



Introduction to Deliverable 2.2 – A Theoretical
Framework for STEAM practice

Dr Lucy Yeomans
Assoc Prof. Kerry Chappell
Assoc Prof. Lindsay Hetherington
Mx Harriet White



Road-STEAMer attempts to develop a STEAM Roadmap for Science Education in Horizon Europe and in educational policy across the continent in order to:



01

To produce better knowledge and shared understanding of Europe's particular educational needs and how STEAM can address them

02

To explore the opportunities arising through STEAM for integrated science learning approaches and synergies

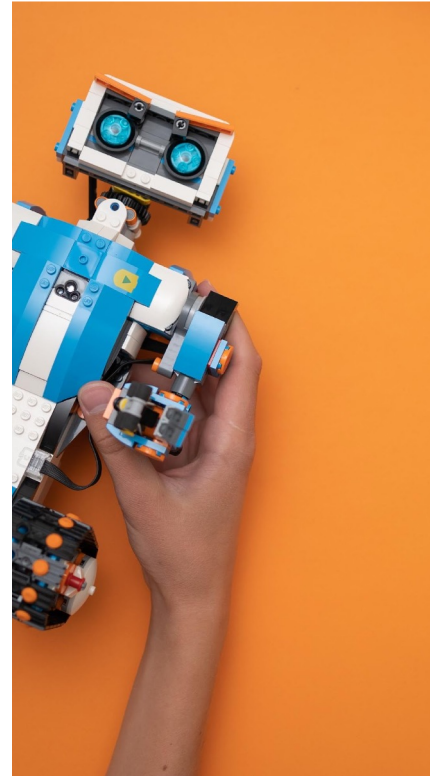
03

To study those policy deficiencies that hinder the impactful adoption of STEAM approaches in Europe's science education landscape



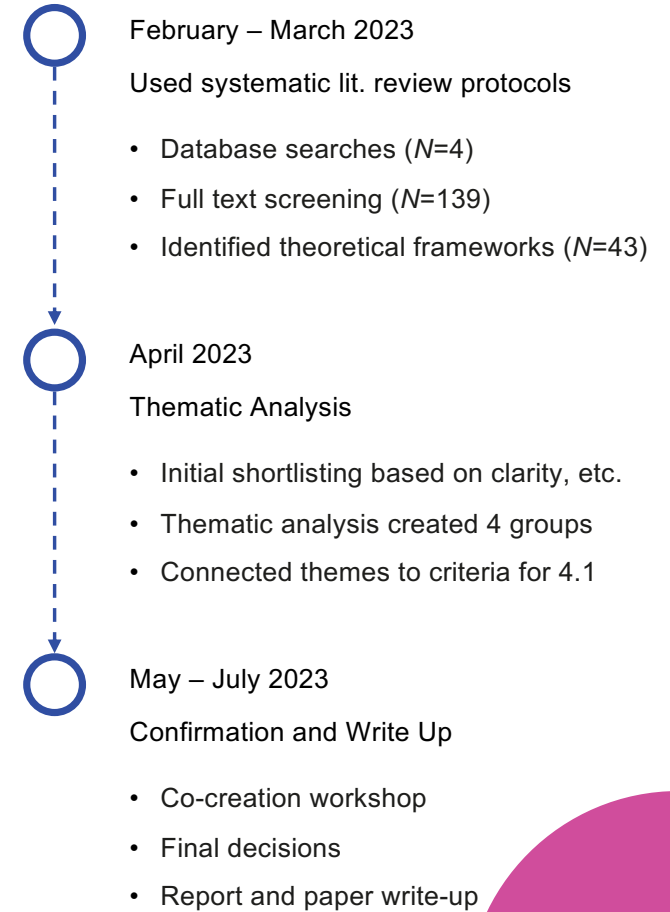
Deliverable 2.2

Develop a comprehensive conceptual framework for STEAM aiming to cover all its aspects and promised positive impacts



Our Timeline

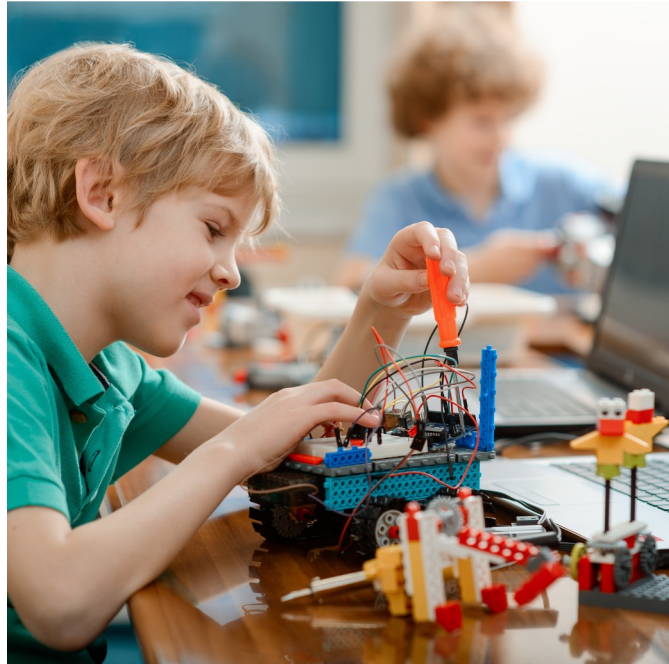
Methodology





Thematic Workings





Relational ontology via four approaches

Experiential Real World Interactions

- Aesthetics
- Active Learning
- Dewey/Learning Through Experience
- Model of Educational Reconstruction
- Constructivism
- Creative Inquiry for Transdisciplinarity

Human, Psychological and Cognitive Approaches

- Creative Thinking
- Five Creative Dispositions Model
- Cognitive Development
- Bloom's Learning Taxonomy
- Resilience
- Resourcefulness
- Self-efficacy
- Torrance Tests of Creative Thinking

Social, Spatial and Material Interconnectivity

- Social Practice Theory
- Flow State
- Connected Learning
- Nexus Theory
- Social Network Theory
- SPACE-TIME and Culture
- Affirmative Ethics
- Slowing
- Transdisciplinarity

Culture and Equity

- Culturally Responsive Pedagogy
- Stereotype Threat
- Critical Pedagogy
- Social Justice Pedagogy
- SPACE-TIME and Culture
- Cultural Competency
- Identity Theories
- Narratives



Definitions



These approaches all place theoretical emphasis on elements of active experience, especially the learners'; they are often grounded in real world problems. They emphasise the nuances of experience through felt knowledge and interaction with the world.



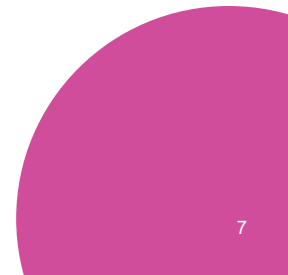
These approaches are grounded in the psychological tradition and demonstrate cognitive theorisations (focused on mental activities or thinking of varied kinds). Nuances are understood in terms of self-driven competences and skills often articulated in frameworks, or as sets of processes, which bring individuals and groups of individuals into interaction with the surrounding environment.



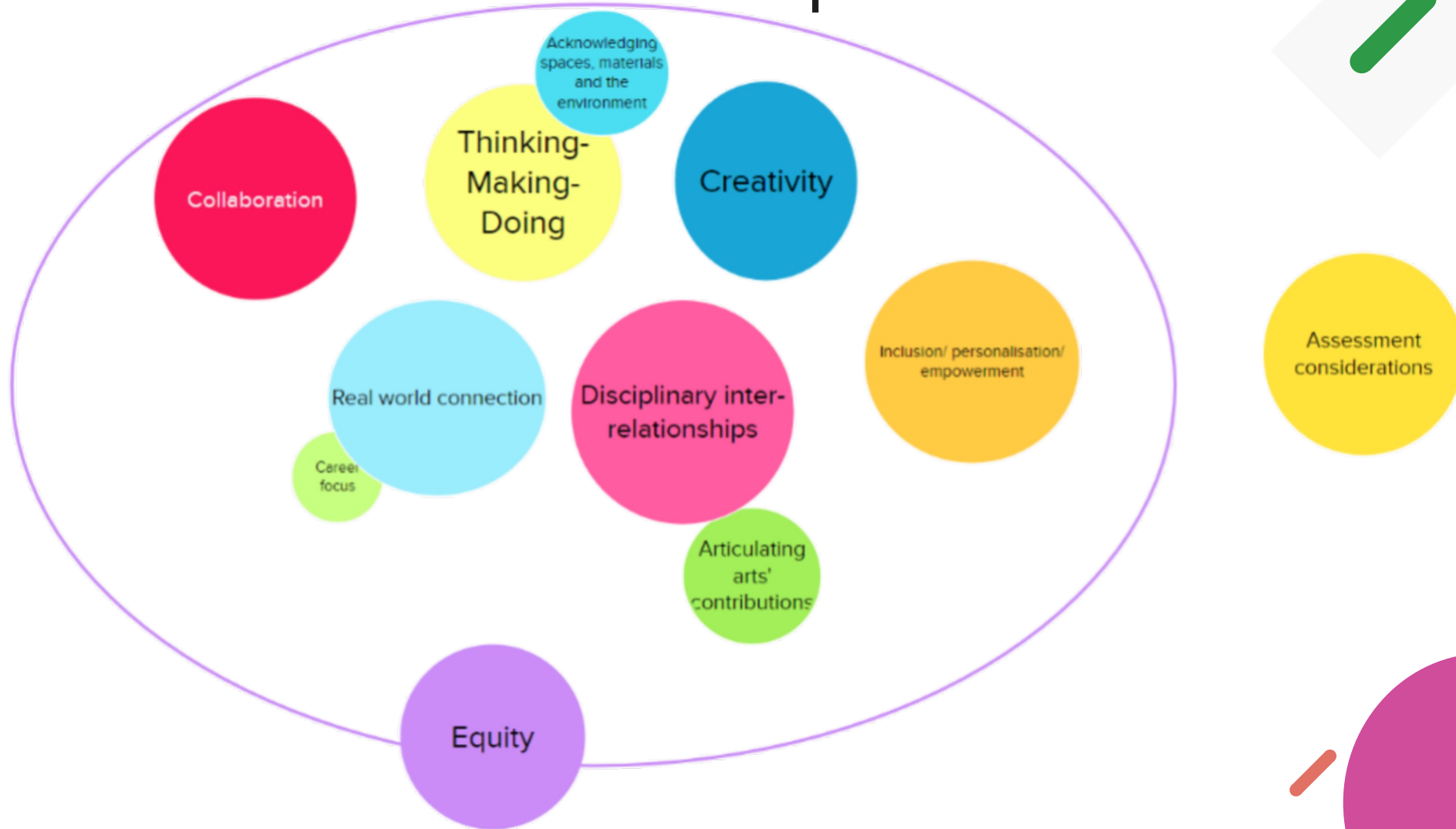
These approaches theorise through an emphasis on interconnectivity taking into account human beings in relation to many kinds of others including material elements, space, time, affect. Nuances of interconnection are considered through connection-making, nexuses, networks, processes such as slowing and flow.



These approaches use cultural theorisations (considering collective ideas, customs and behaviours) which often stress equity of inclusion. Nuances are understood through cultural processes/elements such as space, time, identity, narrative, justice and power .

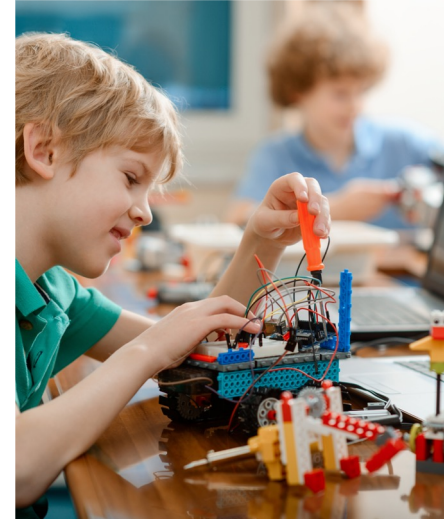
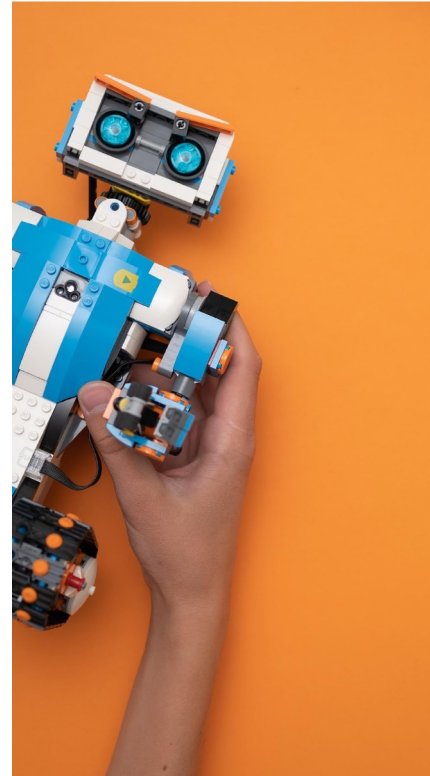


4.1 Criteria for STEAM practice



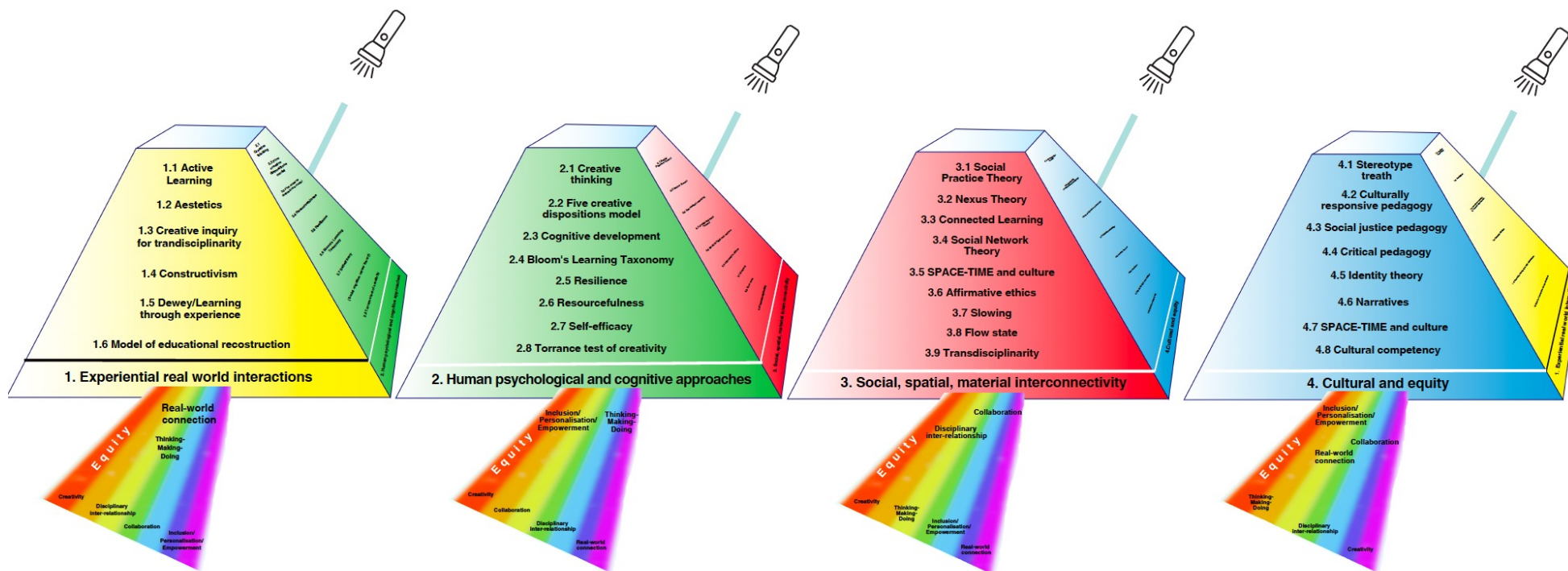


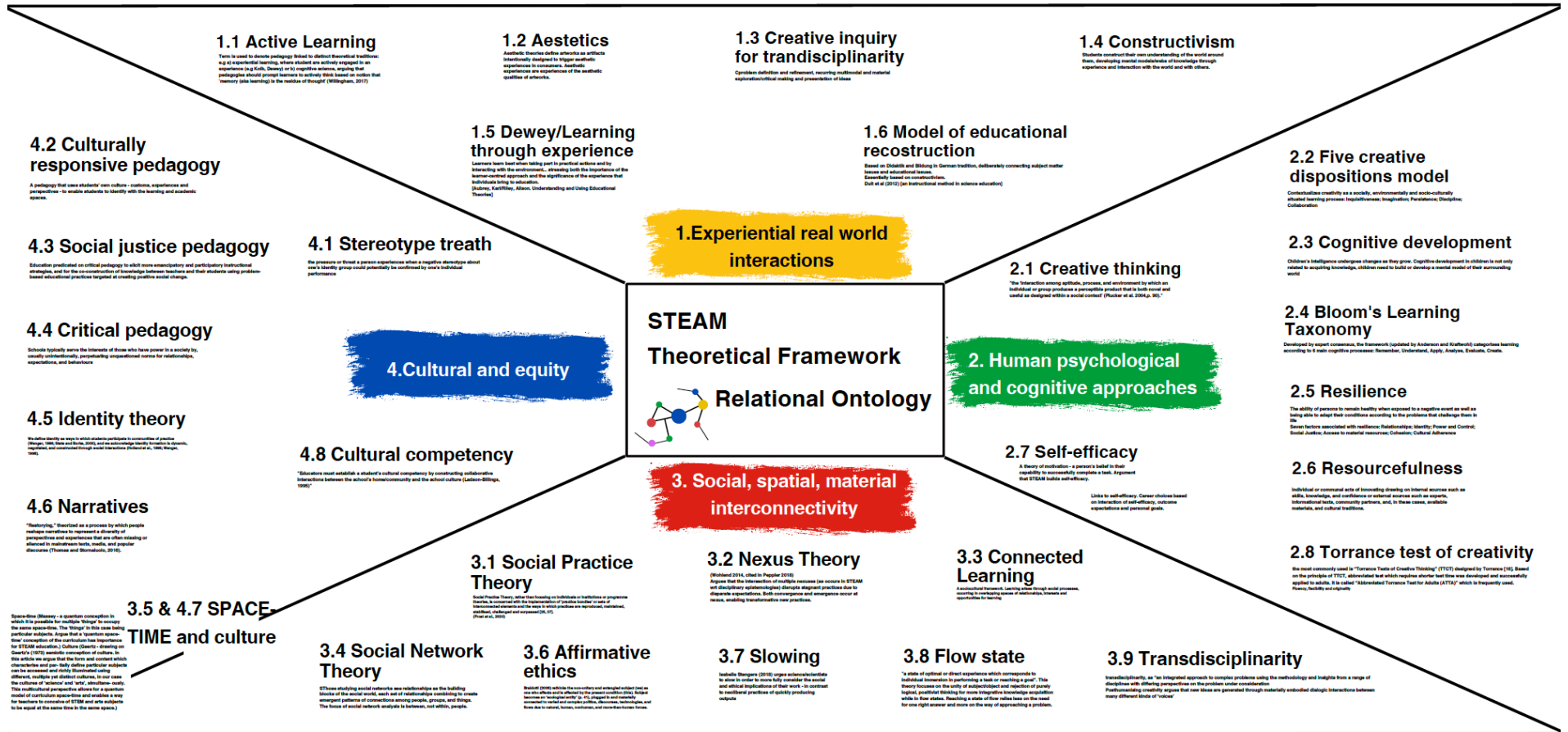
Using the framework as lenses for the criteria

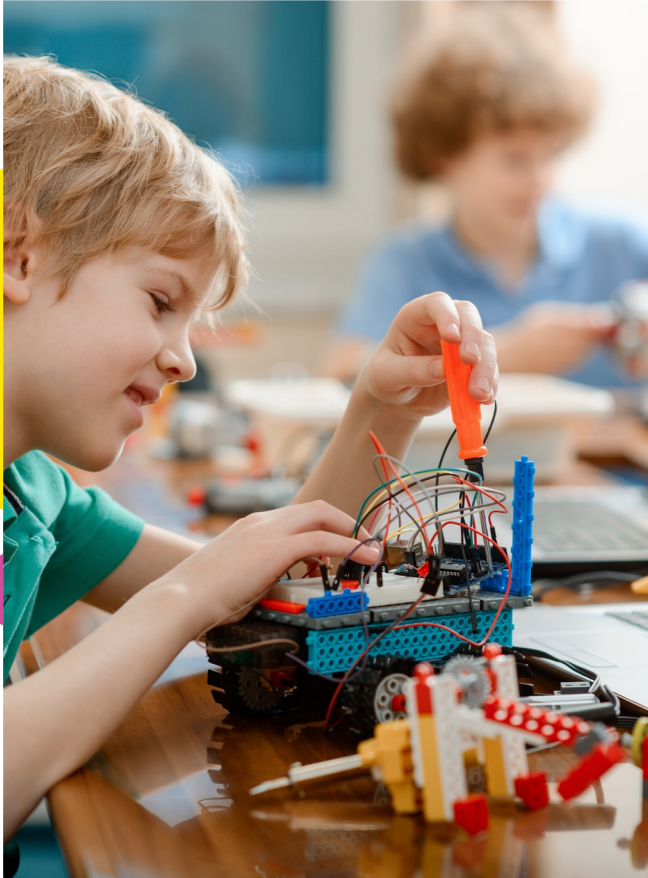




D2.2 Theoretical Framework Relational Ontology







Questions

- *Does this make sense as a way to consolidate a conceptual framework for STEAM?*
- *What do you think about the visualisation?*

Thank You

