Art and digital creativity in the STEAM Education for the construction of the complex imaginary of Digital Native generations. The experience of New Media Artist Giada Totaro, founder of the project STEAM Atelier.

The distinction between art, philosophy and science was not known by Empedocles, Dante, Leonardo, Galileo, Descartes, Goethe, Einstein, nor by the anonymous builders of Gothic cathedrals, nor by Michelangelo; neither the good craftsmen of today know it, nor the physicists on the verge of the knowable.

Primo Levi , *The Wrench* (1978)[1]

I am Giada Totaro, I come from Italy and I am a New Media Artist and a STEAM Educator.

Since 2008 I realize LABS, in Italian is Laboratori. These are experiences between art didactics and art production. I define them *open artworks*, because they don't reflect Giada, as an individual. These *open artworks* are the result of a collaborative and transdisciplinary process between people, the environment, and the no-humans.

I use both MEDIA and NEW MEDIA. That means traditional media like the body, brushes and pencils, paper and recycled material, and so on. This tools are in relation with the latest generation of digital new media, such as the computer, electronics, microcontrollers, screens, the Net and robotics.

In particular, and in occasion of EASE summit, my wish is to invite to reflect and expand our ideas around the role of the Arts in the STEAM. The "A" of the acronym, added at the original term STEM, to better prepare students for both analytical and creative thinking.

The STEAM Education is a collaborative and transdisciplinary educational approach where a group of people cooperate and applies knowledges from the Science, the Technology, the Engineering, the Art and the Maths, in order to accomplish a mission, or for solving a problem. It was created to educate youth with the high-tech skills necessary for the expanding job market.

From the United States, where it started, to Europe and globally, we find STEAM projects with a strong Design thinking approach. Moreover, we also see a lot of integration of visual arts, music, dance and theatre in many educational kits and school activities. The Arts and the Design support the storytelling of STEAM projects: they help to understand, communicate, create and play with complex concepts and techniques.

In my opinion, this is very innovative and interesting. But we can move forward and see what else the Arts can do for the STEAM.

During my research at STEAM Atelier, started in 2017, by observing different STEAM project, over all made by the youngest, I see the connections with archetypes and paradigms coming from the History of New Media Arts, that evolved long an entire century, the XXth , since nowadays.

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[1] Marco Maria Gazzano, Kinema from film to electronic arts, round trip. Cinema in the footsteps of cinema ", Exorama, 2014, p. 51

Unfortunately, the most serious situation is that the way Digital Natives design and express themselves is often poor of critical spirit, of sense of singular identity and also of historic awareness about technology evolution.

In my opinion, a big part of the problem is that all manuals, books and online references about New Media Art History are not designed to be approached to the young scholars, neither to a wider public than the academic one.

I think that STEAM Education could be a great support to the issue of New Media Art preservation and fruition: the obsolescence of the new media. In fact, in the most of cases it is impossible to watch at an original new media artwork because native technologies are lost, out of date, or out of production. For these reasons, I am researching how to build the History of New Media Arts with STEAM tools and techniques, because my mission is to contribute to the building of the complex imaginary of post digital and post humans generation.

Art and digital creativity for the construction of a complex imaginary. The experience of STEAM Atelier and the BEcoming Animals laboratory, published in 2020 and produced with the support of the Presidency of the Italian Council of Ministers and the Equal Opportunities Department, is the first eBook that I have curated. It is bilingual and free to download here:

https://www.steamatelier.eu/ebook-arte-e-creativita-digitale/

The eBook contains: five critical essays by

1. "Art and contemporaneity. New perspectives, opportunities and methodologies of creation, education and knowledge" Pier Luigi Capucci (Accademia di Belle Arti Reggio Calabria, Italy),

2. "Learning for Creativity and Innovation in the Era of Social Distancing: the Experience Workshop International STEAM Network" Kristóf Fenyvesi (Finnish Institute for Educational Research, of the University of Jyväskylä, Finland)

3. Thinking STEAM: Art and Science as Ecosystem Performance Giorgio Cipolletta

4. BECOMING ANIMAL: Why it mattered in the past and why it matters today? Jatun Risba

5. Which imaginary for Digital Natives? Giada Totaro

Moreover, the eBook offers one physical training inspired by animals and three tutorials *Social Distancing wearable BEcoming Animals - Biogeodesic Dome Kit - NOEMI electronic IOT incubator for hens.*

VIDEO CREDITS

IMAGES AND VIDEO OF ARTWORKS AND PRODUCTS IN ORDER OF APPEARANCE

Dolphin Girls, Giada Totaro (Comunità I Delfini, Milano, Italy, 2008-2013)

Science and Math Teaching Creative Toolkit, 4D Frame (Korea, 2017)

Giant Geodesic Dome, 4D Frame and curated by Experience Workshop, Ars Electronica Festival, (Linz, Austria, 2017)

Abbracciobot, STEAM Atelier (Lecce, Italy, 2017)

Minima, Correnti Magnetiche/Magnetic currents (1985), *Computer Art*, exhibition curated by Paola Lagonigro, and part of *Video Makes you happy, Video Art* in Italy, 2022, Palazzo delle Esposizioni, Rome (Italy)

Composizione/Composition_musical pictorial fruition device, Giulia Villareale (2021), Academy of Fine Arts Reggio Calabria (Italy)

Coro/Choir, Studio Azzurro - Paolo Rosa - (1995), *Video Makes you happy, Video Art* in Italy, 2022, Palazzo delle Esposizioni, Rome (Italy)

Social Distancing wearable BEcoming Animals - Biogeodesic Dome Kit - NOEMI electronic IOT incubator for hens, STEAM Atelier (2020)