Design Principles and Methods Toolkit for Supporting Science Learning Outside the Classroom

Introducing the Design Principles

The **Design Principles build on the knowledge and experiences of the science education practitioners and learners** involved in the SySTEM 2020 project and have been generated through a co-design process. Based on the feedback and contributions of SySTEM 2020 partners, **science learning outside the classroom is framed as an inter- and transdisciplinary field**, in which arts and humanities are also central.

A design principle is a proposition that serves as the foundation for a system. Thus, the design principles formulated for supporting science learning outside the classroom provide **general guidelines for designing science learning activities in non-formal education environments**. They are intended as a starting point to aid and inspire educators and pedagogical coordinators, helping them reflect on their practice.

The design principles included **in this toolkit have been grouped in three different areas**, according to what is the main purpose of the design: **design for everyone, design for experience and design for growth**. While these areas are not exclusive, they help to identify entry points to the principles based on each one specific needs. The design for everyone principles are strongly related to equity and highlight issues around access, diversity and inclusion in science education outside the classroom. Thus, **we encourage the non-formal science education community to consider the principles based on design for everyone as the foundation** of any activity they undertake.

Kersnikova Institute

Kersnikova Institute is a non-for-profit organization that produces and incubates contemporary investigative art projects that focus on impacts of science and technology on contemporary society. It encourages, facilitates and showcases investigative artistic practices and projects, creates a public debate, engages citizens into science, stimulates a critical understanding of the time we live in and educates children and young people by using investigative learning approach. https://kersnikova.org/en

SYSTEM 2020

The SySTEM 2020 Project, coordinated by Science Gallery at Trinity College Dublin, aims to tackle scientific literacy and STEAM education of children and teenagers, in order to support our future citizens in this world of fast-evolving science and technology. SySTEM 2020 is focusing on science learning outside the classroom, mapping the field across Europe, evaluating a number of transdisciplinary programmes to design best principles for educators in this field, and also examining individual learning ecologies by piloting self-evaluation tools for learners.
Main partners: Science Gallery Dublin (IE), Waag Society (NL), Ars Electronica (AT), Ecsite (BE), Aalto University (FI), Centre for Social Innovation (AT), Kersnikova Institute (SI), Museo Nazionale Scienza e Tecnologia Leonardo da Vinci (IT), LATRA (EL), Centre for Promotion of Science (RS), Bloomfield Science Museum (IL). https://system2020.education/