

RESULTS FROM IMPACT ASSESSMENT ON SOCIETY AND SCIENTISTS OF FRASCATI SCIENZA EUROPEAN RESEARCHERS NIGHTS IN YEARS 2006 – 2014

Arnone S., Bellini F., Faccini M., Maselli D., Mazzitelli G., Paximadas I., Spagnoli F.

ABSTRACT

The aim of this paper is to present the impact achieved by Frascati Scienza Association through the European Researchers' Night within the years 2006-2015 on the society and researchers. The paper also presents a detailed analysis of the edition of 2014 (with 450 ex-ante and 543 ex-post semi-structured questionnaires) and 2015 results (with 304 ex-ante and n. 623 ex-post questionnaires) and on the world café qualitative technique. Specific information about the impact achieved in each year of European Researchers' Night (ERN) will be here described.

KEYWORDS: Citizen Science, Science education, Public engagement

1. INTRODUCTION

Frascati Scienza was officially founded as an association in 2008, driven by the need to promote educational activities to scientific research, aimed to involve the general public and to bring it closer to science and scientists. However, the first scientific activities and cultural events took shape in 2006, under the coordination of INFN, through the European Researchers' Night (<http://ec.europa.eu/research/researchersnight>), the most important and significant event to promote the role of the researcher and bring people of all ages in the scientific world. The positive and successful experience of the first two events, push the researchers and citizen of all the Frascati Area, where most of Italian research center are located, to formally associate in Frascati Scienza in 2008, who coordinated the events from 2008 to 2015.

Every year, the challenge has become ever more large and engaging with a progressive increase in exchange and sharing activities among citizens and researchers, where the latter are dedicated to tell their passion for the scientific world and to transfer their knowledge to "non-scientists". Since the first edition of the European Researchers' Night, we had several questions about how a cultural entertainment event could bring both citizens and researchers to promote scientific culture to reach a greater understanding of issues and the actors to research. How to engage people? How to explain and re-launch the role of researchers? How to investigate the opinions of those who think they should not be involved in research?

The association had always the objective to develop a dialogue with the public through a constant comparison over time and encouraging a participatory approach. In this perspective, citizens became valuable partners for researchers on key issues of modern research and on its application. A proper science education helps people to become more responsible and aware of the world around us and to develop a greater understanding about the events of everyday life. The need to revitalize

the role of the researcher plays a crucial role in modern society and people have hardly evidence of his work as scientist and how this impacts on their life.

The researchers are perceived as distant from the real world, sometimes even as unpredictable and mysterious. The dialogue between citizens and researchers is necessary to understand that science belongs to all and not only to scientists. Hence, the importance of providing an event to give the opportunity to come into direct contact with the researchers, possibly through a fun and participatory methodology is evident.

The nine years in the implementation of the European Researchers' Night had an interesting impact also on the researchers who have realized that an interaction with the non-scientist people has required a form of education of themselves, too little used to deal with non-experts.

It is very important to involve scientist and non-scientist in multiple ways, so questionnaires over the years tried to highlight if people found useful participating in the event, e.g., understanding researchers work or increasing the knowledge of the research role.

Frascati Scienza aims not only to disseminate scientific information, but especially to facilitate conversations about science, because a more open science to the public can benefit of more perspectives and discover new collective forms of knowledge.

2. METHODOLOGY

The comprehensive survey conducted about the results of the Researchers' Night within the years 2006-2014, was primarily based on a non-probabilistic sample of respondents.

The survey included two types of questionnaires: ex-ante questionnaire distributed prior to the event, and ex-post questionnaire administered at the end of event. The number of respondents in the course of all years fall in total in the range of about 300-900. The distribution has been developed by sending online questionnaires to the newsletter subscribers of Frascati Scienza.

Data collection took place through the website www.frascatiscienza.it.

Part of the interviews of ex-post questionnaires took place during the European Researchers' Night, both through the compilation in paper form and directly online through the website and a computer at the Info Point.

The main objective of the analysis was to gather useful information to improve future events and/or confirm any expected performance, through the following steps:

- define the target audience reached during the European Researchers' Night.
- Measure how much the event has affected the greater awareness on commitment, knowledge and promotion of the researcher's figure.
- Draft the most concrete possible idea about the image of the researcher.
- Being able to understand how much difference, between Italy and Europe, is perceived by the public interviewed in relation to employability, consideration given to the research and funding.
- Analyse how much the role of research in Italy and Europe is considered important.

- Evaluate how much and which media influenced the dissemination of news and event information.
- Understanding what was the level of appreciation about the events and organization managed within the event.

3. IMPACT OF ERN ACTIVITIES DEVELOPED BY FRASCATI SCIENZA: 2006 - 2014

During the editions 2006 – 2007 of the Researchers' Night, the gender composition of the participants shown a male representation stronger than women (with a predominance of the first of about 15-20 percentage points), while, in all the following years, until the edition of 2014, the number of women participation tended to be equal to the men one.

Besides the growing interest of women to research and related activities, it is interesting to note the changing internal composition of age groups from the edition 2011 onwards, reflecting a progressively more evident trend to an increase of participation of young people and adults (from 10-19 to 40-49), in the years: 2011 (about 37% Females and 35% Males of total) and from 2012 mainly by high representation of women (about 46% Females and 31% Males on total of interviewed). In 2015 the number of men and women is almost comparable, with approximately 9 percentage points of difference in favor of women's representation.

The fact that the participants are focused on the younger and central classes denotes also the importance of specific choices in communication, appropriated to the technological evolution of the media used by the target (internet and social networks). Anyway, the association of new media to old media (such as outdoor advertising) has brought interesting results, especially in the past editions in which they were the key of advertising campaigns and for the events included in the program (competitions for schools and young people from 2007-2014, “the researchers put their face” in 2010 edition, Flash mob in 2011, Speed date with researchers in 2012 and 2013).

The young/adult participants of the Researchers' Night (the Night) have predominantly an high level of education, as the respondents appear to be mainly *university student* or already have a *degree title* (in the various editions, into account of the different conducted surveys over the years, it is possible to state that the percentage value, on average, is approximately of 35% for both variables). Throughout the different editions, from 2006 to 2015, in order to investigate the situation of researchers in Italy, the question posed was: “*If you are a researcher, you feel professionally inserted in Italy?*”. There has been a changing of trend in considering the researcher inserted in society. Although the answer *little* is always present, until the Night 2011, it is detectable even a good percentage of those who believe that the researcher is *enough* inserted in Italy (on average about 32%), while from 2012 to 2015, this percentage tends to decrease giving way to *not at all*.

It can be deduced that the perception that the researchers have, about their situation, is rather pessimistic. More than the half of researchers in 2014 (about 63%) answered to feel *little* or *not at all* inserted professionally in Italy.

From the Night of 2006 to 2008 edition, the most part of interviewed people stated to become aware of the event, especially through *internet, friends/word of mouth and direct contact with the Institutes involved* (on average, respectively, approximately 26%, 30 % and 26%).

From 2009 to 2012, the trend for the variables listed above was the same and, on account of a new type of advertising campaign, particularly focused on an highest impact of the visual, in the media plan was also used the *outdoor advertising* that appears to have had its own role in reaching the population (on average about 15%), together with the affirmation *to have participated in the previous editions* (on average about 18%).

During the same period, the use of internet (through its various channels: Frascati Scienza website, daily press and radio websites, social networks, etc.) reached on average about 35%, with a peak in 2012 of about 52% (more than half of the respondents).

From 2013 to 2015 it is possible to note different data from the last trend and this is probably due to a changed media plan compared to previous years. This identifies a return to a generally lower use of media, noting a predominance of those who have been reached through *friends/word of mouth* (about more than 50%), and 26% from other sources (in which it is detectable *internet* included, about 11%, considerably reduced compared to all other editions).

Throughout the different editions of the Researchers' Night, on average, 80% of respondents stated that the role of the research is *enough and very important for the development of our country and for Europe*. It might be assumed that there is a common direction of Italy and Europe related to the significance of research for the future both in Italy and in whole continent.

There are enormous differences when we deal with financing of research projects in Italy and Europe. An overwhelming majority of respondents stated to be aware of *not appropriate financing* of the research in Italy (on average, about 90%). While, in Europe, the research initiatives are considered *well financed* for about 72% of respondents, on average. It is possible to deduce almost an opposite trend.

From the event of 2010 to that of 2014, it has been requested a list on which to place the various scientific disciplines that people believed important for the research. For all the years, on average percentage, *Medicine* has been inserted in the first place (about 41%), followed by *Physics* (about 17%).

Until the 2009 edition, people had to answer *whether the event had helped to increase knowledge on research*, with positive results (on average, 78%). While, in the editions from 2010 onwards, it was considered necessary to split the question into multiple answer mode, in order to be able to identify more specifically what the event had helped to understand. Therefore, in the following years, the results are that the event of "Researchers' Night" contributed *to give a clearer image of what research is*, on average, for about 40% of participants until 2015, in which *raise awareness of researchers' work* is considered more important (66,3%).

Interestingly, in the course of the editions from 2010 to 2014, the fact of having a clearer image of what is the research is gradually increased, starting from 21% in 2010, reaching 56% in 2014. This survey could be interpreted as a increasing communication effectiveness of researchers and Night's collaborators to the needs of the target, including through more dedicated and interactive events.

Overall, the people interviewed between 2009-2015 believe that *the event has changed their idea of the figure of the researcher in a positive way*. Overall, the respondents in recent years of the event describe the figure of the researcher with the following characteristics: *enough young, certainly useful, dynamic and important, but not rich and not fully integrated into society as a relevant figure*.

On average, 88% of participants considered it *very useful to promote the role of the researcher*. However, from the first edition of 2006 to the Night 2015 the results for the two different responses have undergone a change of the internal composition. While until 2009 on average 52% of respondents answered *enough* and about 30% felt *very useful* the event for the promotion of the figure of the researcher, from the 2010 onwards, the trend reversed to reach in average 63% for the

answer *very useful* and 29% for the answer *enough*. This information might show a strengthening, over the years, in the positive appreciation of this event to create interest in the researcher and in research. Finally, the *event was judged positively*, on average, by about 85% of the participants in all editions, and about 98% of respondents stated that *would like to participate again in an event of this type*.

ERN 2015 IMPACT AND WORLD CAFÉ RESULTS

To achieve the main goal of evaluating the impact of the ‘European Researchers’ Night 2015’ event in the public perception of the researchers and their work, quantitative and qualitative analysis were realized. A total of 927 questionnaires (n. 304 ex-ante and n. 623 ex-post).

The level of participants' satisfaction, regarding the efficiency of the organization, remains high and constant over the years. Overall, most of the participants expressed enthusiasm, and congratulate the organization for the professionalism and the choice of speakers.

Even in the Night 2015, as in 2014, almost all the respondents believe that this type of event is useful to promote the role of the researcher and it could encourage the choice of young people to pursue a career in science.

During the European Researchers' Night 2015, for the second consecutive year, the Association Frascati Scienza collected impressions and suggestions by the participants about the event through the World Café methodology.

The objectives of the 2015 event were: to bring out the views of the public to analyze strengths and weaknesses, opportunities and criticalities, but above all Frascati Scienza was interested to collect ideas for future editions of the European Researchers' Week/Night reasoning in a practical, fun and productive way all together.

The roundtable have been held at SAPERmercato inFrascati, the new reinvented space dedicated to science, involving an audience of about 40 people consisting of both adults and children, in a broad debate for identifying interesting ideas.

In order to promote an orderly and systematic dialogue, a series of keywords have been proposed to participants for each theme to help people to focus on the issues .

About opportunities and criticalities Frascati Scienza presented the following keywords:

- Collaborations / partnerships between cities, institutions, associations;
- Project value as contributions to “Tuscolana Area”;
- Developing the concept of "sustainability" also for Night 2015;
- Multidisciplinary thematic proposals.

The analysis of the Opportunities showed particular appreciation for the event for being able to learn new things and engaging them in the practice of the experiments. According to the participants, the Researchers' Night 2015 has constituted an opportunity to access more reliable information because during the event you can speak directly with researchers. It also emerged as the event can promote the Tuscolana area, transmitting the knowledge of what it has been done from the inside perspective.

About Criticalities participants have raised doubts on the schedules of events and the fact that sometimes have been concentrated too many activities have been concentrated together and they would need more time in order to participate in. In fact, it is useful to extend the rally even on weekends or in other occasions during the year. About the critical issues some people rated the programme of the event unclear and advised to make the website more usable.

The World Café 2015 also discussed the Strengths and the Weaknesses of the event focusing the discussion on the following keywords:

- General organization;
- Easy registration and access location / activities;
- Innovativeness events;
- Usability issues;
- Technical and scientific, arguments;
- Promotion and communication event;
- Involvement and collaboration.

Regarding the Strengths, the participants considered easy to understand the issues proposed. They have enjoyed the open and direct dialogue between the audience and the speakers. Children had the opportunity to deal many curiosities with researchers. During the debate, some people appreciated the passion of the researchers. The accessibility to the events has considered adequate and the website excellent. The advertising was effective and the public felt pampered by Frascati Scienza staff.

About the Weaknesses, some practical aspects emerged, such as the acoustic of some rooms and the need to carry out these activities in larger spaces. On the other hand, some issues emerged more related to communication, such as to anticipate event information in June and in particular the promotion of those dedicated to schools, giving a proper notice. Not all participants found comfortable starting times of the events and it would be better to postpone them. About organization, it would be desirable to have a pause time after the events and to increase the number of the stands with the experiments considered useful and fun, as well as increasing the number of workshops for younger children (under 6). It also has been asked to play more events in kindergartens throughout the year.

Finally, during the World Café, Frascati Scienza asked participants to focus on Suggestions for the Future to be taken into account for the organization of the next editions. Also in this case, we have prepared some keywords on which to focus the attention:

- Organization;
- Reservations and access to the website;
- Location activities;
- Type of activities;
- Interaction with researchers;
- Future topics to be treated;
- Any further collaborations/partnerships can be developed;
- Communication/advertising Night event and related activities.

The participants focused on some issues they would like to go deeper in through laboratories and experiments, such as ecology, chemistry and mathematics. Especially children would like to talk about the Big Bang and they would also increase the number of experiments dedicated to them,

which in general are very helpful and fun. Some participants, finally, stressed that some activities require more space to accommodate the large number of attendees in order to give everyone the opportunity to participate comfortably.

4. CONCLUSIONS

The analysis presented in this paper shown the relevance and the huge impact of the European Researchers' Night organised by Frascati Scienza researchers and citizens since 2006. As a main result, the event was judged positively, on average, by about 85% of participants in all editions, and about 98% of respondents stated that would like to participate again in an event of this type. Throughout the different editions of the Researchers' Night, on average, 96% of respondents stated that the role of the research is *very important for development of our country and for Europe*. More in detail, in the last edition of 2015, the overall rating on the implementation of the 'European Researchers' Night' is positive for all respondents: the majority of them are surprised by the pleasantly content of their visits (laboratories, equipment, design research), but also on the ability to popularize researchers and their human side.

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