstar pilots in A320 flight deck Jetstar pilots in an Airbus A320 flight deck.)
2) Picture in the middle: Helicopter Pilot (Source: http://www.flickr.com/photos/defenceimages/5038864324/ | Apache Helicopter Pilot in Cockpit An Apache pilot of 673 Squadron is pictured looking at the Longbow Radar screen aboard his Apache

Attack Helicopter. Photographer: Graeme Main Image 45148279.jpg fromwww.defenceimages.mod.uk

3) Picture on the right: Fighter Pilot (Source: http://www.flickr.com/photos/41397624@N06/3854896435/in/photolist-6SDmpD-6TgMGR-6W1nQr-6WBtsk-6Xiwd4-71TBjn-71XBTQ-75UCct-78nx8i-78rtp9-7jQA35-cYVuQs-8yMNXX-9vMJZ9-afXAWK-eiS6W5-etyT9a-amW4Zv-cYiGjG-7Uv9gU-8sh1Va-axDjZ5-cw2kXh-c7bn2b-9zCRY4-e8bYc1-aeSVaC-aaGMHo-8oVWXi-bGgPx2-aDRLzt-a79AVc-buFAiA-bnhETQ-cuWXa3-cuWXw3-84GYyd-etEcdb-fcoiqT-aK9XAD-cXh7Hy-hxx9Gt-eamwxS-bmjdvn-guZ8Hr-fa2Wna-cuWXqA-bevU8x-8dQbF9-dppaVv-8sKmDH)

Possible Extension: Have the students investigate the minimum requirements for entrance into your national air force and, in particular, its pilot training programmes. Are these different from those required of the navy or army (who also use aircraft and helicopters extensively)? And how do they compare with requirements stipulated for your (or other) national civilian airlines? There are likely to find that demands are higher then they thought – but they may find also some surprising inconsistencies!

Finally, note that pilots are **not** always male. On the contrary. women have trained and are training successfully to become pilots and most airlines are encouraging this development, for example by including individual case studies, for both genders, as part of their recruitment materials. **Girls interested in aviation should not shy away from this possibility**. Instead they should explore www.girlswithwings.com to see for themselves just how successful female pilots can be and – given that they meet the essential requirements demanded of everyone - investigate their local opportunities and make an application.

Slides 6 - 7: Cabin Crew

The other high profile role in Aviation is the Airline Steward or Stewardess. Again, stereotypes are breaking down and there are opportunities for men and women equally in this field. The slides invite the students to think about the implications of short and long haul flights and both the over-lapping and contrasting requirements and strains of these differing roles.

In Europe, the massive increase in air travel has in large part come about as a consequence of the cut-price short-haul airlines shuttling from provincial airports an hour or two flying-time apart. The work of a cabin crew member for such an airline would have much in common with those working long-haul: direct contact with customers, dealing appropriately with difficult or anxious passengers, extensive safety and emergency training, sometimes unsociably early or late rotas and so on. However, they are much more likely to rest at home and not find their personal time lost in stopovers elsewhere.

Long-haul airline staff will "live out of a suitcase", working extensive shifts with rest breaks in different cities anywhere in the world - a much less 'family friendly' working environment, but a life-style that, for many, would be the very reason they have committed to the work.

Students will probably not have much difficulty in discerning this for themselves – again, the idea is to encourage them to think a little more deeply than perhaps they have done so far. (They may also appreciate

knowing that many of the bigger airlines offer "mixed" options: some periods of routine travel and then others that are more far-flung.)

They may well, however, under-estimate the importance of language skills to cabin crews. Even on short-haul flights, cabin staff able to speak at least some of a foreign language will be of greater value to an airline than someone who cannot. For example, Spanish passengers flying from Madrid to Lanzarote (so from Spain to Spain) will expect to communicate in Spanish. It is of no matter to them that the airline is Greek owned and, on its next and final 'leg' of the day returns to its base airport which is nowhere near Greece, Madrid or the Canary Islands but on the northern outskirts of London (where every one of the cabin crew have lived for all their lives). This is an international business!

At the time of writing, British Airways are actively campaigning to recruit Mandarin speakers for their long-haul flights from London to Sydney (i.e. from England's capital city to English-speaking Australia) …. because the flights always stop at Singapore or Hong-Kong and so attract a very high proportion of Asian customers.

(NB Pilots need sufficient English to follow instruction from Air Traffic Control – which is conducted in English – but do not have the same level of contact with international passengers.)

Picture Acknowledgements Slide 6

1) Picture on the left: Long-haul Flight Attendant: PanAm Stewardesses (Source: http://www.flickr.com/photos/kevlar/5959819781/)
2) Picture on the right: Short Haul Stteward: Cabin Crew Germanwings | Flight from Hannover to London-Stansted with Germanwings.
   (Source: http://www.flickr.com/photos/oxfordian/7165898862/)

Slides 8 - 10: A huge industry behind the scenes!

Self-explanatory summary of just how large is the Aviation/Aeronautics industry.

Slides 11 – 12:

Class Activity: Class divide into pairs or small groups and try to identify as many different roles that are needed for the operation of a busy airport. Some prompting may be necessary, but many students will have passed through an airport and should not have too much difficulty in making suggestions.

Slide 12 offers a list – but it is by no means definitive. An airport is a mini-city and the roles required to make it run smoothly (and therefore the jobs on offer) are very extensive. There is literally something at every level of expertise – from the Chief Executive, the computer technicians and aircraft mechanics, to the baggage handlers and cleaners.

Slides 13 – 14:

Out-of-class Investigation (OR an investigation in a computer room, if your school/college has sufficient capacity):

Our focus on large airports however is in danger of neglecting regional airports (often an important 'hub' for the short-haul, cut-price airlines) as well as a myriad of airfields and aero-domes, scattered all over Europe (that furnish smaller, executive aircraft, private light aircraft, private pilot licence training, hobbyists and so on). Again these will be local – and sometimes very small. Nonetheless, they offer a service and they need people to work there.

Airports and airfields are to be found almost everywhere. The activities very much depend on where your school or college is located, and what local airports/airfields/ flight-clubs etc. have put on the Internet.

The presenter is strongly recommended to undertake this local research ahead of the students!

The activity would lend itself to a brief introductory discussion and then follow-up on a further occasion.

Slides 15 - 17: Engineering and Manufacture

Class Activity: Again, divide the class into pairs or small groups and now ask them to try to identify as many different roles that are needed to engineer and manufacture aircraft. A little more prompting may be necessary this time, but students should be challenged to think more deeply about how these machines are put together

Slide 16 offers a list – but, again, it is by no means definitive. Accept any student suggestion that is offered sensibly – big factories need an army of people committed to a vast range of different tasks.

Slide 18 (Optional Extension)

Possible Extension: Manufacturing the final product – the aeroplanes and helicopters – requires massive space, usually concentrated into a specific, specialised area. France, Germany, Italy and the United Kingdom host large, dedicated aeronautical industries. What is less appreciated is that smaller engineering companies all over the European Union manufacture the components of these aircraft.

On the fly higher website at http://www.flyhigher.eu/wp-content/uploads/2013/07/GIS-Map-v4.html

there is a detailed map illustrating this point by showing the locations of companies that are major contributors to aeronautics. If there is class time, you may wish to include the map as part of the presentation and the link is also given on the notes to the slide. This assumes, of course, that you have a reliable Internet link in the classroom. You could download the map ahead of time or, alternatively, you might invite the students to look at it individually and investigate further the companies in your region,

which have been included on the map. As it is heavily detailed, interactive and up-dated regularly, we have only been able to pictured it on the PowerPoint.

Slides 19 – 26 Three jobs in depth

We have chosen to illustrate three jobs in detail. These are

1. Air Traffic Controller 2. Aircraft Mechanic 3. Aircraft Painter

These represent three levels of involvement – the traffic controller as a "brain worker"; the skilled practical work of the aircraft mechanic and the more artistic, manual work of the aircraft painter. Something for everyone!

The slides facilitate a discussion of the responsibilities in each role; a brief video from someone doing the job; and a further outline of the work and the requirements placed upon the person doing it. These have been taken directly from the Fly Higher website, that offers a total of 15 "Career Kits" of this nature. The intention is to introduce the students to the resource and then invite them to explore for themselves the career path that might be of interest to them. You might, of course, substitute other Career Kits if you wish.

The full list of available Career Kits is as follows:

1. Software Engineer
2. Manufacturing Engineer
3. Sheet-Metal Worker
4. Aircraft Painter
5. Test Technician
6. Logistics Technician
7. Business Development Manager
8. Aircraft Mechanic
9. Structural Engineer
10. Air Traffic Controller
11. Planner Scheduler
12. CNC Operator
13. Composite Technician
14. Quality Technician
15. Interactive Cockpit Design Engineer

These are all to be found under the careers section of the fly higher website:

www.flyhigher.eu

Slides 27 – 28 Conclusion

We hope that after this presentation the students will be interested enough to explore for themselves the career opportunities open to them in this field.

Many of the job titles listed on our website will make little sense to them - until they have explored them! And (of course) every individual will be interested in different things, bringing different qualities and potential to the career paths they may choose.

The slides now intentionally set an open-ended research task for the students.

SEVENTH FRAMEWORK PROGRAMME

The task could be given more structure by follow-up careers interviews, if resources allow, or perhaps a class discussion in which the students present their preferred options.

Other Internet Resources

In addition to the Fly Higher website (in English, French, Spanish and Portuguese), students are likely to find many different sites offering careers advice and/or insights to careers in flying and aeronautics. The following websites are particularly useful:

In English:

www.aerosociety.com/careers-education

www.britishairways.com/careers

www.girlswithwings.com

www.lifeasabutterfly.com

www.raf.mod.uk/careers

SEVENTH FRAMEWORK PROGRAMME