Creativity at its best: making science by making art

High School Student project

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On behalf of A&S coordination committee
The main idea is to put in practice the basic concept of the STEAM field in which neither STEM nor arts are privileged over the other, but both are equally in play and engaging high school students with science using artistic languages, regardless of student’s specific skills or level of knowledge.

More Goals
• Learn how conceive, design a project based on the creativity and realize it.
• Learn to work in group and with colleagues coming from different cultures and experiences.
• Arts-based activities may constitute a suitable approach towards integrating creativity, imagination, and science in school settings.

• The inclusion of a competition element is supported by evidence suggesting a positive association between student participation in STEM competitions.

• Some of the pillars of the scientific research is the working in team; to collaborate, to share ideas and personal skills. For this reason, the project is structured in working group.

• Full process in conceiving, design and create an artwork inspired by a scientific topic.
Present status

Italian high school students (15-18 years old)

*Art & Science Across Italy*, is organized and funded by the Italian National Institute for Nuclear Physics (INFN) and by CERN.

III edition (2020-2022) is on going now

Many Italian Universities and Research Centers are contributing to the project – about 120 researchers.

Physics, Chemistry, Math, Biology, Oceanography, Engineering, Art, Literature, Medicine and more

All the info at: https://artandscience.infn.it
https://www.facebook.com/artandscienceacrossitaly
https://www.instagram.com/artandscienceacrossitaly/
Educational phase (6 months)
- Seminars
- Museum visits
- Laboratory visits
- Round tables
- Photo/Video contest
- Movies and doc.

Creative phase (3 months)
- Group of 3 students design an artistic project
- One scientific theme
- No restriction or boundary
- Any artistic form is welcome

Exhibition & Competition
- All artworks are shown at local exhibitions
- The first 7 gain the National competition
- Students act as guide for the public

Master at CERN/INFN
- 24-30 fellowships for the A&S Master
- 5 days long
- II edition at LNF

Project Structure
The numbers

**Edition I (’16 – ’18) + II (’18 - ’20)**
- 200 Teachers
- 150 Schools
- 11 Regions
- 11 Exhibitions
- 12,400 Students

**Edition III (Nov ’20 – Mar ’22)**
- 111 Schools
- 218 Teachers
- 15 Regions
- 15 Exhibitions (Jan – Mar ’22)

**Activities (@Sep ‘21)**
- 21 online meetings with the participation of 47 researchers and 3 artists

**Creativity Championship**
(Mar – Jun ‘21)
From the award ceremony to the Master at CERN (I edition)
24 students won the national competition
Evaluation and results

II Edition

More than 2,000 answered to the pre and post questionnaire. 58% are female – 62% are from scientific high school.
How much the students are interested in Science and Art

Students are a little bit more interested in science w.r.t. art

- last two bins in science = 66.7%
- last two bins in art = 59.3%
Evaluation and results

II Edition

- Working in group was not evaluated as very difficult
- The process to design and create the artwork has been evaluated as difficult for most of the students

Histograms showing:
- How difficult was working in group?
- How difficult was the creation of the artwork?
Evaluation and results
II Edition

• The type of high schools and the university field at which they were interested have been used to evaluate if the project engaged all the students to science regardless their attitude.

  Large variety of cultural interest; 10 were interested in scientific field, 3 in medicine, 2 in art, 4 in human field.

• Comparing the type of school of the participants to the questionnaire and that of the winners, we can state that the two samples are compatible with a confidence level of 97.5%.

  All the students have the same probability to have success in the project regardless the type of high school they come from.
III Edition – Creativity championship
(Mar - Jun ’21)

4 matches:
1. picture
2. video
3. collage
4. text

3 winners at the end of the competition
3 winners per match

*images are taken from the first match as an example of their creativity
Conclusions

• The idea of using Art to attract students to the Science seems to work well

• Students from different high schools (classic, scientific, artistic...) are engaged to design and build an artwork based on Science

• The competition, the working in group and the Master at CERN/INFN are clearly motivating them
Gratzias po s’atentzioni de bosaterus

Thank you for your attention

Grazie per la vostra attenzione