Tech Education

How Estonia educates the next generation of innovators

education estonia

Estonian students rank #1 in Europe (OECD, PISA 2018)

4th

in the world in
science

5th

in the world in
reading

8th

in the world in
math

≈ 1.5 times more
top performers
vs OECD average

≈ 2 times less
low performers
vs OECD average

Characteristics of Estonia's education system

+ AUTONOMY in schools:
  Fostering innovation and flexibility

+ EDUCATION IS FREE OF CHARGE:
  Ensuring equal access
  to tech education opportunities

+ Emphasis on HOBBY EDUCATION:
  Nurturing interests in areas like technology

+ STRATEGIC PLANNING:
  Goal-setting with stakeholders to guide
  Estonia's tech education journey

Tracing the roots

The start of Estonia's tech education revolution

1960
Institute
of Cybernetics

1968
First programming
lessons in 3
Estonian schools

1988
First computers
type JUKU
reached schools

1996
Tiger Leap

2001
All schools connected
to internet and provided
with computers

Look@World Foundation

2002
E-School

2004
EHIS
Estonian Education
Information System

2011
Rakett 69.
TV show to promote
STEM education

2012

IT Academy

ProgeTiger

2016–2017
New computers
for teachers

2016–2022
Modernizing
internet connection
in all Estonian schools

The pillars of Estonia's digital education system

+ The Tiger Leap programme in the 1990s provided schools with INTERNET CONNECTIONS, COMPUTERS, and IT TRAININGS.
+ For the evidence-based decisions, the EDUCATIONAL DATA is publicly accessible on the internet.
+ DIGITAL LEARNING MATERIALS are available for all subjects and across all educational levels.
+ All schools in Estonia use E-SOLUTIONS.
+ Many schools and kindergartens have EDUCATIONAL TECHNOLOGISTS – technology integration specialists to support teachers.
+ DIGITAL COMPETENCE is set in curriculum as a general competence.
+ Educational programmes create INTEREST IN TECHNOLOGY from kindergarten to university.

Shaping future innovators

ProgeTiger programme

- Early introduction to programming and robotics prepares for a digital future
- Students from kindergarten to high school and vocational education
- Develops logical thinking and problem-solving skills, encourages creativity and innovation
- Offers teacher training, device funding support, student events, and free educational resources

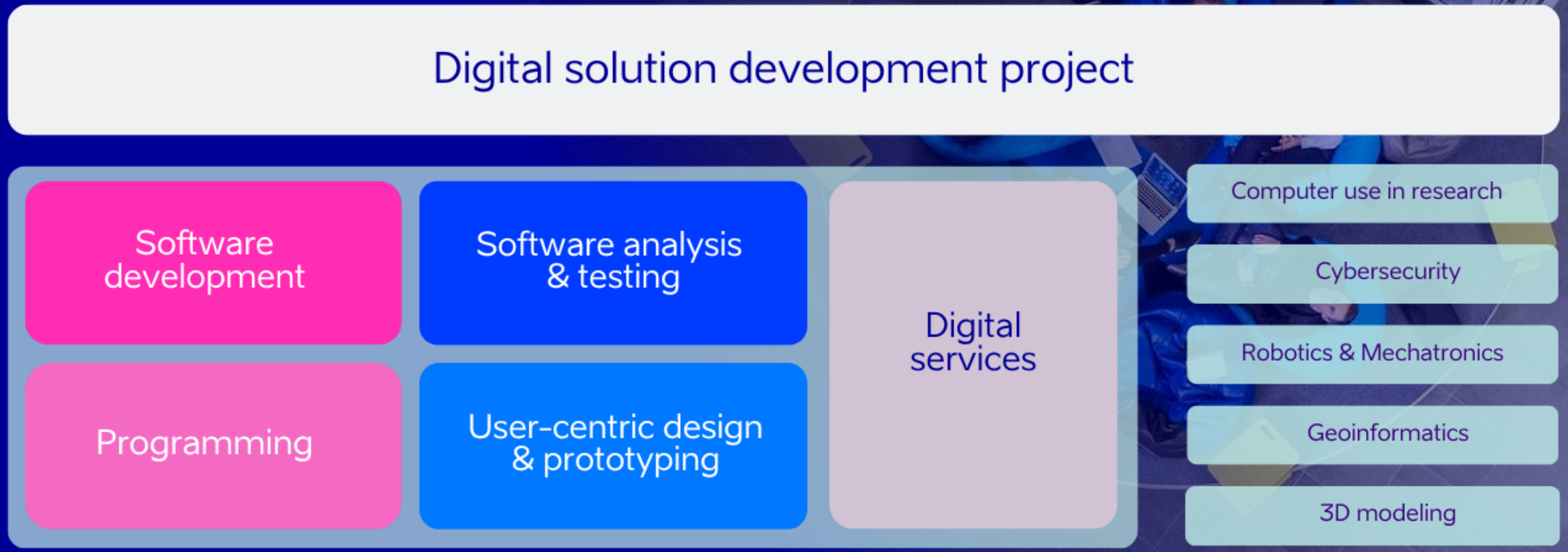
Hands-on tech

Informatics elective courses for high school

+ 35-hour course for 10th and 11th-grade students
+ Involves defining problems, project planning, and execution
+ Teams of 3-5 students, each having completed specific elective courses
+ Roles: programmer, designer, project manager
+ Mentors from schools and companies

Hands-on tech

Informatics elective courses for high school



Shaping ICT education

IT Academy

+ A public-private partnership for higher education in technology: Cooperation program between the state, ICT companies, universities, and vocational schools
+ Focus on ICT research, higher and vocational ICT education
+ Ensures diverse ICT competencies across various fields

Making STEM popular

Rakett69 TV show

+ Students from age 15 compete for a €10,000 scholarship
+ Science tasks: electronics, robotics, chemistry
+ The show provides STEM teaching material and lessons for schools

Challenging the brightest minds

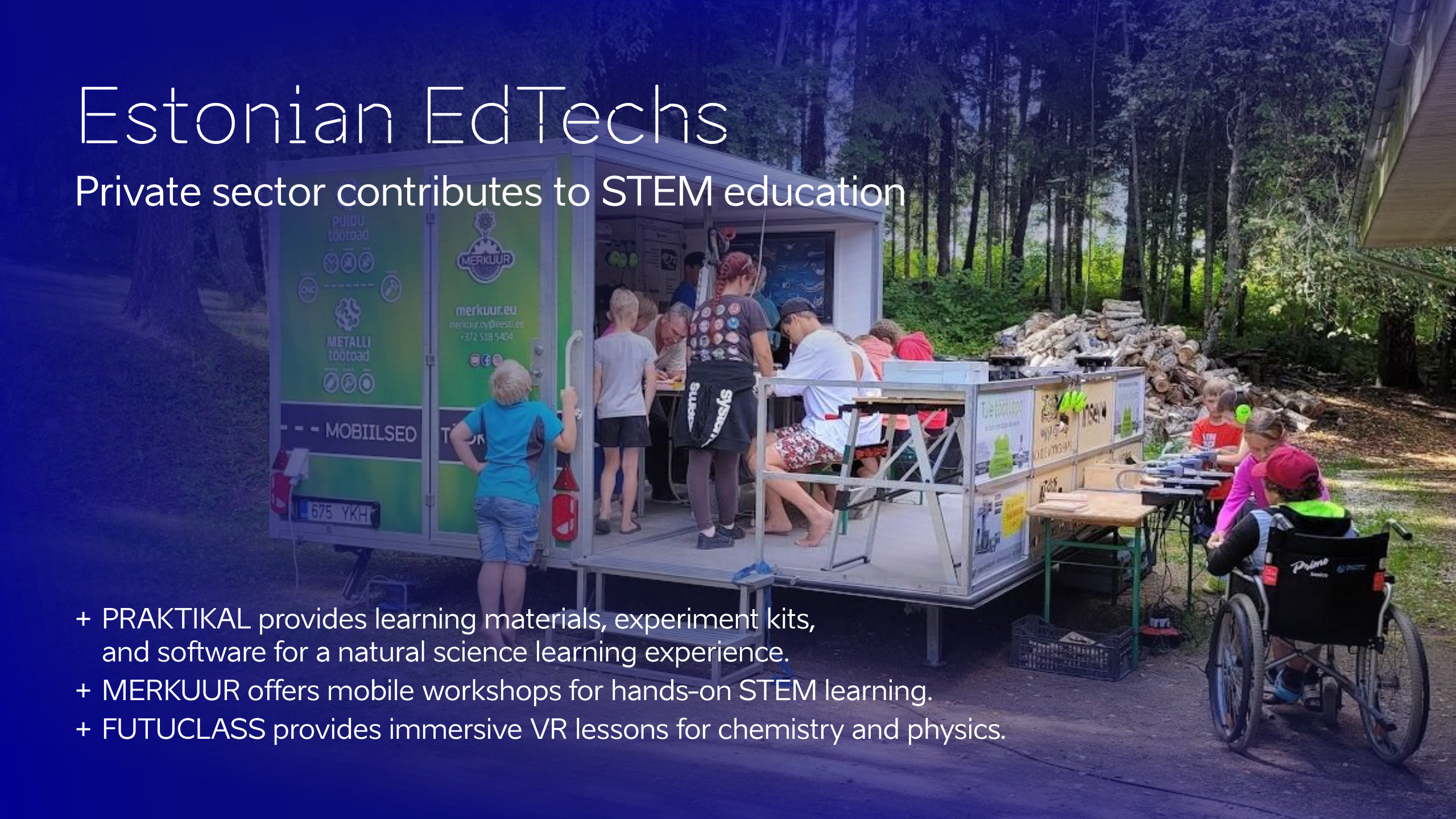
Science school of the University of Tartu

Science school offers educational opportunities for gifted students:

+ Activities and resources supplement the school curriculum
+ Competitions and events for students
+ Additional educational resources for schools

Estonian EdTechs

Private sector contributes to STEM education



+ PRAKTIKAL provides learning materials, experiment kits, and software for a natural science learning experience.
+ MERKUUR offers mobile workshops for hands-on STEM learning.
+ FUTUCLASS provides immersive VR lessons for chemistry and physics.

80%

of the 7-19 year olds participate
in hobby education and
hobby activities in Estonia

Empowering girls in tech

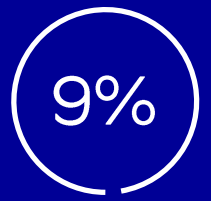
Unicorn Squad

+ Tech education for girls aged 8-14
+ Over 160 groups, 2000+ participants
+ Free course materials and instructions
+ Summer tech camps

The numbers

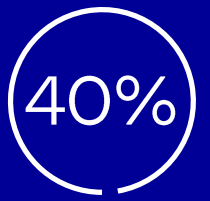
Estonia's tech education

of Estonian kindergartens take part in technology education programme ProgeTiger



of students study ICT in Estonia — twice as many as EU average
Eurostat 2018

students pursues STEM in higher education



of ICT Master's students are female — this is highest share in Europe
Informatics Europe 2020

Solving tech talent needs

Vali IT retraining programme

+ Intensive 14-week programme
+ Retrains non-tech professionals into tech roles
+ Acceptance rate 25%
+ 700 specialists in 7 years

The future is for all

Bridging the digital gap: Look@World

+ A private initiative cultivated digital citizens
+ Trained 10% of Estonia's adults, reaching even rural areas with IT trainings on wheels etc
+ Initiated projects like e-School
+ Daily, 2000 librarians offer e-service guidance, helping people to become skilled

Aitäh!

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Photos: Renee Altrov, Aron Urb, Sven Zacek, Küllike Heide, Lauri Kadajane, Aivo Kallas, Tallinn University, Ajujaht

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