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| **The History of Flight** |
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| Making a hanging-mobile timeline of the history of flight |
| **Subject(s):** Design & Technology, Engineering**Approx time:** 80 - 140 minutes (with adjustment if research is set as a homework activity) |  | **Key words / Topics:** * aircraft
* airplanes
* balloons
* helicopters
* rockets
* timeline
* mobile
* flight
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| **Stay safe** Whether you are a scientist researching a new medicine or an engineer solving climate change, safety always comes first. An adult must always be around and supervising when doing this activity. You are responsible for:• ensuring that any equipment used for this activity is in good working condition• behaving sensibly and following any safety instructions so as not to hurt or injure yourself or others Please note that in the absence of any negligence or other breach of duty by us, this activity is carried out at your own risk. It is important to take extra care at the stages marked with this symbol: ⚠ |
| **Suggested Learning Outcomes**  |  |  |
| * To understand that products and technologies change over time.
* To be able to produce a graphic product (hanging mobile).
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| **Introduction** |  |  |
| This is one of a series of resources designed to allow learners to use the theme of the future of flight to develop their knowledge and skills in Design & Technology and Engineering. This resource focusses on producing a timeline for the history of crewed flight. Rather than the conventional linear timeline, this version is presented as a hanging mobile. |
| **Purpose of this activity**In this activity, learners will produce a hanging-mobile timeline representing the history of crewed flight. They will carry out research to identify the important technological advances and dates, then use this to create the images hung on the mobile.This could be used as a one-off main lesson activity to develop understanding that products and technologies change over time, or to build knowledge and understanding of flight. Alternatively, it could be used as a part of a wider scheme of work to develop skills with graphic media in Design & Technology.  |
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| **Activity** |  | **Teacher notes** |
| **Introduction (10-20 mins)** As a class discuss why humans need to fly.Watch the short video on the history of flight on YouTube https://www.youtube.com/watch?v=LgjKVE43V\_k.Teacher to introduce the activity, using the presentation to outline some of the main developments in the history of crewed flight.**Research & future design (20-40 mins)**Learners to use the internet to research the history of flight, either printing or copying images of aircraft.Learners could produce a drawing of what they think the future designs for one or more aircraft will be, to extend their timeline.**Demonstration (15-20 mins)**Teacher to demonstrate steps shown below and on the presentation. Learners to then follow these steps to produce their own mobile.* Step 1 - Printout or copy the aircraft to be included on the mobile, adding colour if appropriate. Cut these out using scissors. ⚠
* Step 2 – Draw large cloud shapes onto card. Cut these out and add shading if desired. Stick onto the coat hanger using tape - the hangar should be completely covered with clouds. ⚠
* Step 3 - Tape cotton to the back of each image – then tape the other end of the cotton to the back of the cloud. Hang the finished mobile on the wall!

**Performing the Activity (30-50 mins)**Learners work as a group to produce their mobiles.**Peer review (5-10 mins)**Learners to ask a peer for feedback – three kisses and a wish. Peers identify three things they like about the mobile and one thing that could be improved. |  | This activity could be carried out in small groups – if working individually the time for research and making may need to be extended.**Introduction**The overview in the presentation contains only a selection of events – there are many others that could be included, such as the first powered helicopter flight (1907), the first commercial airline flight (1914), first autogyro flight across the channel (1928), the first supersonic flight (1947), the first vertical take-off and landing aircraft flight (the harrier jump jet) (1958), the first man on the moon (1969) etc..**Research & future design**The research activity could be set as a homework task.Images from printed media could be copied using tracing paper and stuck onto card using glue sticks.If the internet or other research resources are not available, the templates handout could be used instead; in this case less time should be spent on research and more time given to producing a future design.For the future design, learners should be encouraged to be diverse and creative – potential ideas could range from jet packs and jet powered vehicles to helicopters, blimps, rocket ships etc.**Demonstration**Step 1 – depending upon capabilities learners could cut out the aircraft within a simple shape (e.g. oval or octagon) or to its exact outlines.Step 3 - different lengths of cotton could be used to hang the aircraft at different heights representing how far back in the past it was or how high they flew. The most modern or the future could be taped to the clouds. |
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| **Differentiation** |  |  |
| **Basic** |  | **Extension** |
| * Provide the templates for learners to use.
* Provide pre-cut clouds, images and cotton.
 |  | * Use a second coat hanger (at right angles to the first and interlaced with it) to make a 3D version of the mobile.
* Cut out around the outline of the planes to add style to your mobile.
* Add dates to the images.
* Design aircraft and space transport of the future and add to the mobile.
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| **Resources** |  | **Required files** icon-docicon-pdficon-ppt |
| * Access to internet or other appropriate research facilities
* Card
* Pencil & pens
* Scissors
* Sticky tape
* Cotton or string
* Coat hanger
 |  | icon-ppt Presentation History of flight icon-doc History of flight templates |
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| **Additional websites** |
| * **NASA** History of flight up to the Wright bothershttps://www.grc.nasa.gov/www/k-12/UEET/StudentSite/historyofflight.html.
* **Discovery Space** – a brief history of flying on YouTube: <https://www.youtube.com/watch?v=LgjKVE43V_k>
* **Timelines** – detailed timelines with key events in text from Wikipedia: <https://upload.wikimedia.org/wikipedia/commons/9/91/History_of_aviation.svg> (also supported by the detailed Wikipedia page <https://en.wikipedia.org/wiki/History_of_aviation>) and the library of congress https://www.loc.gov/exhibits/dreamofflight/dream-timeline.html.
* **History of Aircraft**, with many useful images: https://www.dkfindout.com/uk/transport/history-aircraft/
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| **Related activities (to build a full lesson)** |  |  |
| **Starters** (Options) * Discuss why humans need to fly.
* Watch the history of flight clip on YouTube https://www.youtube.com/watch?v=LgjKVE43V\_k
* As a class, make a list all the different machines that fly.
 | **Plenary*** Peer review – what is good about the mobile and what could be improved?
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| **The Engineering Context** film |
| * The future of flight is a great context to explore the opportunities that working in the aeronautical engineering and travel industry presents! For example, designing, manufacturing and maintaining aircraft.
* Engineers constantly look to improve existing methods of transport to make them faster, more efficient and widely available to everyone.
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| **Curriculum links**  |
| **England: National Curriculum**Design & Technology KS2 3a, 3c | **Northern Ireland: Curriculum**Technology & DesignKS2 The world around us:* Interdependence - interdependence of people and the environment and how this has been accelerated over time by advances in transport and communications.
* Change over time - how change is a feature of the human and natural world and may have consequences for our lives and the world around us; ways in which change occurs over both short and long periods of time in the physical and natural world
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| **Scotland: Curriculum for Excellence**TechnologiesTCH1-05a, TCH2-05a | **Wales: National Curriculum** Design and Technology* KS2 range: explore and investigate simple products in order to acquire technological knowledge
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| **Assessment opportunities** |
| * Formal summative assessment of completed work by the teacher.
* Peer assessment and feedback on mobiles produced.
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