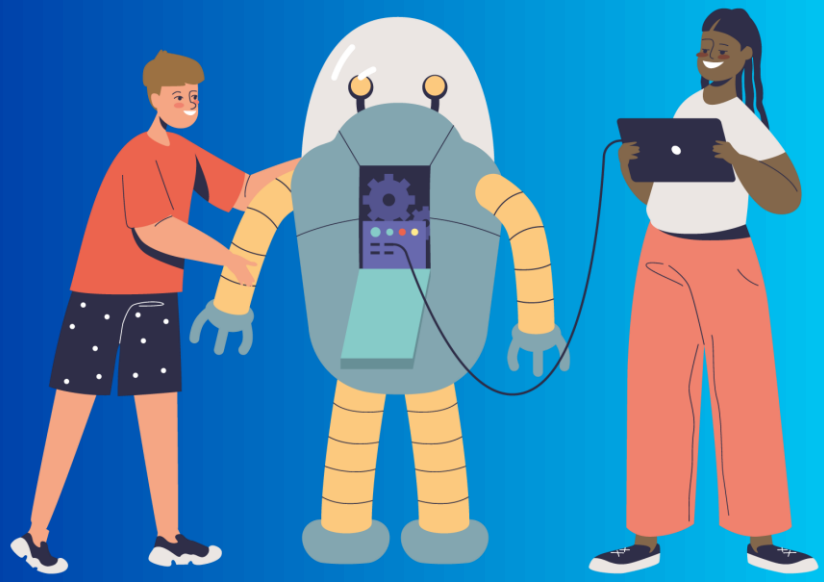

DOING MORE
TOGETHER
STEAM
IN OULU

The STEAM process

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

STEAM process

1. Objective
2. Task
3. Backround
4. Ideation
5. Planning
6. Execution
7. Sharing



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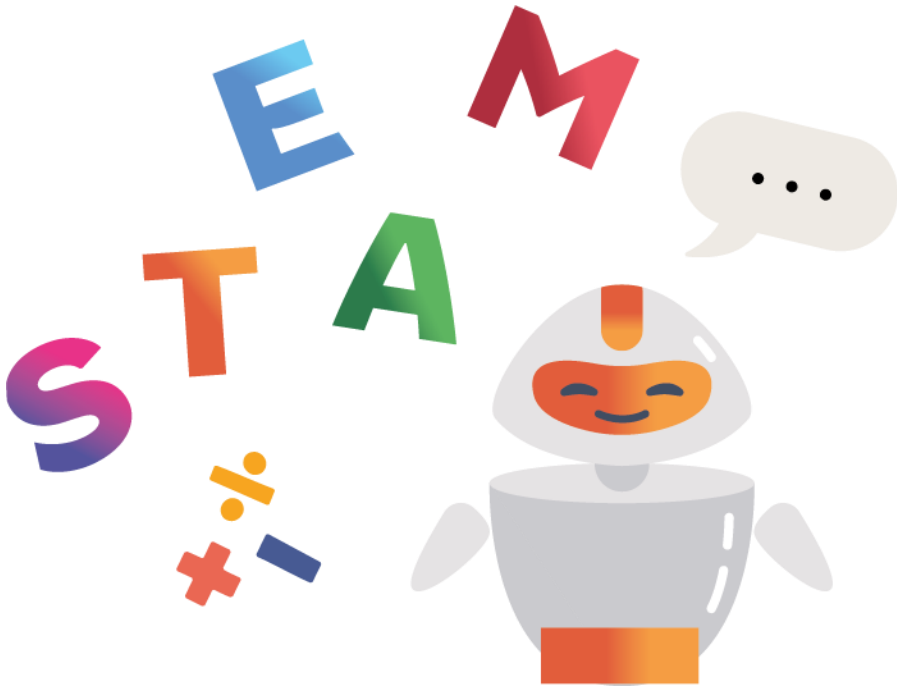
steaminoulu.fi

1. Objective

At the center of the process are the learning goals that are set in the planning phase. The goal identifies multidisciplinary knowledge goals and transversal skill goals to which the STEAM implementation is linked to.



1. Objective

Explore the STEAM process

Explore one of the SDG’s (Sustainable Development Goals)

Collaboration skills

Negotiation skills

2. Task

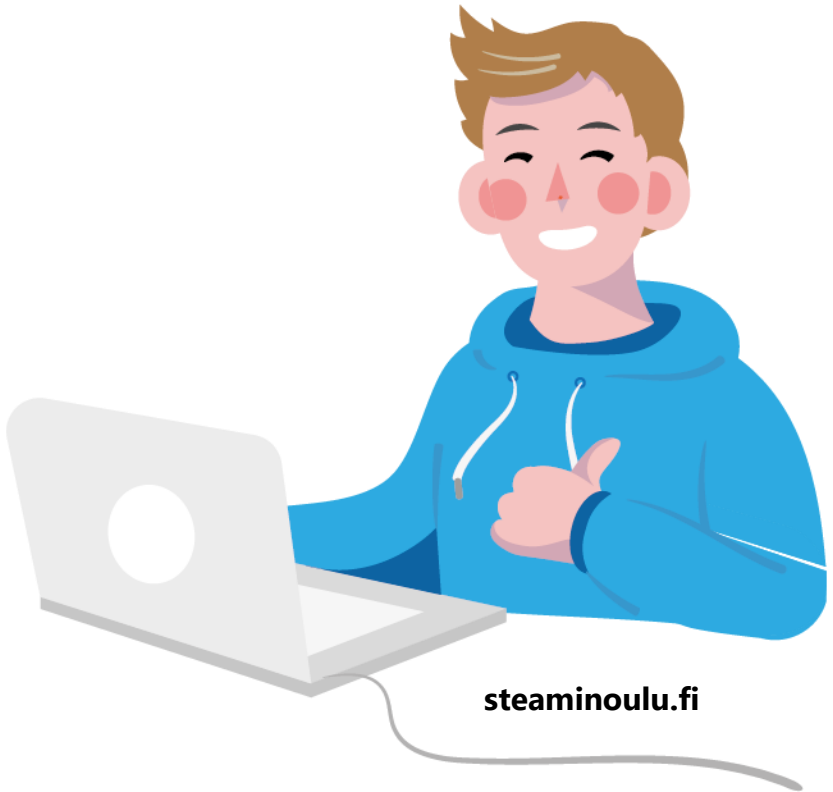
At the beginning of the STEAM process, we tune into the activity, define and present the period´s theme and/or problem, which can be very broad or strictly limited. Learners are told the goals defined for the period, what will be done, why and for how long. Activities usually take place in groups, so it is also important to define the roles and responsibilities within the groups during the task phase. For example, different games, sound or videos can be used as ways to tune in to the project.

2. Task

Plan and execute a machine or a modern building that could bring a solution to one of the chosen SDG's

3. Background

In the backround phase learners actively function as collectors of the necessary information and as researchers related to the given theme. They get to explore the matter and build the necessary knowledge base. The key is that especially children and young people are taught how to form good questions. At first, we find out what kind of information about the theme and the problem already exists. It is good to ensure that learners find and use a variety of information sources. The observations made by the learners themselves are often used to gather information. In connection with the observation, for example, you can visit the object and interview other people about the theme. As a result of the phase, the learners have a good understanding of the theme or object, possibly the needs of the users and the challenges related to use.



STEAM process

What do we already know?
⇒ Share
What do we want to know?
What do we need to know?
⇒ Make good questions
⇒ Search for meaningful answers
⇒ Share everything
⇒ Collect all the data in one place

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3. Background

Group chooses one of these goals. First write what you already know about the goal and learn more about it here:

[THE 17 GOALS | Sustainable Development (un.org)]

30 min

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4. Ideation

In the ideation phase the material collected in the background work phase is utilized. In the groups, we focus on ideation and look for possible solutions related to the task. The goal is to generate a lot of different ideas, so an open attitude towards all ideas is important, and judging them should be avoided in order to maintain a creative and positive mind. By combining ideas, they can often become a completely new solution, and the resulting refined ideas are shared by the group. As a result, the group has developed one or even more solutions, which they take to further development.

4. Ideation

1. Each group member brainstorms alone at first.
You can draw, write, create a mind map etc.

2. Share your ideas for the group.
Talk about similarities and differences.
Brainstorm together.
Don’t plan or make any decisions yet.

20 min

5. Planning

In this phase solution ideas can be initially sketched, for example, on paper, what it would look like or how it would work. The most important thing is to find a design method suitable for your own solution. In planning, it is possible to create so-called light prototypes, which can be used to quickly test the functionality of the solution. The most suitable versions are selected for the next step. We try to look at our own and others' plans through the eyes of the final user. In the planning phase, the so-called "improving", where the group's own solutions develop by learning from the solutions made by others.

5. Planning

Now it’s time to start planning!

Use some idea from every group member

Be creative! Be brave!

You can take a look at the materials first.

Don’t build, just plan.

20 min

6. Execution

In this phase we make the first more accurate prototype of the solution. At this stage, the right materials and techniques are used to produce the final solutions. When the first version of the solution is completed, it is evaluated and feedback is collected. In the implementation phase, several manufacturing or implementation experiments can be done iteratively until it is concluded that the solution and its production process have been perfected.

6. Execution

Start building the proto type of your machine or building.
Prepare to share your process and
the solution you've created

30 min

7. Sharing

In the sharing phase the groups present their achievements to the others. In addition to the prototype/solution, the presentation tells what the group has done in the different stages of the process and why. Repetition implemented in this way helps learners to adopt the process even more strongly. Reflecting on one's actions and decisions is also key in the sharing phase. In addition, it is good to practice your own solution, the so-called "pitching". In addition, you can also learn about communication and marketing.

7. Sharing

Every group tells about their process

and

about the solution they’ve created.

Groups get feedback from on other group

15 min