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Teach & Learn seismic safety at high school: the SISIFO project

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ABSTRACT We present the educational activities developed within a project that aims at disseminating the knowledge about seismic safety at high schools. SISIFO (SIcurezza SIsmica nella FOrmazione scolastica, that in English sounds like “seismic safety in school training”), is the name of the project and during the school year 2013-2014, fourteen high schools of north-eastern Italy joined it, working in different activities to comply with the school curricula. We provided the teachers with conceptual guidelines together with some educational materials in order to stimulate the inventiveness and the interest of the students. The students were engaged in labs on the earthquake source, in the detection of non-structural seismic safety elements, in monitoring of the local site and building responses and in risk perception surveys. They provided a stimulating, bi-directional learning process that culminated in a workshop, held at the University of Udine (Italy) on April 7, 2014, when the students illustrated their work. The project experience has been positive and we believe that it can be replicated and properly integrated in the future training of high school students.

Key words: seismic risk education, seismic safety in schools, Italy, SISIFO project.

1. Introduction

Recent earthquakes in Italy and around the world have stressed once more the crucial role of education on seismic risk as a key point to raise awareness of seismic safety. After the 2002 San Giuliano di Puglia earthquake (M_w=5.7), that caused the collapse of a school and the death of 26 children and their teacher (e.g., Maffei and Bazzurro, 2004; Mucciarelli *et al*., 2004), special attention was paid in Italy to the seismic safety of schools, mainly with regard to the structural aspects. Conversely, little attention has been devoted to other potential sources of injuries and losses, e.g., those linked to the individual or the community behaviors (in emergency or not), and to non-structural elements (collapse of ceilings, tipping of cabinets and shelves, escape routes, etc.).

Since 2002, the project EDURISK (Camassi *et al*., 2005a, 2005b) has offered educational tools and training programs for teachers, at nursery school (3-5 year old), primary school (6-10) and intermediate level (11-13, in Italy named Secondary School of 1st degree). Camassi and Peruzza (2012) observed that the numbers of teachers and students reached by the EDURISK activities, already relevant before, exploded after the 2009 L'Aquila earthquake [M_w=6.3; Galli *et al*. (2009), and the 2012 Emilia earthquakes [M_w=6.1 and M_w=5.9; e.g., Saraò and Peruzza, (2012) and Tertulliani *et al*. (2012), respectively for the microseismic and macroseismic surveys)]. More recently, the Civil Protection agency has launched in Italy a nationwide communication campaign on best practices of risk reduction (IoNonRischio, 2015) addressed to the citizens: the initiative focuses on earthquakes, tsunami and flooding risks and it involves hundreds of municipalities.

In 2012 we proposed a project, SISIFO (SIcurezza SIsmica nella FOrmazione scolastica, that in English sounds like "seismic safety in school training"), for raising awareness on seismic safety. We focused on the high schools students, since the age 15-19 has not been yet targeted by existing Italian projects on seismic risk education. Besides that, it is an age range in which curiosity, fervent and disparate interests may create unconventional and positive responses that may drive deep societal changes. The project was funded for one year by the Italian government (MIUR, Ministero Istruzione Università e Ricerca), in the frame of the laws for scientific culture dissemination. Fourteen high schools of north-eastern Italy participated in the pilot project in 2013-14. To face effectively the problem of seismic safety, an interdisciplinary knowledge and a comprehensive approach are fundamental, also for stimulating the interest of students with non-technical background or prospective students. Basic knowledge of seismic hazard, seismic site response of foundation soils, seismic behaviour of buildings due to the dynamics of structural and non-structural elements and functional issues (escape ways, emergency systems, etc.) may improve the capability of students and teachers to recognize safety issues and possible solutions everywhere (in places of study, work and life), thus leading to effective preventive actions for seismic risk reduction. Therefore the students were engaged in different activities, in labs on the earthquake source, in the detection of non-structural seismic safety elements, in monitoring the local site and the building responses, as well as in risk perception surveys. The project activities, already presented at some international meetings (e.g., Peruzza *et al*., 2014), are described in this paper.

2. Framework and basic principles

We adopted the experiential learning approach (i.e., act, reflect, conceptualize, apply) to educate the students on the best practice of seismic safety. We organized educational materials for teachers, in the form of presentations, fact sheets and handouts so to drive the students towards the seismic safety concepts and the reasoning process for performing seismic safety assessment. The educational supports take into account our previous experiences on earthquake didactics and seismic risk education gained in the previous educational projects (Peruzza, 2000; Camassi *et al*., 2005b; Azzaro *et al*., 2006; Peruzza and Slejko, 2006), and in years of dissemination activities with the schools (Barnaba *et al*., 2013; Saraò *et al*., 2013, 2014) joined with the expertise in the seismic safety issues (Grimaz *et al*., 2014, 2015a, 2015b; Grimaz and Malisan, 2015). Indeed, the team of the SISIFO project proponents has complementary skills

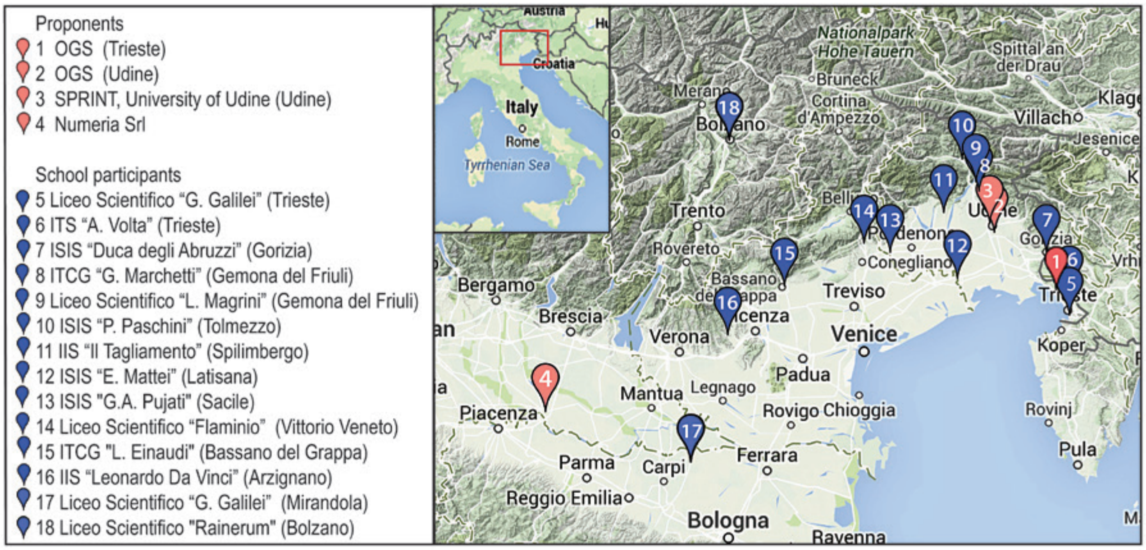


Fig. 1 - Map of NE Italy (red rectangle of the inset) with the location of the proponents of the SISIFO project (red pins) and the school participants (blue pins). In the left panel the list of the schools.

and expertise, and, since communication and dissemination are among the stated duties of the Italian public institutions, a solid experience in education and in school oriented activities. The team is composed of researchers, seismologists and engineers, working at:

1) Istituto Nazionale di Oceanografia e di Geofisica Sperimentale (OGS), Department "Centro di Ricerche Sismologiche" (CRS). CRS is the authoritative centre for seismic alarm in north-eastern Italy (Friuli Venezia Giulia Region, Veneto Region and Autonomous Province of Trento). The research activities of the department span from seismogenic studies to geodetic measurements, experimental observation and numerical modelling of seismic wave propagation and local site effects, seismic hazard and risk analyses for ordinary planning and critical facilities too.

2) University of Udine, SPRINT (Safety and PRotection INTersectoral) Laboratory of the Department of Chemistry, Physics and Environment; SPRINT-Lab studies the issues related to safety and protection with a holistic and multidisciplinary approach. The research activities aim at developing decision making support tools and innovative methodologies for a comprehensive risk assessment and management mainly in the areas of seismic and fire safety, occupational health and safety, environmental protection, crisis and emergency management.

3) NUMERIA Consulting Engineers S.r.l. is a private consulting engineers company, located in Cremona, with expertise in earthquake engineering, seismic vulnerability assessment, emergency planning, research and development activities, education and training of students and professionals.

To recruit the school participants, we sent an invitation letter, at the end of June 2013, to 50 schools of north-eastern Italy, selected among those with a dominant technological or scientific curricula: fourteen schools, out of 50, joined the project (Fig. 1). The majority of the teachers interested in the project lead classes in math, physics or science, others in electronics, topography, building design and construction. The adhesion to the project was on a voluntary

Fig. 2 - Kickoff meeting of the project held in Udine at CRS on October 23, 2013; agenda and presentations (pdf and video) are available on the SISIFO project website (SISIFO, 2013).

basis, not solicited or forced by school authorities; therefore we did expect to deal with motivated teachers and collaborative students.

Apart from the invitation letter, sent by ordinary mail, all the communications/materials related to the project circulated on fast track e-mail or were posted on the project website (SISIFO, 2013), for now available in Italian only. We used simple on-line tools (e.g., Google tools, or Doodle scheduling forms) for gathering information and for collecting requests from the participating schools. In early September 2013, the teachers notified which classes and how many students planning to be involved in the SISIFO activities: about 400-500 students were expected to enter into the experiment.

The project's kickoff meeting with the teachers was held at the CRS lab of Udine on October 23, 2013 (Fig. 2). The full day meeting had the aim of motivating and tutoring the teachers' team. The materials presented during the day were promptly released via Internet for the benefit of missing participants, and as e-learning contents dedicated to widen the teachers' audience (e.g., the presentations done during the day, in podcast, are available in the section "Letture utili", on the SISIFO website).

As SISIFO project aims at developing original approaches to seismic safety, tailored on different targeted schools, we provided the teachers with some reference educational materials [e.g., CD and brochures issued for the 30th anniversary of the 1976 Friuli earthquakes (Peruzza and Slejko, 2006); the booklets and movies released in the frame of EDURISK project (EDURISK, 2004-2012); movies and materials posted on the SISIFO website (in the section "Insegnanti per un giorno"], and later on the fact sheets compiled specifically during the project (e.g., Fig. 3). We did not supply a *what-to-do* guide, leaving each class free to develop its own activity.

As main reference for the educational materials on safety issues, we adopted the method named SPRINT (Fig. 4), designed by the SPRINT-Lab team, starting from the principles of the

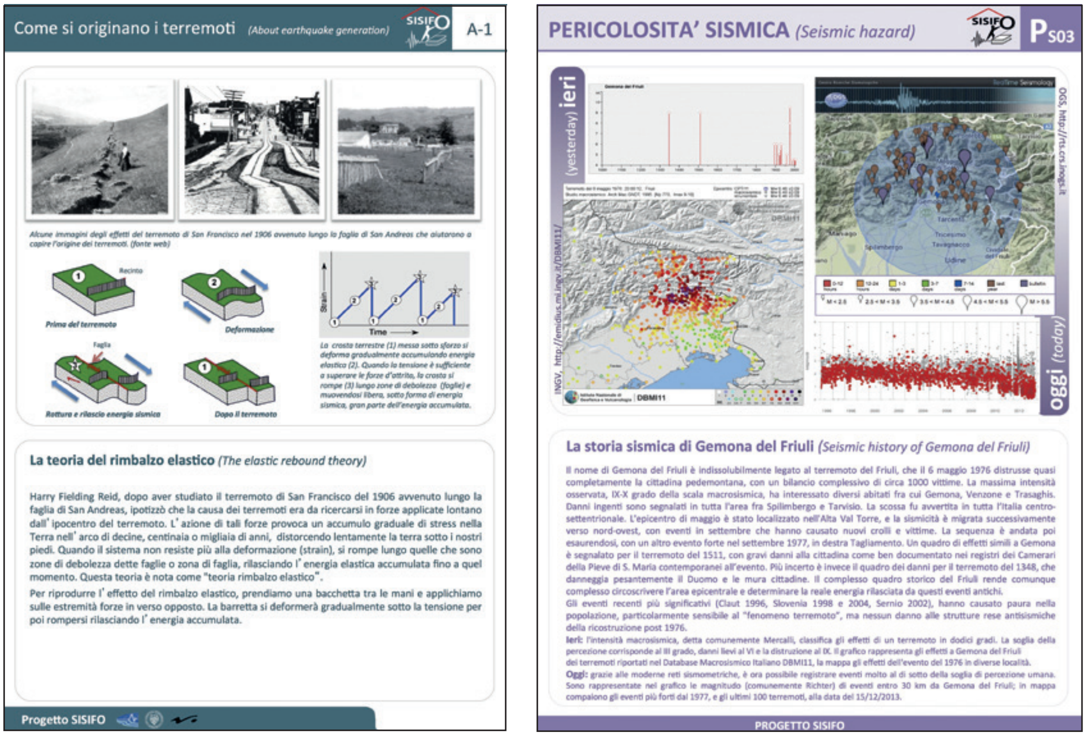


Fig. 3 - Example of fact sheets prepared for the teachers: a) about earthquake generation; b) seismic history of Gemona del Friuli (NE Italy). All the fact sheets are in Italian. In this picture we put between brackets the English translation of the main titles.

Fundamental Process of Damage Generation [FPDG; Grimaz *et al.*, (2014)], for making a quick safety assessment, through the study of the interaction process between adverse effects and targets. Specific attention was paid to design simple and effective activities, aimed at involving directly the students. The activities focused mainly on the non-structural and functional elements, since they permit a visual assessment and stimulate the recognition of possible pro-active actions for improving the seismic safety. Under the label SISIFOcchio (in Italian, the word "occhio" means both "eye" but also "watch out!"), some fact-sheets were developed to guide the students' evaluation on "what could happen in case of an earthquake". The fact-sheets are based on the following steps:

1) identification and characterization of adverse effects;
2) evaluation of possible interaction between adverse effects and targets;
3) final judgment in terms of potential consequences on the values considered.

The subdivision in steps aims at making explicit the mental process that usually an expert adopts to judge specific elements concerning safety. The outcome of the assessment is a simple post-it that summarizes the evaluations and that the students can attach in correspondence of the non-structural element assessed. The exhibition of the results should improve the exchange of viewpoints among students and the discussions on seismic safety issues.

As an example, with reference to the case of false-ceilings (Fig. 5), the assessment, first, evaluates the adversity level considering the predisposition of ceilings to fall (anchoring and holding conditions) and then the potential damage related to the falling (heavy elements, sharp edges). The possible interaction between the adverse effects and the targets (people and

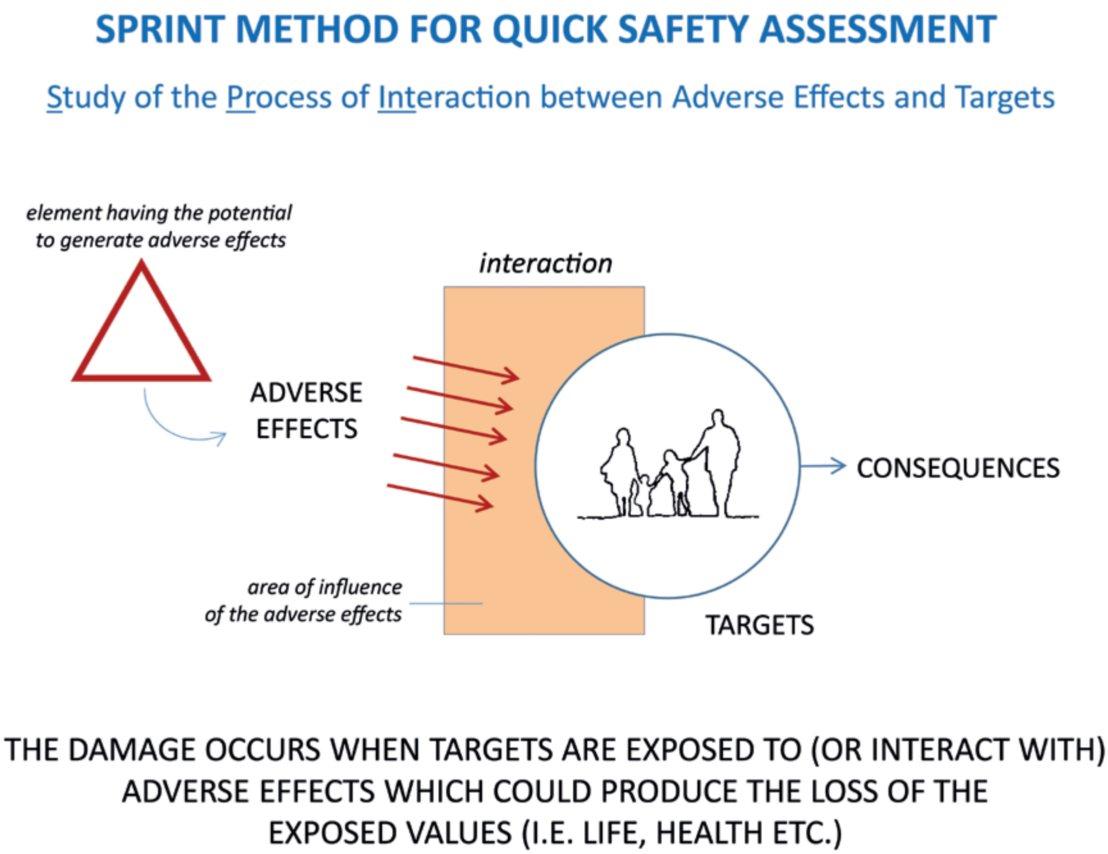


Fig. 4 - Conceptual framework of SPRINT method, adopted within the SISIFO Project.

egress system) is analysed and judged in terms of consequences on life safety and functional maintenance of the egress pathways. In this way, the students are guided to find possible solutions to prevent the interaction between targets and potential adverse elements (e.g., by removing the predisposition to fall, or introducing systems of collective protections, or avoiding the presence of targets in the area of falling).

The potential consequences are classified using some coloured indicators (white: no concerns because the problem does not exist; green: no concerns; orange: the adverse event could cause potential difficulties to people; red: the adverse event could cause potential serious situations for people safety). To underline that the predisposition to fall does not entail the fall of the non-structural elements, the concept of trigger action was introduced. The students use the matrix "Trigger: likelihood of activation" (Fig. 5). The matrix, derived from expert's evaluations, permits to associate the level of the expected earthquake to the likelihood of activation of the identified potential consequences. The outcome is represented through an indicator specifying the levels of likelihood of activation, as rare, frequent or almost certain.

The SISIFOcchio fact-sheets were used during the plenary meeting held at the end of the project, with the direct involvement of the students, for the assessment of the seismic safety condition of non-structural elements of the meeting-room at the University of Udine.

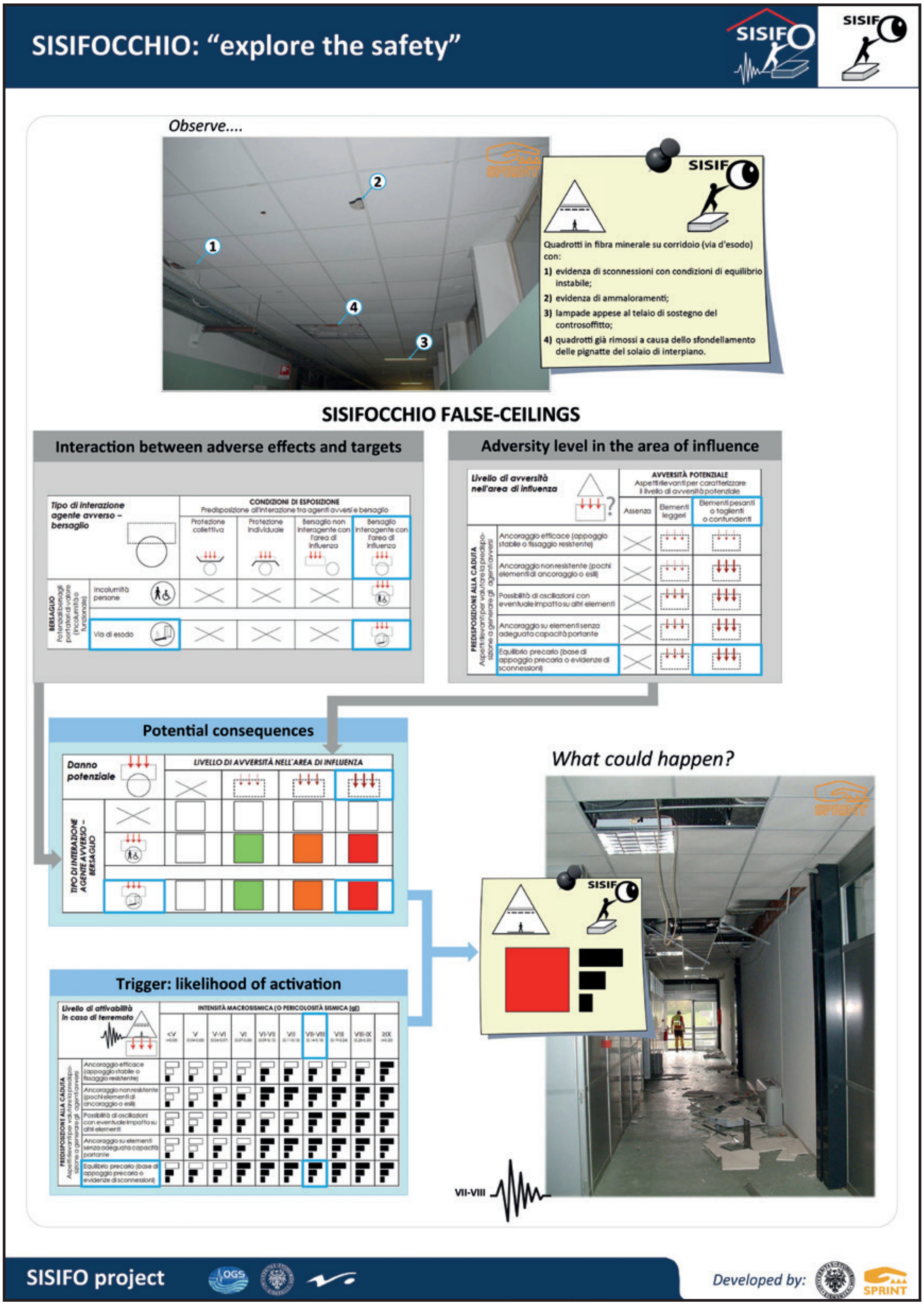


Fig. 5 - Example of SISIFOcchio fact sheet containing the procedure for assessing seismic safety of false-ceilings.

3. Channeling the seismic safety education into class' activities

Taking into account the heterogeneity of the curricula of the schools involved in the project, we suggested different guidelines for the class activities, to channel them into five main tracks. The different paths (see Table 1) focus on the physics of the earthquake, on the analysis of building's response to ground shaking, on the best practices of seismic safety at school and outside, on evacuation and emergency procedures, and on surveys on the seismic risk perception in the local communities. These paths can be somehow ascribed to three main classical areas of Education: knowledge (paths 1 and 2 in Table 1), skills (paths 3 and 4 in Table 1) and abilities (path 5 in Table 1) (respectively in Italian: *conoscenza, sapere*; *competenza, saper fare*; *capacità, saper essere*), even if strong mutual interactions of these areas may coexist in each single path.

The schools pursued their own activities by dedicating different amount of time and resources, spanning from a single lesson on the topic (lectures by seismologists and engineers were provided by the project partners), up until activities that needed to be developed in the long term, probably longer than the one school year here planned. During the project we provided assistance to teachers and students by hosting visits in our labs and supporting the classes' jobs. The different activities developed by the schools are hereinafter described.

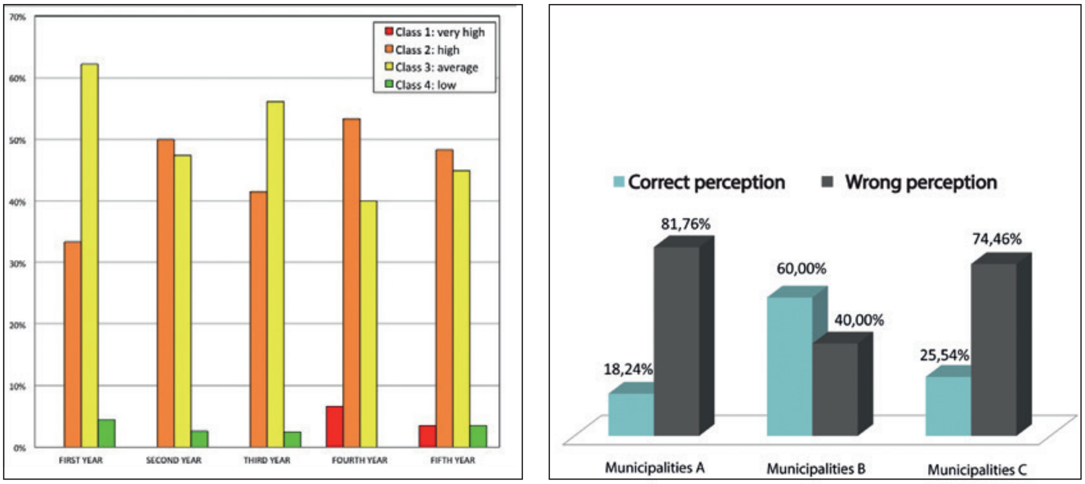
Table 1 - Name of the track activities suggested to the teachers. For each activity the aim and the materials provided are listed.

NAME	Aim; materials provided
1) MACCHINA DA TERREMOTO (Quake caster)	Basic principles of earthquake generation; movies for building hands-on devices; fact-sheets, instruments and physical laws related to the process.
2) TORRI S-GEMELLE (NOT-twin towers)	Basic knowledge of building response to seismic excitation; movies of hands-on devices; experimental session with students.
3) LA MACCHIA NERA (Phantom blot)	Basic awareness of seismic safety through the identification of dangerous/safe elements in schools and houses; fact-sheets on non-structural damages.
4) FUGA DA ALCATRAZ (Escape from Alcatraz)	Basic planning of evacuation for earthquakes; fact-sheets on alarm system and on structural and non-structural damages.
5) FEBBRE DA TERREMOTO (Earthquake fever)	Basic survey on seismic risk perception and persistency of memory in society; on-line questionnaire; fact-sheets on local seismic history.

3.1. From the physics of the earthquake to its social implications

The two tracks "Macchina da terremoto" and "Febbre da terremoto" (see Table 1) encompass the activities related to the earthquakes as physical and social phenomena respectively; several schools were interested about them.

Just to give an example, for studying the mechanical properties of stress accumulation and strain release, and for investigating the statistical characteristics of the magnitude versus frequency distribution, we provided short hints on the theory of the elastic rebound (Fig. 3a) and instructions for building the "earthquake machine", commonly known as the Quakecaster. The Quakecaster (Linton and Stein, 2012) is an interactive, hands-on teaching model that simulates earthquakes and their interactions along a plate-boundary fault, based on stick-and-slip theory.

a


b

Fig. 6 - Results of the survey on the perception of seismic risk as performed by the students of: a) School "Mattei" who represented the seismic hazard perception of the students of the school; b) School "Magrini", who led the survey in the municipalities of Gemona del Friuli (A), Tarcento (B), Buja and Osoppo (C). The students of "Magrini" grouped the results to show if the seismic risk perception was correct or wrong.

Several prototypes were built in some schools ("Flaminio" and "Pujati") using a granite slider in frictional contact with a non-skid rock-like surface (sandpaper), to simulate a fault surface, and a spring-mass system.

Worthy of mention are also the exercises developed in a math class (School "Galilei", Trieste) to assess basic seismic hazard in north-eastern Italy through a probabilistic approach, and the study of the evolution of the approach to natural risks and earthquakes carried out during a Philosophy class (School "Pujati"). Some group of students explored the local seismic history (School "Flaminio"), benefitting from SISIFO sheets (e.g., Fig. 3b) *ad-hoc* prepared, surfing data available on the web, and performing historical research at local libraries.

The most popular activity performed by the schools was the survey on how the seismic risk is perceived by the society. To this end, some students adapted the questionnaire (available at http://www.terremototest.it) set up within the Project "DPC-INGV S2" funded by Dipartimento Protezione Civile (Crescimbene *et al.*, 2014, 2015). Ninety-nine forms were fully compiled and submitted via web, explicitly marking their participation in the SISIFO project (Crescimbene, 2014, personal communication); about 75% of this sample is represented by students, with a good gender balance; less than 20% of the compilers perceive their place as less hazardous than what is stated in the seismic regulation, whilst 30% of them has an overestimated perception of the seismic hazard.

However, from the class works, we estimated that more than 500 people were involved in the survey. In fact, most of the students preferred to rearrange the questionnaire by Crescimbene *et al.* (2014) and to collect themselves the survey responses, given by companions or relatives, and to group the results applying some basic statistics (Fig. 6).

The overall picture coming from the survey is coherent with a society that perceives the seismic risk as a consequence of the past events (considering the location of schools with respect to the distribution of damages, during the 1976 Friuli earthquakes), but the community is somehow relaxing itself, in the false idea that another big earthquake is far to come.

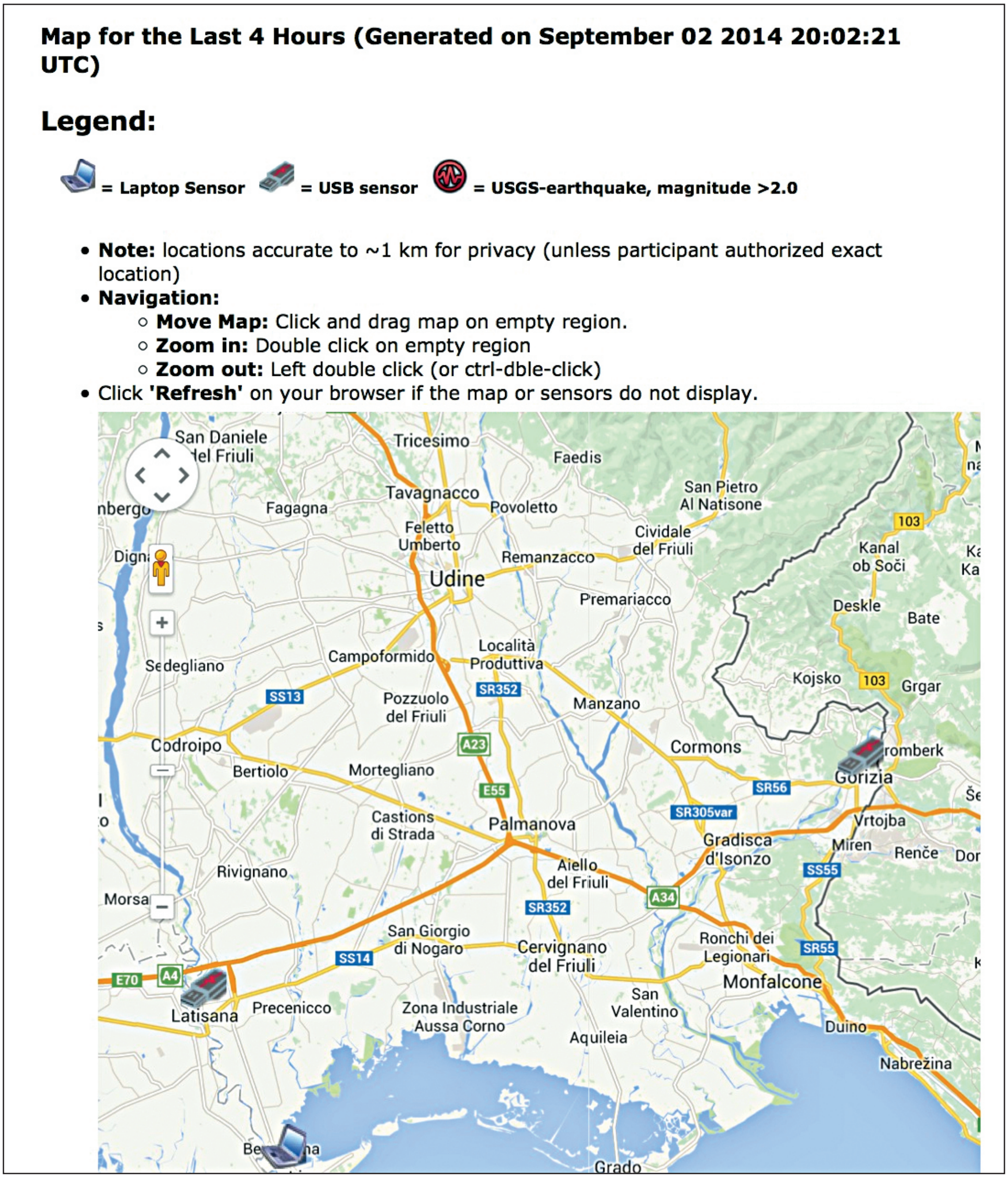


Fig. 7 - Location of the SISIFO schools (marked by USB sensor in the legend) that joined the QCN network.

3.2. The seismic waves recording, doorway to the building response

It is very well known that the use of real data provides the teaching of Earth sciences and, particularly, of earthquake science, a quite effective approach (e.g., Kafka *et al.*, 2006). Therefore, we proposed the teachers to involve students into the practice of recording earthquakes, for locating them and for comprehending basic principles of local site and building

Fig. 8 - Monitoring system installed at School “Flaminio” (Vittorio Veneto) building (yellow circle plotted in the top view and front view of the school in the lefts panel). The instrument is linked to the CRS data acquisition system, and it is providing continuous data accessible through its IP address visible on the CRS web site (www.crs.inogs.it/flaminio, last access July 2, 2015).

response; however, we were conscious that most of the teachers could lack adequate knowledge to convey such contents to the students. On this topic we have gained a lot of experience thanks to the “GeoScience Summer School” that every year drives some high school students of the Friuli area to the CRS lab e.g., (Barnaba *et al.*, 2013) for a 3-week stage.

For this aim, within the SISIFO project, we supplied and installed in each school a QCN sensor (QCN, 2014), a low-cost accelerometer designed for recording earthquakes, but also for educating on earthquake science (Cochran *et al.*, 2009, 2011). During the last years the knowledge and usage of such low-cost sensors has grown, thanks also to some projects like the Citizen Seismology Projects launched in Europe and in the U.S.A. (Wendel, 2015) to involve citizens and use them as primary source of information in case of seismic events (Citizen Seismology, 2013).

The sensor is provided with free software, and it can be used as a stand-alone sensor (QCNLive) or to be connected to the worldwide or local QCN strong-motion seismic networks (BOINC for QCN). In our case, it soon became clear that for limitations due to the Internet security protocols, only some schools were able to join the QCN global network and to monitor earthquakes (see Fig. 7), thus forcing the teachers to use the sensors in a stand-alone mode for lab activity. However, the QCN’s capabilities stimulated the inventiveness of the students and a lot of activities bloomed around it. A group of students developed some software in C

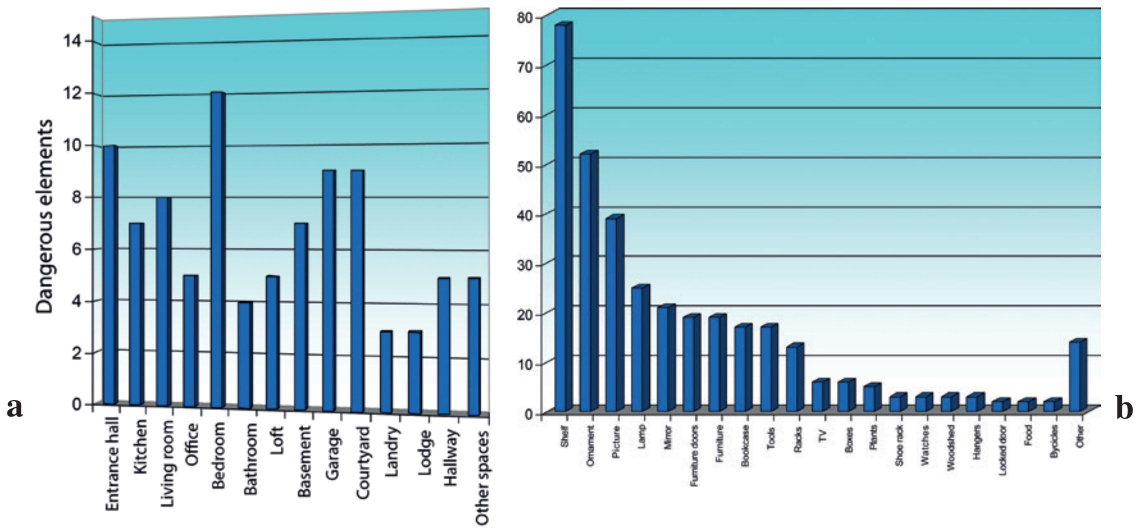


Fig. 9 - Results of a survey performed by the students of School “Magrini” to investigate: a) the most dangerous area in a house; b) the elements that could be potentially dangerous in case of earthquake.

language to manage the continuous data stream recorded by their sensor (School “Magrini”); some others (School “Paschini”) under the supervision of their teacher, built up their own low-cost seismometer using the Arduino open-source electronics platform (Arduino, 2014) and two accelerometers (ADXL345, 1995) to emulate a low cost seismometer; the seismograph that they achieved is a very satisfactory outcome, and it can be used for educational purposes to display tremors on the local network of the school (Saraò *et al.*, 2016).

Besides the QCN monitoring, we supplied a school (Fig. 8) with a professional monitoring seismological instrument, to increase the awareness of the seismic characteristics of the territory. Since then, the instrument, linked to the CRS data acquisition system, is providing continuous data accessible (through the IP address) by researchers, teachers, or students. The last aim of these activities, in the concept of seismic safety that the SISIFO project pursues, is the consciousness of the effect of earthquakes on buildings, and therefore on humans. For this reason a full seminar day has been held at “Mattei” high school in Latisana focused on unusual topics for the students: the dynamic behaviour of their school, characterized with ambient noise measurements performed live just before the seminar.

Still on the concepts of building response, a student team of School “Galilei” in Mirandola built a shaking table using Lego® plastic bricks and a variable speed engine, in order to show the effect of resonance between soil and buildings. The buildings were simulated either with a single degree of freedom (reverse pendulum, a mass on a stick) or with simple frames built in glued polycarbonate. The work of Mirandola’s students entered the SISIFO project almost at its end, as it had been originally developed for participating at the 2013 FIRST Lego League Italia (FLL, 2013), an international robotics competition organized by a youth organization that operates For Inspiration and Recognition of Science and Technology (FIRST). These efforts have then been rewarded, at the end of 2014, as MIUR gave a small grant to the school’s project (Project PANN14T2_01353) that wants to keep alive this experience of an educational seismic lab.

Fig. 10 - Activities inspired to the “Escape from Alcatraz” path (Table 1), performed by the students of school “Magrini”: a) identification of possible obstacles in case of earthquakes; b) drill for people with disabilities; c) analysis of the emergency plans of the schools to locate exits.

3.3. Working on best practices in seismic safety

During the kickoff meeting the teachers were trained on what the seismic safety and the best practices of seismic safety are. Pictures of damage and of the dangerous consequences related to the different elements (site, structures, non-structural and functional elements) collected during the field activities with the Italian National Fire Department in the 2009 L'Aquila and 2012 Emilia earthquakes (Grimaz and Maiolo, 2010; Grimaz, 2011) supported the educational materials and in particular the presentations on seismic safety.

The key points that students (and everybody) should know about seismic safety are:

1) seismic safety is the condition in which nobody gets hurt or dies as a consequence of an earthquake;
2) safety assessment requires to consider every potential element that could hit the people and how this interaction could occur;
3) seismic safety is related to a plurality of issues: the site, the structural response, the non-structural and functional elements.

Working on these concepts some classes developed their activity within the tracks named "La macchia nera" and "Fuga da Alcatraz" (Table 1) to apply the best practice and tackle emergency procedures.

The students of School "Magrini" worked toward identifying the possible interaction between potential adverse elements and people at home, at school and in the street. They investigated, through a survey among the schoolmates, the most dangerous area e.g., in the house and the elements that could be potentially dangerous in case of earthquake (Fig. 9). Finally, they suggested possible solutions to reduce the risk of injuries and damage in case of an earthquake, e.g., by removing adverse elements that may have the tendency to fall or by introducing simple protection systems (e.g., by sticking objects on the shelves). Other classes were particularly attentive in analysing the emergency plans of their schools to also overcome obstacles for people with disabilities (Fig. 10). They performed an earthquake drill, taking into account all the critical issues they have found, to be prepared with their schoolmates to tackle a possible emergency.

4. Conclusions

The aim of the project SISIFO, targeted on high school students, is to spread best practice of seismic safety. To achieve this goal, during the school year 2013-14, we worked with teachers and students of fourteen high schools in north-eastern Italy, developing a variety of activities and assessment tools. After a short motivating and training course for teachers, the proponent team provided equipment (the accelerometric sensors), lessons opportunities (e.g., visits to the OGS labs), programming and learning materials to the schools; the classrooms developed their own project in autonomy.

The final scheduled activity of the SISIFO project was the plenary meeting held on April 7, 2014 at the University of Udine. About 250 students and teachers attended it. During the workshop (program of the day available on the SISIFO website), some technical contents were given by the project partners, but the oral presentations of the students' activities have been the focal point of the meeting (Fig. 11). The accuracy of all the schools in the preparation of their

Fig. 11 - Final meeting of the SISIFO project held in Udine on April 7, 2014. Some photos of the students' presentations: a) general view of the auditorium of the University of Udine where the meeting was held; b) students of "Galilei" (Mirandola) illustrating their shaking table; c) students of "Magrini" presenting their work; c) a student of "Paschini" with his teacher, settling the Arduino school-made seismograph.

talks, and the thoughtfulness demonstrated by the speakers (e.g., the respect of time schedule) was really impressive. The students of Mirandola, before showing their lab activity (Fig. 11b), brought the extra-value of sharing their own experiences and the emotions felt during the Emilia 2012 sequence.

Two evaluation forms were finally proposed to the participants, for gathering comments and suggestions on the project and on the final workshop. Despite the fact that few of the participants filled the form, not allowing us to trace statistically robust conclusions, we had very positive comments on the fly by all the participants and a good level of satisfaction also for the interaction with the university and the research institutes. Some schools, among those that have committed more, declared their availability to continue the educational activities in the next years.

We believe that this pilot experience has been very positive: it provided a stimulating, bi-directional learning process and we believe that it could be replicated and properly integrated in training course of young people, all over the country.

The name of our project "SISIFO" is an acronym (SIcurezza SIsmica nella FOrmazione scolastica), but it is clearly inspired by the Greek mythological character of Sisyphus (Sisifo in Italian); he was king of Corinth, punished by being compelled to roll an immense boulder uphill, only to watch it roll back down, and to repeat this action forever. We have found this image very similar with the role of seismologists and of teachers engaged in seismic risk education and dissemination of best practice of seismic safety, every new strong earthquake observing the ineffectiveness of their efforts. But like Sisyphus we want to persist in pursuing our goals, certain that our work is not in vain.

The prolongation and consolidation of SISIFO activities, with involvement of additional subjects like existing local museums and communication agencies, have led to a new project proposal, unfortunately not funded by MIUR in 2014. In order to continue the very promising work started with the SISIFO project we are looking for funds coming from private partnerships and/or joint efforts with other initiatives and international programs. For example, in Autumn 2014 we had the opportunity to raise the awareness of seismic hazard and the importance of the good practice of seismic safety at schools. As a litmus test, after a call for our schools published in the SISIFO website and the OGS social networks, about 10,000 people more than the previous year, joined the Great Shake Out 2014 in Italy (Great Shakeout, 2015) bringing to the attention of the Italian media the worldwide drill held every year, since 2008, in many countries around the world, in order to be prepared to survive and recover quickly from big earthquakes.

We do expect that in north-eastern Italy the initiatives dedicated to schools will increase in the next years, both for an augmented sensitivity on this subject and for the anniversary of the 1976 Friuli earthquake.

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