

# Bionics4Education

## Bionic Swift

FESTO



### Highlights

- Understanding and applying biological phenomena
- Introduction to aerodynamics and lightweight construction
- Learning and testing the basics of bird flight
- Assembling wings and tail from high-tech materials
- Learning to use the remote control
- Integrative STEAM lessons

### Bionic Swift experimental set

The Bionic Swift is a robot bird inspired by the swallow, designed for general technical education. The experimental set allows assembly of the wings and tail, which are controlled by a remote control. In integrative STEAM lessons, students learn the basics of bird flight and the working principle of flapping wings in a playful way. Natural science and technology related topics, such as the fascination of bird flight, lightweight construction, energy efficiency and aerodynamics can be taught by means of a project-based learning approach with hands-on experience.

### Swallow as a role model

Flying like a bird - a dream of mankind! Bird flight is the model for the Bionic Swift. The upward and forward thrust has ingeniously succeeded in nature and can be experienced with the experimental set itself.

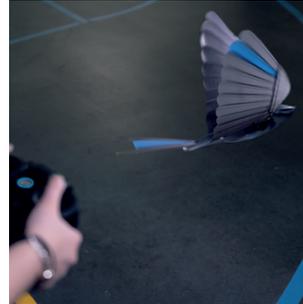
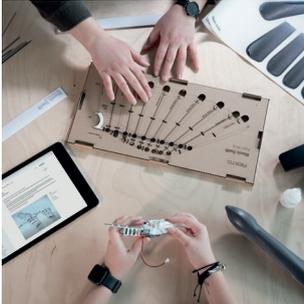
### Agile flight behavior

After learning about how bird flight works, the students try it out in a practical experiment! Thanks to its extremely lightweight construction, the Bionic Swift weighs less than 40 grams and thus displays extremely agile flight behavior as an ultra-light flying object. The test flight should therefore take place in a relatively windless airspace.

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## Bionic Swift

Experiencing the fascination for bird flight in a practical way



### Hands on learning experience

The experimental set contains all materials for assembling and operating the Bionic Swift. The additionally available consumable material set, which contains feathers, glue and carbon rods, allows the wing and tail to be rebuilt and thus enables multiple use.

### Reference to the curriculum

The content of biology and technology that can be taught in STEAM lessons or at out-of-classroom-activities is diverse: The flight of birds and the flapping of wings, the structure of hollow bones, the basics of lightweight construction and aerodynamics show the parallels between nature and technology.

### Technical highlights

The work tasks for the students include: assembling the wings and the tail using carbon rods and feathers made of a high-tech foam material, with the help of a template. Once built, these are mounted to the drive assembly and the fuselage. Then the Bionic Swift is commissioned with the remote control. Finally, the fun can begin and with the practical testing of the Bionic Swift, the dream of flying becomes reality!

An overall concept for techies



### Holistic STEAM concept

The experimental set, which teaches relevant knowledge about bird flight both in the school educational environment and in the private sphere, is suitable for learners from the age of 15. Previous knowledge of model flight is an advantage. Related instructions and materials are available free of charge at: [www.bionics4education.com](http://www.bionics4education.com)

### Bionics4Education

Festo Didactic wants to get young people excited about science and technology with Bionics4Education. STEAM skills play a central role in the increasingly digital world of work. This makes the offer suitable for interdisciplinary knowledge transfer in the classroom and for lifelong learning.

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