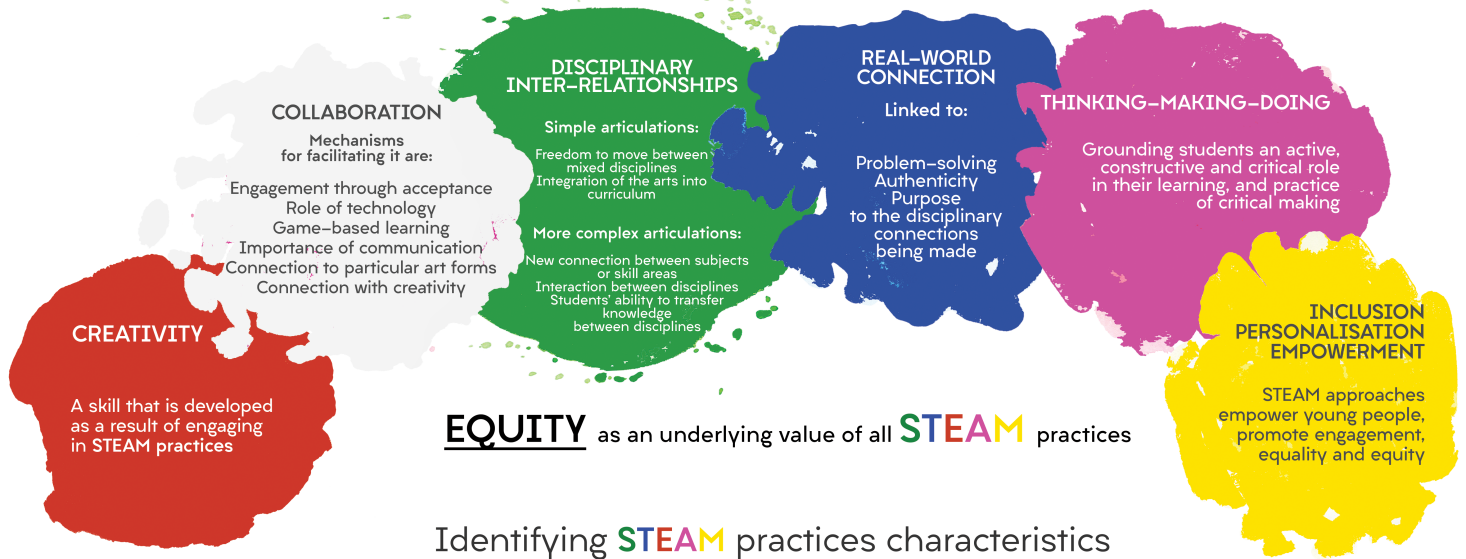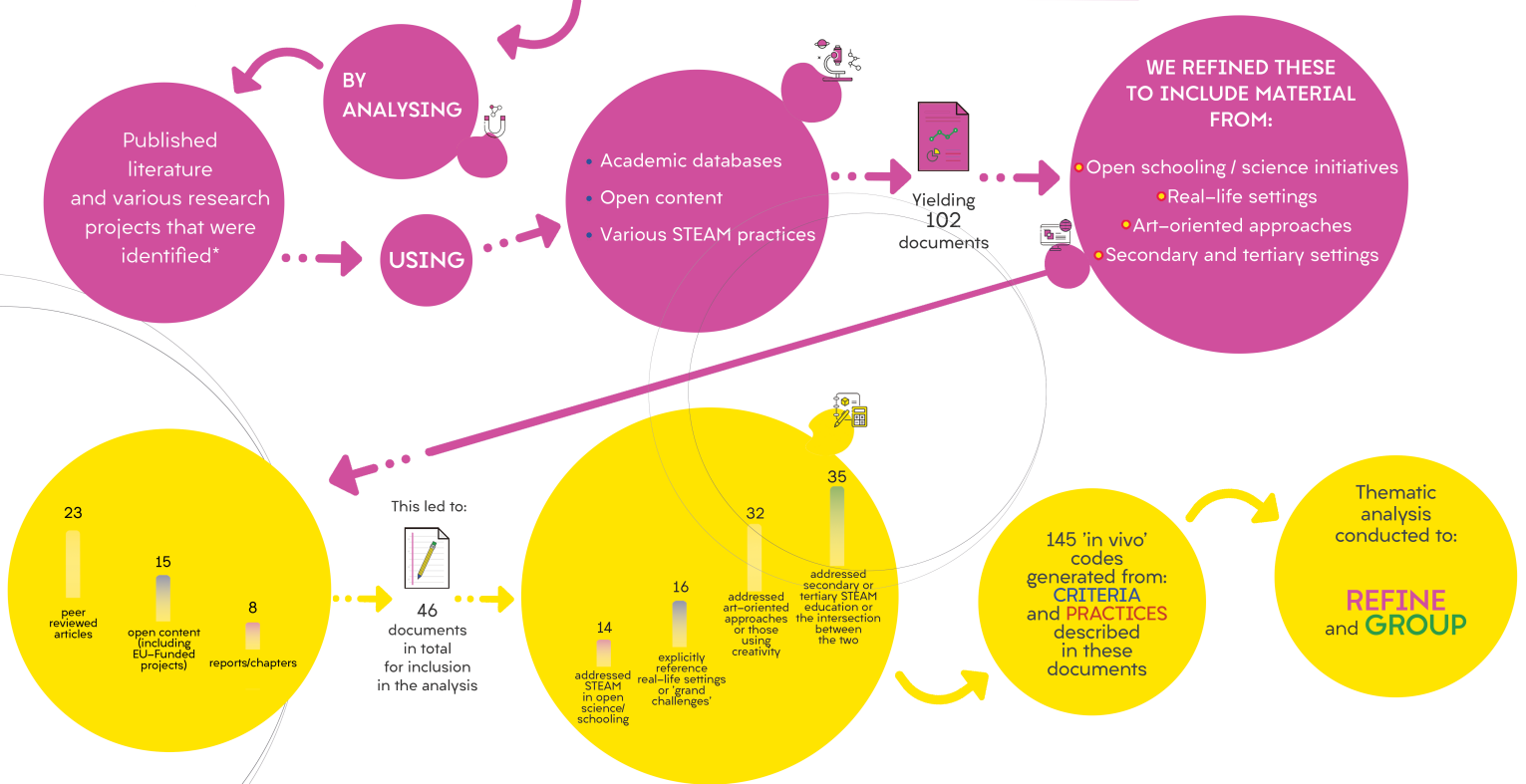# Characteristics for STEAM activities and projects

Road–STEAMer is using these characteristics as criteria for mapping and analysing STEAM practices in Europe

COLLABORATION

Mechanisms for facilitating it are:

Engagement through acceptance
Role of technology
Game–based learning
Importance of communication
Connection to particular art forms
Connection with creativity

DISCIPLINARY INTER-RELATIONSHIPS

Simple articulations:

Freedom to move between mixed disciplines
Integration of the arts into curriculum

More complex articulations:

New connection between subjects or skill areas
Interaction between disciplines
Students' ability to transfer knowledge between disciplines

REAL-WORLD CONNECTION

Linked to:

Problem–solving
Authenticity
Purpose
to the disciplinary connections being made

THINKING-MAKING-DOING

Grounding students an active, constructive and critical role in their learning, and practice of critical making

CREATIVITY

A skill that is developed as a result of engaging in STEAM practices

INCLUSION PERSONALISATION EMPOWERMENT

STEAM approaches empower young people, promote engagement, equality and equity

EQUITY as an underlying value of all **STEAM** practices

Identifying STEAM practices characteristics

BY ANALYSING

Published literature and various research projects that were identified*

USING

- Academic databases
- Open content
- Various STEAM practices

Yielding 102 documents

WE REFINED THESE TO INCLUDE MATERIAL FROM:

- Open schooling / science initiatives
- Real–life settings
- Art–oriented approaches
- Secondary and tertiary settings

This led to:

46 documents in total for inclusion in the analysis

23 peer reviewed articles
15 open content (including EU–Funded projects)
8 reports/chapters

14 addressed STEAM in open science/schooling
16 explicitly reference real-life settings or 'grand challenges'
32 addressed art–oriented approaches or those using creativity
35 addressed secondary or tertiary STEAM education or the intersection between the two

145 'in vivo' codes generated from: CRITERIA and PRACTICES described in these documents

Thematic analysis conducted to:

REFINE and GROUP

What is the Road–STEAMer project about?

road STEAMER

aims to create a STEAM roadmap

Science | Technology | Engineering | Arts | Math

for science education in Horizon Europe and continental educational policy

ROAD STEAMER | the Lisbon council think tank for the 21st century | POLITECNICO MILANO 1863 | ELLINOGERMANIKI AGOGI | esha European School Heads Association | ecsite | BLOOMFIELD SCIENCE MUSEUM JERUSALEM | TRACES | University of Exeter | ENGINEERING | ZSI | COPERNICUS SCIENCE CENTRE