23rd International Congress on Sound & Vibration
Athens, Greece 10-14 July 2016
ICSV23

PARTICIPATION THROUGH KNOWLEDGE SHARING AND TRANSFER: STUDENTS PARTICIPATION AND NOISE RISK PERCEPTION

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Gioconda stays for i GIOvani CONtano nelle Decisioni su Ambiente e salute: the Young count in the decisions on environment and health. It is a European project (LIFE13 ENV/IT/000225) aimed at realizing an institutionalized participation of the youth in the local decision-making in the field of environment and health.
The way to realize it is a model of governance based on a platform, which offers a methodology, reliable data, and practical tools to be applied at a local basis. The dialogue fostered by the platform is mainly between two actors: 11-17 school pupils, mediated by their teachers, and the local administrations where the schools are located.
During the school year 2014-2015, the GIOCONDA team worked with around 600 students in eight schools in four areas in Italy, under different environmental pressures: Naples (Campania Region), Ravenna (Emilia-Romagna Region), Taranto (Apulia Region) and Lower Valdarno Valley (Tuscany Region). To these first areas, two further cities adopted the tool in the next year (Ferrara and Santa Croce S/A - Pisa), for a total of around 800 young participants.
As for the methodology, an environmental monitoring of air and noise quality, indoor and outdoor, was carried out by the local agencies for the protection of environment (ARPA). As a reliable source of evidence, the results were integrated in an informal-learning process in 13 classrooms, after the administration of a questionnaire to measure the young people perception of the risks connecting their health to a set of different pollutants.
Compared to air pollution and other environmental stressors monitored (odours and water), noise pollution is clearly underestimated and demonstrated to be an novelty along the whole research-action process. Respondents to the questionnaire shown a very limited awareness about the effect of noise on their health. After raising their awareness on this topic, they worked on suggesting possible improvements to reduce the noise in and outdoor and the implementation of protective measures. These recommendations were presented to and positively accepted by the local decision makers during the engagement events in each of the GIOCONDA's areas.

1. Introduction

GIOCONDA is funded by the European Union General Directorate for the Environment, EU 2014-2016 LIFE+ Environment Policy and Governance Programme [1]. The project's objective is to

build up a tool to facilitate the participation of young citizens in public decisions in the environment and health domain. The project proposal is based on the scientific evidence referred to the impact of environmental stressors on children [2], and on a series of political documents supporting the positive effects of participation in decision-making, including the young citizens [3-15].

The reduction and prevention of health outcomes associated with environmental factors has become a European priority since the WHO Europe Third Ministerial Conference on Environment and Health in 1999. In 2004, at the IV Ministerial Conference on Environment and Health, all the European ministers signed the Children Environment and Health Action Plan for Europe [4]. They committed themselves to protect young individuals from environmental risk and to endorse the WHO children's health and environmental program. Children's environmental and health program for Europe was drafted to set regional priority goals for European countries to reduce, and, where possible, to eliminate, children's exposure to environmental health risks. Children's environmental and health program for Europe, the European Environment & Health Action Plan 2004-2010 and the Parma Declaration on Environment and Health [5] emphasize the importance of involving young generations in the processes of decision making because, as suggested by Licari, Nemer and Tamburlini (2005) "young people are a resource for change" [6].

According to the WHO, the promotion of the education of children about their physical environment and their participation in decisions that affect their lives are among the main steps for reducing the environmental burden of disease that heavily affects the younger generations. The members of the Parma Conference agreed on strengthening of participative tools in order to involve young people, developing of environment and health indicators according to the European Environment and Health Information System (ENHIS), and realizing initiatives on the perception of risk, its assessment, management and communication [5].

In 1999, the UN highlighted that promoting youth participation in environment and development decision-making is a major factor for the success of Agenda 21 [7].

On the basis of the scientific evidence related to risks, and on the existence of wide possibilities to address the issues, the GIOCONDA's team decided to address two major environmental stressors: air pollution and noise. They are well known for their negative consequences on health, especially for children, and the advantages of preventive measures are well recognized [8-9].

In this paper, the work developed by the GIOCONDA's team focuses on noise, paying attention to a comparison with the air pollution perception.

The aim of the GIOCONDA project is to involve adolescents in the construction of effective evidence-informed policies on environment and health, adopting inform learning methods [10]. The mean is a process of learning and dialogue with adolescents based on a scientific approach: examining and discussing data, facts and options, and then elaborate concrete proposals for action. One of the priorities is to understand young people's perception of risk associated with environmental pollution. The project was thus carried out, during the first period, in four Italian areas characterized by different environmental conditions: Naples (in the region of Campania), Ravenna (Emilia-Romagna), Taranto (Apulia) and Lower Valdarno Valley (Tuscany).

Policy makers were involved and engaged in replying to the pupils' recommendations, elaborated after a process of research-action in the classrooms. As evident result after the first year of activities, is that the Ravenna Municipality included the results of GIOCONDA in the current projecting of the Urban Plan of Sustainable Mobility (PUMS).

Regarding the near future, after the realization of a web based platform (September 2016) that assumes the successful methods experimented in the first year, the GIOCONDA project will be ready for a more extensive use.

Further municipalities will be invited to initiate GIOCONDA activity with schools, taking advantage of the possibility to exploit a fruitful method to install a dialogue with their young citizens, to discuss about the local policies in progress, to compare the data available in their areas with the perception of risk and to listen to the recommendations elaborated by target rarely included in decision

making processes as the youngsters are.

2. Methods

GIOCONDA is realized in high schools, using a participatory approach [16].

The principles underpinning the GIOCONDA project are: the promotion of student participation through discussion; their central role in promoting ideas and actions to be included in decision-making; an exchange of multi-cultural ideas across different areas, in order to detect differences and similarities in various contexts; the use of ICT to collect information and deepen the local environmental health issues, to exchange ideas, and to submit recommendations to policy makers. This approach is developed in phases, detailed in the following pages.

2.1 Participants

The GIOCONDA project involved a total of four schools with students aged between 11 and 13 (secondary school), and four with 14-18 year old (high school). In each location, one of each type of school was selected. The four regions were selected due to their different demographic, social and environmental characteristics, such as population distribution and employment, socio-economic conditions and environmental pressures.

In the eight schools involved in the GIOCONDA project, 28 classes took part for a total of 603 students. 521 of them completed the questionnaire on risk perception.

The GIOCONDA project involved around 40 teachers, around 20 public administrators, several parents and around 30 researchers.

2.2 Working in schools

The whole process of GIOCONDA activities in schools (Fig. 1) was developed during a school year (2014-2015) and at the beginning of the second school year 2015-2016. The final Engagements Events were in Naples on October 2015, Ravenna and San Miniato December 2015, and in Taranto in February 2016.

Each step included activities related to environment and health issues. The noise issue was faced along the whole process, each step of which is briefly described here.

2.2.1 Step1. Mental maps

The first meeting in the classrooms was meant as a warm-up activity, focused on encourage the kids to about what “risk” means. The educators proposed a brainstorming around this concept using the technique of the *mental map*. The effectiveness of using concept maps to address complex issues, such as environment and health, is widely recognized by the social sciences [10].

21 “risk maps” in total were drawn on a flip board, and later elaborated by the educators using the software CMap. The results were used via ppt presentations and A3 printings in the further meetings, with the aim to go in depth on the meanings of risk and to isolate the topics of “environment” and “health” when mentioned.

2.2.2 Step 2. Questionnaires.

The GIOCONDA project combine two monitoring systems in school environments: one based on environmental data collection (indoor and outdoor measurements of air and noise pollution), the other based on a questionnaire exploring the pupils’ risk perception and their “willingness-to-pay” in relation to local environmental health issues. The willingness to pay, WTP, measures what individuals are willing to pay to reduce the likelihood of an adverse event [11]. WTP is not examined in this paper.

The questionnaires is drafted on the basis of the psychometric paradigm developed by Slovic et al. [12-13].

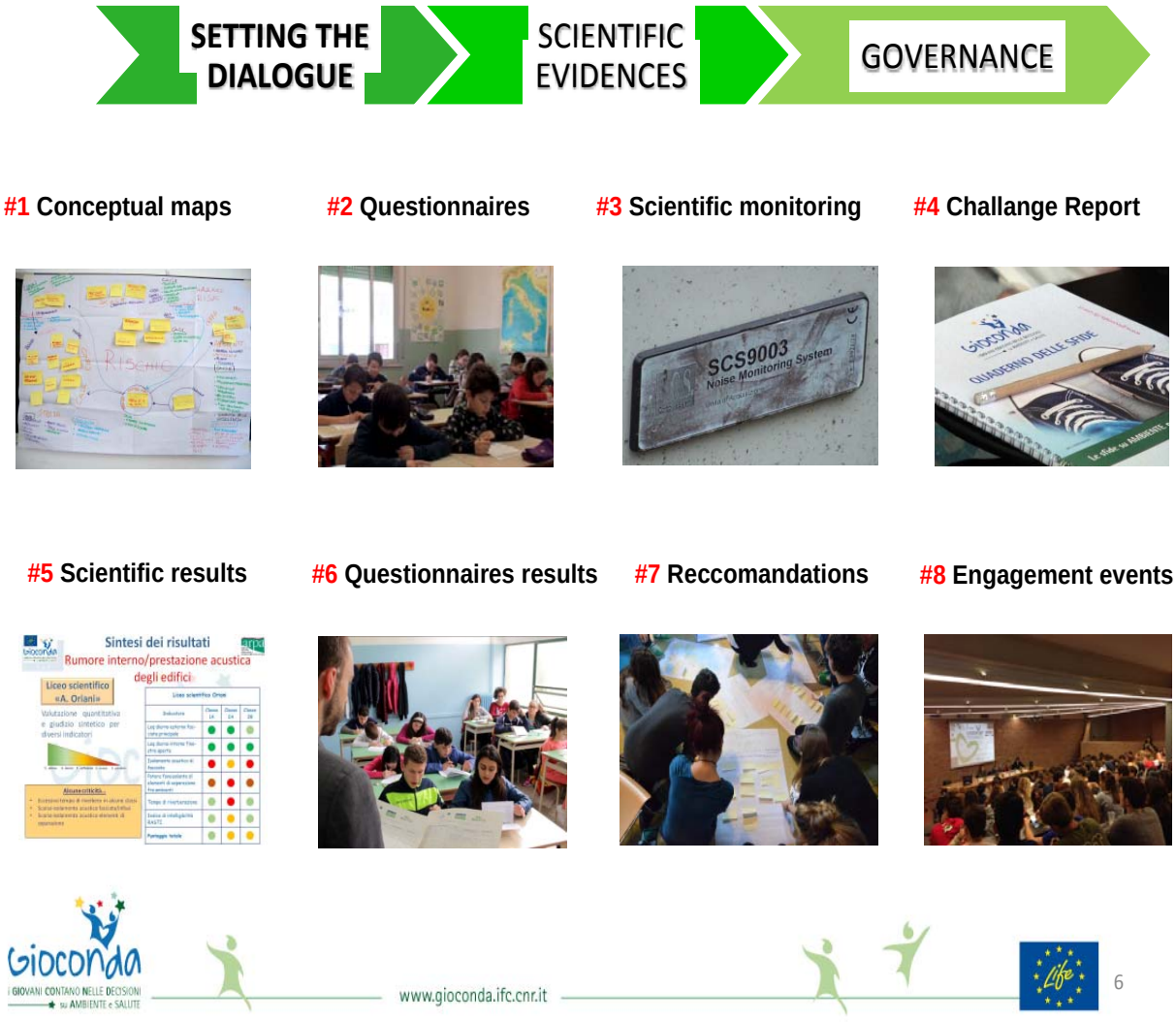

Figure 1: GIOCONDA activities in schools.

The noise-related questions were detailed and analysed in another article in this ICSV23 session (L. Cori et al.), using an "individual risk perception index".

2.2.3 Step 3. Environmental monitoring

Indoor and outdoor air and noise pollution were measured in the GIOCONDA's schools [14].

Those data were integrated with current local data, and with a socio-economic and health characterization of the area. The monitoring data collection is part of a learning process in schools about environment and health issues. Children directly experienced the monitoring activities, interacting with technicians, examining the devices and raising questions.

2.2.4 Step 4. Challenge Reports

During this stage, besides asking a feedback about the questionnaire administrated, 4 Local Challenges Report (LCR) were presented in the shape of a booklet, around 40 pages, with blank pages to include local data. The LCR collected basic information on environment and health issues, on the topic of environemntal rights in the field and referred to youngster, to public participation and the initiatives promoted in the territory where the students live.

The LCR, completed with environmental monitoring and questionnaires results, represent the main tool to be used for discussion and recommendation production.

2.2.5 Step 5. Results of monitoring activities

After the presentation of the LCR, and the delivery of a booklet per each student, a meeting with experts and technician presenting monitoring data gave the opportunity of further discuss about local

issues. This gave the change to each student to elaborate ideas for the recommendation production exercise.

2.2.6 Step 6. Questionnaires results

The results of the questionnaires on risk perception were discussed with the students, added to the LCR and contributed. In the overall sample, only 5% of students had a very high-risk perception index. The mean RPI was significantly higher in Taranto and Naples samples, compared to the other two areas. No differences of RPI according age class and gender were observed in Taranto and Ravenna samples.

2.2.7 Step 6. Recommendations

The LCR, including the scientific background, the results of the environmental monitoring and the risk perception, local initiatives and requests from administrators, were the core instrument for the recommendation production. The data collection was part of the learning process, and resulted to be crucial to address the meaning of scientific approach, method, systematic, exhaustive and curious.

In order to locally collect and share the recommendations, a participative event was organized using an Open Space Technology [17], adapted to specific space availability and the objective of the work. During those local events, several researchers have been involved in supporting the discussion with the expert point of view, and in the process of recommendation elaboration.

The results were organised as presentations or videos, to be shared during the engagement events.

2.2.8 Step 7. Engagement events

During the Engagement Events the local recommendation are shared with the decision makers, the parents and all the stakeholders.

3. Results

All the phases briefly described here, documented in the project reports, the web site and social media, provide elements to be discussed and further examined.

As main evidence, environmental and health issues are not spontaneously mentioned by the school students. During the first meeting (construction of a mental map around the word *risk*), the results show a great richness of meanings and hopes: adolescents tend to refer the work “risk” to themselves, as individuals, and to the environment where they experience risks: the school (being afraid of bad grades, of not being accepted by the others), the family, the street (accidents, violence, drug, racism), connected to “fear”, “emotion”, “adrenalin”. The other areas main areas around the word are: natural disasters, health, hospitals, environment, gamble. The most frequent word connected to risk is “death”. Talking about health, the main reference is the word “contamination”, with outcomes rarely connected with environmental pollution. Environment and pollution are often rightly connected with industries, traffic, human selfishness. However, rarely, and only by the oldest participants in the high schools, health and environment are explicitly linked. Among the areas, this link is recurrent especially in Taranto, where the industry and its polluting effects has been widely discussed in the last years in different arenas: inside the families – because of the high incidence of cancer and other diseases pollution-related, in politics, in the media.

Clear evidence is that the issue of noise is not spontaneously mentioned, while it raises the interest when pointed as a possible cause of annoyance by the educators, especially using multimedia resources and enrolling the participants in the fieldwork: seeing, touching and using the tools for the acoustic measures.

When associated with motorcycles or cars, or with the music listen through their smartphones, ideas and suggestions to mitigate the noise raise.

In general, noise risk for young citizens represented a challenge in terms of knowledge, awareness

and monitoring capacity. It is as a matter of fact a novel issue for most of the people interviewed during the preparatory phase of GIOCONDA project, especially in terms of risk for health. Teachers are aware of the problem, and they are positively surprised by the fact that noise is considered an environmental physical stressor, addressed by environmental legislations.

The noise monitoring results [14] represented a relevant point of attention for most of the external stakeholders, whereas students and teachers were more aware, even if they didn't conceptualise the risk of noise until the progress of project activities. Most of the noise problems inside the structures are linked to old school buildings or inadequate structures. Though, raising awareness on the issue of noise pollution and its effects on health mobilized creativity and ideas for solutions.

From the questionnaire emerged scarce sensitivity towards noise, all the students are more worried about air pollution.

During the drafting of recommendations, the experts found extremely interesting and challenging the discussion around noise, the difference between the personal exposure and the collective risk posed by the neighbourhood main streets, highroads, facilities, airports. Another challenging issue was that of *responsibility*. Questions raised were: who is responsible for what? and the necessary balance of request and pledges to be presented.

One third of all the recommendations collected by GIOCONDA and presented during the engagement events is referred to noise. Partly they are referred to the noise indoor, asking for simple and low-cost measures to solve the problem, partly to the whole problem of city organisation and building renovation.

Several Public Administrators participated in the events, and received the recommendations, and they also proposed actions to be taken.

4. Conclusion

The GIOCONDA project team expects the following impacts during the present year of project implementation on:

- decision makers, to enhance the number of public projects supporting the proposals presented by young citizens, in particular referred to noise abatement: participated re-organization of traffic in the cities, identification of measures to avoid noise, isolation via green natural barriers, restore school buildings;
- students, to maintain the program of volunteering for school restoration, and the implementation of personal protection measures;
- the bodies responsible for noise monitoring, to provide continuous information, together with technical and scientific support;
- the bodies responsible for health protection from noise, to provide continuous information, together with technical and scientific support;
- citizen associations to contribute to the effort of GIOCONDA project to raise awareness with reference to noise pollution.

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