

The big „A” in STEAM

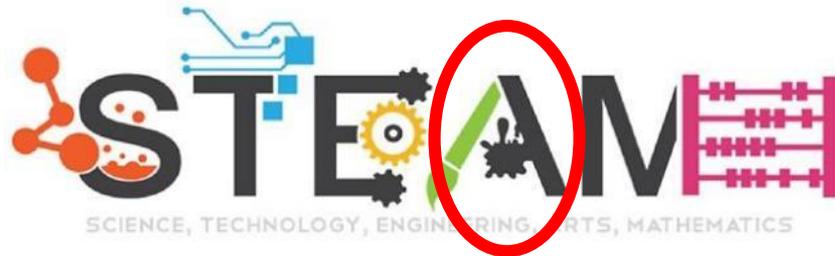
integrating art, technology and science education
in the Austrian community programs
at the Venice Architecture Biennale, 2018

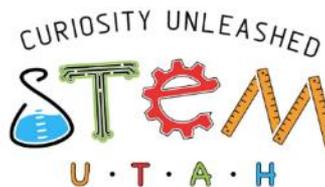
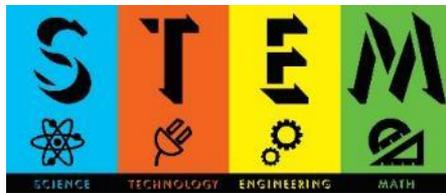
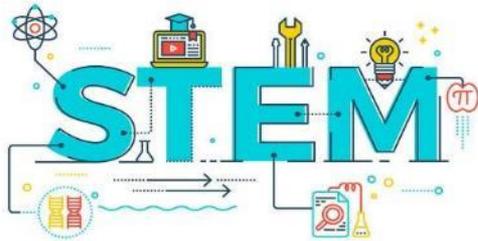
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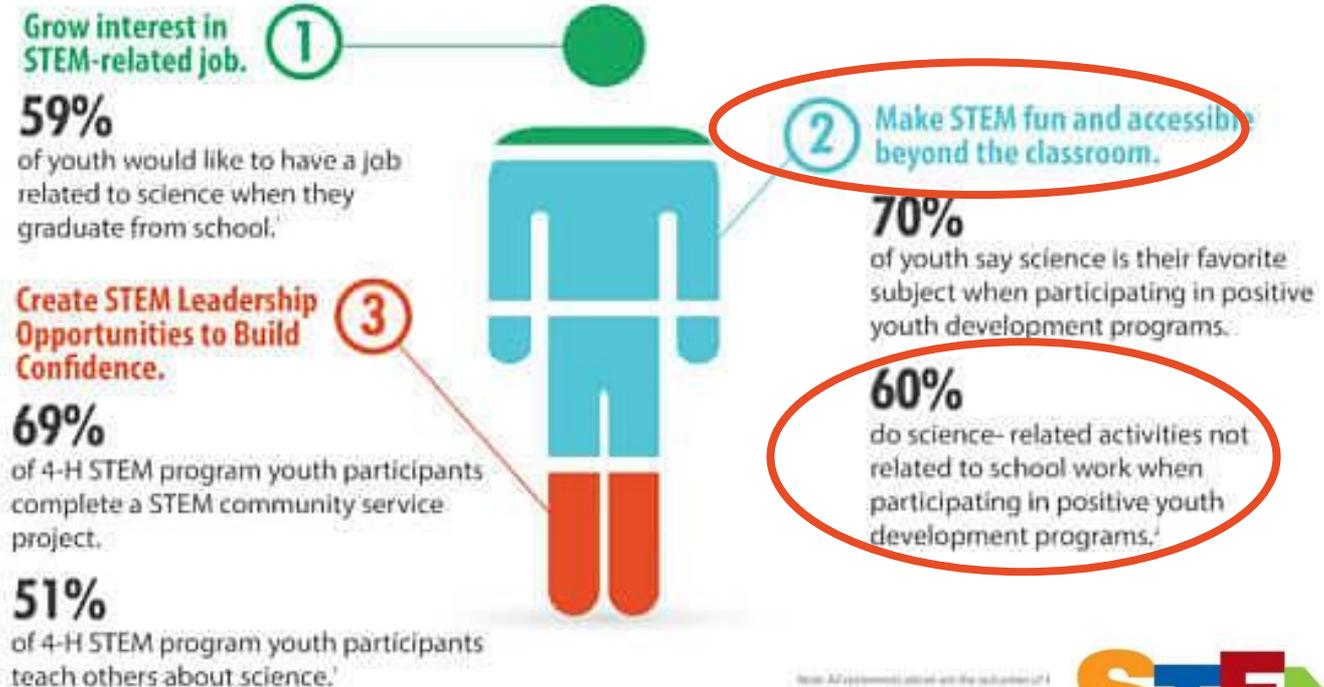




What is **STEM**?

S	T	E	M
SCIENCE	TECHNOLOGY	ENGINEERING	MATH
<p><i>Observing, experimenting, making predictions, asking questions</i></p>	<p><i>Being inventive, using tools, making things work, identifying issues, using computers</i></p>	<p><i>Solving problems, using materials, designing and creating, building</i></p>	<p><i>Patterning, sequencing, exploring shapes, numbers, volume and size</i></p>

Top Ways to Attract Youth to STEM

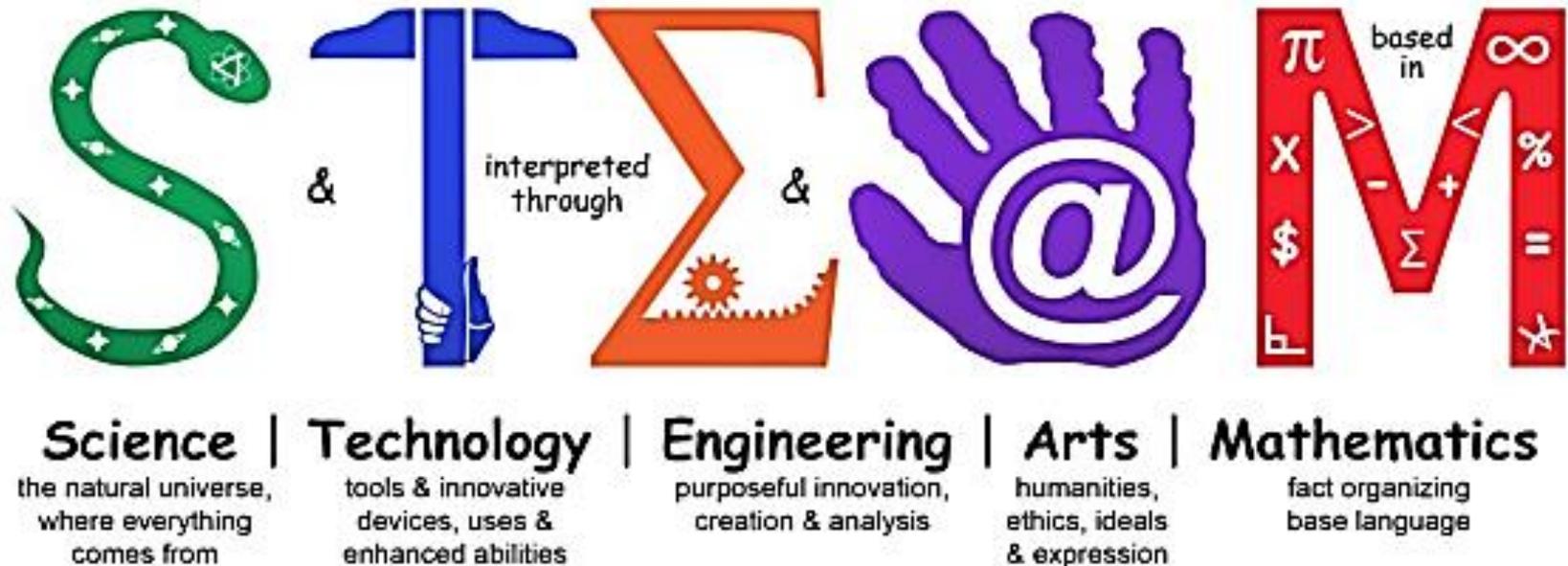


Youth subculture studies prove that technology and arts in synergy are top peer learning activities in nonformal **Visual Culture Learning Groups**.

(Freedman et al, 2013, Kárpáti et al., 2016)

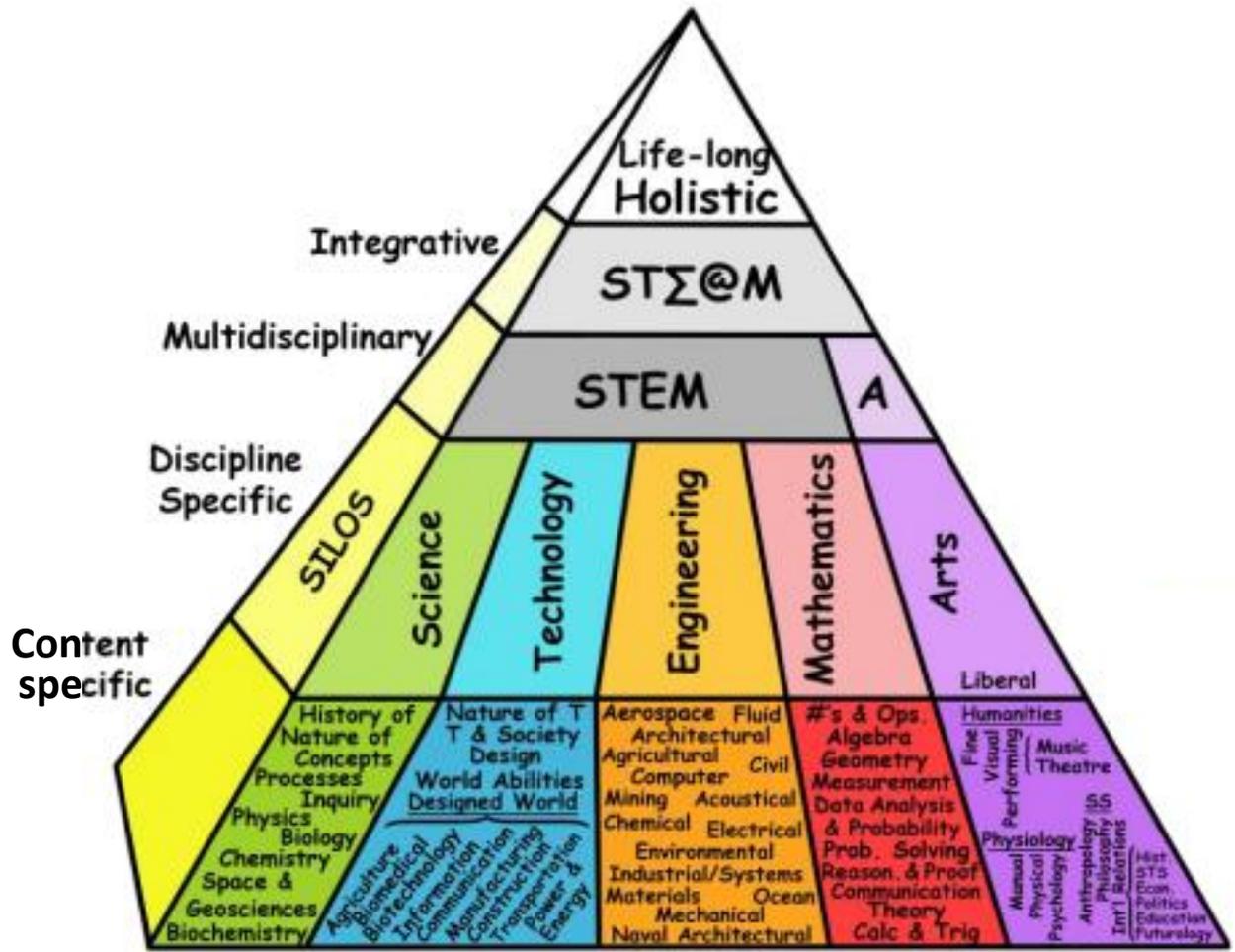


Flagship STEM toy: Rubic's Cube



STEAM is a curriculum design model based on educating students in an **interdisciplinary and applied approach.**

STEAM integrates 5 disciplines into a cohesive learning paradigm based on **real-world applications.**



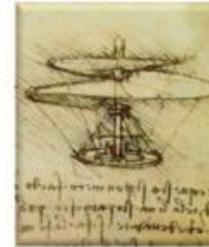
www.STEAMedu.com ©TM© 2006-2015 G. Yakman

[STEAM Education Program Overview](#)

[A STEAM school in India, 2017](#)

[STeAM at Perth College, Anglican School for Girls, in Western Australia](#)

Including the Arts



S-T-E-M with the A includes;

- sharing knowledge with **language** arts,
- a working knowledge of **manual** and **physical** arts,
- better understanding the past & present through **fine** arts.
- understanding developments with **social/liberal** arts...



including: sociology, psychology, history, politics, philosophy, education, etc.

A legal educational alternative in the US

H. Res. 51: the „STEAM LAW“:

Expressing the sense of the House of Representatives that

adding art and design into Federal programs that target the Science, Technology, Engineering, and Mathematics (STEM) fields

encourages innovation and economic growth in the United States

→ **Functional** technical and visual competency

Learning theories supporting STE(A)M education: Constructivism & Problem Based Learning

Commitment

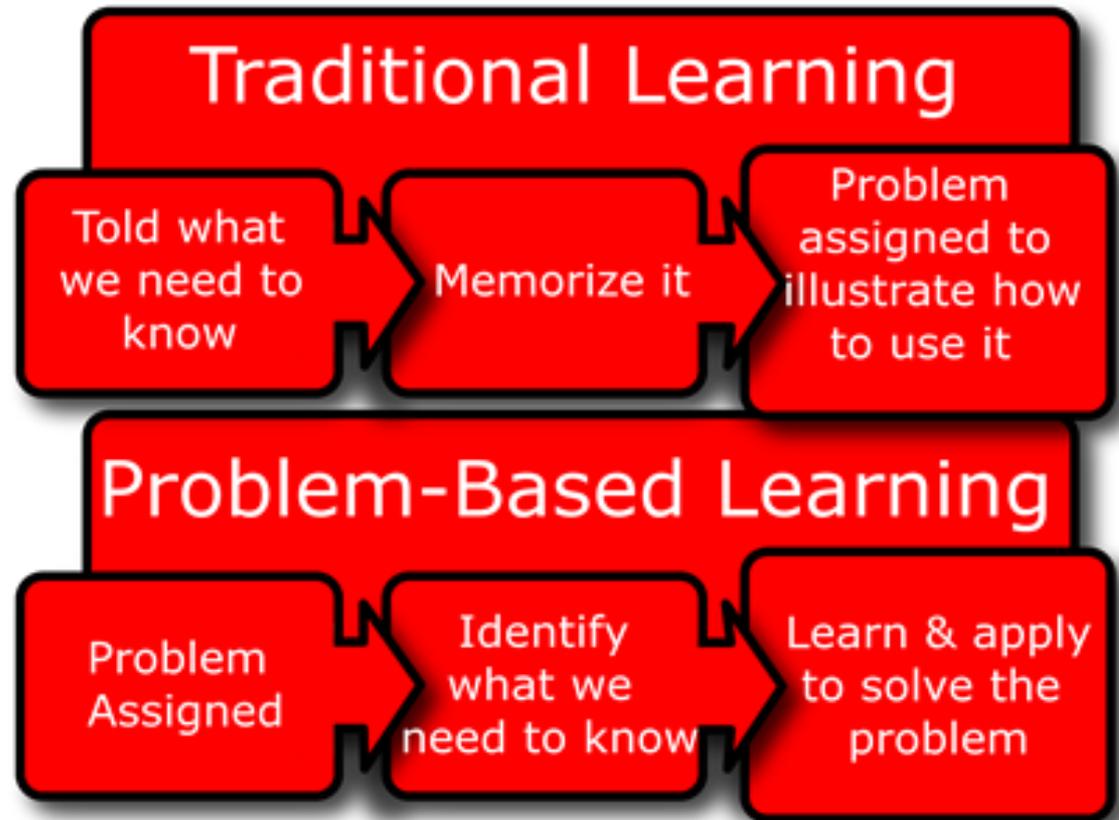
Engagement

Generativity

Performance

Reflection

Understanding



STEAM at the Bauhaus

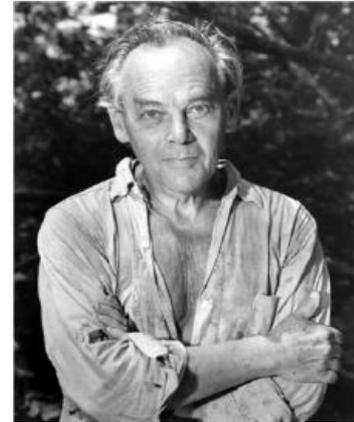
László Moholy-Nagy
(1895-1946)

Leader of the preliminary course at the Bauhaus with Josef Albers, described New Vision, invented the photogram and pioneered multimedia art.



George Kepes (1906-2001)

Painter, photographer, designer, educator, and art theorist. Tutor at the New Bauhaus, founder of the Center for Advanced Visual Studies at MIT

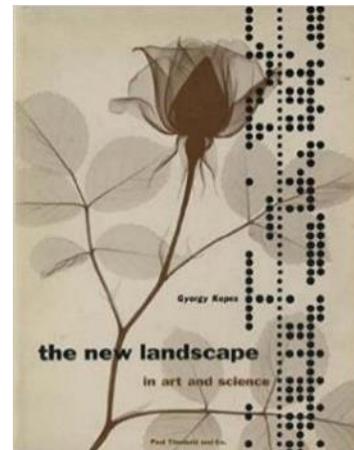
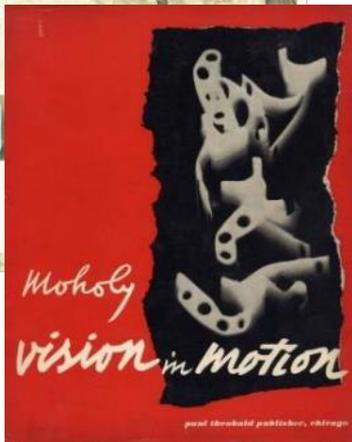
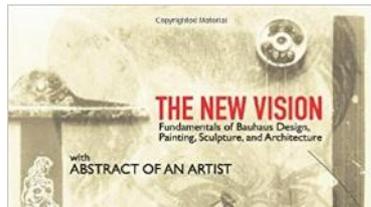


Synergy of art, design and science

Modular structure for instruction:

- „Basic course” – foundations of visual literacy
- Specialization + interdisciplinary projects

Research on art in society:
development of competences instead of teaching stylistic conventions





VENICE, 26.05 - 25.11 2018

BIENNALE ARCHITETTURA 2018

16TH INTERNATIONAL ARCHITECTURE EXHIBITION

„*Freespace* can be a space for opportunity, a **democratic space**, un-programmed and free for uses not yet conceived. There is an **exchange between people and buildings** that happens, even if not intended or designed, so buildings themselves find ways of sharing and engaging with people over time, long after the architect has left the scene. Architecture has an active as well as a passive life.

Freespace encompasses freedom to imagine, the **free space of time and memory**, binding past, present and future together, **building on inherited cultural layers**, weaving the archaic with the contemporary.” (Yvonne Farrell and Shelley McNamara)

FRIROM
FREESPACE
खाली जगह
FREESPACE
SAORSPÁS
FREESPACE
СВОБОДНОЕ ПРОСТРАНСТВО
FREESPACE
フリースペース

La Biennale di Venezia

Arte
Architettura
Cinema
Danza
Musica
Teatro
Archivio Storico

Giardini and Arsenale
Orario / Opening Hours
10am–6pm
Chiuso il Lunedì
Closed on Mondays
labiennale.org

Biennale
Architettura
2018

Venezia
26.05–25.11



«*Freospace* describes a generosity of spirit and a sense of humanity at the core of architecture's agenda, focusing on the quality of space itself.

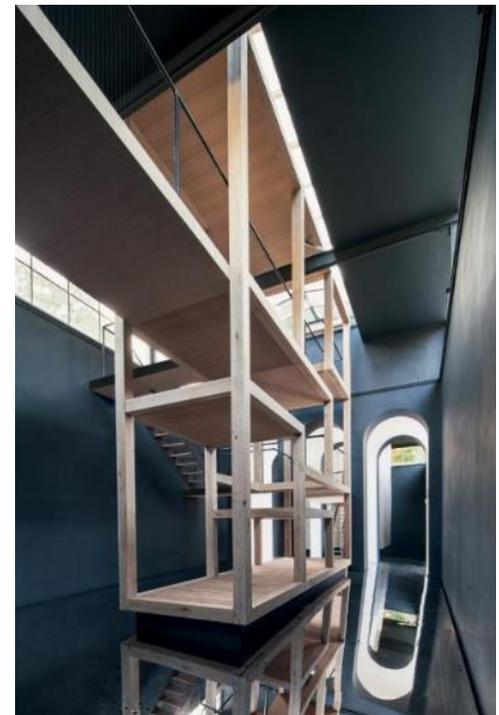
Freospace focuses on architecture's ability to provide free and additional spatial gifts to those who use it and on its ability to address the unspoken wishes of strangers. (Yvonne Farrell and Shelley McNamara, curators of the 16th International Architecture Exhibition)

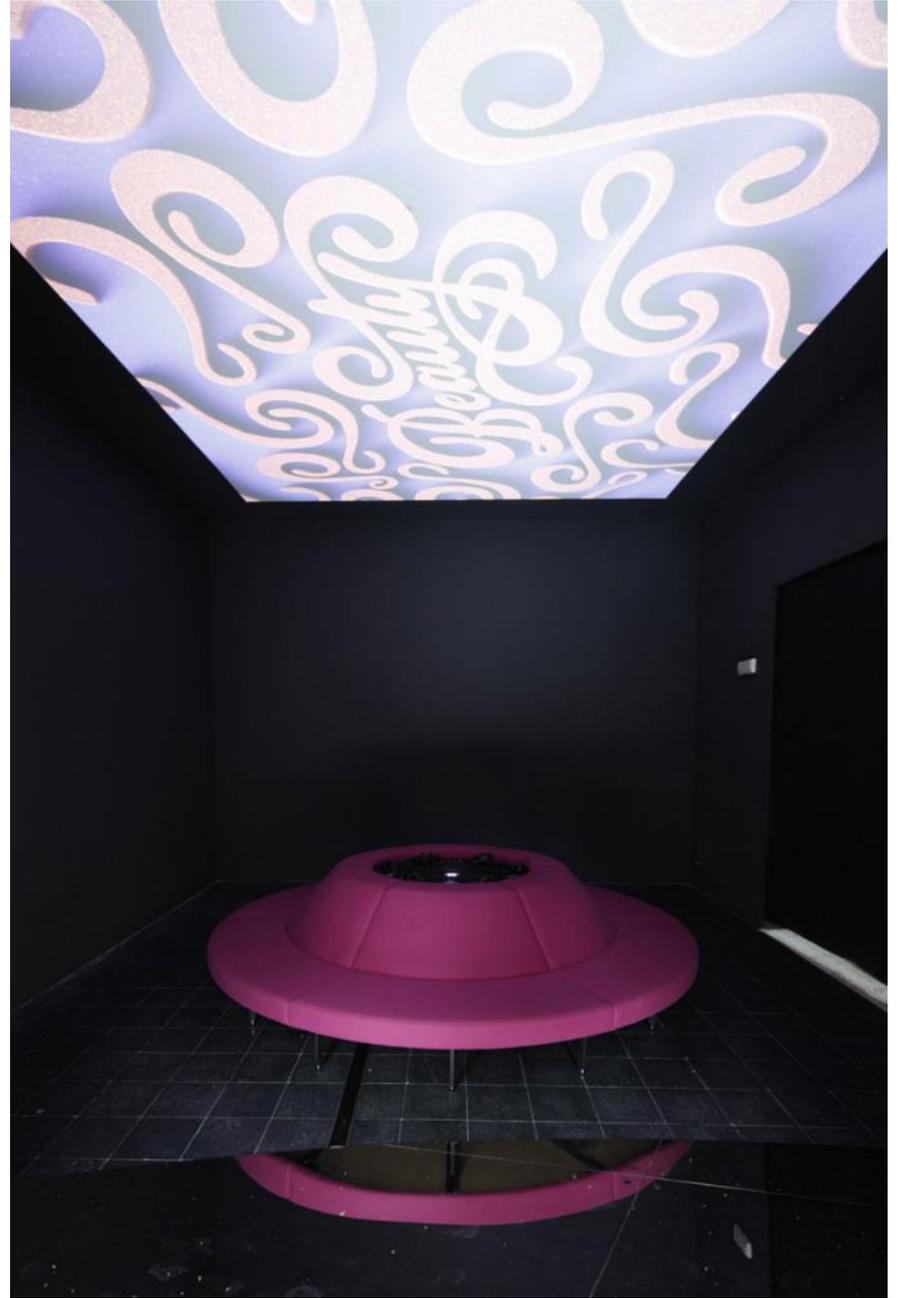
Biennale
Architettura
2018
Austrian
Pavilion

Thoughts
Form
Matter

„...is a plea for the power of architecture **as an intellectual analysis of the world** and for the **freedom to design spaces** that are not subject to functional and economic constraints.

LAAC, henke schreieck and [sagmeister & walsh](#) are creating a conceptually and materially complex **spatial installation** which draws together inside and outside, vertical and horizontal, the historic pavilion and the language of contemporary architecture and design.” ([Catalogue](#))







Target groups:
architects, structural engineers, landscape and spatial planners, educators, engineers, pedagogues, **sociologists, scientists, youth workers**, students & **political decision makers** in the context of built environment education.

„...opportunities for discussion and insights on an international scale by performing **hands-on workshops in public space** on site in Venice.”

Venice, 11-13 October 2018



International symposium
of architectural and built
environment education
for young people,
Venice, 11-13 October 2018



CAMERA URBANA – Anne-Chantal Rufer, [Association Ville en Tête](#), Lausanne, Switzerland

CITY OF RELATIONS – Päivi Kataikko-Grigoleit, [JAS – Jugend Architektur Stadt e.V.](#), Essen, Germany

CUCINA PUBBLICA – [Stiftung Freizeit](#), Berlin, Germany

SPAZIO.POSSIBILE – [Corina Forthuber](#), Vienna, Austria

UPSIDE DOWN – Maylis Leuret and Fanny Millard, [Association EXTRA](#), Bordeaux, France

URBAN MENUES – Laura P. Spinadel, [BOANET](#), Vienna, Austria



Venue: the backyard of Venice



URBAN MENUES — Laura P. Spinadel, [BOANET](#), Vienna, Austria



Aim: reflect on and co-create in an everyday open space in Venice

Participatory consensus techniques

Real-time virtual simulations: **Urban Menus → co-constructing 3D models**

1. Quickly simulate and visualize possible scenarios for desired futures
2. Virtually walk through and modify a model of a real open space of Venice,
3. Evaluate the effects of design actions on the open space at the environmental, cultural, social, political and economic dimensions
4. Formulate design / lifestyle recommendations about the city we share

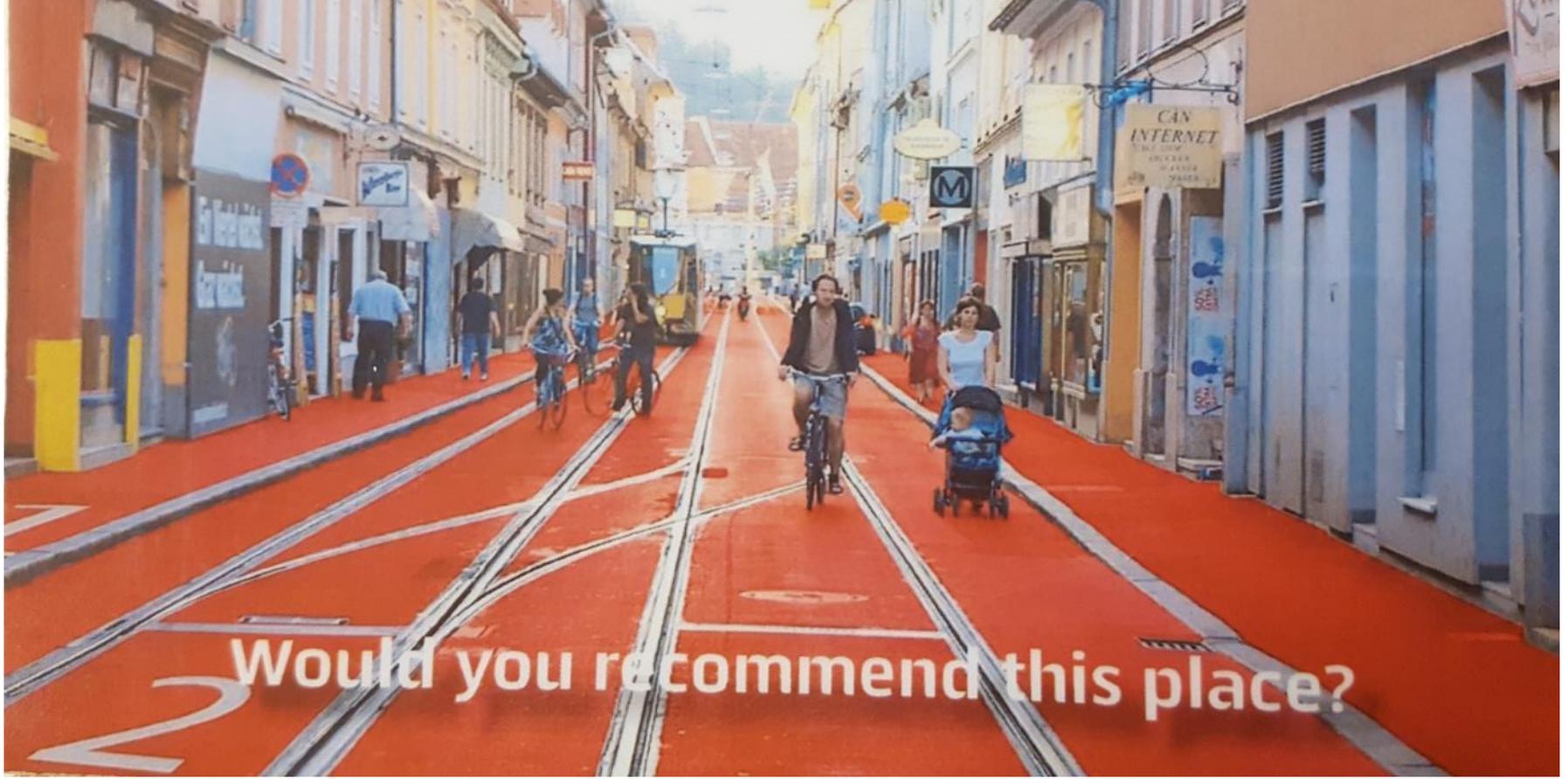
Biennale Sessions

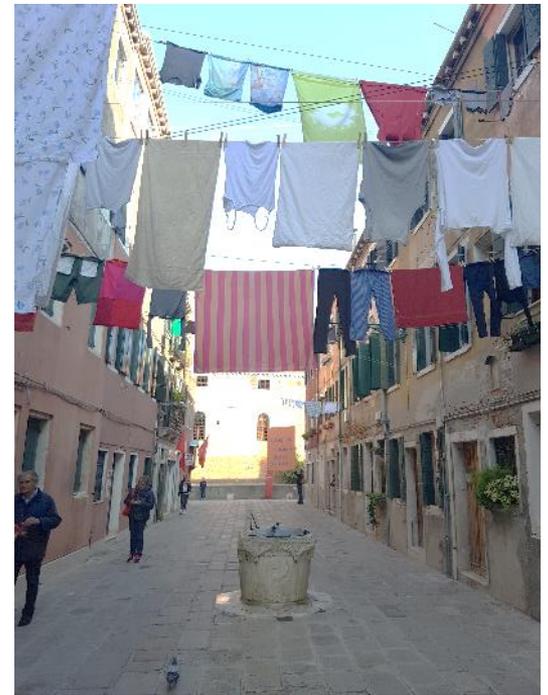
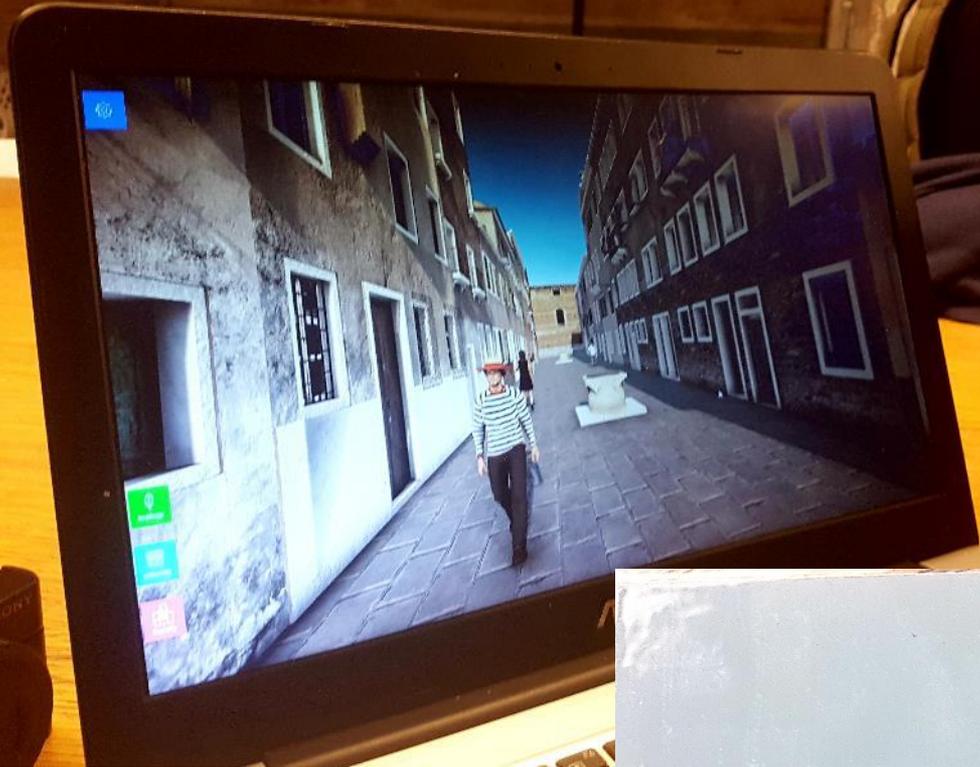
Art
Architecture
Design
Music
Performance
Public Space

ROLI









LAMPS glowing using **ALGAE**, one **TREE** producing energy using **WIND** and **SOLAR PANELS** will be added



GREEN AREA of 33 m² areas with HIGH GRASS and CLIMBING PLANTS on the facades will be added



Ecology

VOO

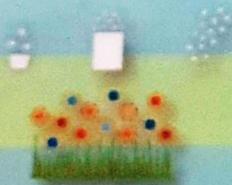
several colored SHADING elements are added between buildings at different points of the street



Ecology

VOO

CLIMBING FLOWERS and FLOWER POTS will be added to facades, as well as FLOWER CASKS along the street



Ecology

VOO

urban gardening elements will be added to the public space: FACADE POTS, BOXES and A STREET GARDEN



Ecology

VOO

LAMPS glowing using ALGAE, one TREE producing energy using WIND and SOLAR PANELS will be added



Ecology

VOO



RIFONDAZIONE
COMUNISTA
SEZ. 7 MARTIRI

2061 A

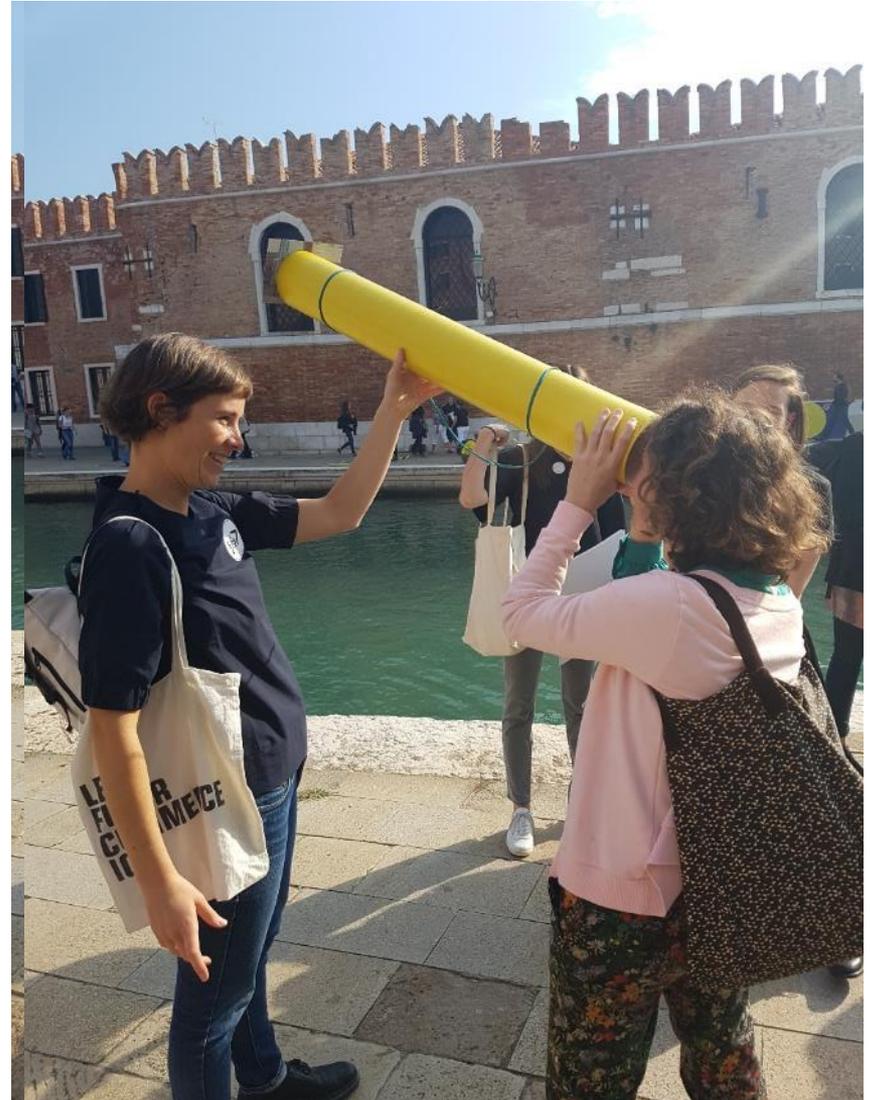
SEZ. CASTELLO
7 MARTIRI

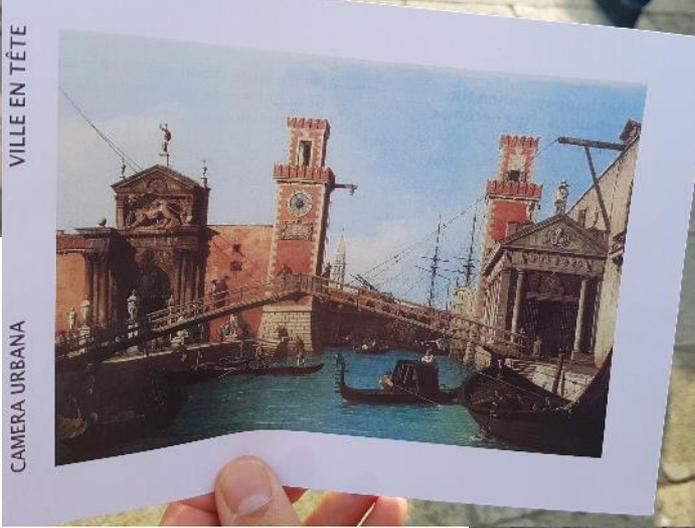
2061

CAMERA URBANA – Anne-Chantal Rufer, Association Ville en Tête, Lausanne, Switzerland

Designing public space as a creative game of constraints - a set of rules - through which we can discover the needs and realities of our society.

1. **Analysis of the constraints** that shaped the public space in Venice
2. Framing devices reveals hidden aspects for passers-by
3. **Engage** them in a discussion with the workshop team
4. **Compare** the Venetian situation to other familiar urban conditions → database of public space projected
5. **Question** the actual public space
6. **Improve understanding** of situations they are familiar with through comparisons





VILLE EN TÊTE

CAMERA URBANA

1

What happens when the
«forbidden city» becomes
accessible?

walls
gates
activities
openings
crossings

Please write down some references
of public space you associate with
this question.

.....

.....

.....

.....

.....

.....

.....



SPAZIO.POSSIBILE – [Corinna Forthuber](#), Vienna, Austria



„Make the **threshold between the possibilities and realities of space tangible**. Public space becomes a space of consciousness by sketching, pointing out, proposing and communicating situations, which call for a different use”.

IL CIELO
IN UNA STANZA
THE SKY IN
A ROOM

OPEN PRIVATE
ROOM
TO
PUBLIC

LOTS OF
SPECTATORS
MEANS HERE IS
A LOT TO
SPECTATE

PRIVATE
OVER
PUBLIC

Inspired by clothes-lines - public space used privately – spatial messages are printed on textiles and installed in a Venetian alley
→ inviting passers-by to actively engage in space design.





UPSIDE DOWN – Maylis Leuret and Fanny
Millard, [Association EXTRA](#), Bordeaux, France

The visitors are invited
to invest a part of their
public space with spatial
actions

Signs and panels from
„**spatial solfège**” on
streets mark a new
route to be experienced
through improvised
motions

→ New reading of the
public











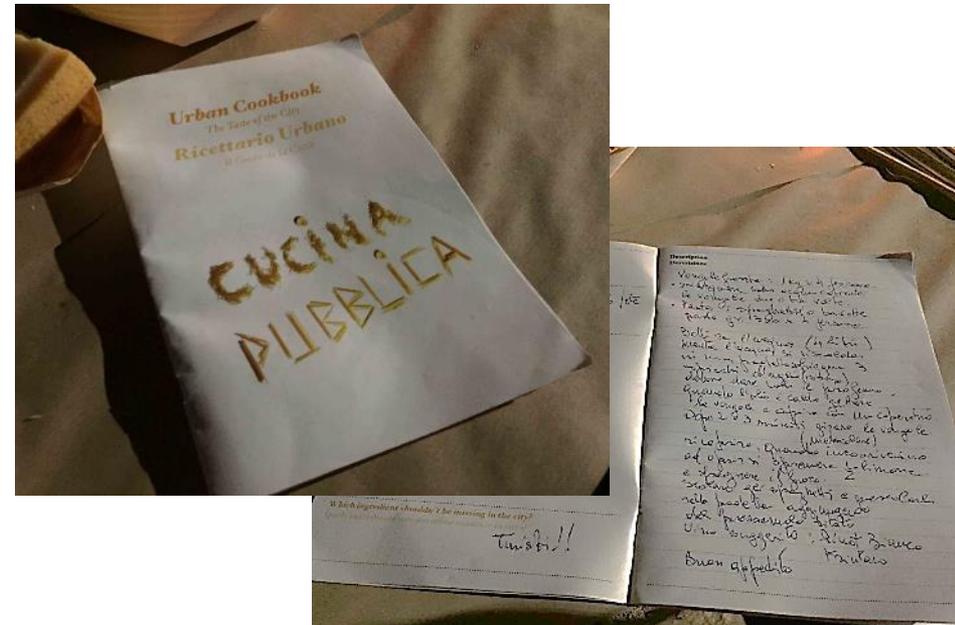
Cucina Publica – a social act



„Stewing cooking installation and verbose exchange performance”.



1. **Old family recipes** from passers-by
2. Ingredients and tools collected, Ad-hoc cooking groups arranged
3. **Shifts after 10 minutes** → experiencing different people, tastes and collaboration methods



We **STEAM**-ed up
in Venice
and **gotinvolved**!



STEAM pedagogy: some resources

[STEM engagement for students in a Makerspace | Phil Carew & Liana Gooch | TEDxRosalindParkED](#)

[STEM Education Overview \(Based on "STEM Lesson Essentials" book\)](#)

[Maricopa Institute of Technology - Best STEM School in the World](#)

[Classrooms of the Future: How to Add Mixed Reality and Robotics to a Schools STEAM Infrastructure](#)

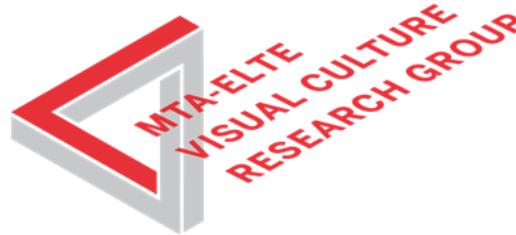
[STEM School Short Film](#)

[Teaching STEM With HipHop: STEM to STEAM](#)

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Moholy-Nagy Visual Modules



- **Modular curriculum** for Grades 1-11, ages 6-17 years
- 1) **Multicultural visual communication**: decoding and producing authentic messages;
- 2) **The art of media**: integration of their values and linguistic features of with traditional imaging;
- 3) **The man-made environment**: understanding and shaping it
- 4) **Contemporary visual arts** as an individual and collective experience: : closing the gap between creators and their young audience.



<http://vizualiskultura.elte.hu/>

