

Officina 2020: Education and Futures



Report of the Panel Discussion of the scientific and educational community on the
theme:

Futures of scientific citizenship and Global Science Opera

*A reflection on the futures of scientific citizenship, the role of the school and learning
opportunities that integrate art and science*

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Futures of scientific citizenship and Global Science Opera

Introduction

The reflections which follow in this report are the outcome of the online panel discussion on the theme of “Futures of scientific citizenship and Global Science Opera”, which took place on 13 May 2020 within the context of the initiative “Officina 2020: Education and Futures”, organized by the Institute for Research on Population and Social Policies of the National Research Council of Italy, [Social studies of science, education, communication](#), in collaboration with the Ministry of Education and the UNESCO project “[Futures of Education](#)”. The discussion had the aim of activating a reflection on the futures concentrating on the theme of scientific citizenship, on the role of science education and the synergy between art and science in education. This is inspired by the initiative of “Global Science Opera”, which foresees the collaboration of schools from many countries for the co-creation of musical “operas” on scientific themes, currently at the center of the Erasmus+ project “[Leverage students participation and engagement in science through art practices](#)” - [GSO4SCHOOL](#).

Visions of scientific citizenship

In summary, scientific citizenship can be defined as an “informed exercise of citizenship rights”, in a context - the “knowledge society”¹ - in which knowledge is the primary engine - of social, economic and cultural dynamics. Technological development is accelerating, and we are increasingly called upon to take part in decision-making processes that include strong techno-scientific components. Therefore, a demand for scientific citizenship rights arises as a prerequisite for the accomplishment of a substantial democracy. The experience of COVID-19, which has led us to passively accept decisions made by a technical-scientific committee without having the possibility of not only participating, but also of being informed and being able to fully understand the data on which those decisions were based, has shown how far we are from the participatory exercise of a scientific citizenship. We are within a context of “post-normal” science², in which the decisions to be taken are urgent, values are in dispute, stakes are very high and science is uncertain. This highlights the need to rapidly prepare the tools useful for the fulfillment of a scientific citizenship.

Scientific citizenship includes a political dimension, but also a cultural, social, economic and ethical dimension. We are faced with complex global challenges which require knowledge that is able to account for the complexity of reality and that can be considered as a right and a common good, as a basic prerequisite for ensuring inclusion and equity. Knowledge is the only asset which, the more it is used and shared, the more it increases. Therefore, the fact that it is for the benefit of all humanity can only enhance it, as already hoped for by the philosopher Francis Bacon³. This is in line with the objectives of the United Nations 2030 Agenda for Sustainable Development⁴, which at the moment seems to be the only shared future project and which has the advantage of including, in addition to

¹ We should specify that, if the 20th century was defined as the “age of knowledge” or “information age”, the 21st century is envisaged as the “imagination age”, an era in which imagination and creativity are the most widely required competences.

² Silvio Funtowicz and Jerry Ravetz (1997), “[Environmental problems, post-normal science, and extended peer communities](#)”, *Études et Recherches sur les Systèmes Agraires et le Développement*, INRA Editions, pp.169-175.

³ For reflections of Francis Bacon on this theme see “*Cogitata et Visa de Interpretatione Naturae*”.

⁴ United Nations (2015), “[Transforming our World: the 2030 Agenda for Sustainable Development](#)”.

environmental issues, also social issues, with references to equality of rights, tolerance and peace. Scientific citizenship should include and be based on certain values, such as peace, cooperation, democracy, dialogue and social inclusion, justice and equity, as already highlighted in the Science for the 21st century Document over ten years ago⁵.

The problem is the realization of these objectives. Public research funding seems to be decreasing everywhere and this further affects increasingly serious situations of inequality, both between countries and between social classes, in terms of accessing knowledge and the benefits that derive from it, including the application of scientific research. For example, there remains a strong digital gap, not only between individuals but also between schools, as shown by the distance learning experience undertaken due to COVID-19. This last aspect, together with the lack of information education, makes it difficult to develop digital citizenship⁶ as an essential dimension for the development of full scientific citizenship. These inequalities, together with a science narration - both in school and in the media - in which the element of uncertainty characteristic of the contemporary post-normal science context is absent, contribute to fueling suspicious and distrustful attitudes towards science, conspiracies and conflicts. Historically rights - civil rights in the eighteenth century, political rights in the nineteenth century, and social rights in the twentieth century - have never been bestowed from above, but have always been the result of conquest. The same applies to scientific citizenship rights. How can we attain them?

It takes participation, “practice” of scientific citizenship, which requires effort and struggle. Knowing is not enough: knowing is the prerequisite for acting with awareness, as was already highlighted in the Aarhus convention on environmental communication⁷.

“Taking part”, in a more contemporary sense that looks to the future, means not only being able to access scientific contents and knowledge to experience an active and informed citizenship, but to help build them, “co-create” them, also sharing the responsibilities that the scientific enterprise involves, and also giving value to other types of knowledge in addition to that of the academic sphere. There are already numerous experiences of opening scientific processes to social actors that are not part of academia, in which “extended peer communities”⁸ are formed, from “citizen science” projects to “do-it-yourself science” experiences such as those of *makers*. A more “participatory” science, inclusive of multiple points of view, could also contribute to making the “narration” of science closer to reality, with the introduction of elements such as uncertainty and the transience of knowledge. In this sense uncertainty, from a factor of uneasiness, obviously negative, as in the case of the COVID-19 experience, could turn into an element of inclusion, which reflects the opening of the scientific enterprise to different points of view and contributions, in terms of knowledge and experience.

Thinking then about the place where scientific citizenship can develop, school plays an essential role, even more than the mass media. The school could be the gym in which to train scientific citizenship, in which to practice attaining it.

⁵ UNESCO (2000), “Declaration on Science and the Use of Scientific Knowledge”, in “[World Conference on Science: Science for the Twenty-first Century; a New Commitment](#)”, UNESCO, Paris, pp.462-467.

⁶ On the theme of “digital life” see “[The Onlife Manifesto. Being Human in a Hyperconnected Era](#)” by Luciano Floridi, Springer Nature 2015.

⁷ UN Economic Commission for Europe (1998), Aarhus “Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters”.

⁸ See note 2

Towards a new conception of school as “gym of scientific citizenship”

In order for the school to become a “gym of scientific citizenship”, it must be deeply rethought, contextualizing it within a complex, global and interconnected reality. For decades we have been thinking about changes to be introduced into the school. There are numerous very advanced European documents in this regard, but little has been achieved, at least in Italy; now the need for change is urgent.

The criticisms that can be levelled at the current school, especially with reference to the Italian context, are manifold. Although there are widespread experiences of quality, it is a place where knowledge is transferred in a frontal way, giving value to notionism, which offers an abstract and often not entirely engaging learning for students as it is distant from real life. It is an institution resistant to innovations. It is prescriptive, not very reflective, not very flexible, not very technological and digital. Indeed, technology is often viewed ideologically in a hostile way as something of exclusive interest of the new generations (despite the fact that the web has been an integrated part of our lives for thirty years now), with large gaps in the use of information technology and digitalization between the different schools. Individualism and competition are often encouraged, while the development of the personality is little cared for. Furthermore, this type of school hardly fulfills its function as a social elevator.

To become a gym of scientific citizenship, the school should be characterized by participatory and personalized learning, considering and encouraging students’ desires and inclinations. It should favor the development of the personality and the fulfillment of people, in an inclusive way. These aspects are already present in the vision of the European school, but seem difficult to apply in the Italian school. Teachers should not transfer knowledge, but assume the role of “coaches” and facilitators in the development of knowledge, and listen, recognize and enhance new skills brought by students. In fact, this often happened with respect to the use of digital technologies during the COVID-19 emergency, which in this sense has prompted a positive shock. Affectivity and empathy should be the basis of the learning and teaching process, as also suggested in Socio Emotional Learning practices. This school should be conceived as a “research laboratory” in which participation and co-creation, creativity and imagination are stimulated, to counteract homogenization. It should be based on an interdisciplinary and transdisciplinary approach, in order to help future citizens to orient themselves in the complexity of reality, to grasp the interconnections between phenomena, between human beings, nature, the Earth and the universe. In this sense, the training of teachers should be reviewed and rethought, rather than be entrusted to academia, which is strictly divided into disciplines, based on conservative frontal lessons.

In particular, the following should be introduced and enhanced: an education regarding sustainability, environmental, social and individual; an education in affectivity and being together with others, in empathy. This is also keeping in mind the biological studies on other social animals conducted on these issues, for example on altruism in primates (think of the research by Frans De Waal and Jane Goodall). Experiences from cultures other than western societies (for example South America) should be introduced and listening education encouraged as an inclusive experience. There should be education involving the body, corporeality, and also stimulating manual skills in learning basic elements of concepts that cannot be defined and learned only theoretically, together with education in new technologies. An education on inclusiveness, including the theme of gender, and on intercultural dialogue should be transversal themes integrated seamlessly in learning, rather than being dealt with in dedicated workshops.

Among the competences that the school should stimulate and train (some of which have already been suggested by the Council of the European Union in the 2018 Recommendation on key competences for lifelong learning⁹), are digital competences and the ability to find one's way in the multiplicity of sources of information. Another is multilingual competence, paying attention also to the languages brought by immigrant communities, in order to reflect our society. Others are critical thinking, the ability to "discern" (understood as the ability to choose and decide), social intelligence, resilience, the ability to imagine future scenarios and the ability to exercise citizenship, intended as a capacity for struggle and resistance, which must be practiced from an early age. Finally, last but not least, there is need for an awareness that knowledge and participation require effort and effort.

This school should be open to experimentation, constant rethinking, new experiences, and in general to continuous exchange with the outside world and with society (we could say a school "with and for society", recalling the expression referring to science in one of the activities of the European research funding program Horizon2020). Training should be entrusted not only to teachers, but also to other social actors, including foreign teachers and people from different cultures, and the training of educators should be ongoing. Beyond the school walls, cultural, natural and virtual spaces outside the school should also be experienced as educational spaces, for a more open school in the world. The school structures themselves should be aesthetically "beautiful", or at least significant in some way. Learning should never take place in the classroom as an isolated event, but through a dynamic process in which students "move in space and time"¹⁰. Furthermore, it should guarantee continuity and education coherence between the different levels of school.

Finally, this school should be considered not only a universal right (which is not yet taken for granted even in western countries with a well-established welfare state), but a common good in itself.

Prospects of science education

Science education is one of the essential prerequisites for the development of scientific citizenship. Also in this case, alongside the criticisms of the current school system, we can highlight some critical elements of science teaching, which is often out of date, and neither motivating nor engaging. Scientific subjects are usually presented as an abstract prescriptive framework, the scientific endeavor in a simplified way as an ideal linear path from hypothesis to thesis, without emphasizing the element of creativity, changes of mind and the evolution of scientific thought. The education often remains notional and theoretical, devoid of the experiential and "tangible" practical part of experimentation and lacking an appropriate "narrative", capable of analyzing more in depth. The inadequacy of science education in the Italian school, which seems to be reflected also in the poor results of Italian students in tests such as in the PISA tests¹¹, is an obstacle to the achievement of a scientific citizenship. It also risks making people manipulable, leaving room for simplifications and making it easy to hunt out the enemy in public debate. A science education that promotes the construction of a scientific citizenship should work on the formation of a culture and a scientific sensitivity that goes beyond the differences between the various scientific subjects. It should prompt students to learn and experiment with scientific thought, the models of the sciences and work practices that characterize "doing science".

⁹ Council of the European Union (2018), "[Recommendation of 22 May 2018 on key competences for lifelong learning](#)".

¹⁰ D. S. Gray and L. Colucci-Gray (2019), "[Laying down a path in walking: student teachers' emerging ecological identities](#)", *Environmental Education Research*, 25(3), 341-364.

¹¹ INVALSI (2018), OCSE survey PISA 2018: [Country note about Italy](#).

This involves inspiring the students to ask questions that make sense and to devote time to building answers, with a maieutic, participatory and complexity-oriented educational approach. It entails giving space to experimentation, enhancing both mental experiments and the perceptive-sensorial experience of material reality and combining study with the emotions and the experience of the body (for example with experiences of astronomy in the field, or perception of forces through their own movements). There should be stress on the links between scientific concepts and daily life, giving space to the history of science and presenting science as a collective human enterprise linked to a historical context that includes the dimensions of uncertainty, doubt and error. We should be clarifying how production, distribution and access to scientific knowledge is organized in the contemporary world, emphasizing the political, ethical, social, legal and economic implications of research (also to avoid conspiracy theorizing) and its global dimension. There is a need to enhance the knowledge of human biological nature and the theme of health, understood as a multidisciplinary and transdisciplinary theme that includes physical, mental and social well-being. This brings about a positive relationship with the environment and life skills necessary for adaptation, in line with the conception of the World Health Organization¹² and with further perspectives added in the international debate¹³. We have to train students to use scientific information in the mass media, addressing issues such as how journalism works and the freedom of the press, fake news, privacy and online data processing, in order to make students more aware in using the web. Opening up to other cultures, past and present, is essential, particularly those that follow different rationalities and ways of conceiving human beings and their relationship with nature. The links between science and values such as altruism, collaboration, peace, should be taught, also by promoting among students a spirit of collaboration, essential for any scientific endeavor, rather than competition. In this way we are providing tools to reason about the future and sustainability.

Towards an education that integrates art and science

As already emphasized, promoting an interdisciplinary and transdisciplinary approach is necessary to encourage the development of thought capable of measuring itself with complexity¹⁴, which requires both logical and intuitive skills. This is to prepare us for global challenges, such as global warming and pandemics, which by their very nature cross borders between disciplines.

In particular, given the critical points found in current schools and science education, interconnecting and integrating art and science could have positive effects to encourage the development of the different concepts of both school and science education described in the previous paragraphs.

Historically art and science have always influenced each other and, in past centuries, many artists have also been scientists. If we go beyond stereotypes, art and science have several essential elements in common. They are based on research processes, albeit with different methods, they require intuition¹⁵ and creativity and they investigate the properties and qualities of things and the rules that underlie reality. This is developing tacit knowledge that is at the roots of the knowledge of the world, overcoming common sense and promoting the acquisition of awareness. Art and science develop the ability to abstract and to observe according to the mental categories of form and structure, they

¹² [Constitution of the World Health Organization](#) (1946).

¹³ Machteld Huber *et al.* (2011), "How should we define health?", *British Medical Journal*, 343, d4163.

¹⁴ On this theme, see note 9.

¹⁵ Among reflections on this theme see "An Essay on the Psychology of Invention in the Mathematical Field" by Jacques Hadamard (1945), Princeton University Press.

provide representations of the world and strongly influence our imagination and they engage with the mystery.

Bringing art and science to converse with each other in education could have many different positive aspects, as already shown by the numerous, unfortunately almost always sporadic, experiences implemented in this area, also outside the national context (for example, the Global Science Opera initiative, by which the idea of this discussion was inspired), which led to the first international reflections on a STEAM (Science, Technology, Engineering, Arts, Mathematics) approach. It could help to find and rethink the element of “narration” and “narrative models”, as a structure that connects, in the manner of Bateson¹⁶, in the epistemology and science education¹⁷, an all too neglected strategy (also through methodologies such as digital storytelling). This coming together of the two subjects can enhance the perceptual-sensorial experience and the pleasure of creating and manipulating (e.g. by means of the production, by the students, of “scientific” objects also possessing an aesthetic value), also as a way of building an ecological identity, a sense of oneself as part of an ecosystem¹⁸. These subjects working together can help to explore emotions and encourage empathy (also by linking it to a discourse on values that should be part of scientific citizenship) and to promote collaboration/co-creation. They can help to stimulate curiosity, imagination, fantasy and creativity and to deal with information considering not only the reading of data and texts, but also the visual reading - and the creation - of images and videos, of graphic signs, so as to orient oneself in the multimedia environment of the web. They can encourage “understanding”, the development of critical thinking, complex and systemic thinking (which are also objectives of education for sustainability), and teach students to deal with complexity, as Calvino already suggested with respect to the union of science, literature and philosophy¹⁹, describing reality as a labyrinth (also favoring the comparison between different visions of the world). Art and science combined open up to educational spaces outside the school, enhancing an emotional connection with the local territory and the cultural, material and immaterial heritage (as hoped for by UNESCO already in the Convention for the Protection of the World Cultural and Natural Heritage of 1972²⁰ and also by the European Union with the heritage education program). Students and teachers can be involved in a redesign of school environments in order to reflect the present and future imagination of those who are experiencing them, and the aesthetic dimension of science itself may also be enhanced.

Feeling and appreciating beauty is, after all, a way of loving reality, as well as science and nature (as the physicist Paul Dirac pointed out²¹). Recognizing beauty in science, in a theory, in a mathematical demonstration, a formula, and also considering this aspect in education can therefore be a way to perceive science also in an affective and emotional way, in the way of an “ingrained” science, which inspires a sense of belonging in us. And this would be an important step towards stimulating the exercise of scientific citizenship, the transition from knowledge to action²².

¹⁶ Gregory Bateson (1979), [“Mind and Nature”](#), E. P. Dutton, New York.

¹⁷ Jerome Bruner (2003), [“Making Stories: Law, Literature, Life”](#), Harvard University Press.

¹⁸ See [“Identity and the Natural Environment: The Psychological Significance of Nature”](#) by Susan Clayton and Susan Opatow, MIT Press 2003.

¹⁹ Italo Calvino (1967), [“Philosophy and Literature”](#), *The Times Literary Supplement*, 871-872.

²⁰ UNESCO (1972), [“Convention Concerning the Protection of the World Cultural and Natural Heritage”](#), with particular reference to Article 4.

²¹ Paul Dirac (2018), [“La bellezza come metodo”](#), Raffaello Cortina Editore, Milano.

²² Further suggestions for going into depth on the theme of beauty in science brought up in the panel discussion are the [“Letter on the Blind for the use of those who can see”](#) by Denis Diderot (1749); [“The science of Leonardo”](#) by Fritjof Capra (2007), Anchor; the documentary film [“The sense of beauty”](#) (2017), by Valerio Jalongo.

Suggestions for a Global Science Opera

More pragmatically, the implementation of some of the ideas that have emerged seems essential for the creation of a Global Science Opera. In particular, we can mention the enhancement of digitization and the technological equipment of schools, with the possibility of using tablets and connected computers, but also mixers, audio and video recording systems, graphics and communication programs. In addition, the setting up of multifunctional spaces in the school, also suitable for welcoming visitors. This includes the integration of the physical spaces of the school with digital spaces through platforms for distance learning (for example, Moodle or Classroom) and the use of public spaces as educational spaces, with the opportunity for experiences in places of culture and community life (also with visits to artist atelier). We can involve social actors in school life, such as *alumni* and ex-teachers, artists, researchers, public and private associations and institutions, from ministries to local authorities, to research centers and business enterprises. There should be the introduction into school curricula of expressive-creative practices such as theater, dance, music, poetry and the visual arts, with the expansion of languages and forms of school communication and the promotion of narrative forms. There is a need for more frequent co-presence of teachers, both to encourage collaboration and interdisciplinary exchanges and to be able to work in small groups, while leaving students more autonomy in experimenting with their own creativity.

These suggestions will flow into the intellectual outputs of the Erasmus + [GSO4SCHOOL](#) project, to form guidelines for the creation of a Global Science Opera.

Biographical notes of panel members ***“Futures of scientific citizenship and Global Science Opera”***

Paola Boggetto

Head of the IISS “Cillario Ferrero” school in Alba (Cuneo). Born in Canelli on July 13, 1965. Graduated in Pedagogy (philosophical path). Primary school teacher from 1984 to 1996, following a job competition he became Academic Director in the Board of Education of S. Stefano Belbo, then school director for a year at the I.C. of S. Stefano Belbo. He moved to the position of Director of the Middle School of Canelli and the CTP (AT). Deputyship for 4 years at the C.P.I.A. CN2 Alba-Mondovì. Appointed external member of the Evaluation Committee with assignment of position to the "Umberto I" educational institution in Alba. Appointed member of the external evaluation units of school institutions (INVALSI).

Silvia Caravita

Graduate in Biological Sciences. Researcher of the CNR, she carried out her activity at the Center of Neuroembryology in the University of Rome “La Sapienza”, the Institute of Sciences and Technologies of Cognition, where she coordinated the Department of Learning and Educational Contexts, and, as associate Researcher, at the Institute for Research on Population and Social Policies. She has been responsible for national and European research projects and been visiting professor at foreign institutes. She has held positions in international scientific associations and with journals. Her research work has concerned the processes of building scientific knowledge, the factors that contribute to their evolution, and the conditions that influence them in formal and informal educational environments.

Rosanna Colombrita

Teacher at IISS R. Rossellini Cine-Tv Roma (Coordination of Support teachers, member of the Inclusion Commission of the institute; member of the School Council; tutor Classi Biennio Professionale – Vocational High School). Specialization in the Support and integration of disabled students, 1996. Artistic background AFAM Diploma in Piano as first instrument, 1987 and Specialized piano courses at the Santa Cecilia Conservatory, Rome. Collaboration in various theatrical and musical events, piano accompaniment and chamber music. Studies in Economics and Commerce (Università La Sapienza, Roma). Studies in Philosophy Università di Palermo. Head of

Final State Examinations Commission. Previous teaching experience: Musical education in High Schools I and II Level (Modica 1979/1983; Palermo 1993/1996).

Elisabetta Falchetti

Researcher and project manager of the European Centre for Cultural Organization and Management. Of scientific background, she worked at the Rome Zoo and Museum of Zoology. University Professor of Scientific and Museum Education and Communication, Museology and Naturalistic Museography, Environmental Education and Sustainability, and Biology Didactics. She participates in European projects for the training of cultural operators and teachers and carries out research into school learning and lifelong learning, interculture and sustainability. She is author of articles and texts in her research fields. Experience in training, construction of multiple competences and education for sustainability through the promotion of cultural heritage and storytelling as a form of communication and understanding of reality.

Pietro Greco

Scientific journalist and writer, he is editor in chief of *Il Bo Live*, web journal of the University of Padua. He was a columnist for the newspaper *L'Unità* and director of the Master in Science Communication of the Sissa in Trieste. He is host conductor of Radio3Scienza, RAI Radio3. He has written over 40 monographs on scientific culture topics. He has proposed some reflections on scientific citizenship.

Alba L'Astorina

She works in Milan at the [IREA of the CNR](#), where she deals with [theoretical and practical models of science communication](#). In 2006 she co-founded the CNR Group "[Social Studies on Science, Education and Communication](#)", interested in understanding the role that the scientific community plays, through its practices and narratives, in the complex science-society relationship. Within this framework, she interacts in educational contexts [introducing the post-normal perspective](#). Since 2015 she has collaborated with the Long Term Ecological Research network for the design and implementation of [Cammini LTER Italia](#), itinerant events of informal science communication. In 2018, with Monica Di Fiore, she edited the volume "[Scienziati in affanno? Ricerca e innovazione Responsabili \(RRI\) in teoria e nelle pratiche](#)".

Nicoletta Lanciano

Associate Professor of Mathematics and Sciences Education at the University of Rome "Sapienza". Degree in Mathematics and Doctorate in Astronomy Didactics in Geneva. In the Educational Cooperation Movement (MCE) for 40 years, she is responsible for a national group of Pedagogy of the sky. She devised Geometry and Astronomy projects in the urban areas with classes and teachers from kindergarten to university. She coordinates the reorganization of the Emma Castelnuovo library, of mathematics and general pedagogy, left to the MCE. She collaborates with Latin American countries in the astronomy education. She is on the Board of Directors of the Italian Society of Archaeoastronomy and on the Education and Equity and inclusion Commission of the International Astronomical Union. She coordinates the international GLOBOLocal project.

Maria Monina

Maria Monina is a student of the Liceo Morgagni in Rome and is a member of the Provincial Student Council of Rome.

Leonardo Soffientini

Leonardo Soffientini is a student of the Liceo Classico Augusto in Rome and is secretary of the Provincial Student Council of Rome.

Elisabetta Tola

Scientific journalist and data journalist, PhD in Microbiology. *Tow-Knight fellow* 2019 at the Craig Newmark Graduate School of Journalism, NY. Founder of [Facta](#), a non-profit project that uses the scientific method in journalism. She is radio host conductor at Radio3Scienza, RAI Radio3. Freelance for national/international media, co-author of the *crossborder* and multimedia projects [Seediversity.org](#), [SEEDcontrol](#) and [Hearing voices](#), with the support of EJC and [Journalismfund](#) respectively. CEO and co-founder of the scientific communication agency [formicablu](#) and of [datajournalism.it](#), a laboratory of stories and data-driven tools. Media trainer and teacher of digital journalism, data e verification.

Valentina Tudisca

PhD in physics with a two-year master in Science communication, she is a researcher at the Institute for Research on Population and Social Policies of the National Research Council of Italy, where she works in the group [Social studies of science, education, communication](#) on the relations between science, politics and society. Her research interests include: science communication, the relation between evidence and decisional processes, representations of migrants in the mass media and in textbooks. She uses participative methodologies transversally with respect to the various themes so as to involve social actors in the research activities. In parallel with her research, she has collaborated with a range of magazines such as *Sapere*, *National Geographic Italia* and *OggiScienza*.

Alessia Vaglivello

Life and career coach, certified Lego® Serious Play® facilitator, orientation counsellor, teacher and provincial (Rome) and regional representative of the Provincial Student Councils for the Lazio Region Education Office. She has worked in the sector of training and has coordinated, developed and directed the startup and re-start of departments, agencies, academies and institutes that operate within the spheres of artistic, managerial, personal services and consultancy, in senior and directorship positions. In these situations she has dealt with processes of organizational and recruitment development, shadowing and training in human resources, planning and management of training courses, organization of promotional events on themes regarding the visual arts and design.