



# **ACTION FOR A CHANGE**

**Annual Report 2024**

**Engineer the future**

# Thank you to all our important alliance partners



It is with great joy and pride that we look back on a year characterized by impactful results, made possible only through our strong collaboration. Your commitment and dedication to the alliance have been essential in enabling us to take important steps together towards strengthening children and young people's sense of belonging when it comes to the technology and science agenda – thus laying the foundation for the solutions of the future.

We are living in a time where society's challenges cannot be solved by individual actors alone. The complexity of the problems we face requires us to join forces across businesses, education, foundations, and organizations. This is where Engineer the Future truly stands out - as a platform for bridging diverse perspectives and competences, translating them into action.

When we pool resources and unite our efforts, we demonstrate what the power of community can achieve. We enable children and young people to develop the sense of agency and competences they

need to engage with the world with optimism and curiosity.

On behalf of the board, I would like to thank every single partner in the alliance for your contributions. Your efforts – whether through the development of educational materials, financial support, or participation in projects – play a crucial role in making a meaningful impact. In the future, the need for partnerships like ours will only grow. The challenges we face call for continued collaboration and a strengthened collective effort. As interconnected entities, organizations and institutions, we can both inspire and drive sustainable change that will benefit future generations and society as a whole.

Thank you for your continued commitment to the alliance and your invaluable collaboration. I look forward to another year of collective action, progress, and, most importantly, impactful results.

**Laura Klitgaard,**  
Chairman of the Board for Engineer the Future and President of the Danish Society of Engineers (IDA)



# Together we create action for a change



In a world of constant change, our ability to collaborate, innovate, and take intentional action defines how we address the challenges of our time. The Engineer the Future alliance is driven by a vision to strengthen the connection to technology and science for all children and young people - not just as subjects in school, but as essential tools for shaping the future. In an overwhelming world filled with complex issues, this sense of belonging is important when fostering enthusiasm, optimism, and a sense of agency.

The past year has been characterized by significant progress. We have witnessed how partnerships between educational institutions, businesses, foundations, and organizations can turn ambitions into tangible results - laying the groundwork for a shared conversation on how to prepare for a future none of us can predict. We have strengthened education in science and technology and inspired the problemsolvers of tomorrow.

With engineering as our catalyst, we have created a framework for more children and young people to unleash their creativity, take action, and believe in their ability to make a difference. In response to joint efforts, we have seen an increase when it comes to applying for higher education in science, IT, and engineering.

In this annual report, we present not only this year's results but also the insights and future orientation that drive us forward. Following a decade of collaboration we look forward to further developing and implementing initiatives that create value for all. This is where we see our true strength - bringing together forces that drive "action for a change".

The future calls for everyone to contribute – bringing different perspectives, ideas, and skills to the table. Together, within Denmark's technological alliance, we can empower children and young people to navigate a future where technology and science become an influential and driving force. A force with the potential to create real change – within ourselves and in the world around us.

That's why we need everyone's way of thinking, and more partners to join the alliance as we work together to engineer our shared future.

**Hans Ubbe Ebbesen**  
Director,  
Engineer the Future



## Engineer the Future's board of directors



**Søren Fogt Lundbo**  
Head of Branding and Marketing, Netcompany



**Maria Vinther Fenger**  
Director People and Culture, Liftra



**Per Hessellund Lauritsen**  
Head of research, Siemens Gamesa



**Mikkel Haarder**  
Deputy director, DI



**Jesper Toubøl**  
Vice President Operations, LEGO



**Stine Gry Roland**  
Project Vice President, Strategy, Public Affairs, & Communications, Novo Nordisk



**Lars D. Christoffersen**  
Dean of Bachelor Programs and Student Environment



**Henrik Garver**  
Director, FRI (the Danish Association of Consulting Engineers)

## We foster tech and scientific literacy

Students gain insight into how science and technology can help solve both small and large challenges.



Students who have worked with engineering show a greater interest in science

# 75%

of primary school students have a better understanding of how the subjects can be applied after meeting a role model

# 35.000

children and young people have met one of our role models

1 in 4 primary schools in Denmark have worked with engineering

Students who have worked with engineering find science more relevant and important

# Our progress

## We strengthen the next generation's competences

Through engineering, children and young people gain competences within science, technology, and innovation.



Engineering enhances students' motivation, creativity, collaboration skills, and problem-solving abilities

More than 260.000 students across the country have worked with engineering

# 67%

of teachers in primary school believe students learn more by using engineering

# 95%

of high school teachers agree that students had their creativity and innovative abilities stimulated

1 ud af 4 science teachers has been upskilled in engineering

78% of high school students agree with the statement, "We had to be creative to solve the engineering challenge."

# in 2024

## We work to secure the workforce of the future

In the alliance, we inspire more children and young people toward a future in technology and science.

Our study choice campaigns particularly appeal to women



More than 350,000 young people watch our annual study choice campaigns

# 19.756

applied for a STEM program in 2024 - a 6% increase

## An 11% increase

in applications to engineering programs - marking, for the first time, the most sought-after field of study in Denmark.

# 50%

of high school students were inspired to explore whether a STEM education was right for them after meeting a role model.



# 24%

of young people are more motivated to pursue a degree in engineering, IT, or science after watching our campaign.

Sources: Evaluering af Engineering i Skolen gennemført af VIVE, 2023; Evaluering af Book en ekspert gennemført af PH Absalon, 2021; Måling blandt 516 unge foretaget af Epinion, 2023; Evaluering af Engineering i Gymnasiet intern rapport, 2024.

# Denmark's Technological Alliance

We unite educational institutions, organizations, businesses, and foundations within a common field of interest, leveraging the alliance as a driving force to enhance the pool of scientific, technological, and practical competences.

Together, we foster a strong sense of belonging and community around science and technology for the greater benefit of society.

## We Engineer the Future:





# Authentic stories that inspire

As a partner in Engineer the Future, your involvement extends beyond mere visibility - your contributions actively engage with children and young people by:

- supporting the development of educational materials
- serving as a role model in classrooms
- participating in videos offering advice to young people
- providing science teachers with insights into cutting-edge technologies

Thank you to all of you, who have contributed to inspiring students to reflect on their own interests and strengths, thereby broadening their understanding of education and future career opportunities.

### Role models

The Role Model Program "Book an Expert" reaches thousands of students every year, with 7,500 students participating in 2024 alone, and brings captivating stories from technological workplaces across Denmark. Over the past 12 months, we have successfully onboarded 40 new role models from our alliance partners.

Through the "Voluntary Role Models for Everyone" project, more children and young people across the country, are provided with role models to look up to and the opportunity to receive voluntary assistance with their schoolwork. They gain better opportunities to experience real-life workplaces or participate in internships. This project seeks to elevate their motivation, strengthen their academic capabilities, and contribute to their personal development, ensuring a greater chance for success in life after school.

### The alliance bridges the gap

When primary - and high school students encounter the cutting-edge technologies of our partners, the subject transcends textbooks and becomes tangible. Students' engagement is further enriched by concrete examples from partner companies. This is achieved through various means, including ed-

ucational videos, where partners demonstrate, for instance:

- The use of models in engineering practices
- The principles of hydraulics
- How to make a robot walk on sand

### From company to classroom

Insights and technologies from industry leaders reach teachers and students, as exemplified by COWI and MAN, who opened their doors to host engineering workshops for science educators. Engineer the Future conducted the teaching, which was thoughtfully complemented with essential knowledge about climate adaptation and sustainable fuel solutions. Teachers love these insights and bring them back to their students.

### You can only choose what you know

Regrettably, many young people are not familiar with what studying and working in engineering, IT, or science truly entails. This is a gap we are determined to address. FAQ films featuring students and recent graduates from alliance partners provide practical advice to other young people. These videos form a key component of our study choice campaign and have proven to be immensely popular with young audiences.

**Why role models?**

Role models can help spark an interest and offer an educational and formative perspective on the value of education. They also provide knowledge and insight into scientific and technical subjects, giving students a more informed foundation for making their choices, while showcasing a wide range of career opportunities. Our work with role models is grounded in research (including studies by H.T. Holmegaard, B. Read, and others) as well as external evaluations of our own initiatives.



Is there room for everyone?

How can I help others?



Is it easy getting a job?

Is the pay good?



How is job startup?



Is there a good study environment?

"A good expert visit for me is one where I can give students something they can engage with. Not everyone in a classroom may be equally excited about a presentation on science/technology, but if I can inspire just one student, then I'm happy."

- Role model

"It was a great experience to visit Korsager Skole and meet so many curious and engaged students. It's wonderful to be part of Engineer the Future, inspiring the next generation of engineers."

- Rikke Winberg, R&D Engineer & Scrum Master and role model. MAN Energy solutions

# We develop the competences of tomorrow across all of Denmark

As an alliance, we strive to ensure that many more young people pursue an education in science and technology. We do this by making education in primary schools and secondary education more relevant and appealing to a broader audience.

Our professional development programs equip teachers with tools to create more engaging lessons, while also enhancing students' skills. Engineering equips children and young people with knowledge, drive, and a sense of agency. With engineering in their toolkit, the next generation will be well-prepared to navigate both the opportunities and challenges of tomorrow's job market.

**"I think the concept is important and should be developed so that it gains more prominence in the schools of the future."**

- Primary school teacher on engineering

## Engineering in school

The Engineering in School program was launched in 2017. The program reaches thousands of students across the country and has become an integral part of the annual plans of schools nationwide.

Development of engineering didactics.  
Four municipalities on board.

A large external evaluation demonstrates that engineering as a teaching method works. An additional 26 municipalities on board.

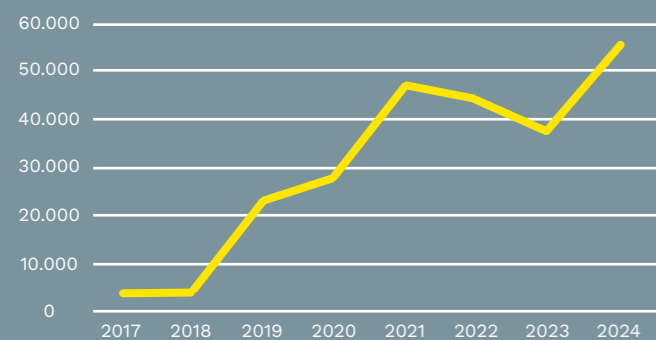
Anchoring and consolidation. Strengthened focus on practical skills, technological understanding, and school-business collaboration.

2017 – 2019

2020 – 2023

2024 – 2027

Number of students participating in Engineering Day



## Engineering Day

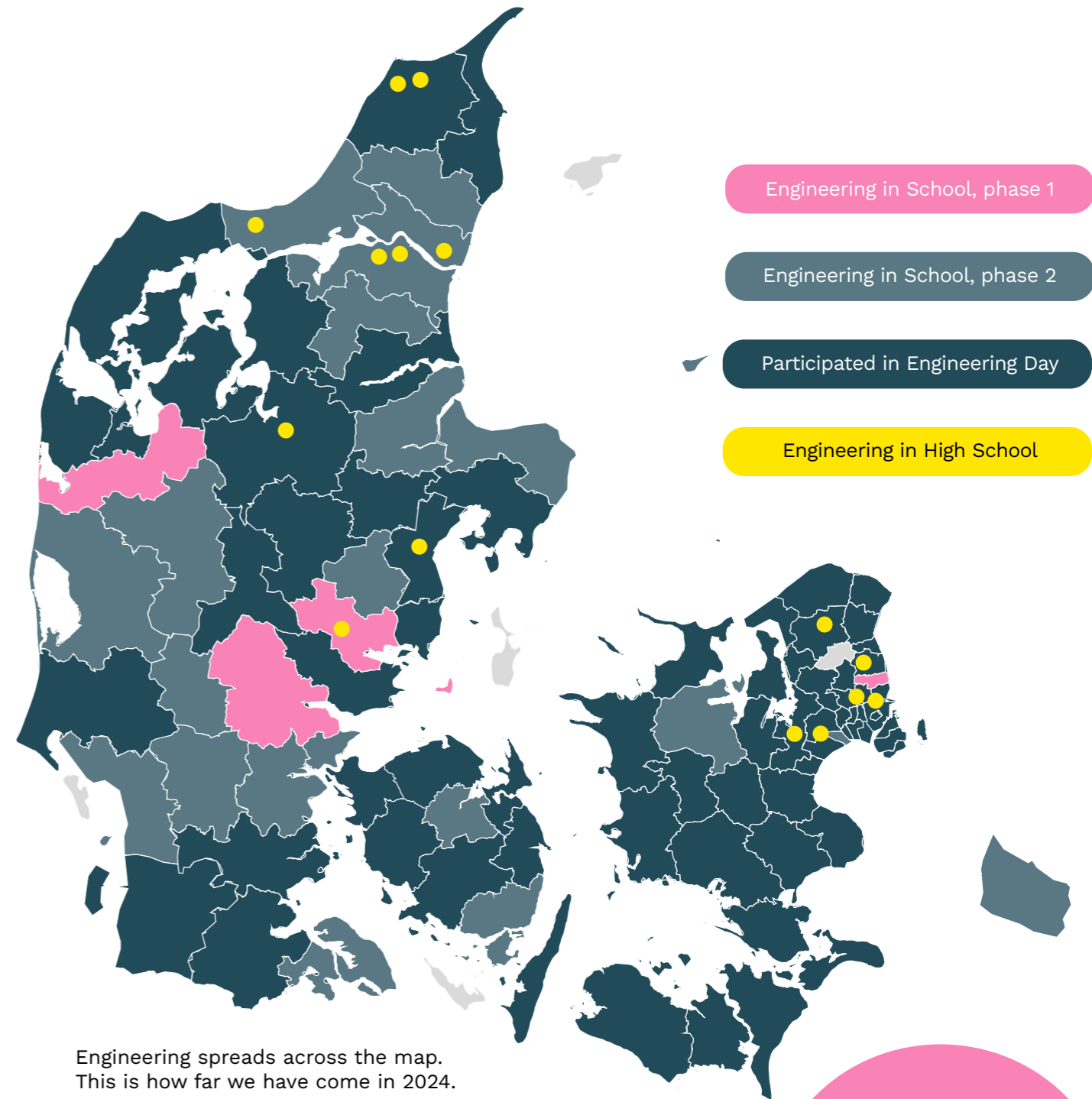
Students across the country take on science challenges in week 45, building prototypes to solve real-world problems. Along the way, they develop their scientific skills and innovation abilities through hands-on and inquiry-based work.

## Engineering in high school

In high school, both teachers and students have begun incorporating engineering into their science education. In 2024, we held workshops for around 60 teachers at 15 high schools. Approximately 1,300 students have applied their scientific knowledge to authentic problem-solving using this method, sharpening skills such as collaboration, data communication, and idea sharing. Evaluations from the initial courses show that engineering particularly stimulates creativity and innovation skills among students.

**"Through engineering, students are motivated by solving a problem and creating a product."**

- High school teacher



Engineering in School, phase 1

Engineering in School, phase 2

Participated in Engineering Day

Engineering in High School

Education partners:



# Study choice - inspiration at eye level

If we are to succeed in encouraging more young people to pursue a future in engineering, IT, or science, it is crucial that we understand their needs and interests. Over the past 10 years, in collaboration with our educational partners, we have built a wealth of knowledge that forms the foundation for all our communication with young people.

Our latest survey shows that, in 2024, young people consider the following factors most important when choosing their studies:

- The education offers good opportunities for a high salary later in life (49%)
- There is a good study environment (47%)
- There are strong career prospects (39%)
- The education allows them to make a difference for others (28%)
- There is low unemployment within the field (28%)

In 2024, we launched 10 new FAQ videos, where young people share insights on topics such as salary, study environment, career opportunities, and how to make a difference for others.

These videos provide prospective students with authentic glimpses into life as a student and graduate in technology and science, while also breaking down stereotypes and creating appealing and credible stories.

Our evaluation shows that these personal stories are both popular and useful for young people facing the challenging decision of choosing a field of study.



**Lars D. Christoffersen, representative for engineering programs and study environment, Technical University of Denmark.**

"Our society needs many young people to pursue careers in technology, and for higher education STEM programs, it is invaluable that we work together across sectors. We are currently experiencing record-high applications – and we must maintain this momentum."



**Lone Hoelgaard Havmand, Communication Consultant - Chief Consultant, University College Absalon:**

"Choosing a field of study is complex, and the young people of the future are constantly evolving. When we continuously meet across educational institutions through Engineer the Future, we share a common goal: to strengthen the interest in scientific and technological education throughout Denmark. Together, we can achieve much more than any single institution can alone."



**Lise Kanstrup, Chief Consultant, University of Southern Denmark:**

"Engineer the Future is a unique alliance that enables the Technical Faculty at SDU to discuss strategies and initiatives for student recruitment to STEM programs with other Danish educational institutions. We share successes and experiences from recruitment efforts, thereby enhancing the impact across all institutions. Furthermore, we actively use Engineer the Future to highlight national agendas, where our collective influence is far greater than what we could achieve individually."

# What we talk about when we talk about engineering



**"The course sparked my students' curiosity, and they became very engaged in finding solutions to the problem"**  
- Primary school teacher

The majority of Danish primary school students excel in science and mathematics, yet their motivation declines from the middle school years and becomes difficult to reignite. Many students find these subjects irrelevant and express a desire for more real-world applications that clarify their practical value. Research in social neuroscience indicates that cognitive functions such as learning, attention, memory, and motivation are secondary to emotional processes. Integrating affective elements into teaching may therefore enhance both learning and motivation in science education.

Engineering education engages students in solving problems within concrete and authentic contexts. These challenges can be global, local, or even personally relevant to the students. When working with engineering, students must apply scientific knowledge, but they also need to consider ethical and societal dimensions, thereby connecting science and mathematics with affective learning processes. Beyond strengthening their scientific and mathematical competencies, students engaged in the engineering design process acquire subject-specific knowledge while also developing other valuable skills essential for their broader education and future endeavors. This applies to both general competencies, such as collaboration and project management, but also to the more specialized skills, including problem-solving, critical thinking, and technological literacy. All these skills are devel-

oped within a framework that connects science and mathematics to concrete, real-world problems that are meaningful to students.

The engineering didactic approach follows a structured progression from primary school through secondary education. Like any other skill, mastering engineering requires both practice and challenges that are adapted to individual students' levels. Engineering allows for participation at different levels, with differentiated instruction ensuring that all students can experience success and growth.

Our initiatives include professional development for teachers, the development of teaching materials, and resources to support planning. Both the didactics and educational materials have been developed in close partnership with experts in subject-specific pedagogy from universities and teacher education institutions, as well as with educators from primary and secondary schools.

When students engage in engineering, they experience greater motivation and a clearer sense of purpose in their science education. They also develop essential competencies needed to understand, create, and act meaningfully in a society where technology increasingly drives change.

\*Immordino-Yang, M. H., & Damasio, A. (2007). We feel, therefore we learn: The relevance of affective and social neuroscience to education. *Mind, brain, and education*, 1(1), 3-10

## What is Didactics?

Didactics is the study of teaching theory and practice, focusing on how to effectively convey knowledge and skills to students. It encompasses the planning, execution, and evaluation of teaching methods, ultimately creating optimal learning conditions. Didactics also involves selecting teaching methods and materials that align with students' needs and learning objectives.

**"The students have received a methodical approach, which looks positive compared to previous students who did not have engineering."**  
- High School Teacher

## Engineering Works

**67%** of primary school teachers believe that students learn more when applying engineering.

**69%** of primary school teachers believe that engineering enhances the quality of teaching.

**78%** of high school students agree or strongly agree with the statement: "We had to be creative to solve the engineering challenge."

**95%** of high school teachers agree or largely agree that students' creativity and innovation skills were stimulated.

Our expertise in engineering is built on a strong foundation and continuously maintained through discussions with international experts.

In 2024, we explored various perspectives on engineering at the American Society for Engineering Education Conference and in discussions with Tuft's University in Boston. We look forward to establishing a more formal collaboration in 2025.

Naturally, we maintain a strong presence at Big Bang, Denmark's annual conference for science teachers.



# Visions for the future - where can we make a difference

## Climate and sustainability

### Increased need for climate education

Engineering empowers children and young people with the courage and skills to take action - including on climate issues. 75% of young people worldwide see the future as frightening (EU Commission), yet only 1.5% of global climate funding is allocated to education (UNESCO). Feelings of hopelessness can be transformed into drive and agency through our engineering programs, which, e.g. address climate challenges and give children and young people the courage to take an active part in finding solutions.



## Digital technological literacy

### Artificial intelligence is reshaping education

With AI readily providing answers, the focus must shift from mere reproduction of knowledge to fostering students' ability to understand and navigate learning processes driven by curiosity and critical questioning. In collaboration with thought leaders in the field, we are exploring the need for new exam assessment formats in upper secondary education.

### Technological literacy does not come from being on Social Media

A stronger focus on technological literacy in education is essential for equipping children and young people with the ability to comprehend, critically assess, and act in relation to digital technology.

That is why the Engineering in School program is integrating technological literacy into engineering didactics. Simultaneously, we are developing a new project where students use AI and computer models to create digital solutions for engineering challenges in science and mathematics.

We are at the forefront of this effort, engaging in discussions alongside Danske Skoleelever at Folkemødet and in Altinget.

Kilder: Børne- og undervisningsministeriet, TIMMS, Egmont Rapporten 2023



## Practice-oriented learning

### Education on the move

In 2024, the alliance participated in political discussions on the new curricula for primary school subjects, set to take effect in 2027/2028. This meeting exemplifies our ongoing efforts to influence and contribute ideas within the educational policy landscape.

We are also closely following the debate on practice-oriented learning in secondary education, particularly in light of the new EPX. Here, we see exciting opportunities to share our knowledge and insights, drawing on our experience with engineering as a teaching method.

Understanding theory and translating it into practical solutions through experimentation and iterative processes is not only a key competency for future EPX graduates - it is just as relevant for STX and HTX students today.

### Political attention

Minister for Children and Education, Mattias Tesfaye, and Spokeswoman on Education, Lotte Rod, visited Strandgårdskolen in Ishøj, where they, alongside Laura Klitgaard, President of IDA, experienced engineering as a practice-oriented didactic approach.

### Denmark faces a shortage of vocationally educated youth

In collaboration with Dansk Metal, we are working politically to strengthen practice-oriented learning in primary schools. This includes addressing the necessary conditions and structural changes required to ensure that teaching becomes truly hands-on and application focused.



## Mathematics

### Many children and young people disengage from mathematics

At Engineer the Future, we believe that engineering can help address several of these challenges. To make mathematics more engaging and accessible, teaching must be strengthened with new approaches that foster motivation and confidence.

Engineer the Future is applying for funding to develop new projects for both primary schools and high schools. By integrating a tailored version of engineering, these initiatives aim to support students in developing stronger mathematical competences.



### The students' experience

"Why do I need this?"

"It's going too fast, I can't keep up."

"It's a right-or-wrong culture."

### Engineering offers

Authentic challenges

Iterations and improvements

Mistakes are a source of learning



# As partners, you make a significant difference for children and young people

**The need to strengthen and prioritize science and technology has never been greater. After ten years of dedicated effort, our collective work remains both impactful and highly relevant.**

**Did you know that:**

- Science subjects make up only 10% of total teaching hours in primary school.

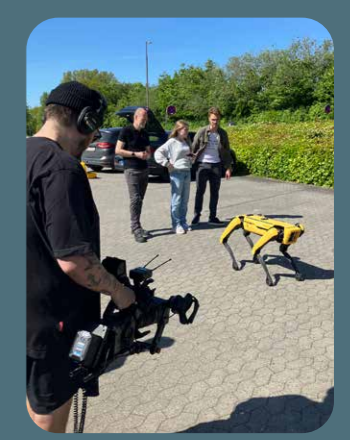
- Science had its allocated hours reduced as part of the political agreement on primary education in March 2024.
- STX has seen a 25% decline in enrollment in science study programs since 2018.
- HTX, which offers the most extensive science curriculum, has experienced a nearly 30% drop in enrollment over the past five years.



Inspirational videos - peer to peer advice



Educational videos for Engineering Day



Explainer videos



Work Experience Placement



Corporate volunteering - Role models



Technology from you to the classroom

**A tailored, engaging effort**

We base our efforts on your reality, working together to make a difference for children and young people - aligning with your strategies and ESG goals.

**More children and young people develop interest and skills in science and technology**

**A scalable, collaborative effort**

Your insights and technologies lay the foundation for high-quality teaching materials. Together, we foster curiosity and inspiration in classrooms.e.

**A policy improving effort**

As an alliance partner, you gain relevance in the educational policy agenda and have the opportunity to offer valuable perspectives.



Political engagement



Communication



Networking events



# 56.500 students participated in Engineering Day 2024

Every year in Week 45, we host Engineering Day, where students across the country apply scientific knowledge and build prototypes to solve real-world challenges. In 2024, we developed three new engineering cases.



**Early Primary: Clever mechanics**  
Students developed and designed a mechanical prototype to create movement and sound.



**Middle Primary: Turn the table**  
Students created a mechanical prototype using hydraulics.



**Upper Primary: Are you stuck?**  
Students created propulsion without using wheels.

**"Students have the opportunity to use their knowledge to construct something on their own."**  
- Primary school teacher

**"Good material that is easy to approach and thoroughly developed"**  
- Primary school teacher

**"We had set aside the whole day, we had time, the materials were ready, the children were excited, and the teachers were incredibly enthusiastic. What's not to like?"**  
- Primary school teacher

**"It appeals to all groups of students"**  
- Primary school teacher

As an alliance,  
we can achieve more



**Ib Enevoldsen, CEO,  
Rambøll Denmark:**

“Studies reveal that many children and young people lose interest in mathematics and the sciences during their schooling. This is problematic considering we need more young people to pursue higher education in STEM fields. This is crucial if we are to develop future green solutions. We cannot solve this challenge as individual actors. On the contrary, we must work together in alliance, and we need to address the issue through a broad range of initiatives.”



**Lars Sandahl Sørensen,  
CEO, Danish Industry**

“In Denmark, we have reason to be proud of our strong tradition of being at the forefront of technology and innovation. Now more than ever, it is crucial that we equip young people with the courage and skills to engage in the struggle for the future.”



**Diana Ringe Krogh, VP, Head of Social Responsibility,  
People, Places & Culture, LEGO:**

“Children’s agency is their empowerment to act independently and make decisions affecting them, crucial for their wellbeing, education, and learning. Enhancing children’s agency benefits individuals and enriches communities, fostering a more inclusive, innovative, and empowered future.”

Children’s agency is one of the key themes of our social strategy, as it’s instrumental to children’s wellbeing and thriving. Together we can build a brighter, more inclusive future. Let’s inspire and develop the builders of tomorrow, today!



**Charlotte Lei Barnewitz,  
HR Director, Schneider Electric:**

“If Denmark is to succeed in the green transition, it is crucial that businesses take responsibility for attracting more individuals to STEM education. This is something we can work on concretely in Engineer the Future, for example, by having our professional role models visit primary schools and high schools to inspire students and spark interest in green tech careers, such as becoming an electrician, energy consultant, or engineer.”



**Marie Brinkgaard, Head of HR,  
MAN Energy Solutions:**

“MAN’s engagement in Engineer the Future is an important part of our social sustainability strategy and corporate responsibility. The role models we involve in the alliance’s work play a key societal role when they meet children and young people, fostering their scientific curiosity and development. At the same time, we address the industry’s growing need for qualified engineers and technical specialists, which is crucial for ensuring innovation and growth in the future.”

# Visioneering 2024

Where visions meet abilities and stakeholders across the alliance, thoughts turn into action. We call it Visioneering.

The Visioneering Conference on the future of competences, education, and learning brought together stakeholders from businesses, educational institutions, and foundations for a collective conversation about the challenges and opportunities our children and young people face as they approach a future none of us can predict.

TIL FORSKEL  
for the future



Play and a playful approach to learning are central to the wellbeing of children and young people, as well as to their development of skills such as collaboration, communication, and resilience.

Diana Ringe Krogh, LEGO

**"It's about our children and young people. And it's about actions. Because without actions, everything is completely meaningless."**

With these words, Carsten Beck from the Copenhagen Institute for Futures Studies opened the Visioneering Conference, offering a glimpse into the future.



**"I think it has been a fantastic day. It has been exciting and we covered a lot of important topics."**

Agi Csonka, Program Director, Villum Fonden.



How do we create education systems that nurture capable and resilient individuals?  
Mette Miriam Böll, MIT



Interview with Louisa Loran, Google, on how digitalization is a profound transformation that requires leadership and a sense of timing.

**"I think a conference like Visioneering has done a great job of highlighting the skills needed for the future."**

Birgitte Vedersø, Former Chair of the Expert Group on ChatGPT and Exams



A casual conversation between Henriette Holmegaard, Professor of Science Identity at the University of Copenhagen, and Andreas Mogensen, ESA Astronaut, offered different perspectives on how role models can motivate children and young people to pursue a future in technology and science.



Thank you to the foundations:



The drinking water, the IT security, that little thingy that won't work.  
No matter where we look, we are surrounded by challenges.

It can be overwhelming - especially for children and young people  
- to see the world through these eyes. To see the problems without  
feeling able to do anything about them. It creates a feeling of helplessness.  
Because when you don't know what to do, you can't make a  
difference.

But when we have the tools to take action and people to  
collaborate with, something changes.  
When engineering becomes a mindset, our world opens up.  
Paralysis is replaced by action.  
And optimism starts to grow.  
A force that truly can make a difference.  
In ourselves. And in the world around us.

We believe that we succeed when there's

**ACTION FOR A CHANGE**

**Engineer the future**