Consiglio Nazionale delle Ricerche
IRPPS
Istituto di ricerche sulla popolazione e le politiche sociali

INFN

GENERA Network

Raising awareness on gender issues: a path through physics, outreach and diversity.

Maria Rosaria Masullo
INFN Napoli
Bologna, 9th July 2022

ICHEP 2022
Education and Outreach session

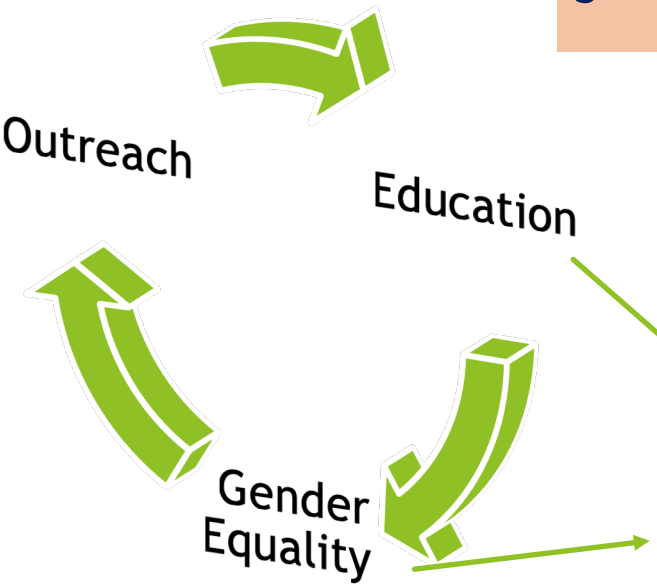
Through Outreach activities we have an enormous potential to effect a change

ourselves

students

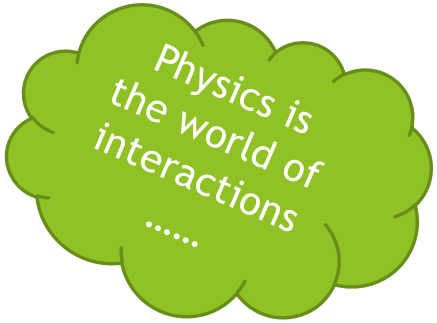
teachers

We trigger young people toward science…
but how do we trigger ….?
what we tell ….?



Schools have enormous potential to effect changes in gender relations, views of and gender practices, to create a gender-sensitive and gender-equal generation of men and women.

Are instrumental in the development of the society



It is a question of **interactions** ….

As we interact with teachers and students
As teachers interact with students
As students interact with other students, with themselves and with teachers

Often all these interactions are subconsciously based on gender stereotypes
We have more gender stereotypes than we think…..

The idea of school competition on gender issues

- During the organization of the **Italian GENDER day inside the GENERA** European project, the school competition stemmed from a collaboration between the Italian National Research Council (CNR) and the Italian National Institute for Nuclear Physics (INFN).
  - The idea was to improve female participation in science, starting from the higher school educational level.

Why the school competition? What we tried to understand?

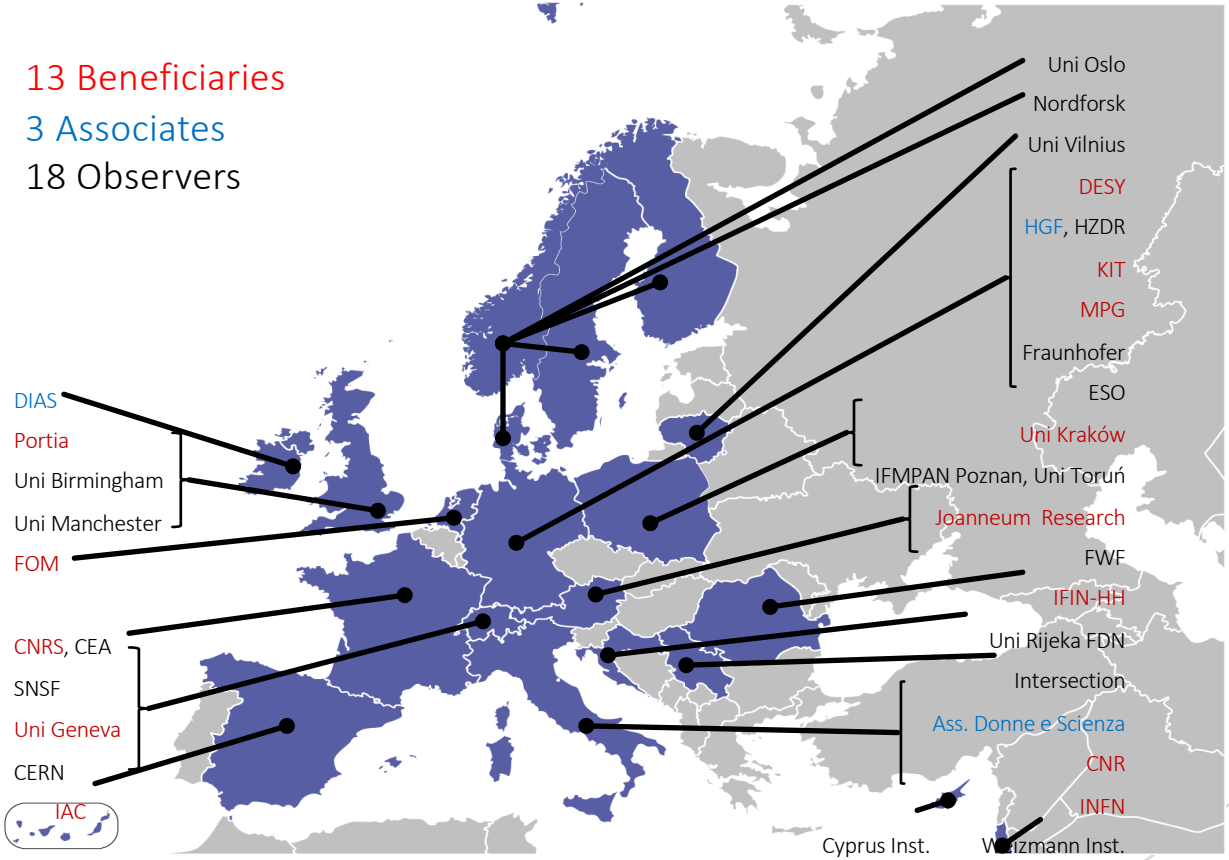
- Which is the student level of awareness on gender stereotypes
- How students perceive the personality of woman researchers, what do they think about aspects of female scientists' personality and professional life; which is their idea about the role of women scientists on scientific progress
- How students consider cultural and social prejudices on women in science and in which way this could affect the career paths of young women scientists.
- Which is their perception of the future

From GENERA to GENERA Network

GENERA Project GENERA Network

2015 2016 2017 2018 2018 2019 2020 …

13 Beneficiaries
3 Associates
18 Observers



GENERA UE Project in short

- GENERA Acronym: **G**ender **E**quality **N**etwork in Physics in the **E**uropean **R**esearch **A**rea
- Horizon 2020 Project ---- Funded under the call GERI.4.2014
  „Support to research organisation to implement gender equality plans"
- Sept. 2015 – Aug. 2018

Unique selling point: Field-specific approach *"from physics for physics"*

- A multidisciplinary approach: partnership composed by European Physics and Sociology Institutions

- Network out of 13 beneficiaries:
  - 11 physics related organizations
  - 2 professional support organizations for evaluation and outreach & valorization
  - More and more observers (2 => 18)

GENERA Project: achievements

- Report on how to improve the Research Cultural Environment,
- Summary Report and Guidelines of the Interview Results,
- Fields of Action Report,
- Toolbox for **"Customised GEPs and their implementation in physics"**
- Roadmap for Gender Equality Plan Implementation,
- Evaluation Concept
- Gender and Mobility Report
- PAM (Planning – Action – Monitoring) Tool
- 3 Policy Briefs
- Concept for Gender in Physics Days
- Results of the Gender in Physics Days
- GENERA Status Report on Gender in involved RPOs and RFOs,
- Videos - winners of the School Competition "Women in Physics: stereotypes and gender bias"
- Memorandum of Understanding for GENERA Network

See https://www.genera-network.eu/achievements

GENERA Project

GENERA Network

2015 2016 2017 2018 2018 2019 2020 …

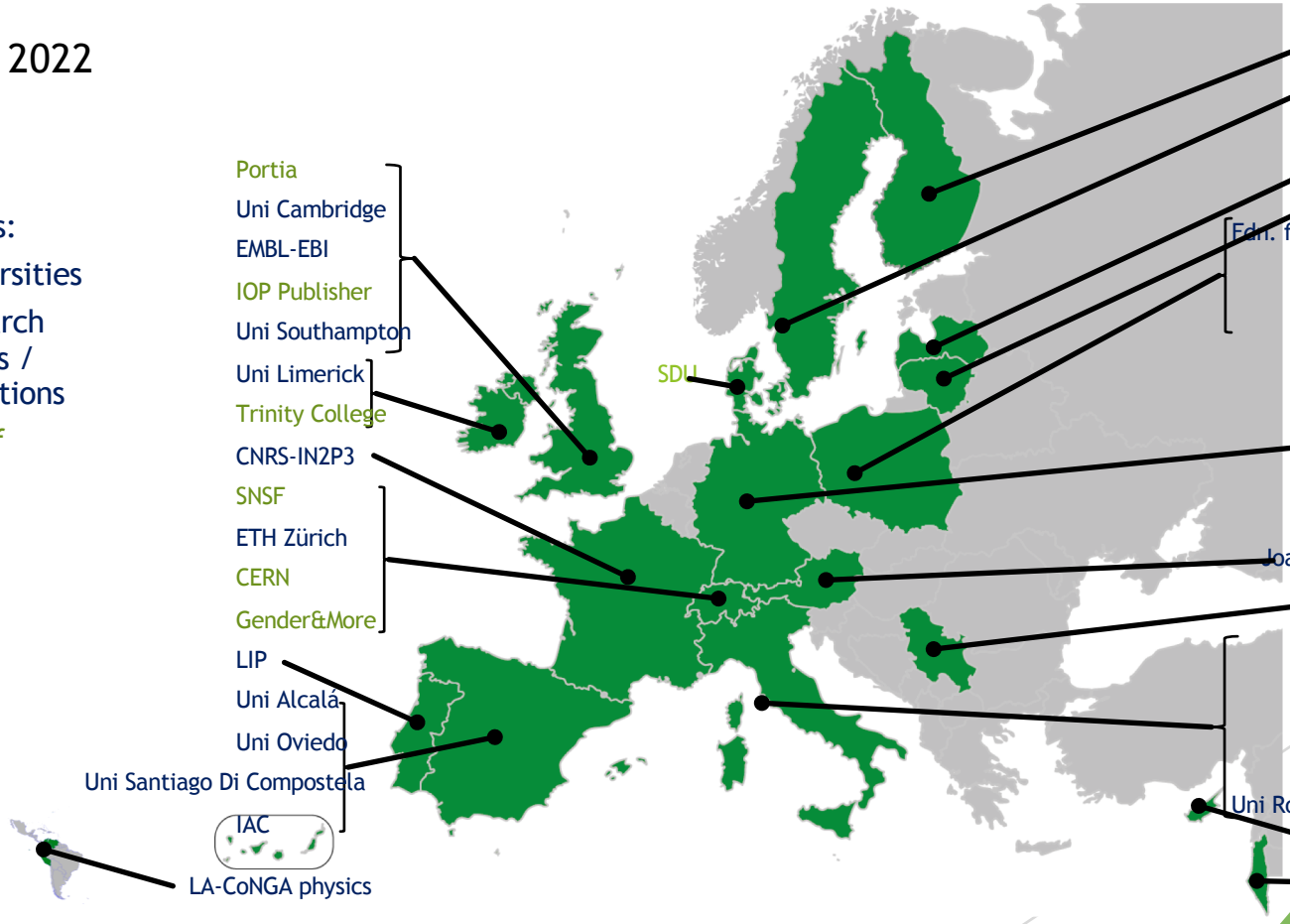
See the talk of Tomas Brage: The GENERA Network - promoting gender equality in physics (EDI session 9july)

Map updated to 2022

35 Members:

- 18 Universities
- 17 Research Institutes / Organisations

6 Friends of GENERA



The GENERA NETWORK vision

https://www.genera-network.eu/

- to support, coordinate and improve gender equality policies in physics research organisations in Europe and world-wide;
- to support its Members and Friends with the transition to an environment for learning, teaching and research in physics that is equally attractive and supportive to all genders, at each stage of their education and career path,
- to provide its Members and Friends with access to expertise on methods to improve gender balance in research content, process, and impact, as well as provide opportunities to identify new markets for science knowledge where gender can differentiate quality of research and innovation outcomes;

- to provide its Members and Friends collective responses to shared and well-evidenced specific gender issues, such as the retention of women already in the system and mobility of dual-career couples as well as gender bias and discrimination.

- to provide its Members and Friends a common framework for the collection of gender data in physics at the individual institutional level, and for sharing the results across the network to enable comparative analyses for physics.
- GENERA Network collectively contributes to the policy making for improvement of the gender balance in the European Research Area.

SHE FIGURES 2021 recognizes our school contest as valid support for young women…and not only!

Institutional-level policy and practices

At institutional level, there are several examples of policies, projects and programmes to encourage and support young girls/women to pursue STEM subjects at the undergraduate level and higher. Furthermore, several institutions have developed specific programmes to encourage and support women to enter STEM careers.

Support for young women and girls to pursue STEM subjects

In Italy, the **National Institute for Nuclear Physics (INFN) and National Research Council (CNR)** organised a school competition on 'women in physics, stereotypes and gender bias'.[54] The competition aimed to encourage girls to choose STEM-related subjects in university, to highlight the importance of role models and stereotypes related to women in science and to understand the perception of young people about women in research. The competition involved 120 high schools where students created pictures, posters or brochures on the stereotypes related to women in physics.

In Germany, the project 'Zdi Campus – Girls try out STEM-fields'[55] provided young girls with high school diplomas the opportunity to attend university courses in STEM-related subjects for a period of six months. The project was found to be effective as several young girls/women that attended the courses chose to select a STEM field for their further study. At the undergraduate and graduate level, the UniMento project[56] at the **University of Augsburg** provides mentoring for students and women researchers to help eliminate gender-based career stereotypes in subjects where either women or men are typically under-represented. The mentoring programme includes individual career planning support and opportunities for students to reflect on their future ambitions. Furthermore, mentees are offered support through training on job applications and networking with useful contacts for their future careers.

The school competition for high school students: first and second edition

Italian GENDER IN PHYSICS DAY
10 Maggio 2017

Aula Convegni CNR
Piazzale Aldo Moro 7, Roma

9:00 REGISTRAZIONE

9:30 SESSIONE DI APERTURA
Modera: Sveva Avveduto (CNR – IRPPS)

Saluti istituzionali

Massimo Inguscio (Presidente CNR),
Fernando Ferroni (Presidente INFN)
Valeria Fedeli (Ministra dell'Istruzione, Università e Ricerca)*
Monica Parrella (Pari Opportunità. Presidenza del Consiglio dei Ministri)*

10:00

Progetto GENERA, Thomas Berghoefer (GENERA)
CNR e INFN: dati e questioni aperte Sveva Avveduto (CNR - IRPPS), Roberta Antolini (INFN)

10:30 Pausa Caffè

11:00 SFIDE E PROSPETTIVE PER L'UGUAGLIANZA DI GENERE NEL SISTEMA DI RICERCA EUROPEO
Modera: Lucio Pisacane (CNR - IRPPS)

Fisica: chiudere il divario di genere Wendy Hansen (UNU-MERIT Maastricht University)
Uguaglianza di genere in fisica in Olanda Win Van Saarloos (Leiden University)
Carriere scientifiche europee ed eccellenza Claartje J. Vinkenburg (University Amsterdam)

*(da confermare)

11:45 BUONE PRATICHE E "GEP IN PRATICA"
Modera: Sandra Leone (INFN)

GenderTime Silvana Badaloni (Università di Padova)
GENOVATE Antonella Liccardo (Università di Napoli Federico II)
GenisLAB Oretta Di Carlo (INFN)
Il Piano Triennale di Azioni Positive dell'INFN Maria Rosaria Masullo (INFN)
CNR-CUG Buone Pratiche Gabriella Liberati (CNR)

13:00 CONCLUSIONI: A CHE PUNTO SIAMO, COSA ABBIAMO IMPARATO E AZIONI FUTURE
Modera: Marco Ferrazzoli (CNR)

INFN Speranza Falciano (Giunta Esecutiva INFN)
CNR Corrado Spinella (Direttore Dipartimento Scienze fisiche e tecnologie della materia, CNR)

13:30 – 14:30 Pranzo

14:30 SESSIONE POMERIDIANA
Modera: Silvia Bencivelli (Giornalista)

ERC Starting Grant *L'esperienza di una giovane fisica.* Manuela Cavallaro (INFN)
Concorso per le scuole: "Donne nella Fisica: stereotipi e pregiudizi di genere"

Presentazione degli elaborati e Cerimonia di premiazione

Segreteria organizzativa: CNR-IRPPS, Cristiana Crescimbene (c.crescimbene@irpps.cnr.it), Laura Sperandio (l.sperandio@irpps.cnr.it); **INFN,** Lucia Tinari (gpday@lngs.infn.it)

GENERA - Gender Equality Network in the European Research Area.
This project has received funding from European Union's H2020 programme GERI – 4 - 2014 Grant Agreement n. 665637

GENDER DAY in PHYSICS

Consiglio Nazionale delle Ricerche
IRPPS Consiglio Nazionale delle Ricerche Istituto di Ricerche sulla Popolazione e le Politiche Sociali

INFN Istituto Nazionale di Fisica Nucleare

SCIENZA, GENERE E NUOVE GENERAZIONI

16 maggio 2018
Auditorium B. Touschek
Laboratori Nazionali di Frascati – INFN
Via Enrico Fermi, 40 Frascati

9:30 REGISTRAZIONE

10:00 SALUTI ISTITUZIONALI
Modera: Marco FERRAZZOLI (Capo ufficio stampa CNR)

Fernando FERRONI (Presidente INFN)
Corrado SPINELLA (CNR Direttore Dipartimento Scienze fisiche e tecnologia della materia)
Pierluigi CAMPANA (Direttore Laboratori Nazionali di Frascati - INFN)

10:20
"Pari Opportunità: il punto di vista della Presidenza del Consiglio dei Ministri"
Monica PARRELLA (Dipartimento Pari Opportunità – Presidenza del Consiglio dei Ministri)

10:40
"Presentazione dati e Progetto GENERA"
Roberta ANTOLINI (INFN-LNGS) **Sveva AVVEDUTO** (CNR-IRPPS)

11:00
"La creatività delle donne per la scienza del nuovo mondo"
Patrizia COLELLA (Dirigente Scolastico Istituto Tecnico "A. Olivetti" – Lecce)

11.30 INTERVALLO

11:40
"Day of Women and Girls in Science: l'esperienza International Masterclass a Cagliari"
Viviana FANTI (Università di Cagliari e INFN Sezione di Cagliari)

11:55
"Perché ho scelto la fisica medica: un percorso di ricerca all'intersezione fra varie discipline"
Silva BORTOLUSSI (Università di Pavia – Dipartimento di Fisica e INFN Sezione di Pavia)

12:15
"Le nanotecnologie e la medicina di precisione per lo sviluppo di nuovi modelli tumorali 3D: il progetto ERC – Starting Grant"
Loretta DEL MERCATO (CNR-Nanotec – Lecce), **vincitrice ERC-Starting Grant INTERCELLMED**

12:30
Premiazione vincitori II[a] edizione Concorso "Donne e ricerca in fisica: stereotipi e pregiudizi"

Moderano: Sandra LEONE (INFN – Pisa) **Maria Rosaria MASULLO** (INFN – Napoli) **e Lucio PISACANE** (CNR-IRPPS)

Presentazione dei video degli studenti vincitori del Concorso Cerimonia di premiazione: Primo, Secondo, Terzo posto e Menzioni Speciali

13:30 FINE EVENTO

GENERA - Gender Equality Network in the European Research Area.
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The rules, the selections, the methodology……

The student belong to the 3rd, 4th and 5th year of any typology of high school (scientific, industrial, technical, artistic, classic liceum, etc)

The Competition required the candidates to create a project about the issue of gender equality in physics with the aim to explore students' perceptions on the prejudices embedded in dominated culture concerning the role of female scientists in society.

For the first competition they produced tales, reportage and videos about gender equality and the female role in scientific careers.

Since the second edition we asked only for short videos

The evaluation criteria (three referees for each project and then a general comparison):

- Originality/creativity
- The communicative effectiveness
- The correspondence to the theme
- The quality of the technique, in the case of video

The awards for first positions:

- Scientific school kits for science experiments

or since the second edition

- 2/3 day stay in one INFN or CNR big lab

Plus special mentions

First contest

- 120 schools participating
- more than 830 students were involved
- Videos were the preferred media chosen by students (58%)

Reference: *Students' Vision and Representation of Gender-Inclusiveness in Science*, R. ANTOLINI, S. AREZZINI, S. AVVEDUTO, G. DIONISIO, Ilaria DI TULLIO, S. LEONE, D. LUZI, M. R. MASULLO, S. PELLIZONI, L. PISCANE (2019)
DOI: 10.3217/978-3-85125-668-0-17

The third edition has been included in a wider program dedicated to women in science organized with the help of central INFN offices

Donne e ricerca in fisica: opportunità, ostacoli e sfide

(Women and Research in Physics: chances, obstacles and challenges)

GENDER DAY
in PHYSICS

May 2022 - Auditorium Parco della Musica- Roma

The numbers of the contest

80 Projects

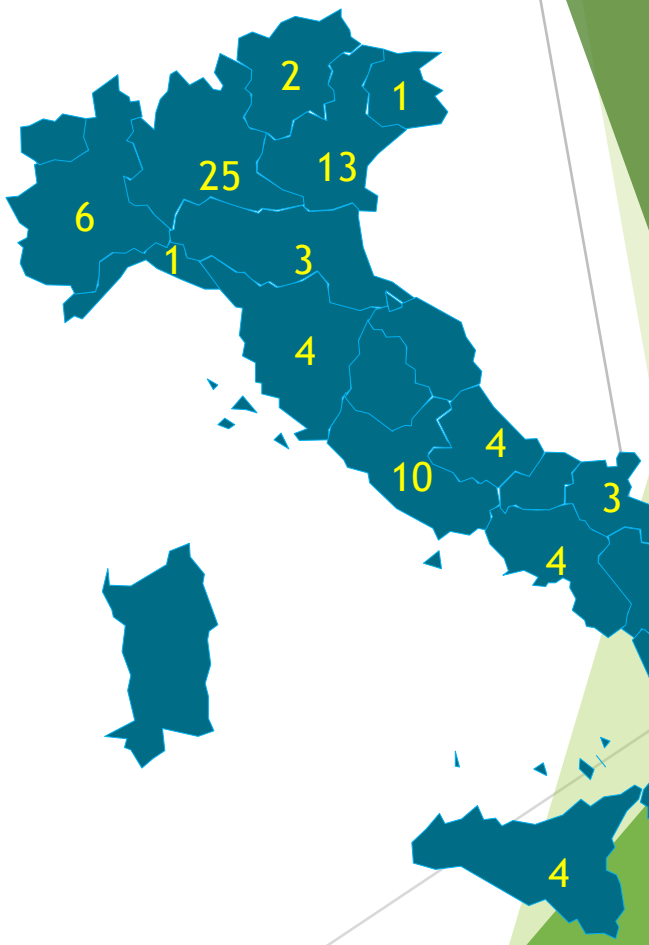
54 High Schools

70 Classes

n. participants: 680

63% girls e 37% boys

Teachers involved: over 100



What they gave us !

- Videos are the language of this generation; the young people can really produce wonderful things

- Girls and boys have given free rein to their imagination, they have been actors, screenwriters and directors…..
- They conceived, written, interpreted, designed them, invented drawings, interviewed people, studied the history ...
- Projects have been carried out by individuals, small groups or entire classes. In several cases, videos are the final products of a multidisciplinary path of civic education .
- Often more than one teacher was involved in the individual projects.
- The value of working in group as a methodology to face new arguments, new issue never discussed…

What we learned

- The girls have often felt the "diversity" and the external attempt to direct their lives, already in the phase of choosing high school ..(what's about boys??)

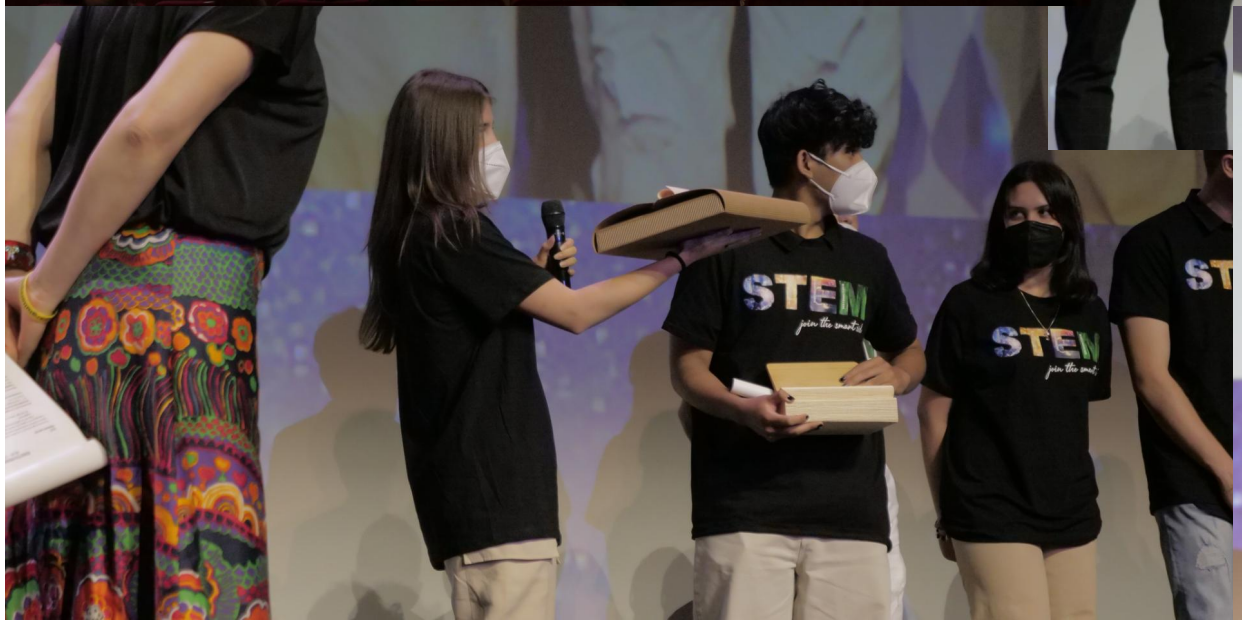
- In several cases they have heard about gender issues, but they have never stopped, neither the girls nor the boys, specifically and above all, do not know in practice what this means ...
- The way in which the school generally deals with these topics is superficial and often distant. We need news opportunities for further studies.
- And also the way in which we speak of the science and the research
- In reality, girls and boys don't really know what we do, what our life is like (I mean ..being a physicist, a researcher)
- Knowing about the life, the challenges and the obstacles that the scientists of the past have faced serves as an incentive to believe in themselves, to pursue their dreams, to believe more in what they can realize.


GENERA
Network
IRPPS
AIF
STEM


STEM


SCIENZIATE
Talenti da valorizzare per una scienza di successo
GENERA Network
IRPPS
SPRINGER NATURE
Musica per Roma


STEM


STEM


GENERA Network
IRPPS
STEM

Change our point of view to change the history

The writers haven't rewritten the stories in this book. They haven't reimagined endings, or reinvented characters.

What they have done is switch all the genders.
Jonathan created an algorithm that swaps the gender in text turning 'he' to 'she' and 'son' to 'daughter'. They applied it to fairytales and Karrie illustrated the new stories.

Can we do it?

Can we be the agent of change?

Thanks for your attention

INFN group: Roberta Antolini, Silvia Arezzini, Gianni Dionisio, Sandra Leone, Maria Rosaria Masullo, Sabina Pellizzoni

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