

FRida & fred travelling exhibitions presents

## ExpresScience



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## **Get aboard ExpresScience**

Calling all inventors, explorers, thinkers and those who thirst for knowledge!

The exhibition "ExpresScience" sparks the interest of its visitors and motivates them to explore and investigate natural science phenomena which occur in different modes of transportation. Children and young people are inspired to interact with technical ideas and innovations.

The main target groups of the exhibition are children 5 and up and young people.

Children are encouraged to build and experiment in the workshop labs and to think about the sociological aspects of mobility at the stopping points.

## Our educational aims

### The exhibition "ExpresScience"

- ❖ encourages young visitors to explore natural sciences and technology
- ❖ challenges the sociological ideas of what drives people to move
- ❖ motivates children to think independently and encourages them to pursue an exploratory strategy
- ❖ creates positive experiences through successful accomplishments
- ❖ communicates that innovations, based on historical developments, are continuously developing
- ❖ shows that transportation is based on the laws of nature
- ❖ shows children how to behave in an environmentally responsible way

### **Always in motion - the chair concept**

Children move through the exhibition sitting on chairs with four wheels fastened to the legs. The wheels are a symbol of motion and are the perfect means for transporting our bodies through the exhibition in a fun and creative way. At the same time, the chairs also point out that we almost always sit when we move. The more mobile we are, the more immobile we become.

## **Stopping Points and the sociological aspects of mobility**

“ExpresScience” deals with many mobility themes: How can transportation be fully accessible to all people? What does bionic mean? What role does public transportation play and how efficiently do alternative energy sources work? Why do nomads move and what do they take with them?

Attention is also given to the question of what makes us actually move. Curiosity inspires visitors not just to explore strangers’ suitcases but also to follow in the footsteps of famous explorers. What is it exactly that fuelled the inspiration of aviation pioneers to finally realise their dream of flying - and what motivates today’s engineers and scientists? In the exhibition, the visitors are on the path to discovering everything that moves between earth and sky.

### **Speed**

How fast are we moving when we run? This installation measures the speed of children as they run. With the help of the research diary, the results can be converted into m/sec. Young visitors can compare their speed with various fast animals.

### **Traffic safety**

Children and young people are encouraged to send photographs, videos and drawings of dangerous traffic situations. Visitors can view the images, which are tagged with a key word and an explanation and are sorted according to categories. Different safety devices that protect children in traffic such as car seats, safety vests, reflector bands, bicycle helmets, elbow, knee and wrist protection etc. are presented.

### **Waiting to take off**

What really happens at the airport while passengers wait for their flights? How far will their pieces of luggage go and how are airplanes prepared while the passengers wait in the airport? A multimedia-supported game allows visitors to look behind the scenes of an airport. With the help of pictograms, as we know them from airports, young visitors put the different locations into the correct order showing the distance that a piece of luggage covers at the airport. They also learn what needs to be done before a plane can depart.

### **Navigation and orientation**

Small boxes are hidden throughout the exhibition. Their contents reveal how people find their way without a map or navigation system. Spider webs, tree trunks, satellite dishes, compasses and the polar star lead the way.

### **Expeditions**

The explorers Sir Edmund Hillary, Marco Polo, Ida Pfeiffer and Neil Armstrong have a lot to tell about their interesting journeys. Before the visitors can listen to their adventures, they have to categorise equipment according to each of the four globetrotters.

### **Perception of movement**

The children watch a computer-generated silhouette of a person walking. The gait of the person can be altered. It can be made “heavier” or “lighter”, “nervous” or “relaxed”, “happy” or “sad” and “male” or “female”. After pushing the button “That’s how I move”, the visualisation fades and the children walk on a treadmill and watch their own reflection in a mirror to see their own gait.

### **Living in a means of transportation**

Using perforated sheets of paper, visitors try and to fit common house hold objects into a vehicle which also serves as a nomad’s home. Some of the objects originate from different cultures: Saami, Tuareg and Mongolia.

### **Public transportation**

Sitting behind the steering wheel of a bus, visitors drive through a city and make frequent stops. Questions, such as how many people fit into a bus or tram compared to a car, which alternative energy sources are used in public transportation and how can we move as environmentally friendly as possible, are explored.

### **Bionics**

The word “bionics” is a combination of biology and technology and deals with how inventions of nature can be used in technology. A series of pictures shows that nature served as a foundation for many interesting inventions. Children are also encouraged to think independently: Is it really true that the principle of cogwheels derived from dancing starfish? A comic shows visitors how the development of the tyre tread was based on a cat’s paw.

### **Limitations of mobility**

Being mobile sometimes means encountering barriers. For example, mobility can be limited if one loses a bus ticket, a bicycle breaks down or if someone is restricted in his or her mobility because of a disability. A multimedia-supported board game shows, with the help of film sequences, possible limitations and possible strategies to overcome those limitations.

### **Transportation of goods**

Behind the transportation of food lies an extensive logistical effort. The question of storing freight in as small a space as possible is especially important. Visitors arrange different sized boxes so the containers can be transported using as little space as possible. Pictures show the distances food must travel.

### **Noises**

A dialogue between two children shows that sound is in fact perceived neutrally and then subjectively turns into a bothersome noise. Different noises in traffic are pointed out as well as how they can be amplified or weakened.

### **Modes of transportation as status symbols**

Modes of transportation are often a status symbol - no matter how old the driver is. Young visitors experience the exhibition in motion. Wheels are installed on a chair, making the chair mobile. These chairs can be individually decorated with different coloured covers and with different accessories such as number plates, rear-view mirrors and headlights.

### **Pioneers**

A film and illustrations of historic aviation pioneers shows how people have tried to realise their dream of flying for hundreds of years.

❖ **Six Workshop Labs to invent and explore - natural sciences and mobility**

The six Workshop Labs cover the themes:

Workshop Lab ON WHEELS

Workshop Lab AIRCRAFT

Workshop Lab SPACE TRAVEL

Workshop Lab RAIL-BOUND VEHICLES

Workshop Lab WATER CRAFT

Workshop Lab ON FOOT

To spark interest in exploration and invention, children and young people are introduced to the laws of nature and scientific phenomena through simple experiments. The experiments are designed to inspire children to actively participate and to discover for themselves what impact their individual actions have on their environment. Trial and error lead them along the path of discovery.

**Workshop Lab ON WHEELS**

Children compare important components of cars and bicycles. Principles such as braking, changing gears and tire pressure are explained using the individual parts of a bicycle.

**Workshop Lab AIRCRAFT**

What makes planes and helicopters stay in the air and move forward? Visitors discover which rotor blade provides the greatest lift and which self-built paper planes fly the furthest.

**Workshop Lab SPACE TRAVEL**

After experiencing the principle of recoil, children have the opportunity to build different skyrockets and let them blast off -or- fly as high as possible using various starting devices.

**Workshop Lab RAIL-BOUND VEHICLES**

The common element of all rail-bound vehicles is an electric motor. Exhibits explain how electric motors work. Children can build their own electric motors using these explanations and audio-visual directions. With their small electric motors, our young visitors can power a self-built conveyer belt and select graphics representing escalators, sushi belts, trains or chair lifts.

### **Workshop Lab WATERCRAFT**

What floats and why? Children build boats and test them on water.

### **Workshop Lab ON FOOT**

The most important device that facilitates our mobility and makes it easier to move is the shoe. Different materials are examined for their air and water permeability. Which shoes are most suitable when it rains or for ice? And how important are shock-absorbing shoes? Visitors can learn about a shoe's qualities and characteristics before creating their own.

## Research diary

Everything interesting and fascinating can be written down into the research diary. Observation and documentation are tangibly experienced as the basis of scientific research. It manages to spark the interest in research, support systematic thinking and behaviour and to create an awareness of research being a continuous process.

The research diary is an individual product that visitors fill-out themselves and can take home. It is a medium for examining the theory of science in a suitable way for children and it offers encouragement to continue researching even after their visit to the exhibition.

❖ **Spatial and technical requirements**

Required surface area: 400 m<sup>2</sup> to 600 m<sup>2</sup>

Minimum room height: 2.80 m

Sufficient energy supply and internet access is required.

The exhibition is highly adaptable and can fit into most spaces.

❖ **Dates and prices**

Please contact us for availability and prices.

❖ **Contact**

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❖ Photos

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