

EDUCATOR'S GUIDE

Supersonic Flight

Preparation

Overview and Objectives

This lesson is geared toward families interested in learning more about supersonic aircraft.

The Intrepid Sea, Air & Space Museum is home to more than 27 aircraft in its collection, each designed to meet a certain need. This program focuses on two of these aircraft that can reach supersonic speeds and has participants explore design elements that allow them to go faster than the speed of sound.

This lesson includes a [slideshow](#) in which an instructor can lead participants through an exploration of two supersonic aircraft. The lesson culminates with participants creating a paper airplane with design elements of the supersonic aircraft explored during the program!

Instructional Modalities

This activity was designed for both synchronous or asynchronous instruction.

For **synchronous instruction**, we recommend a platform that allows both for whole class discussion and for students to interact in small groups.

For **asynchronous adaptations**, we provide suggestions for teachers to provide additional support for the activities and for students to share their work with each other.

Materials

- [Supersonic Flight Slideshow](#)
- **1 sheet of Paper**
- [Comparing Supersonic Aircraft Activity Sheet](#) (p. 4)

Discussion

Questions

What is one of your favorite places to travel to? How long does it take to travel there?

Is there any place you would not travel to because of the length of travel time?

Would you be open to traveling more places if you could get there in half the time?

Lesson

1. Introductory Activity

- Ask Participants:
 - **What are different modes of transportation?**
 - **What are some ways we can make those modes of transportation faster?**
 - **Why are some modes of transportation not as fast?**
- Discuss the responses with the group.

2. Core Activity

- Inform participants they will be learning about supersonic flight and what features of aircraft make supersonic flight possible. Supersonic means faster than the speed of sound, or faster than it takes the sound of someone's voice to reach your ears. Share [video](#) of how supersonic flight has changed over time.
- Have participants watch the videos on the [Concorde](#) and [A-12](#). As they watch, ask them to identify what design features help each aircraft reach such high speeds. Possible answers could include wing shape, afterburners, the engines, the shape of the aircraft, and shock cones.
- Have participants share the features they identified with a peer.
 - **Would you feel comfortable traveling on an aircraft that moves two or three times the speed of sound? Do you believe that supersonic aircraft be used for commercial flights?**
 - **If you were to design an aircraft that needed to reach supersonic speed, what design elements would you want for that aircraft?**
- Lead participants through the [visual instructions](#) on slides 13-15 to create a paper airplane. Encourage them to fly their plane once they are completed or display their aircraft at home.
 - **What about your paper airplane helps it fly the way it does?**

Asynchronous Adaptation

Have participants go through the [slideshow](#) on their own. Using their [worksheet](#), participants can identify design features of two supersonic aircraft and then follow visual instructions on slides 13 to 15 to create their own paper airplane. Participants can then share their thoughts on how their aircraft flies on a Padlet or Google Doc.

Extension Activities

To deepen participant engagement with this content, you may choose to add the following activities :

Design Your Supersonic Aircraft

Have participants create their own design for a supersonic aircraft keeping the elements of the Concorde and A-12 in mind. Participants can use model magic or a 3D modeling program such as [Tinkercad](#) to create their models.

Explore More Aircraft

Have participants watch more [videos of aircraft](#) in and out of *Intrepid's* collection and identify what sets supersonic aircraft from subsonic aircraft

Additional Resources/ References

***Intrepid's* Aircraft Collection:**

<https://www.intrepidmuseum.org/AircraftCollection>

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ACTIVITY 1: COMPARING SUPERSONIC AIRCRAFT

Directions:

Watch the videos on the [Concorde](#) and [A-12](#) and identify design features that help each aircraft fly at supersonic speeds in the space provided.

Aircraft	Design Features

1. What design features would you add to an aircraft if you wanted it to go four times the speed of sound?