



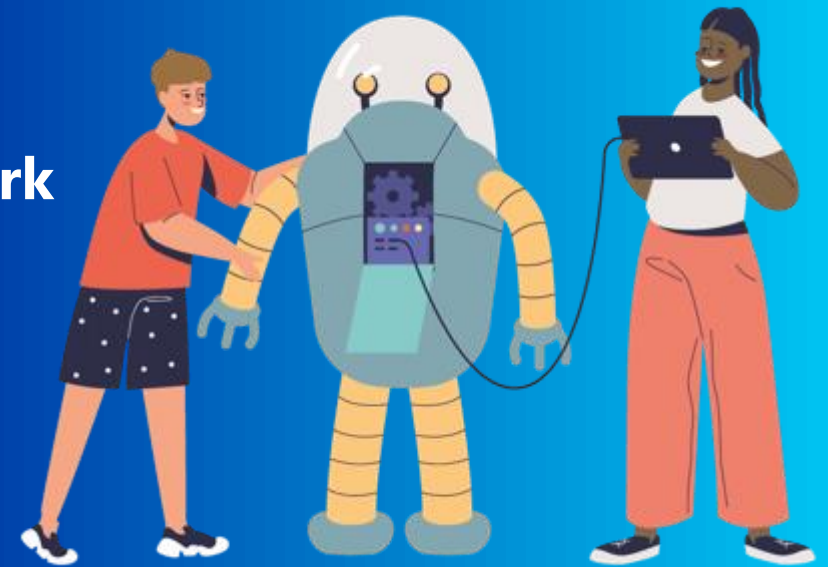
WHAT IS STEAM IN PRACTICE?

STEAM-koostumus on Oulussa ollut innoittavaksi
koulun yhteistyötoimintana, jota on pidetty
koulun yhteistyötoimintana, jota on pidetty

STEAM in Oulu

CONTENT

1. The ABCs of STEAM in Oulu
2. Growing into a regional development network
3. On the path to learning
4. STEAM events and innovation projects



1. The ABC of STEAM in Oulu



STEAM in Oulu

- Which** Innovative community in Oulu
- What** Promoting creativity and curiosity
- Why** Looking for solutions to the challenges of the future
- Where** At the intersection of arts, media, science, and technology
- How** Joining fields of learning and subjects into larger wholes
- Who** Teaching and early childhood education professionals in collaboration with children and youth





“STEAM can be employed to teach more integrated learning entities made up a composite of various subjects. Teaching such planned-out entities rather than individual disconnected lessons is much more rewarding for pupils and teachers alike.”

Sanna Mäkelä, Ylikiimingin koulu
(Comprehensive school)

STEAM

Letter by letter

Science

Technology

Engineering

Arts

Mathematics

In Finnish - Swedish

Tiede - Vetenskap

Teknologia - Teknologi

Insinööritaidot - Ingenjörskonster

Taide - Konst

Matematiikka - Matematik



The fundamental principle: Doing more together

working together

a communal, experimental way of learning



"STEAM means that both the teacher and the pupil are encouraged and strengthened by doing things themselves. Those are inspiring experiences."

**Jaakko Määttä, Oulujoen alakoulu
(elementary school)**

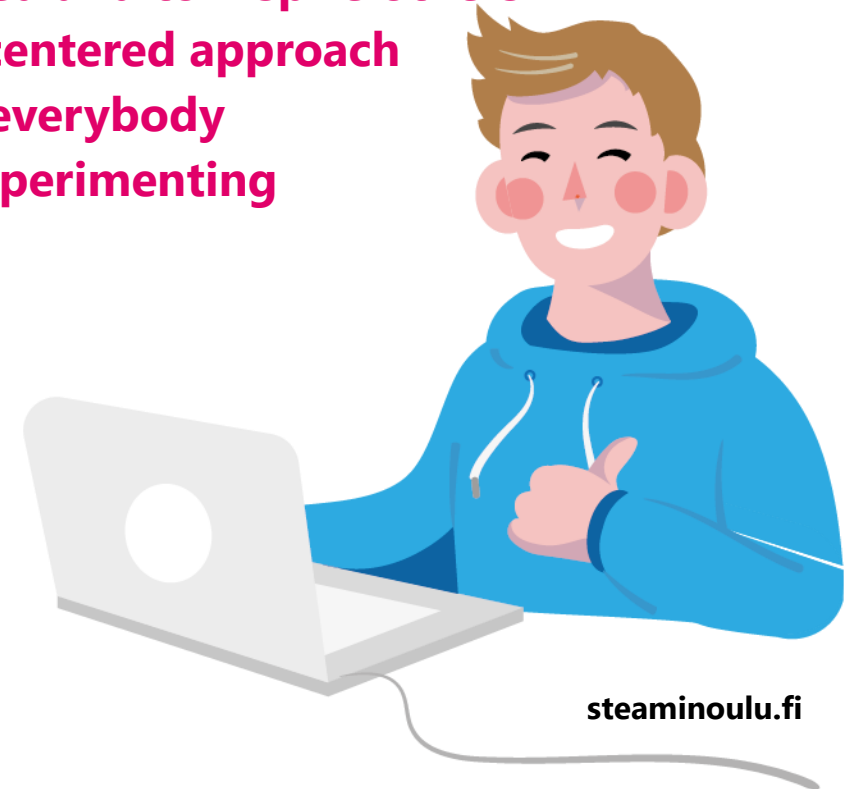
Vision 2026

Boldly on the edge – STEAM in Oulu.
Towards a creative method through
doing together.

- Boldly on the edge – innovative, daring to try and to fail
- A creative culture – experimental and constantly developing

Values

- **Doing more together**
- **Be inspired and to inspire others**
- **Learner-centered approach**
- **Open to everybody**
- **Boldly experimenting**





Focus areas

- Meaningful co-creation
- Permission to experiment and fail
- Emphasis on art and the design process
- Learner-centered approach
- Culture of sharing and collaboration
- Strong connection to pedagogy and daily life
- Active mentoring
- The role and commitment of management

“STEAM has been a turning point and changing the entire culture of our school.”

Pekka Pöyhtäri, Hintan alakoulu
(elementary school)



Elements



2. Growing towards a regional development network



Growing towards a regional development network

- At the core is the education program of the City of Oulu: Education builds Oulu
- Strong support from the city leadership
- An integral part of the Oulu city strategy
- A significant factor in the Oulu2026 European Capital of Culture project
- A way to ensure an adequate and capable workforce for the future
- A part of the FabCity Network 2023=>

“Oulu nurtures well-being, caring, and active citizens together within strong education and competence networks.”

City Strategy



Enabled by



Collaboration with the University of Oulu

Educational sciences

- Minor in STEAM teaching
- Supplementary training
- Research and development
- Teacher internships in STEAM units
- Students participating in projects in STEAM units
- Developing STEAM activities in lower secondary schools

Natural sciences

- LUMA Centre
- Science Education Working Group

Information technology and electronics

FabLab



Joint development with businesses

- MeKiwi
- Lekolar
- Holomonsters
- Playsign
- Happia

International cooperation

- information exchange
- expert exchange
- joint seminars
- university and educational cooperation

In addition, STEAM Residency projects involving collaboration among teachers, students, and artists.



3. On the path to learning



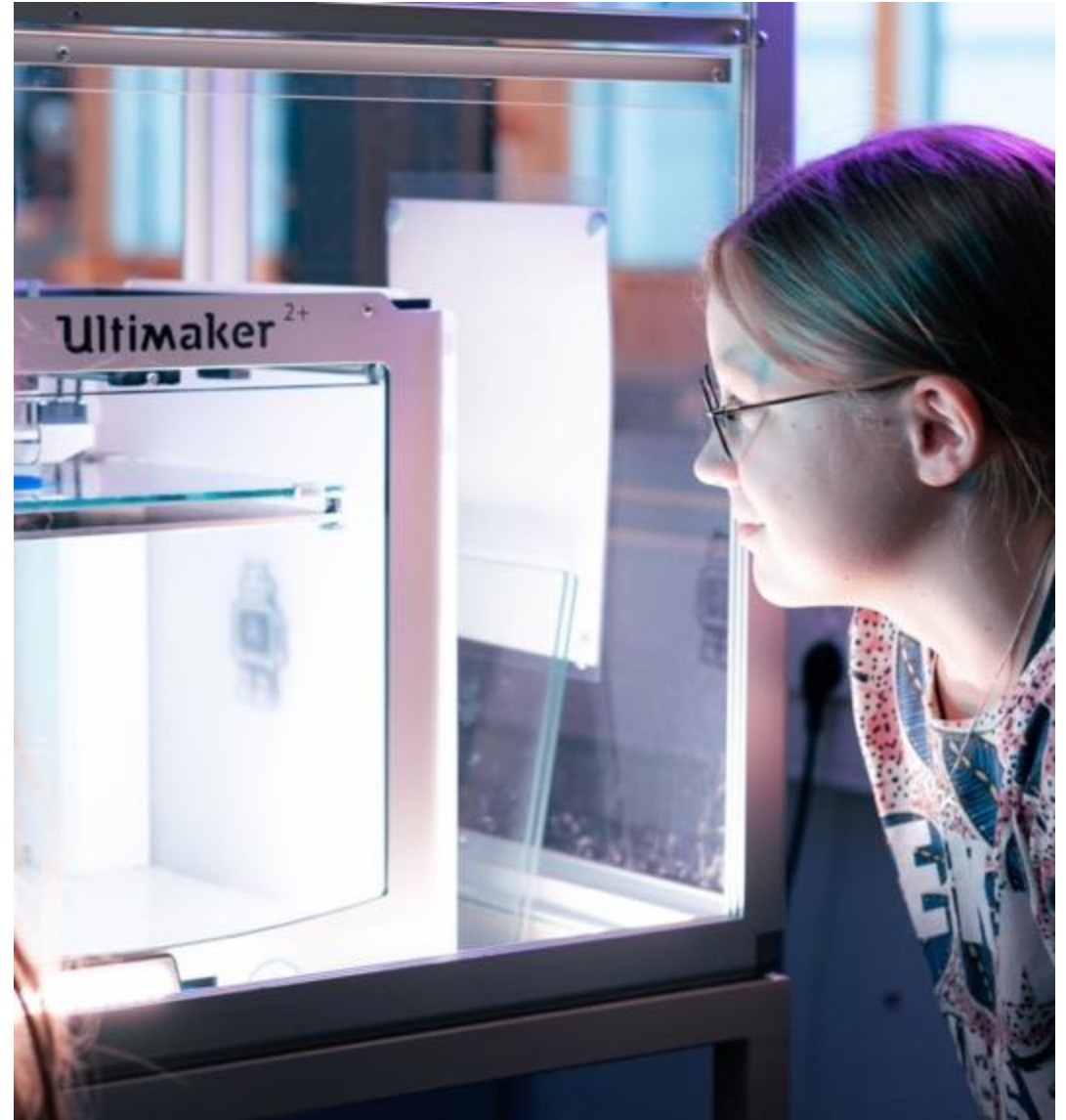


The STEAM process

- Repeated in every STEAM implementation
- Applicable for various theme from product design all the way to knowledge-based education

The processes emphasize

- Joint development
- Exploring and understanding the theme
- Combining creative and rational thinking
- Concretization of ideas
- Failure – learning at its best





“In STEAM, comprehensive concepts are addressed, and learning occurs by combining different elements. When the work is enjoyable and brings joy, learning happens almost effortlessly.”

Pekka Pöyhtäri, Hintán alakoulu (elementary school)

Tips for the STEAM process

- Take into account the participants' skills and diversity.
- Tolerating uncertainty is part of the process.
- Progress happens at the learners' pace.
- STEAM brings freedom – make use of it
- Make things tangible to the learners



Learning entities

Novice

- A good place to start
- Tasks suitable for everybody

Expert

- Able to combine STEAM sub-disciplines and subject knowledge
- Tasks suitable for more advanced learners

Master

- Can choose the most appropriate approach
- Utilizes technology appropriately.
- Gathers information and combines knowledge from different subjects with each other



4. STEAM events and innovation projects





ToolCamp

Innovation challenge and event

Time: May 2024

Place: University of Oulu

Planning team lead: Educational and Cultural Services
at the City of Oulu

- The challenges are released at the end of the previous academic year, and the work can be planned according to the school's/class's preferences for the upcoming year.
- Students present the solutions to the challenges at the ToolCamp event.
- There are several award categories.
- Stakeholders have the opportunity to showcase their products and organize workshops during the event.

Amazing North *collaboration event*

Time: In May every second year (2-day event)

Place: varies

Planning team lead: Educational and Cultural Services
of the City of Oulu

Goal:

- Increasing awareness of the STEAM in Oulu network
- Each actor can present their activities from their own point of view
- Stakeholders may present their products and organize workshops

