

ELEONORA BARELLI

PERSONAL INFORMATION

CURRENT POSITION

November 2021 –

Post-doc researcher

Department of Physics and Astronomy “Augusto Righi” - Alma Mater Studiorum, University of Bologna

Adjunct professor

Department of Education Studies “Giovanni Maria Bertin” - Alma Mater Studiorum, University of Bologna

EDUCATION

PhD

2022 PhD in Data Science and Computation at the University of Bologna. Dissertation: “Complex systems simulations to develop agency and citizenship skills through science education”. Supervisor: Olivia Levrini. Final grade: Excellent *cum laude*.

University degrees

2017 Master degree in Applied Physics at the University of Bologna. Dissertation: “Science of complex systems and future-scaffolding skills: a pilot study with secondary school students”. Supervisor: Olivia Levrini. Final grade: 110/110 *cum laude*. First level degree in Physics at the University of Bologna. Dissertation: “Dielectric

2015 Relaxation in Biological Materials”. Supervisor: Francesco Mainardi. Final grade: 110/110.

High school degree

2012 High school graduation at the Classical Lyceum ‘G. Pico’ of Mirandola (MO). Final grade: 100/100 *cum laude*.

Visiting periods

2021 (April-July; September-November) Visit at the Department of Linguistic and Literary Education, and Didactics of Natural Sciences and Mathematics (ELL-DCEM), Faculty of Education, University of Barcelona (Spain). Supervisor: Prof. Berta Barquero.

Academic responsibilities

2022- Representative in the Department Council of the research fellows of the Department of Physics and Astronomy

2018-2021 Representative in the Teaching Body of the cohort of PhD students in Data Science and Computation

Languages

Italian – mother tongue

English – IELTS certification 8/9 (C2)

Spanish – B2

RESEARCH INTERESTS

- × Educational reconstruction of the science of complex systems and computational simulations: design and implementation of innovative teaching materials.
- × Interdisciplinarity between physics, mathematics, computer science in advanced STEM topics.

- × Future-oriented science education and scientific citizenship: development of strategies for transforming scientific knowledge into transversal skills about future and citizenship issues.
- × Students' explanations about complex systems and computer simulations.

PUBLICATIONS

- ×Barelli, E. (accepted). Imagining the school of the future through computational simulations: scenarios' sustainability and agency as keywords. *Frontiers*, special issue on Future-Oriented Science Education for Agency and Sustainable Development. [scientific article]
- ×Barelli, E., & Levrini, O. (accepted). Computational simulations at the interface of physics and society: a teaching-learning module for high school students. Submitted to *Il Nuovo Cimento* as invited paper for SIF Conference Best Communications. [scientific article]
- ×Barelli, E., & Levrini, O. (accepted). Navigating micro and macro levels of agent-based simulations to build analogies with real-world issues. *ESERA 2021 Electronic Proceedings*. [scientific article]
- ×Barelli, E., Caramaschi, M., Tasquier, G., Satanassi, S., Fantini, P., Branchetti, L., & Levrini, O. (accepted). Making sense to youth futures narratives: results from an empirical study. *Frontiers*, special issue on Future-Oriented Science Education for Agency and Sustainable Development. [scientific article]
- ×Barelli, E., Barquero, B., Romero, O., Aguada, M.R., Giménez, J., Pipitone, C., Sala-Sebastià, G., Nipyrakis, A., Kokolaki, A., Metaxas, I., Michailidi, E., Stavrou, D., Bartzia, I., Lodi, M., Sbaraglia, M., Modeste, S., Martini, S., Durand-Guerrier, V., Bagaglini, V., Satanassi, S., Fantini, P., Kapon, S., Branchetti, L., & Levrini, O. (submitted). Disciplinary identities in interdisciplinary topics: challenges and opportunities for teacher education. *ESERA 2021 Electronic Proceedings*. [submitted]
- ×Barelli, E., Barquero, B., & Branchetti, L. (submitted). Questioning the evolution of the pandemic in an interdisciplinary way: the design of a Study and Research Path for pre-service Teacher Education. *Rivista Matematica dell'Università di Parma*. [submitted]
- ×Satanassi, S., Casarotto, R., Caramaschi, M., Barelli, E., Branchetti, L., & Levrini, O. (submitted). The FRA wheel as a teaching tool to explore disciplinary identities and make disciplines dialogue. *Science & Education*, special issue on Science Education from the perspective of Family Resemblance Approach (FRA). [submitted]
- ×Barelli, E. (2021). Physics and Mathematics university students' ideas about computer simulations. *Journal of Physics: Conference Series*, doi:10.1088/1742-6596/1929/1/012059 [GIREP Conference proceedings]
- ×Levrini, O., Tasquier, G., Barelli, E., Laherto, A., Palmgren, E., Branchetti, L., & Wilson, C. (2021). Recognition and operationalization of *Future-Scaffolding Skills*: Results from an empirical study of a teaching-learning module on climate change and futures thinking. *Science Education*, doi:10.1002/sce.21612 [scientific article]
- ×Levrini, O., Fantini, P., Barelli, E., Branchetti, L., Satanassi, S., & Tasquier, G. (2020). The Present Shock and Time Re-appropriation in the Pandemic Era: Missed Opportunities for Science Education. *Science & Education*, doi:10.1007/s11191-020-00159-x [scientific article]
- ×Reno, C., Lenzi, J., Navarra, A., Barelli, E., Gori, D., Lanza, A., Valentini, R., Tang, B., & Fantini, M. (2020). Forecasting COVID-19-Associated Hospitalizations under Different Levels of Social Distancing in Lombardy and Emilia-Romagna, Northern Italy: Results from an Extended SEIR Compartmental Model. *Journal of Clinical Medicine*, 9(5), 1492, doi:10.3390/jcm9051492 [scientific article]
- ×Levrini, O., Tasquier, G., Branchetti, L., & Barelli, E. (2019). Developing future-scaffolding skills through science education. *International Journal of Science Education*, 41(18), 2647-2674, doi:10.1080/09500693.2019.1693080 [scientific article]
- ×Barelli, E., Branchetti, L., & Ravaioli, G. (2019). High school students' epistemological approaches to computer simulations of complex systems. *Journal of Physics: Conference Series*, 1287(1), doi:10.1088/1742-6596/1287/1/012053 [GIREP Conference proceedings]
- ×Barelli, E., Branchetti, L., Tasquier, G., Albertazzi, L. & Levrini, O. (2018). Science of Complex Systems and Citizenship Skills: A Pilot Study with Adult Citizens. *Eurasia Journal of Mathematics, Science and Technology Education*, 14(4), 1533-1545. doi:10.29333/ejmste/84841 [scientific article]
- ×Barelli, E. & Tasquier, G. (2017). Scrivere il futuro per abitare il presente. Preface to 'Futuro in... Corso'. Centro Culturale "Lucio Lombardo Radice" Edizioni, Correggio (RE) [preface]

CONFERENCE PRESENTATIONS

- × Barelli, E. (2022). Simulazioni computazionali e competenze di futuro: il ruolo della ricerca in didattica delle discipline STEM [Computational simulations and future-scaffolding skills: the role of research in STEM education]. Italian Physical Society (SIF) Conference, 12-16 September 2022, University of Milan, Milan (Italy). [oral presentation]
- × Levrini, O., Barelli, E., Branchetti, L., & Satanassi, S. (2022). Identità disciplinari ed interdisciplinarietà per la formazione iniziale degli insegnanti: approccio e risultati del progetto IDENTITIES [Disciplinary identities and interdisciplinarity for pre-service teacher education: approach and results of the IDENTITIES project]. Italian Physical Society (SIF) Conference, 12-16 September 2022, University of Milan, Milan (Italy). [oral presentation]
- × Caramaschi, M., Barelli, E., Tasquier, G., Satanassi, S., Branchetti, L., Fantini, P., & Levrini, O. (2022). Methodological contribution to youth futures narratives analysis in STEM education. Italian Physical Society (SIF) Conference, 12-16 September 2022, University of Milan, Milan (Italy). [oral presentation]
- × Barelli, E., & Levrini, O. (2022). Agent-based perspectives on epidemiological analysis of interviews with upper high-school students. International Research Group on Physics Teaching & Multimedia in Physics and Teaching Learning (GIREP-MPTL) Conference, 4-8 July 2022, University of Ljubljana, Ljubljana (Slovenia). [oral presentation]
- × Barelli, E., & Levrini, O. (2021). Simulazioni tra fisica, sistemi complessi e società: un laboratorio PLS per studenti di scuola secondaria [Simulations between physics, complex systems, and society: a university orientation course for high-school students]. Italian Physical Society (SIF) Conference, 13-17 September 2021, virtual. [oral presentation]
- × Barelli, E., & Levrini, O. (2021). 'Netlogo "toy" simulations as laboratories to imagine the futures'. European Science Education Research Association (ESERA) Conference, August 31-September 3 2021, online. [oral presentation]
- × Barquero Farras, B., Barelli, E., Romero, O., Aguada Berteá, M. R., Jimenez, J., Pipitone, C., & Sala Sebastián, G. (2021). Teacher education for interdisciplinarity: design of a module about modelling coronavirus evolution. European Science Education Research Association (ESERA) Conference, August 31-September 3 2021, online. [oral presentation in a symposium]
- × Barelli, E., Branchetti, L., & Barquero Farras, B. (2021). Questioning interdisciplinarity within teacher education: A module on the evolution of COVID-19 pandemic. The 14th International Congress on Mathematical Education (ICME), July 12-19 2021, online. [oral presentation]
- × Barelli, E., Levrini, O. (2021). Scientific Simulations as Educational Tools for the Post-Pandemic Era: the Case of the Susceptible-Infectious-Removed Model. National Association for Research in Science Teaching (NARST) International Conference, 7-10 April 2021. [oral presentation]
- × Barelli, E., Levrini, O. (2021). Computational Simulations as Citizenship Tools: a Study with University Physics and Mathematics Students. American Educational Research Association (AERA) Virtual Annual Meeting, 8-12 April 2021. [oral presentation]
- × Barelli, E. (2020). Computational simulations as interdisciplinary decision-making tools: results of a study with university students. Italian Physical Society (SIF) Conference, 14-18 September 2020, University of Milan (Virtual). [invited oral presentation]
- × Barelli, E., Levrini, O. (2019). Artificial neural networks as complex systems: an educational activity for showing the epistemological change introduced by machine learning. Conference of the Commission for History and Philosophy of Computing (HAPOC), 4-7 October 2019, Bergamo. [oral presentation]
- × Barelli, E. (2019). Grasping the conceptual and cultural value of simulations of complex systems: results of interviews and focus groups. Italian Physical Society (SIF) Conference, September 2019, L'Aquila. [oral presentation]
- × Barelli, E., Tasquier, G., Laherto, A., Levrini, O., Palmgren, E. & Wilson, C. (2019). Toward The Recognition Of Future-Scaffolding Skills In Science Education. European Science Education Research Association (ESERA) Conference, 26-30 August 2019, Bologna. [oral presentation]
- × Ravaioli, G., Barelli, E., Branchetti, L., Levrini, O., Lodi, M. & Satanassi, S. (2019). Epistemological Activators to Value S-T-E-M Concepts for Education. European Science Education Research Association (ESERA) Conference, 26-30 August 2019, Bologna. [oral presentation]

- ×Barelli, E. (2019). Physics and Mathematics University Students' Understanding of Simulations of Complex Systems. International Research Group on Physics Teaching & Multimedia in Physics and Teaching Learning (GIREP-MPTL) Conference, 1-5 July 2019, Budapest (Hungary). [oral presentation]
- ×Branchetti L., Levrini, O., Barelli, E., Lodi, M., Ravaioli G., Rigotti, L., Satanassi, S. & Tasquier, G. (2018). STEM analysis of a module on Artificial Intelligence for high school students designed within the I SEE Erasmus+ Project. Congress of the European Society for Research in Mathematics Education (CERME). 6-10 February 2019, Utrecht University (Netherlands). [poster presentation]
- ×Levrini, O., Barelli, E., Lodi, M., Ravaioli, G., Tasquier, G., Branchetti, L., Clementi, M., Fantini, P. & Filippi, F. (2018). The perspective of complexity to futurize STEM education: an interdisciplinary module on Artificial Intelligence. International Research Group on Physics Teaching & Multimedia in Physics and Teaching Learning (GIREP-MPTL) Conference, 9-13 July 2018, University of Basque Country, San Sebastian (Spain). [oral presentation]
- ×Ravaioli, G., Barelli, E., Branchetti, L. (2018). Simulations as scientific research tools: an insight into explanations of high school students. International Research Group on Physics Teaching & Multimedia in Physics and Teaching Learning (GIREP-MPTL) Conference, 9-13 July 2018, University of Basque Country, San Sebastian (Spain). [oral presentation]
- ×Barelli E., Branchetti L., Ravaioli G. (2018). Understanding and trusting explanations based on simulations: an educational perspective for high school. 11th Munich-Sydney-Turin (MuST) Conference in Philosophy of Science, 11-13 June 2018, University of Turin. [oral presentation]
- ×Levrini O., Barelli E., Branchetti L., Tasquier G. (2017). Design of teaching modules about science of complex systems to develop future-scaffolding skills: the I SEE European project. 103rd Italian Physics Society (SIF) Conference, 11-15 September 2017, University of Trento. [oral presentation]
- ×Barelli E., Albertazzi L., Tasquier G., Branchetti L., Levrini O. (2017). Complexity science and citizenship skills: a pilot study with adult citizens. European Science Education Research Association (ESERA) Conference, 21-25 August 2017, Dublin City University. [poster]
- ×Barelli E., Tasquier G., Branchetti L., Levrini O. (2017). The design of present- and future-oriented teaching modules on the science of complex systems for upper secondary school students. International Workshop on Anticipation, Agency and Complexity, 6-8 April 2017, Department of Sociology and Social Research, University of Trento. [oral presentation]
- ×Barelli E., Tasquier G., Branchetti L., Levrini O. (2017). Developing future-scaffolding skills through physics teaching at the secondary school level: the I SEE European project. International Workshop on Anticipation, Agency and Complexity, 6-8 April 2017, Department of Sociology and Social Research, University of Trento. [oral presentation]

PARTICIPATION IN CONFERENCES

- × Italian Physical Society (SIF) Conference, 13-17 September 2021, Virtual.
- × European Science Education Research Association (ESERA) Conference, 30 August-3 September 2021, Virtual.
- × National Association for Research in Science Teaching (NARST) International Conference, 7-10 April 2021, Virtual.
- × American Educational Research Association (AERA) Virtual Annual Meeting, 8-12 April 2021, Virtual.
- × Italian Physical Society (SIF) Conference, 14-18 September 2020, Virtual.
- × Conference of the Commission for History and Philosophy of Computing (HAPOC), 4-7 October 2019, Bergamo.
- × Italian Physical Society (SIF) Conference, September 2019, L'Aquila.
- × European Science Education Research Association (ESERA) Conference, 26-30 August 2019, Bologna.
- × International Research Group on Physics Teaching & Multimedia in Physics and Teaching Learning (GIREP-MPTL) Conference, 9-13 July 2018, University of Basque Country, San Sebastian (Spain).
- × 11th Munich-Sydney-Turin (MuST) Conference in Philosophy of Science, 11-13 June 2018, University of Turin.
- × 103rd Italian Physics Society (SIF) Conference, 11-15 September 2017, University of Trento.
- × European Science Education Research Association (ESERA) Conference, 21-25 August 2017, Dublin City University.
- × International Workshop on Anticipation, Agency and Complexity, 6-8 April 2017, Department of Sociology and Social Research, University of Trento.

- × National Conference ‘Probability, Risk and Prediction: tools for building a culture of uncertainty’, 3-5 May 2017, Gran Sasso Science Institute, L’Aquila. Participation as auditor.

Other courses and workshops

- 2017 Training course (12 hours) ‘Methods and Laboratories of future’ (Prof. Roberto Poli and colleagues), Department of Sociology and Social Research, University of Trento.
I SEE Summer School for researchers in future-oriented science education, Fondazione Golinelli, Bologna.
- 2018 Seminar (4 hours) ‘How to make meaning computable?’ (Prof. Pierre Lévy), Fondazione Golinelli, Bologna.
Workshop ‘Philosophy and technologies of computer simulations’, Politecnico di Milano.
Workshop ‘Cognitive basis of physics education’, University of Florence.
- 2020 European Science Education Research Association (ESERA) Virtual Doctoral Network (40 hours).
- 2021 IDENTITIES Summer School for trainers and researchers, Online.

AWARDS

- 2021 – Marco Polo scholarship.
- 2021 – Scholarship for the participation at the 2021 AERA Virtual Annual Meeting, assigned through evaluation of CV and research project.
- 2020 – Selection for the participation at ESERA Virtual Doctoral Network, Virtual.
- 2019 – Selection for the participation at ESERA Summer School, Crete.
- 2017 – Scholarship for the participation at the 12th ESERA 2017 Conference, assigned through evaluation of CV.

THESIS COSUPERVISION

- ×Boselli, M. (2021). Simulazioni NetLogo per ragionare su problemi reali: analisi di lavori di gruppo ed interviste nell’ambito di un laboratorio PLS [NetLogo simulations to reason about real problems: analysis of teamworks and interviews within a PLS Laboratory]. Master thesis in Physics, Alma Mater Studiorum – University of Bologna. Advisor: Olivia Levrini. Co-advisor: Eleonora Barelli.
- ×Fabbri, E. (2021). Educare alla complessità tramite simulazioni ad agente: progettazione e sperimentazione di un’attività per studenti di scuola secondaria in un laboratorio PLS [Educating to complexity through agent-based simulations: design and implementation of an activity for secondary school students in a PLS Laboratory]. Bachelor thesis in Physics, Alma Mater Studiorum – University of Bologna. Advisor: Olivia Levrini. Co-advisor: Eleonora Barelli.
- ↓onidetti, E. (2021). Dalla termodinamica ai sistemi complessi: analisi di una proposta didattica sui cambiamenti climatici per sviluppare abilità di pensiero sistemico [From thermodynamics to complex systems: analysis of an educational proposal on climate change to develop system thinking skills]. Master thesis in Physics, Alma Mater Studiorum – University of Bologna. Advisor: Giulia Tasquier. Co-advisor: Eleonora Barelli.
- ×Castelli, R. P. (2021). Analisi comparativa di simulazioni PhET di sistemi meccanici classici e simulazioni NetLogo di sistemi complessi [Comparative analysis of PhET simulations of classical mechanical systems and NetLogo simulations of complex systems]. Bachelor thesis in Physics, Alma Mater Studiorum – University of Bologna. Advisor: Olivia Levrini. Co-advisor: Eleonora Barelli.
- ×Maines, E. (2020). Addressing the complexity of climate change through games. Bachelor thesis in Physics, Alma Mater Studiorum – University of Bologna. Advisor: Giulia Tasquier. Co-advisor: Eleonora Barelli.
- ×Chiusoli, S. (2019). La mappa logistica come caso di studio per riflettere sull’interdisciplinarietà nei sistemi complessi [The logistic map as a case study to reflect on interdisciplinarity in complex systems]. Bachelor thesis in Physics, Alma Mater Studiorum – University of Bologna. Advisor: Olivia Levrini. Co-advisor: Eleonora Barelli.
- ×Rigotti, L. (2018). Intelligenza Artificiale come contesto per un approccio STEM alla didattica [Artificial Intelligence as a context for a STEM approach to education]. Bachelor thesis in Physics, Alma Mater Studiorum – University of Bologna. Advisor: Olivia Levrini. Co-advisor: Eleonora Barelli.
- ×Giovannelli, I. (2018). Il modello degli *epistemic game* per la progettazione di strumenti di analisi di problemi: uno studio sull’induzione elettromagnetica nella scuola secondaria [The model of *epistemic games* to design tools of analysis of problems: a study on electromagnetic induction in high school]. Master thesis in Physics, Alma Mater

Studiorum – University of Bologna. Advisor: Olivia Levrini; Co-Advisors: Eleonora Barelli, Laura Branchetti, Niccolò Vernazza.

INVOLVEMENT IN RESEARCH PROJECTS

- 2017- I SEE Project (Erasmus+)
- 2019 IDENTITIES Project (Erasmus+) as member of the Steering Committee
- 2019- SEAS Project (Horizon2020) as member of the local research group
- 2019- FEDORA Project (Horizon2020) as WP Co-Leader
- 2020-

EDITORIAL ACTIVITIES

Peer-review activity for:

- × *Science&Education*
- × ESERA 2019 Conference
- × NARST 2021 Conference

TEACHING EXPERIENCES

Seminars for PhD students and research groups

- × Speaker at the International Multiplier Event of the IDENTITIES project, University of Parma. Title of the seminar: “Curricular interdisciplinarity and advanced STEM topics: teaching modules for an interdisciplinary preservice teacher education” (2022 April 21st)
- × Invited speaker at the seminar for the Department of Mathematics “F. Enriques”, University of Milan. Title of the seminar: “Complex systems simulations to develop agency and citizenship skills through science education” (2022 April 11th)
- × Organizer and speaker at the course on “Methods and methodological practices in Physics Education Research” for PhD students, March-May 2022, Department of Physics and Astronomy, University of Bologna. Title of the seminar: “Thematic analysis with NVivo” (2022 April 7th)
- × Invited speaker at the seminar for the PhD in Science and Mathematics Education, Department of Didactics of Mathematics and Experimental Sciences, Universitat Autònoma de Barcelona. Title of the seminar: “Modelos y simulaciones para promover la interacción entre disciplinas STEM en el Proyecto IDENTITIES” (2021 June 16th)

Courses for university students

- × Invited speaker at the seminar for the Master students in Teacher Education, Department of Linguistic and Literary Education, and Didactics of Natural Sciences and Mathematics, Universitat de Barcelona. Title of the seminar: “Imaginar la escuela del future con simulaciones computacionales” (2022 May 26th)
- × Invited speaker at the seminar for the Master students in Educational Research, Department of Didactics of Mathematics and Experimental Sciences, Universitat Autònoma de Barcelona. Title of the seminar: “Simulaciones como objetos interdisciplinarios” (2022 April 28th)
- × Adjunct professor for the Laboratory of Physics and Physics Teaching for the students of Science of Primary Education, May 2022, Department of Education Studies “Giovanni Maria Bertin”, University of Bologna.
- × Tutor at summer school of the IDENTITIES European Project, 28 June – 2 July 2021, Virtual.
- × Tutor and speaker at the course on Health Literacy (teaching module of 12 hours), May 2021, Department of Medicine, University of Bologna.
- × Speaker at the course on Modeling the evolution of COVID-19 for the Master of Secondary Teaching (Mathematics curriculum, Physics and Chemistry curriculum), May 2021, Faculty of Education, University of Barcelona.
- × Tutor for the Physics Education course, February-May 2021, Department of Physics and Astronomy, University of Bologna.

Courses for in-service teachers

- × Organizer, tutor and speaker at National Scientific Degrees Plan (PLS) laboratory course on Simulations of Complex Systems for secondary school students, in-service and pre-service teachers (teaching module of 20 hours), January-February 2022, Department of Physics and Astronomy, University of Bologna.

- × Organizer, tutor and speaker at National Scientific Degrees Plan (PLS) laboratory course on Simulations of Complex Systems for secondary school students, in-service and pre-service teachers (teaching module of 20 hours), January-February 2021, Department of Physics and Astronomy, University of Bologna.
- × Tutor and speaker at training course for in-service teachers on the I SEE Project for futurizing science education, March-May 2019, “F. Baracca” Technical Aeronautic Institute, Forlì.
- × Tutor and speaker at I SEE Erasmus+ Project workshop, 19-20 April 2018, Fondazione Golinelli, Bologna.
- × Tutor and speaker at National Scientific Degrees Plan (PLS) teacher training course on interdisciplinarity (title of the lesson: “Physics and Mathematics for problem solving: the model of epistemic games”), March-April 2018, Department of Physics and Astronomy, University of Bologna.

Courses for high-school students

- × Organizer, tutor, and speaker at National Scientific Degrees Plan (PLS) laboratory course on Simulations of Complex Systems for secondary school students (teaching module of 20 hours), January-February 2022, Department of Physics and Astronomy, University of Bologna.
- × Tutor and speaker at National Scientific Degrees Plan (PLS) laboratory course on Climate Change for secondary school students (teaching module of 10 hours), November 2021, Department of Physics and Astronomy, University of Bologna.
- × Organizer, tutor and speaker at National Scientific Degrees Plan (PLS) laboratory course on Simulations of Complex Systems for secondary school students (teaching module of 20 hours), January-February 2021, Department of Physics and Astronomy, University of Bologna.
- × Tutor and speaker at National Scientific Degrees Plan (PLS) laboratory course on Climate Change for secondary school students (teaching module of 10 hours), February 2021, Department of Physics and Astronomy, University of Bologna.
- × Tutor and speaker at National Scientific Degrees Plan (PLS) laboratory course on Artificial Intelligence for secondary school students (teaching module of 10 hours), October 2020, “A. Einstein” Scientific Lyceum, Rimini.
- × Tutor and speaker at National Scientific Degrees Plan (PLS) laboratory course on Climate Change for secondary school students (teaching module of 10 hours), February 2020, Department of Physics and Astronomy, University of Bologna.
- × Tutor and speaker at National Scientific Degrees Plan (PLS) laboratory course on Quantum Computing for secondary school students (teaching module of 10 hours), February-March 2019, Department of Physics and Astronomy, University of Bologna.
- × Tutor and speaker at National Scientific Degrees Plan (PLS) training course for in-service teachers on Interdisciplinarity between Physics and Mathematics: design and discussion of teaching experiments, October 2018-April 2019, Department of Physics and Astronomy, University of Bologna.
- × Teacher at I SEE Erasmus+ Project course on artificial intelligence for secondary school students, November 2018, “A. Einstein” Scientific Lyceum, Rimini.
- × Tutor and speaker at National Scientific Degrees Plan (PLS) summer school on Artificial Intelligence for secondary school students, 13-19 June 2018, Department of Physics and Astronomy, University of Bologna.
- × Invited speaker for the project “Understanding Pollution” for secondary school students (title of the lesson: “Pollution in a complex world: complexity as an instrument to observe and act in the world”), 8 March 2018, “F. Selmi” Institute, Modena.
- × Teacher at I SEE Erasmus+ Project course on artificial intelligence for secondary school students (teaching module of 10 hours), February-March 2018, “A. Einstein” Scientific Lyceum, Rimini.
- × Teacher at National Scientific Degrees Plan (PLS) laboratory course on artificial intelligence for secondary school students (teaching module of 10 hours), February-March 2018, Department of Physics and Astronomy, University of Bologna.
- × Teacher at National Scientific Degrees Plan (PLS) laboratory course on climate change for secondary school students (teaching module of 10 hours), February-March 2018, Department of Physics and Astronomy, University of Bologna.
- × Tutor and invited speaker at summer school of National Scientific Degrees Plan (PLS) on climate change and EuroProject management for secondary school students, 19-23 June 2017, Department of Physics and Astronomy, University of Bologna.

- × Tutor at summer school of the I SEE European Project, 5-9 June 2017, Fondazione Golinelli, Bologna.
- × Teacher at National Scientific Degrees Plan (PLS) laboratory course on climate change for secondary school students, February-March 2017, Department of Physics and Astronomy, University of Bologna.
- × Tutor at 'Fisica in Moto' Physics laboratory, October 2016-January 2017, Ducati, Bologna.