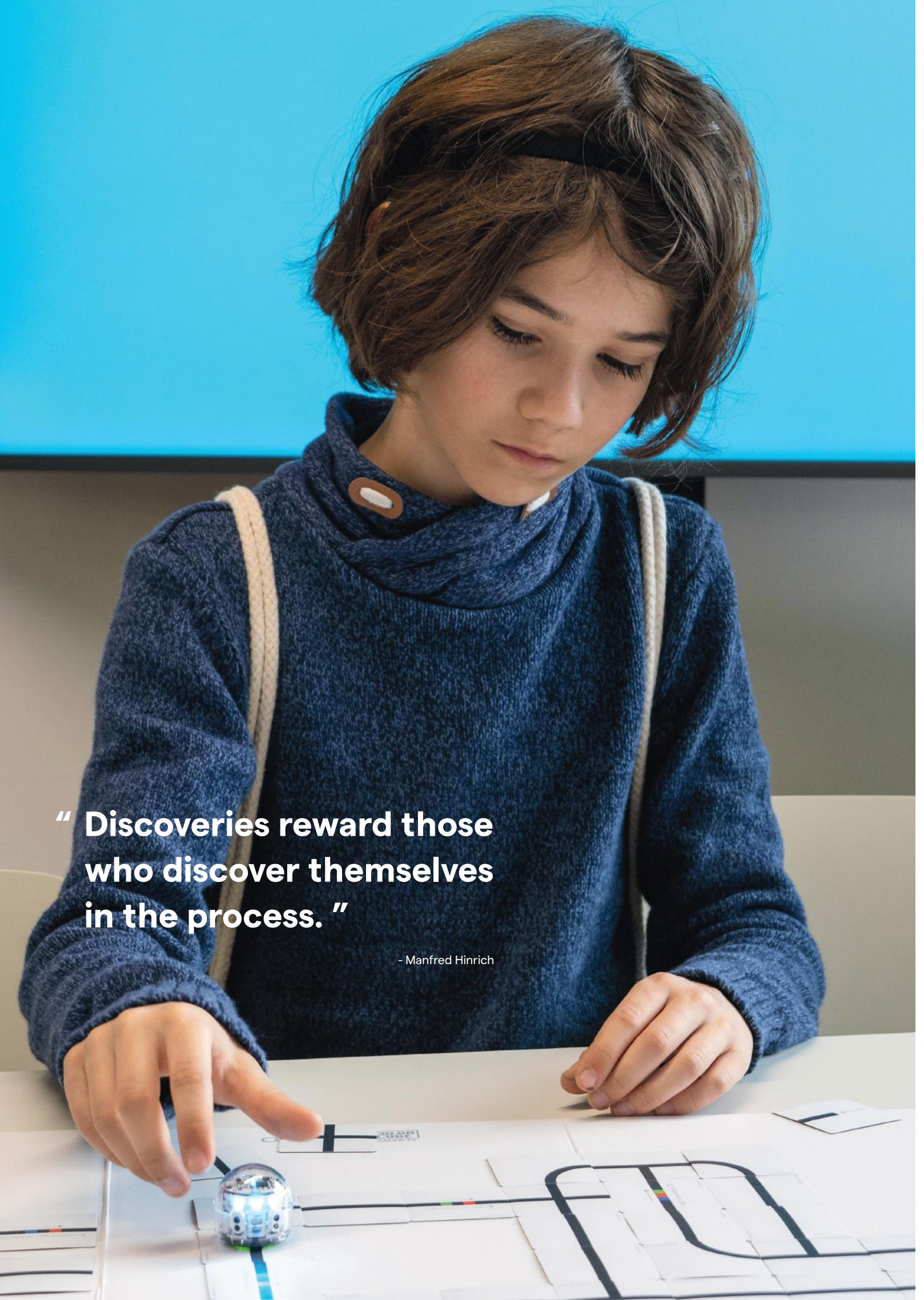
MINT

MAGAZINE
01 | 2025

INDIVIDUAL PRACTICAL PROJECT
AYANA SORAYA PASZKOWIAK


“ Discoveries reward those who discover themselves in the process. ”
- Manfred Hinrich

Contents

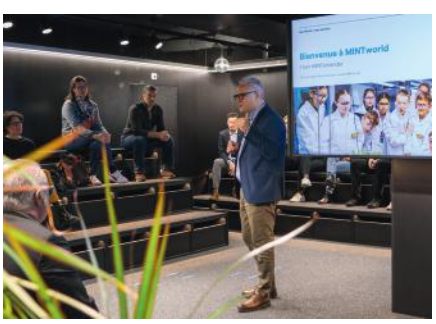
Welcome to MINT Magazine!
Read on for fascinating insights into MINTworld and its history, workshops, interviews and amazing experiments to try. Happy reading and experimenting!

Did you know?
STEM stands for Science, Technology, Engineering and Mathematics, just like MINT in German (Mathematik, Informatik, Naturwissenschaften und Technik). That's why we call our creative learning space MINTworld, it's all about exploring the world of STEM in a fun and hands-on way!

About MINTworld

MINTworld offers children, young people and adults the opportunity to discover the fascinating world of mathematics, information technology, natural sciences and technology during the school day or in their free time.

MINTworld is an initiative launched to inspire young people to become interested in mathematics, information technology, natural sciences and technology (MINT). The idea for the project first came about in 2019, prompted by the need to counteract the shortage of skilled workers while simultaneously promoting skills in these subject areas. The goal was to break down gender-normative career choices and focus on the importance of technical professions in solving global challenges. From the very outset, close cooperation with partners such as the Canton of Valais and BioArk played a crucial role. These partnerships not only provided the necessary financial backing and infrastructure but also supported the content, which was closely aligned with Lehrplan 21 – a curriculum initiative aimed at harmonising education across Switzerland's 21 German-speaking cantons.



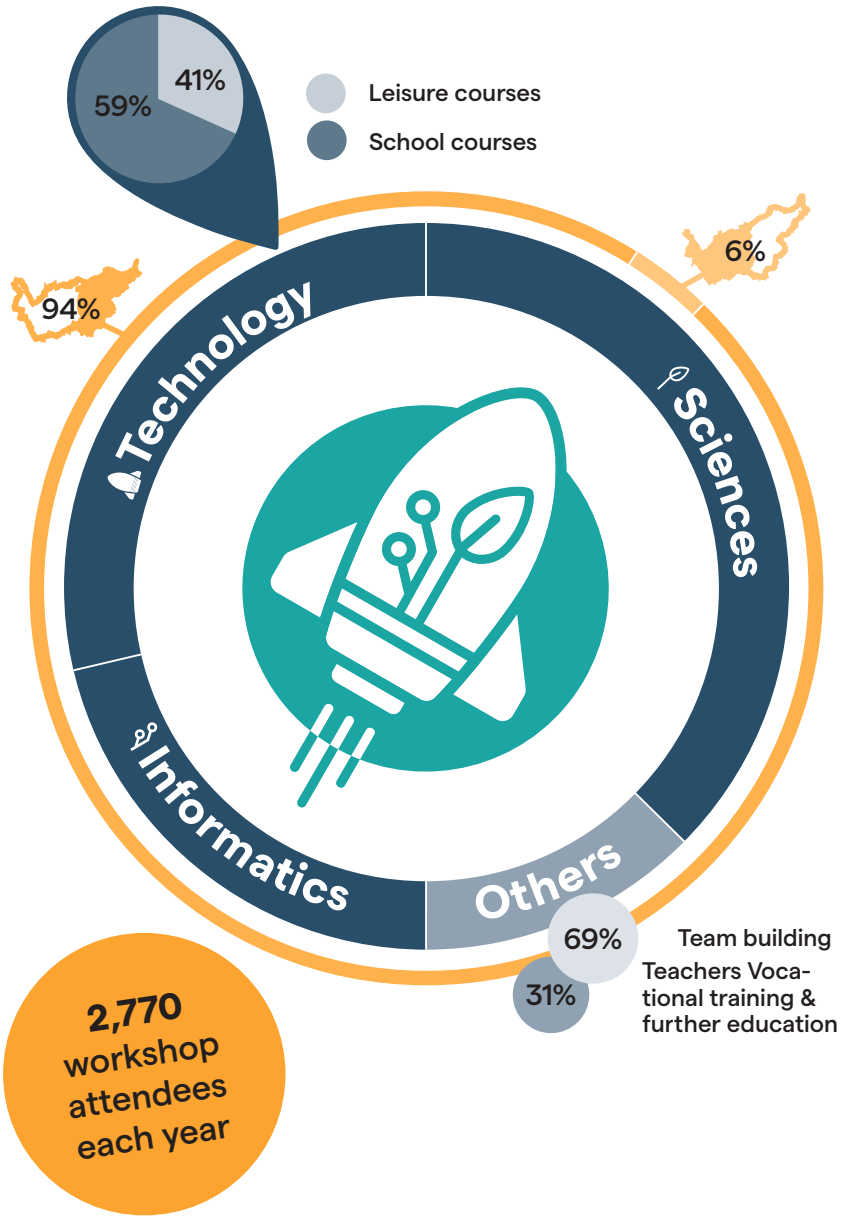
A 1,000m² site was developed into a stimulating and practical learning environment. Drawing inspiration from successful projects led by other institutions, the MINT team devised some initial workshops and tested them in schools. They used the insights gleaned from these pilot workshops to optimise their content. The official MINT programme started out with workshops in computer science, electrical engineering and life sciences. Made up of experts from a wide array of professional backgrounds, the team gradually developed into a unit that took their project forward through innovation, immense commitment and a great deal of passion.

Today, MINTworld provides over twenty different workshops, which are constantly evolving. Linking workshop content to the school curriculum is a particular area of focus. Through close coordination with Lehrplan 21, the workshops dovetail with classroom learning and appeal to both teachers and pupils alike. As a result of MINTworld's close partnership with the University of Applied Sciences and Arts of Western Switzerland (HES-SO), it offers workshops in a number of languages. Leisure activities also play an important role in facilitating young people's access to MINT topics beyond the classroom.

MINTworld aims to inspire as many young people as possible to engage with technical and scientific matters. Developing new workshops and expanding our partner network play a key role in this. At the same time, securing human and financial resources for the long term and deepening our work with existing partners are just as important. Firmer integration into the curriculum, including through compulsory lessons, helps promote skills in MINT subjects across the board. The platform is also designed to offer business and institutions the opportunity to get involved and share their expertise.

Since MINTworld's launch in 2023, it has held 367 workshops, attended by over 5,600 children and young people. Two-thirds of these workshops were held as part of lessons at school, while a third had a recreational format. The glowing feedback attests to the project's success: some 90% of children found the workshops fascinating, three-quarters said that they would like to go back in their free time, and all of the teachers would recommend MINTworld to their colleagues.

Our World. Your Passion.



The aim is to keep on inspiring schools and teachers about MINTworld and integrating its programme into the everyday curriculum. New workshops for different school years are being developed to cover the full range of MINT topics. Securing human and financial resources over the long term remains essential to ensuring sustainable operations and expanding our network of partners.

From an interview with **Pascal Amacker, 1st director of MINTworld**.

A Message from the New Director

I'm Pascal Nyfeler, and I'm delighted to be the new director of MINTworld, starting in May 2025. For me, MINT is all about progress, discovery and a passion for learning – and it's precisely that enthusiasm which I want to encourage. MINTworld is much more than just a place of learning – it's a platform where innovation and curiosity come together. This is all thanks to the fantastic team that will be supporting me over the coming months. I look forward to working with dedicated people, setting new trends and amplifying the wonders of MINT. In my first few weeks, I will be listening and learning from my colleagues, before taking on an active role. Together, we'll develop MINTworld and help inspire even more young people to pursue their interest in mathematics, information technology, natural sciences and technology. My vision is a MINTworld that inspires people, brings them together and encourages them to ask questions. After all, that's precisely where innovation begins.

And in that spirit, VIRIBUS UNITIS!

Pascal Nyfeler

Partners

Lonza, the Canton of Valais and BioArk Visp entered into a partnership to create MINTworld. Together, these partners established a platform that is closely aligned with Lehrplan 21 and the Western Swiss curriculum in Lower Valais, and provides students with practical experience in MINT subjects.

BioArk Visp
BioArk Visp provides modern facilities for the development and operation of MINTworld.

Canton of Valais
The Canton of Valais plays a vital role in expanding our infrastructure and securing the best possible equipment for our learning environment.

Lonza
Lonza oversees our mobile equipment and ensures smooth operation.

Through this partnership, MINTworld provides interactive workshops, experiment stations and practical learning units that promote interest in MINT careers. In future, Lonza will assist in expanding MINTworld and its programme.

Become a MINT Supporter
Support MINTworld and encourage enthusiasm for MINT subjects through:

Partnerships
Become a partner and help support MINT education – we're shaping the future together. Business, charities and institutions can help us expand our provision through partnerships and funding programmes.

Public Outreach
Talk about us and share our content on social media. The more people learn about MINTworld, the more young talent we can inspire!

Volunteering
Get involved in our workshops! Whether you fancy leading a workshop or simply lending a helping hand, your support can make a real difference.

Educational Partnerships
Are you a teacher or member of your school's leadership team? Incorporate MINTworld into your lessons or sign your class up for one of our workshops!

CANTON DU VALAIS
KANTON WALLIS

bioark

Lonza

Site Manager Renzo Cicillini

In this short interview, Renzo Cicillini, Site Manager of Lonza Visp, talks about the importance of MINTworld and the initiative to promote skilled workers in mathematics, information technology, natural sciences and technology. He explains why Lonza, as an international company, relies on global specialists while also actively cultivating local talent.

"Careers in science and technology are the future. We want to inspire young people and show them what's possible."

Together with schools and the Lehrplan 21, an educational initiative was launched to inspire young people to pursue careers in MINT fields and provide them with initial guidance. Through hands-on experiences and interactive learning opportunities, children and adolescents are encouraged to discover early on whether a career in these areas might be right for them. The collaboration between industry, politics, and education plays a key role in fostering enthusiasm and creating long-term opportunities for the next generation.

Watch our interview with Renzo Cicillini!
Have you ever wondered how a credit card works? It's no ordinary card, but a miniature marvel of technology. The chip on a credit card uses near-field communication (NFC) – a technology that enables contactless payments. Just like a credit card, your smartphone can read data via an NFC chip.

Hold the back of your smartphone close to the NFC chip. As soon as your device detects the connection, the video will open automatically. Give it a try and see what Renzo has to say about MINTworld.

The printed version with the NFC code can be collected from MINTworld.

A School Inspector's Perspective

Urs Stoffel reveals how MINTworld is helping to expand teaching and foster interest in MINT subjects. With practical programmes that students can experience in a real-world setting, MINTworld creates added value for schools and local communities.

Hi Urs! Please could you introduce yourself briefly?
My name is Urs Stoffel, and I'm a schools inspector. I'm part of a four-person team that oversees local schools. We're also responsible for specific subject areas. In the committees we lead, we examine developments in these subject areas and propose teaching materials. I lead a committee that focuses specifically on MINT subjects. Before I began my current role, I was a teacher for 20 years – primarily in MINT. Which is why this topic is particularly close to my heart.

What does MINTworld mean to you personally?
MINTworld brings a practical dimension to lessons and offers real breadth. Pupils can apply their knowledge and skills in a real-life context and gain a better understanding of why they're learning about particular topics. I'm struck by how engaged the children and young people are in the workshops here. Often wearing lab coats and safety goggles, they show pride in their experiments. This is exactly the kind of practical experience that schools alone may struggle to offer. I also like the way topics are linked across different disciplines – another thing that's tricky to achieve in schools.

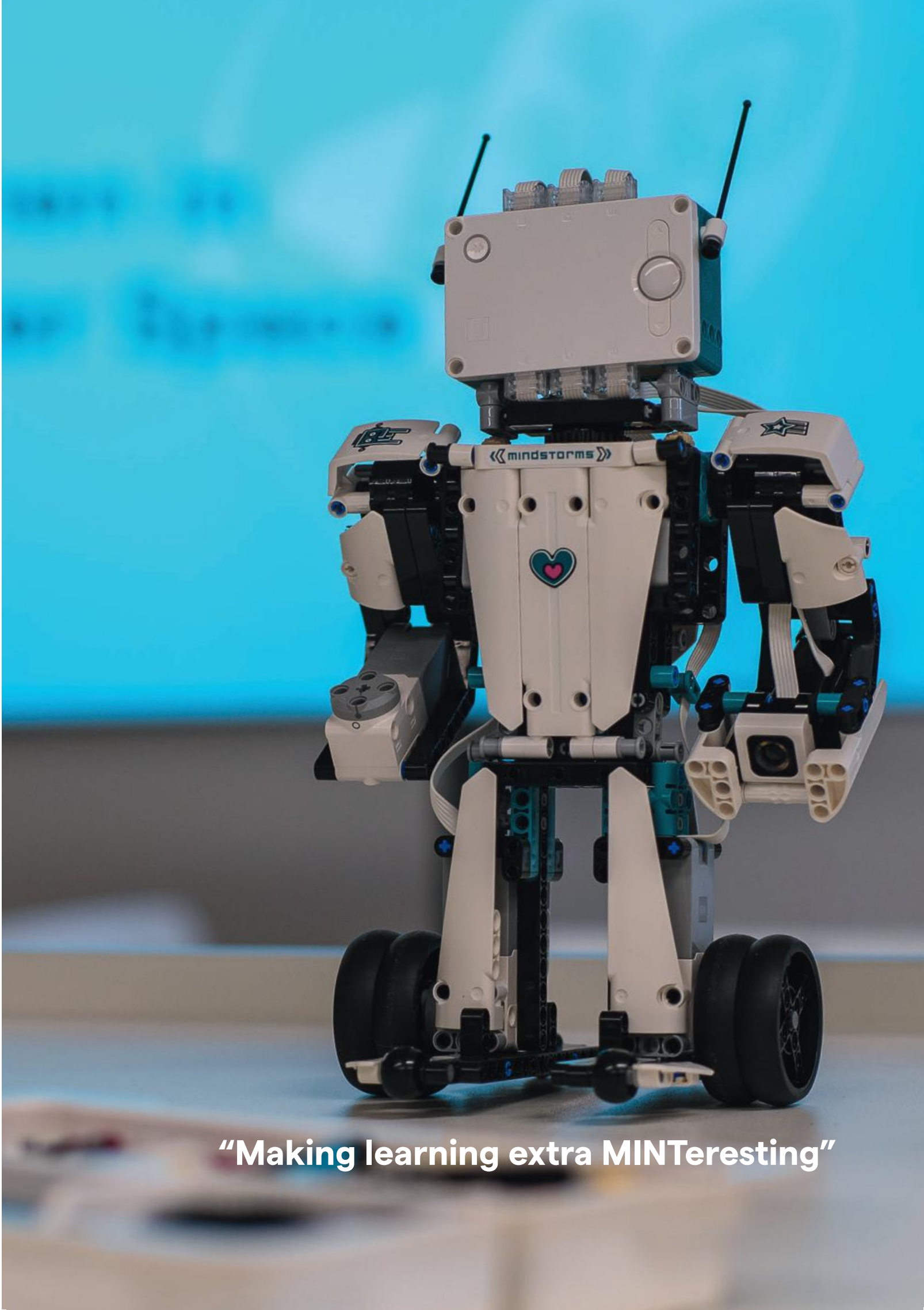
Why are STEM subjects especially important in education?
Schools have the mission to prepare young people for life. In a digital world and with the growing need for skilled workers like at Lonza, it's crucial to promote STEM subjects early on. They help students understand the importance of these fields and consider related careers. STEM also builds key skills like logical thinking, problem-solving, and creativity, which are valuable in all areas of life.

What role did the canton administration play in setting up MINTworld?
The canton recognised that MINT subjects had received insufficient support in the past and that there was a shortage of skilled workers. Once the initiative was launched by Lonza and BioArk, head of department Christoph Darbellay ensured that MINTworld could be established in Visp. The canton not only granted funding but also provided expert advice and assisted with devising the content. Our department was actively involved in publicising the programme among schools. Events like local headteachers' conferences sparked interest and forged a direct link between schools and MINTworld. Several measures have been taken in recent years, including an increased emphasis on science and technology in early years of secondary school and the introduction of Lehrplan 21, which integrates MINT topics more firmly into the primary school curriculum. Media and IT are also promoted widely, starting in kindergarten. Generating interest around these subjects is important, especially among girls, so that later they feel empowered to choose careers in these fields. Targeted programmes and role models play an important part in this.

What challenges are MINT educators facing?
Education needs to stay agile in order to respond to the rapid changes taking place in society. It's about setting the right priorities and preparing children for the future without overloading the curriculum. Initiatives like MINTworld are crucial for fostering skills that will remain relevant for a long time to come. At the same time, it's important to keep questioning the education system and adapting it to keep pace with the latest developments. Providing teachers with the necessary resources and training to handle these changes poses a particular challenge.

Finally, how do you see the future of MINTworld?
I'm excited about the initiative launched by Lonza and the MINTworld team, spearheaded by Pascal. I'm looking forward to many more years of working together productively and hope that MINTworld will continue to play a central role in the educational landscape. It would be great if even more companies and institutions could get on board and support this endeavour, as that would allow MINTworld to expand its programme even further.

Interview with
Urs Stoffel, Schools Inspector



“Making learning extra MINTeresting”

Lifesciences

At the MINTworld laboratory, pupils venture into the fascinating realm of chemistry and biology. In this modern setting, they have the opportunity to conduct their own experiments and familiarise themselves with laboratory equipment and measuring instruments. One example is the “Acids, Alkalis, pH” workshop, where young people measure the pH of substances and investigate the properties of acids and bases. By pipetting and creating dilution series, they learn how to handle chemicals correctly and develop an understanding of chemical reactions. The “Yeast, the Wonder Weapon!” course offers exciting insights into the world of biology. Here, pupils explore the various applications of yeast, from food production to biotechnology processes. They observe yeast cell structures under the microscope and conduct experiments to understand their metabolic processes. These hands-on workshops promote scientific thinking and awaken curiosity and enthusiasm for scientific phenomena.

What About Maths?

Mathematics is the unseen force behind every aspect of MINTworld. Even if it isn’t explicitly highlighted, it’s present in every single workshop – unobtrusive yet indispensable. In the lab, it underpins physical laws and chemical calculations; in computer science, it powers algorithms and data encryption; and in the world of technology, it enables precise designs and simulations. Without mathematics, there would be no accurate measurements, no digital revolution and no functioning world. If you pay attention, you’ll notice that it’s all around us!

For more information about our areas of focus, see YouTube @mintworldvisp or scan the QR code.

Your Own Wildflowers

Carefully remove the paper seed strip from this magazine, place in a pot filled with loose soil and cover thinly with a little more soil. Place the pot somewhere bright and keep the soil moist over the next few days, watering the seeds until they germinate. Soon you’ll see your first flowers!

Informatics

In the MINTworld focus area of Information Technology, pupils explore the fundamentals of programming and robotics. “LEGO Spike – Building and Programming a Safe” is a particularly popular workshop where young people build a safe with LEGO Spike and program it using an iPad so that only they can open it. In the process, they learn the basics of coding, understand how sensors and motors work, and hone their logical thinking and problem-solving skills. Another option is the “Sphero BOLT” course, where pupils program and control the Sphero BOLT spherical robot. They explore various sensors and develop software that lets the robot navigate preset routes. Such activities promote an understanding of programming logic and sensor technology in robotics. By putting their knowledge into practice, pupils expand their professional skills and develop a love of learning. The courses are designed to spark curiosity and foster creativity.

Technology

In MINTworld Technology, young people learn how mechanical, electronic and pneumatic systems interact. They bend, drill and weld metal, use CNC milling machines and laser cutters, and discover how modern manufacturing technology can optimise production. Electrical engineering is a key area of focus: pupils get to work designing series and parallel circuits, measuring voltages and testing sensors. They use micro:bit controllers to control components and learn how electrical signals are used to drive machinery and automate processes. Pneumatics also play a central role in the programme. Students build their own control systems and learn how movement is created using compressed air. Exploring the electric locomotive is a particular highlight: from the high voltage in the overhead line to the turning of the wheels, students investigate the technical process and build a model pneumatic circuit. They then get to drive a locomotive from inside a real driver’s cab. MINTworld Technology combines traditional craftsmanship with cutting-edge technology.

Our Workshops

Can you code with colours? How do you make the invisible visible? How do you start a locomotive? At MINTworld, you'll find the answers to all these questions and more. All of our courses are aligned with Lehrplan 21 (LP21).
At MINTworld, children and young people learn through working and playing together. We aim to inspire curiosity and spark joy in learning. Our visitors conduct research, do experiments, spot connections and strive for constant improvement. They develop their ideas, express their creativity and strengthen their 4C skills (communication, critical thinking, collaboration and creativity).

Our Target Groups

To promote MINT in a sustainable way, we've set ourselves four key goals: to foster enthusiasm among children and young people and impart skills; to support MINT careers; to enhance teacher training and professional development; and to promote a positive image for MINT subjects. In this way, we're creating an inspiring foundation for long-term engagement and innovation.

Why Promote MINT?

MINT subjects play a crucial role in solving global challenges and contribute to innovation and sustainable development. It is vital to reverse young people's declining interest in these fields by sparking enthusiasm early on and encouraging lasting engagement.

For the full list of courses, see
www.mintworld.ch/workshops
or scan the QR code.

School courses

Lab Forensics

Welcome to the lab! Wearing a lab coat and safety goggles, you'll conduct experiments, learn all about the equipment and identify powder mixtures based on their properties.

Block Programming

Learn how coding works step by step! Using Lego Spike and an iPad, you'll build and program a safe that only you can open, thanks to motors and sensors.

Electricity in Everyday Life

Discover how electricity shapes our everyday lives and a whole range of professions. You'll delve into the fundamentals of electricity, acquiring knowledge and practical skills along the way.

Leisure Courses

Acids, Alkalis, pH

What is pH? Why does a lemon taste sour? Find out about the effects of acids and alkalis and how to determine the concentration of an unidentified sample using titration.

Sphero BOLT

You'll learn programming while having fun with this ultra-modern yet charming robot, before presenting your creations to your fellow participants.

The MINT Team

The core MINTworld team consists of four people. Vanessa is a chemistry laboratory technician, Katharina works as a biology laboratory technician, Thomas holds a PhD in chemistry and Pascal comes from the educational sector and took over as director of the MINTworld team in May 2025. MINTworld offers training opportunities, too. We currently employ three "mediamatics" apprentices who are completing six-month internships in various departments at Lonza. Twice a year, MINTworld offers internships for prospective chemistry laboratory technicians at Lonza. Our team might be small, but we truly value teamwork and bring a lot of passion and commitment to our project.

Internships at MINTworld

MINTworld also offers internships at our site in Visp. Responsibilities include helping to promote MINT topics, assisting with planning and implementing workshops for various target groups, developing new course content and supervising pupils. The internship lasts between six and twelve months. Working hours are flexible and range from 50% to 100% of full-time employment. The next start date is in autumn 2025.

If you have any questions or would like to apply, then email us at info@mintworld.ch.

Pascal Nyfeler
Director of MINTworld

Vanessa Zuber
Chemistry Instructor

Thomas Waniek
Chemistry/Technology Instructor

Katharina Laukel
Biology Instructor

Laura Emilie Grandt
"Mediamatician"
4th-year apprentice

Ayana Soraya Paszkowiak
"Mediamatician"
4th-year apprentice

Pascal Flückiger
"Mediamatician"
2nd-year apprentice

Intern

Apprentice Chemical Laboratory Technician

MINTworld From a Child's Perspectiv

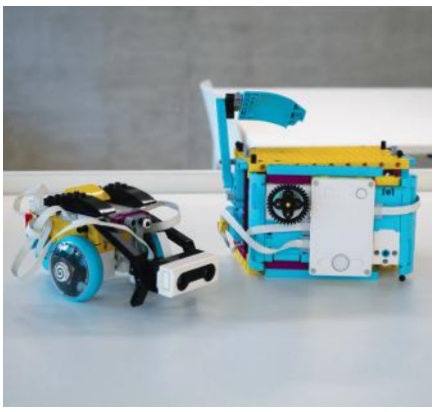
Laura loves MINTworld and discovering new things. Even though she's not sure what she wants to be when she grows up, she's keen to have more MINT-based adventures!

Hi Laura! Please could you introduce yourself briefly?
I'm Laura Allet, I'm 11 years old, I'm from Salgesch in Switzerland, and I'm in year 7.

What are your favourite subjects?
I really enjoy arts and crafts, technical design and sport. I like maths, too.

Do you know what the MINT subjects are?
Yes! Mathematics, information technology, nature, people and society, and I think T stands for technology.

Which MINTworld course have you enjoyed the most?
My favourite one was the first time we were able to do something with cables. That was in the workshop with a Plexiglas wall, where we saw how light switches at home are built into the wall, what they look like from behind, and how an electrical circuit works. I got to make a lamp light up. The second time, we did a session about programming. Both were great!



What did you do on these courses, exactly?
This year we learnt how to program with Lego. We built a small safe and then programmed it so our fellow students couldn't open it. Last year we did experiments, like setting fire to wires. That was fun.

What was your favourite thing about the block programming?
I liked that we got to build a safe with Lego that you could then control with an iPad. There were instructions, too, which I found really useful.

Do you know what you want to be when you grow up?
I want to be involved with children, so maybe a paediatrician. But I might change my mind later and become something else, like a biologist or chemist.

Do you think school teaches children enough about careers like that?
Hmm, maybe not. I think MINTworld shows you these things much more clearly, and that's interesting.

Would you like to do more courses at MINTworld?
Yes, I would! I'd like to try biology and chemistry in the lab, as you get to mix chemicals and do experiments.

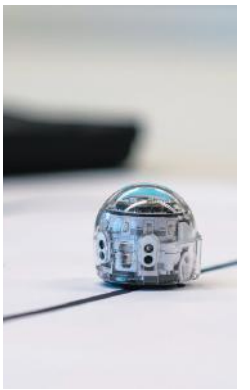
Interview with
Laura Allet, year 7 pupil



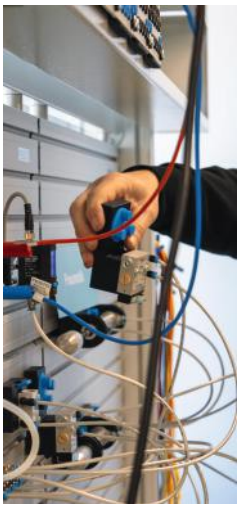












Make Your Own Lava Lamp

What you need:

- Two transparent beakers
- Vegetable oil
- Water
- Food colouring
- 1 effervescent tablet
- Optional: Battery torch to light up the lamp

1. Preparation
Place the beaker on an even surface. Fill it about 1/4 full with water.

2. Add the oil
Carefully pour vegetable oil into the beaker until it is 3/4 full. See how the oil sits on top of the water – they won't mix because water is heavier than oil.

3. Add the food colouring
Now mix food colouring with a little water to colour the water. Pour the coloured water into the beaker with the oil. The drops will sink through the oil and colour the water.

4. Add the effervescent tablet
Now drop the effervescent tablet into the centre of the beaker. Watch as the tablet fizzes in the water and bubbles rise to the top. These transport coloured water through the oil, creating a lava lamp effect.

5. Optional effect
Make the room dark and shine a battery torch on the lava lamp from below to create a cool glowing effect.

Explanation
Water and oil don't mix because oil is hydrophobic and has a lower density than water.The effervescent tablet reacts with the water and produces carbon dioxide gas. The gas bubbles lift the coloured water to the top. When the gas escapes, the water sinks back to the bottom.

Safety Instructions
Do not drink or eat the materials! To dispose of them, separate the oil from the water with a paper towel. You can then pour out the coloured water.

MINTworld From a Teacher's Perspective

Viviane Mudry tells us how MINTworld's programme benefits schools. With its modern equipment, knowledgeable experts and practical workshops, MINTworld inspires children and helps spark interest in MINT subjects – potentially impacting their future educational and career choices.

Hi Viviane! Please could you introduce yourself?
My name is Viviane Mudry, I'm 27 years old, and I'm a teacher at Salgesch Primary School. I've been a teacher for six years.

What role do MINT subjects play in school?
Maths is a core subject, so we have one or two maths lessons every day – it's considered very important. Information technology (ICT) is integrated into lessons once a week, often into subjects like maths or German. The main aim is to make children aware of media use. Lessons on nature, people and society cover topics relating to the natural world and technology. This is one of my favourite subjects because it's so varied and interesting.

How do the opportunities at school differ from those at MINTworld?
MINTworld offers on-site experts who we don't necessarily have in day-to-day school life. The materials and modern equipment are also a huge benefit. In class, we often have a limited budget, although we can borrow materials from the education agency in Brig. They lend out the MINTworld Lego Spike set for free. Generally speaking, though, MINTworld is much better equipped and tailored to specific topics and workshops.

What do you like about MINTworld's courses for pupils?
They're modern, child-friendly and very professionally run. The children can ask questions at any time, and if their teacher can't answer something, there are always experts on hand. It's all very well organised – everything is prepared and the processes are clear.

How much interest is there in MINT subjects among your own pupils?
There's definitely plenty of interest! Children are all different, of course, but MINT topics often affect them directly, whether through the media or practical applications. MINTworld helps them learn new things and may even have an indirect influence on their career aspirations.

What did your pupils think of MINTworld?
They loved it. Many of them wanted to go straight back. The workshop that tied in with our annual theme of Lego and the block programming with the safe went down particularly well. The children found it fascinating and wanted to know if we would be doing it every week.

Feedback from teachers

100%	57%	91%
would recommend MINTworld to their colleagues	would like further training opportunities	find the alignment with LP21 useful

In your opinion, what role can MINTworld play in fostering interest in science and technology?
MINTworld makes a welcome change from everyday school learning. It presents the subjects in a practical way that engages children. By combining construction with technology, the workshops spark curiosity and address a wide range of interests.

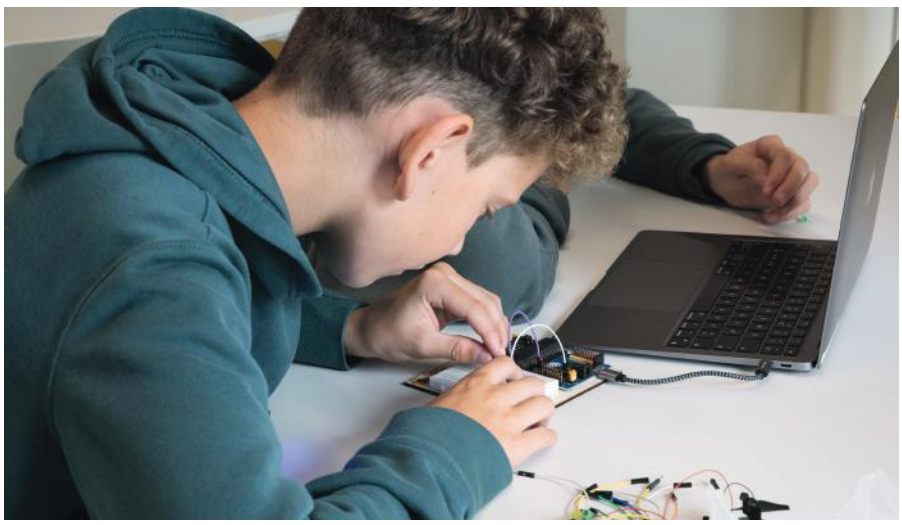
The shortage of skilled workers is an especially urgent concern in MINT professions. How can this be addressed during the school years?
I think projects like MINTworld are an important step. These days, children grow up with technology, and many may later pursue careers in this field. Making learning fun is crucial.

Why did you choose a career as a teacher instead of a typical MINT career?
Being a teacher combines many types of work, including arts and crafts, teaching German and instructing children in media and IT. That's what makes the job so richly varied and engaging for me. And that's how I play a role in MINT!

Interview with
Viviane Mudry, year 7 teacher


MINT
world


Lonza




Lana
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World

Build Your Own Rocket

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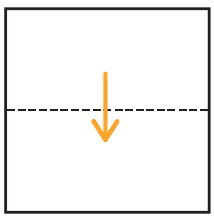

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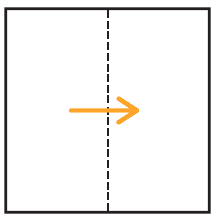

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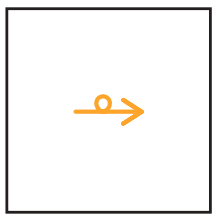

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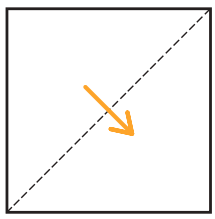

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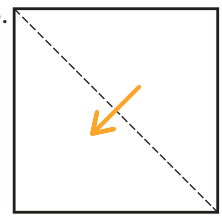

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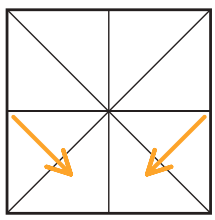
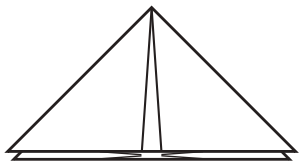
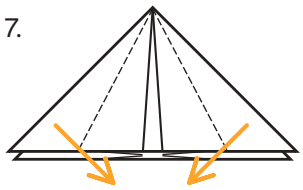
6.





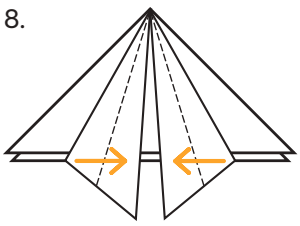
Now fold the left and right sides inwards along the diagonal creases to form a triangular shape and press the paper flat.

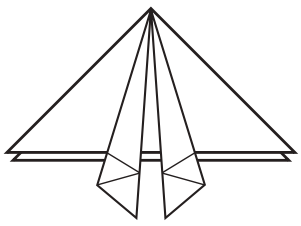
7.



Fold the outer corners inwards to the centre crease.

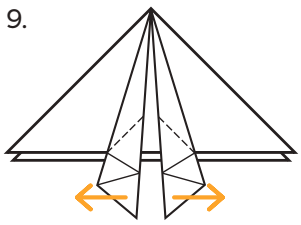
8.

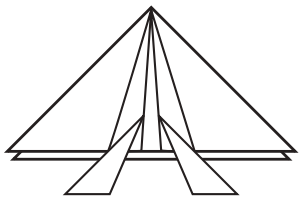




Now fold the newly created outer corners inwards to the centre crease again.

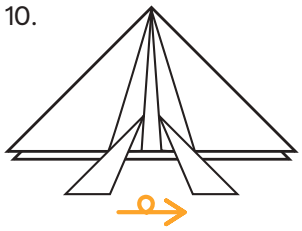
9.





Now fold the tips outwards.

10.

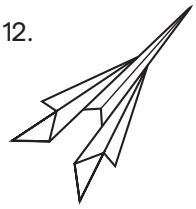


Turn the whole thing over and repeat steps 7 to 9.

11.

Carefully pull the sides apart.
Your rocket is finished!

12.



But how do you launch it?
Find out!

You can pick up a print version of the magazine at MINTworld.

The MINT Magazine Project

Hi there! I'm Ayana, the designer of this magazine. In July 2025, I'll be completing my four-year apprenticeship as a "mediamatician" at Lonza/MINTworld. During my time at Lonza, I've had the opportunity to develop my skills in a number of departments. I've spend many fascinating, illuminating hours in the Lean Learning team, the Communications department, MINTworld and the Lonza Design team. At the end of my apprenticeship, I put together this magazine for my final assignment (individual practical project). I had 85 hours to put this issue and its content together. I also had to provide all of the necessary documentation, which took up about 30% of my time, and meet various other criteria. The idea was to create a MINT magazine that would provide information about MINTworld, its projects, workshops and other matters. I've also included various interviews and experiments, each covering a different area of MINT (biology: seed strip; chemistry: lava lamp experiment; computer science: NFC code; engineering: rocket experiment; mathematics: integral to all the experiments). This way, you can learn more about the fascinating world of MINT subjects and MINTworld at home, at school or at work.

A Big Thank You!

I couldn't have done all this alone, so I'd like to say a big thank you to Pascal Amacker, Pascal Nyfeler, Renzo Cicillini, Urs Stoffel, Viviane Mudry, Laura Allet, David Jentsch, Helena Schneider, Fabio Zenklusen, Jeanne Bussmann and years 7 / 8 from Bitsch. They answered my questions during my project, helped me carry out my work, and contributed to the magazine that you're reading right now. I'm also hugely grateful to everyone else who assisted and supported me during this time.

Huge thanks to everyone!

MINT world

Our world. Your passion.

Disclaimer

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