your visit

THE CRAZY LABORATORY

technisches museum wien

Workshop: THE CRAZY LABORATORY
Duration: 2 hours
Age group: kindergarten (from age 4), pre-school, children aged 6

Dear Teachers & Educators,
This Teacher's Guide contains background information for you and your group, along with suggested topics, a list of vocabulary, instructions for small-scale experiments, etc.
You will also find preparation sheets for your group so you can go over the material with them beforehand or assign it as homework. We also enclose some follow-up material for your group to work on after your visit to the Museum.
As always, we are grateful for your feedback and any suggestions for improvements.

ORGANISATIONAL MATTERS:

Assistance: You know your group best! Please help our team of facilitators by pointing out any particularities specific to your group well in advance (language level, previous knowledge, etc.). Please assist us with the experiments, but also at the exhibition itself.
Break: If you're planning to schedule a break for your group, it is advantageous for the workshop procedure to do so either before or after the guided tour.
Please consult on the matter with our team of educators.

THE TOUR IS OVER – WHAT HAPPENS NOW?

Here are a few tips that go particularly well with the tour so your pupils can later visit and explore the Museum under their own steam:

PHENOMENA & EXPERIMENTS (Level 1)
We'll also be visiting this exciting section full of hands-on installations and experiments as part of the Workshop. However it is essential to schedule some time after the tour to try out the installations for yourself.

RESEARCH ADVENTURE (Level 4)
This section is all about groundbreaking inventions and research work. There are lots of hands-on installations to try out on topics such as bionics, X-rays, batteries or pacemakers.

MINI-TMW Level 3 (for kindergarten groups only / 2 – 6 years)
Seeing, hearing, feeling, sensing – das mini is designed to make technology a particularly exciting sensory experience for visitors aged 2 to 6.
Please note: Das mini is designed for a maximum of 35 participants so on busy days there may be queues or delays to get in.

With some 22,000 m² of exhibition space the Technisches Museum Wien is one of the largest museums in Austria, and so finding your way around is not always easy. If you're having difficulty finding certain exhibition areas, just ask any member of our team after the tour.

bm:uk
KULTUR Kontakt AUSTRIA

The crazy laboratory

DESCRIPTION OF CONTENTS

Please note that our Museum educators reserve the right to modify the teaching module to suit the situation.

Experiments, science and research!

Inventions are all around us and make our everyday lives a lot simpler. Press a switch and the lights come on; press another and your meal is cooked. Cars and trams takes us from A to B without effort.
But who comes up with all these wonderful things? And what did our world used to look like?
What do we still need to invent? And how do you do it?
Our Workshop turns schoolchildren into mini-scientists as they conduct their own experiments aimed at unravelling the mysteries of everyday life in our “crazy laboratory”.
Our experiments are all about research-based learning. Our Museum educators are not there to provide the answers; the children themselves must think about how you go about making secret ink or building a simple rocket.

Vocabulary

Here are some of the words featured in the tour:

Laboratory / experiment / trial
Scientist / researcher / inventor / doctor / professor
Research / invent / experiment / analyse / observe
Microscope / lab coat
Safety
Salt / liquid / crystals

Topics you may want to discuss in class beforehand:

• Why are inventions made?
• What was it like in the old days before … (the wheel, electricity, cars, etc.) existed?
• Famous scientists / researchers
• What would you like to invent?

Experiments

The magic balloon

MATERIALS:
balloon, needle, some sticky tape

PROCEDURE:
Everyone knows that if you stick a needle into a balloon it bursts. Well, this experiment does just that – except that the balloon doesn't burst! Here's the trick: put a piece of sticky tape on the part of the balloon where the needle goes in. Please note: Make sure you smooth away any air bubbles between the sticky tape and the balloon. Now carefully push the needle through the middle of the sticky tape into the balloon.

WHAT HAPPENS?
The balloon doesn't burst – even though it should. It remains completely intact. If you carefully pull the needle back out again, air will begin escaping through the pinhole. If they hold the balloon up to their face, the children are able to feel the flow of air.

WHERE DOES THIS OCCUR?
As the balloon is filled with air, it expands. All the points on its surface are pulled in every direction. Under the microscope the balloon fabric would look like a woven fabric. If the fabric was rigid, it would rip apart when the balloon is blown up. But as it's elastic, it is able to expand. The fabric itself is like a pair of tights – the instant it is damaged in a tiny area, it rips completely. As the whole balloon is under tension, it bursts. It is ripped to pieces.

Inspiration and perspiration

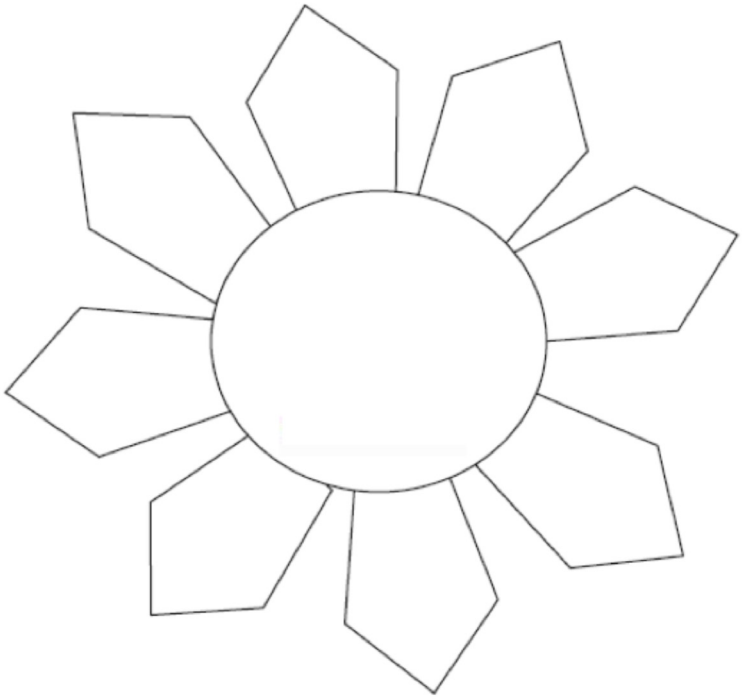
Not all inventors work exclusively in a laboratory or an office. You can come up with a good idea anywhere, and anyone can be an inventor.
The oldest – and most famous – example is Archimedes. He was lying in his bathtub one day when he suddenly exclaimed: "Heureka!" – "I've got it!" He had suddenly found the solution to a mathematical problem that had been on his mind for a long time. He was so delighted to have found the answer that he is said to have run out into street and through the city naked, shouting "Heureka!".
Similarly, Isaac Newton was not sitting in his study when he came up with his big idea on gravity. Instead he was resting under an apple tree when an apple suddenly fell on his head.
And the Swiss inventor Georges de Mestral was out walking in the mountains with his dog one day when he noticed that his dog's fur was covered in sticky burrs. He decided to take a closer look at these burrs. Ultimately it led to the invention of Velcro.
All inventors have something in common: The idea alone is not enough; it also takes tenacity and endurance. Every invention also involves hard work, creativity and lots of courage.

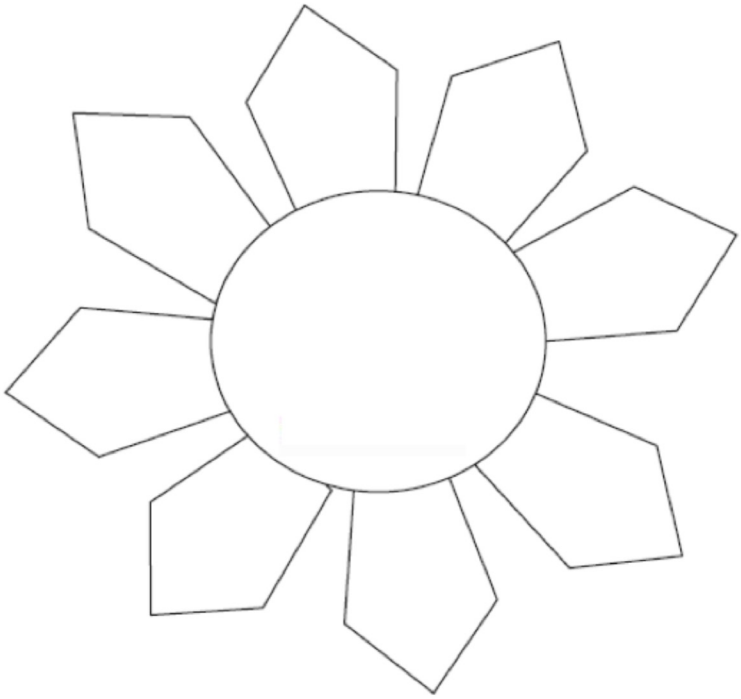
THE DOS AND DON'TS OF LABORATORY WORK

1, 2, 3 – GET RESEARCHING!

THE MYSTERIOUS WATER LILY

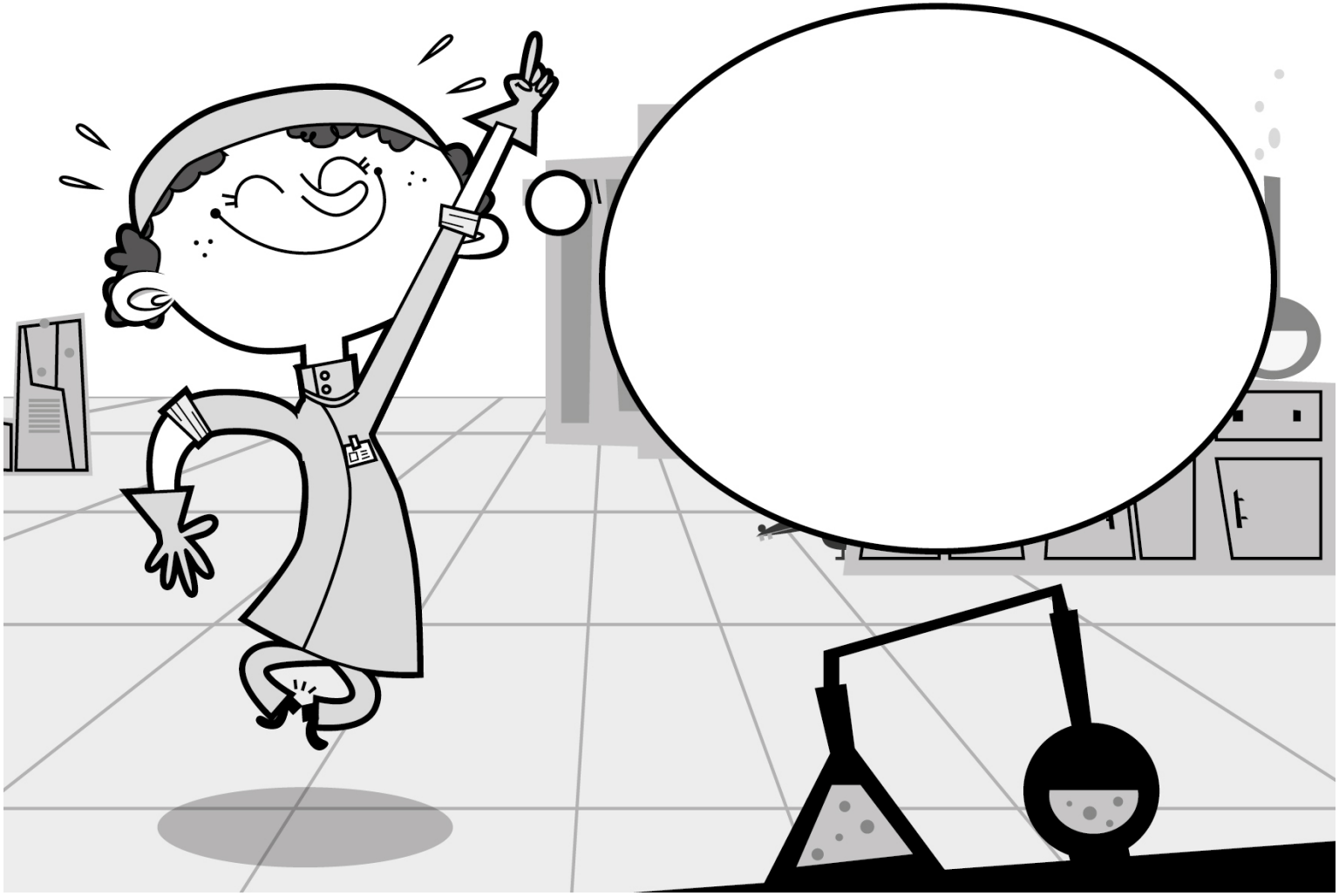
Paint the water lily and fold its petals inwards. Once all the water lilies are finished, place them all together in water. What happens?





THE SCIENTIST HAS HAD A GENIUS IDEA!

What has she invented? Draw it in!



BLACK-BRIGHT BRIGHT-BLACK

Materials: white coffee filter, black felt pen, pipette, water

Use the felt pen to draw a big thick dot on the coffee filter (approx. 1cm). Now use the pipette to carefully drizzle water on to it and watch what happens! Once the filter paper is dry again, you can cut out the circles and glue them onto the picture here. You will have created a colourful world of soap bubbles.