INGV-Istituto Nazionale di Geofisica e Vulcanologia

DPC-Dipartimento della Protezione Civile

Convenzione INGV-DPC 2004 – 2006 / Progetto SV

EDURISK – Percorsi educativi per la riduzione del rischio

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Final report (2005 August 1-2007 July 31)

Foreword

Unlike other seismological and vulcanological projects, EDURISK cannot be adequately described as a "research project", however high the skills required for its implementation. More is more fitting to describe it as a "high-level service activity", custom-designed to meet a specific civil protection requirement: devising ways and means by which multidisciplinary scientific knowledge can be made available to the general community through the school.
Given the peculiarity of the project and of its results –a range of educational tools specially tailored to the requirements of the Italian school (Task 1) and a large-scale experimentation of educational activities (Task 2) – this report cannot follow closely the proposed guidelines. Task 2 activities will be reported in Section 2 and Task 1 activities in Section 4 (Deliverables). Moreover, as the described activities have been developed jointly by all the involved research units, it was decided to make a single joint report in which the activities would be described in detail, while single research units' report would only give brief outlines of the work done.

Abstract/Project objectives

The EDURISK project aims to educational tools and activities dealing with the topic of seismic and volcanic risk for Italian schools to use in their courses. The current project continues the experience of a previous one by the same name, that was ideated within the 2000-2002 cadre program of the Gruppo Nazionale per la Difesa dai Terremoti [GNDT], funded by Dipartimento della Protezione Civile [DPC] and carried out in 2003-2004.
The EDURISK educational offer includes didactic subsidies (books for students and teachers, an exhibition, some multimedial products) and educational proposals (training and refresher courses, distance-learning courses).
In 2005-2007 the EDURISK activity followed three main lines:

1. Improvement of educational tools produced by the 2003-2004 parent project. Texts were thoroughly revised and re-edited; "regional supplements", dealing with the seismicity of each Italian region were prepared.
2. Production of new educational tools on the topic of volcanic hazard and risk.
3. Extension of the educational campaign started within the parent project. Besides the three Italian regions originally involved (and which do still participate) six more have been included. A prototype of distance-learning course for teachers

on the topic of seismic and volcanic risk was created.

1. Project achievements: general aspects

The most interesting and less easily measurable achievement of the EDURISK experience is the creation of an "open working space", in which the worlds of basic school and scientific research meet and mingle freely with great mutual enrichment. More materially, EDURISK achievements include some outstanding educational tools, tenths of tuition courses for teachers and hundreds of learning units created by the involved classes.
Almost 1.000 teachers and 20.000 pupils participated to full-scale experimentation (Tab. 1).

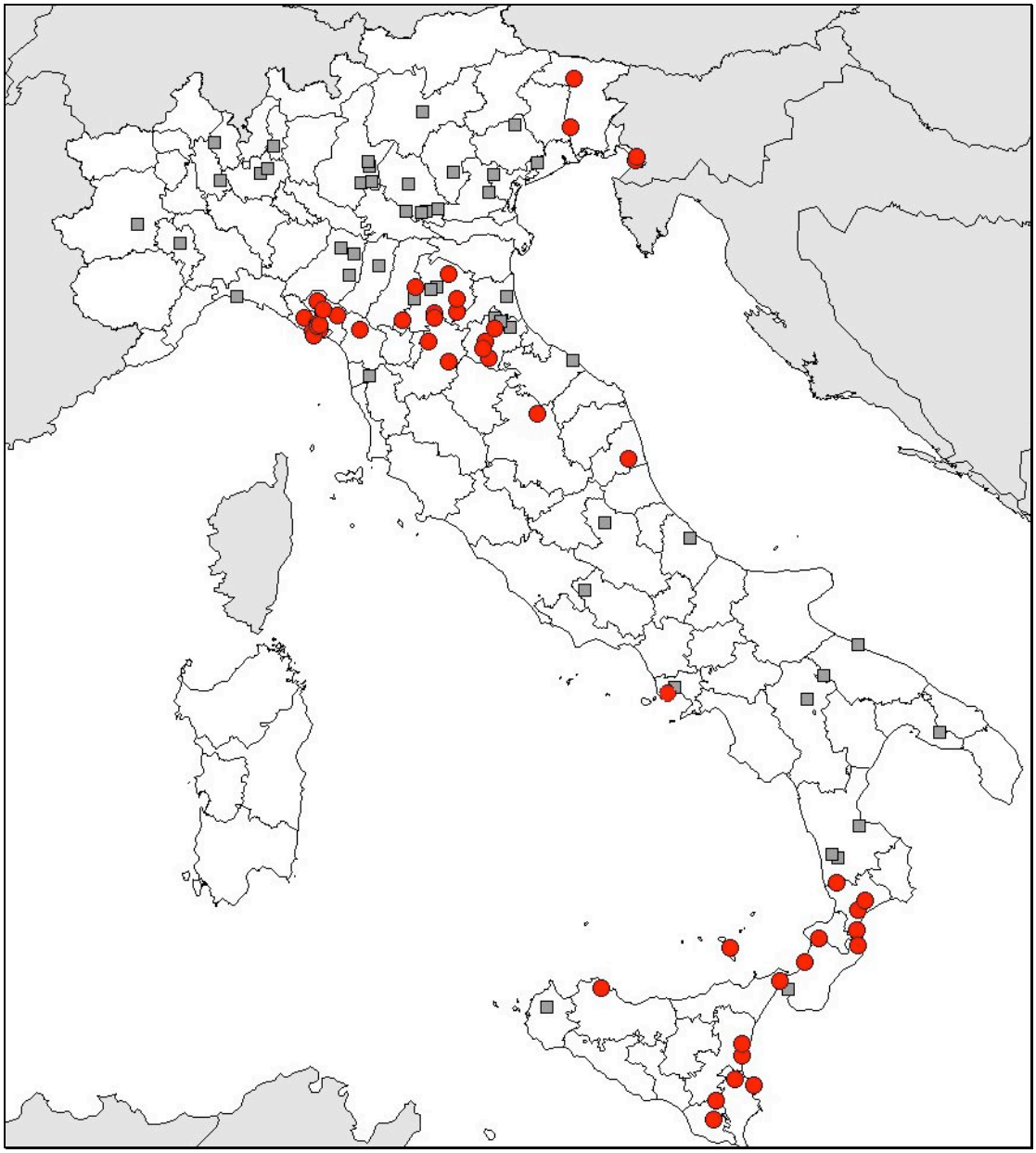


Figure 1 – Distribution of schools (CI and DD) participating (red balls) or connected (rhombs) to the EDURISK project

Outside the experimentation proper, a few local administrations backed the reprinting of more than 60.000 copies of the notebook "A scuola di terremoto" distributed to teachers and pupils of a great many schools that had not been able to enlist for the full-scale experimentation but did wish to include the new didactic tools in their scholastic routine.

School Year	Regions	Teachers	Classes	Students
2003/2004	3	185	121	2.367
2004/2005	3	116	136	2.122
2005/2006	3	129	156	2.887
2006/2007	**9**	**516**	**575**	**11.044**
Total	**9**	**946**	**988**	**18.420**

Table 1. The EDURISK experimentation (2003/2004-2006/2007)

The EDURISK educational model won high praise from all the schools involved in the experimentation, some of whom (the Calabrian and Friulan ones) pursued it uninterruptedly for three years. The Ligurian, Campanian and Sicilian schools, whose involvement in the project started in the school year 2006/2007, also wish to keep on collaborating with EDURISK in the forthcoming school year.

Journal	Title
Liber	Brunetti F., 2006, Che disastro in quelle pagine. Le catastrofi della Terra nei libri di divulgazione per ragazzi, Liber, Libri per bambini e ragazzi, 69, 24-25.
Il Pepeverde	Marotta C., 2005, Se la terra trema, Edurisk il rischio sismico, Il Pepeverde, rivista di letture e letterature per ragazzi, 23, 23-24.
Andersen	Novelli L., 2005, Leggere le scienze, lezione di terremoto, Andersen, il giornale dei libri per ragazzi, 5.
Liber	Brunetti F., 2007, Tutti giù per Terra! Liber, Libri per bambini e ragazzi, 75, 56-57.

Table 2. Main reviews of the EDURISK educational tools **Appendix 1**

Appreciation for the EDURISK educational tools was expressed not only by the teachers who used them in their classrooms, but also by librarians and specialized magazines editors. The most influential such magazine, "Liber" dedicated several pages to a presentation of the EDURISK project, describing it as "a good example of scientific communication" (Tab. 1).

Keen interest was also expressed by several regional administrations, which in some cases sponsored reprintings of the EDURISK booklets (Friuli, Tuscany, Marche, Umbria, Molise).

The EDURISK project was presented at several international meetings (Potsdam, D, September 2004; Torino, I, October 2005; Faro, PT, October 2005; Lisboa, PT, November 2005; Nice, FR, November 2005; Genéve, CH, September 2006; Quito, PE, January 2007; Napoli, I, April 2007; Durban, SA, July 2007 – Tab. 3).

Following these presentations, two leading international institutions - IFFO-RME (France) and PLANAT (Switzerland) – filed official requests for cooperation, which led to the diffusion of EDURISK materials outside Italy and to the development of similarly-structured international educational projects (Tab. 4).

To meet the requirements of international cooperation it was decided that, besides the already scheduled English versions of the nursery-school kit and primary-school notebook, French, German and Spanish versions should also be prepared and made available as PDF files downloadable from the EDURISK website.

Torino (Italy), October 5, 2005 3rd World Environmental Education Congress	Presentation of the EUDRISK project "Percorsi formativi per la riduzione del rischio" by R. Camassi
Faro (Portugal), October 31, 2005 Colòquio "O Terramoto de 1755 no Algarve"	Invited lecture "Education for Earthquakes EDURISK" by R. Camassi
Lisbon (Portugal), November 2, 2005, International conference "250th anniversary of the 1755 Lisbon Earthquake"	Presentation of the EUDRISK project: "Educational activities for reduction of earthquake impact" by Camassi et al., and "Localities abandoned following earthquakes in Italy" by Azzaro et al.
Nice (France), November 5, 2005 Workshop "Apprendre a vivre avec le risque sismique"	Invited lecture "La formation au risque sismique en Italie" by R. Camassi
Bologna (Italy), May 25, 2006 Workshop "Risk management and training"	Invited lecture "Risk educational strategies for schools" by R. Camassi
Geneve (Switzerland), September 3-8, 2006 ECEES Workshop "Education and Outreach for Risk Reduction"	Presentation of the EUDRISK project: "Tutti giù per Terra (All falla down). An active course to discover earthquakes topics" by R. Camassi
Quito (Peru), January 23-27, 2007 Workshop "Cities on Volcanoes"	Presentation of the EUDRISK project: "Risk education in the European project EDURISK: the Italian experience" by R. Nave
Napoli (Italy), April 2, 2007 MASAD-Mediterranean Association for Science Advancement and Dissemination	Invited lecture "Science Dissemination, Knowledge, Risk Education. The EDURISK project" by R. Camassi
Durban (South Africa); July 2-6, 2007 4th World Environmental Education Congress	Presentation of the EUDRISK project: "Educational paths for natural risks reduction" by R. Nave

Table 3. Recent international presentations of the EDURISK project

IFFO-RME	Institut français des formateurs risques majeurs et protection de l'environnement, Paris, France http://www.iffo-rme.fr/
PLANAT	Nationale Plattform Naturgefahren, Berne, Switzerland http://www.planat.ch/index.php

Table 4. Requests for cooperation **Appendix 2**

2. Projects results: a few details on each Task

Task 1 – Educational tools development

The educational tools prepared within the earlier project underwent substantial revisions, the biggest changes concerning the nursery school kit and primary school notebook (texts, pictures, graphics). Editing and reprinting costs (Tab. 5) were borne partly by institutional funds and partly by local administrators.

A series of "regional supplements" to the "Terremoti come e perché" volume for the secondary school has been planned. They are structured in five informative blocks, each of whom addresses a specific facet of the earthquake/people interaction on a regional level: (i) Main features of regional seismicity, regional seismic history, the most representative recent local earthquake; (ii) Regional seismic hazard; (iii) Seismic classification of the regional territory and the legislation thereby; (iv) Regional seismic risk (building typologies; retrofitting initiatives); (v) Regional earthquake monitoring activities and regional civil protection structures (location of offices, extent of duties, phone/fax numbers, e-mails etc.). The outward appearance is that of a centerfold that will be slipped between the pages of the "Terremoti come e perché"

volume, for students to take home and show to their adult relatives, as a mean to introduce adults to the EDURISK experience and foster the growth of their interest in the project's chosen mission. So far, three prototypes of "regional supplements" have been prepared (Calabria, Marches and Sicily).

Institution	Description
INGV, 2005	Reprint of the 3 main booklets
INGV, 2005	English editions of nursery kit and primary book
Tuscany Region, 2006	Reprint of the 3 main booklets and the teacher's guide
DPC (National Department for Civil Protection), 2006	Reprint of the 3 booklets and the two english editions for the EUROSOT2005 international training operation.
Friuli Region, 2006	Reprint of the booklet "A lezione di terremoto" in Italian, Slovenian and Friulan
INOGS, Trieste, 2006	Reprint of the 3 booklets for the 30th anniversary of the 1976 earthquake
Umbria Region, 2006	Reprint of the booklets "A lezione di terremoto" and "Terremoti come e perché"
INGV, 2006	New edition of the booklet "Terremoti come e perché"
Marche region, 2006	Reprint of the booklets "A lezione di terremoto" and "Terremoti come e perché"
INGV, 2007	Reprint of nursery kit "Se arriva il terremoto"
INGV, 2007	Reprint of the booklet "Noi e i Vulcani"
INGV, 2007	French, Spanish and German editions of the nursery kit "Se arriva il terremoto" and the booklet "A lezione di terremoto"

Table 5. Reprints or new editions of the EDURISK booklets (2005-2007)

At the start of the project, English translations of the nursery school kit and primary school notebook were prepared and distributed to the schools participating in the EDURISK experimentation, to great acclaim by all concerned parties. In the final phase of the project both translations were revised and will shortly be available as PDF files downloadable from the EDURISK Internet website http://www.edurisk.it.

A new primary school notebook on the topic of volcanic risk was produced in cooperation with the INGV volcanologic Research Units. "Noi e i Vulcani", written and illustrated by R. Luciani, was the centerpiece round which a totally new volcano-oriented educational campaign was started in the schools of Ercolano (Naples), Lipari (Aeolian Islands) and the province of Catania (Sicily). The great success of this initiative led to the translation of the new notebook into English, French, German and Spanish (with external funds).

An interactive travelling exhibition for a pre-teens public was planned and realized. "Tutti giù per Terra" (We All Fall Down) is a play-cum-workshop shaped as an itinerary, following which young visitors experience a "do-it-yourself" earthquake in safe, fun surroundings; handle toy-models of the inner workings of the earth responsible for earthquakes and volcanic eruptions; try their hand at building "safe" and "unsafe" houses; learn new and old ways of coping with unsettling natural phenomena (through storytelling, riddles, games, physical activities); a dedicated website and a card game round off the experience. A partial model of the "Tutti giù per Terra" exhibition was put on show in Trieste in September 2006, and a complete, fully-working prototype was presented in Bologna (March 2007) and Ercolano (May 2007), in both cases with terrific success. As a result, the National Department for Civil Protection formally asked for it to be made available for a series of official venues to be held from September 2007 to December 2008.

Figure 2 – Cover of the table game "We All Fall Down"

A scheduled task which the project was not able to complete so far is the renovation of the didactic exhibitions of the Volcano Centers which INGV set up in the Aeolian Islands of Vulcano (from 1990) and Stromboli (from 1997). This is due to extremely serious problems deriving from the bad condition of the hosting structures which need a complete renovation.
The Center of Vulcano has also an unfavourable position, far from the tourist tour; so we decided to move the educational activities in two structures close to the Porto di Levante and to project a new Volcano Center, using part of the exhibition of the Centro Carapezza. We worked to identify the rightful owner of the second structure (the first was already a INGV commodate) and of the area which host the centre. This problem reaches a satisfactory solution in May 2006. At the same time we worked to project the new Volcano Center of Vulcano and also some new exhibits have been prepared (among them a diorama representing the island of Vulcano).

Though the EDURISK project is addressed to a nursery school/junior high school target, three senior high schools of northern-eastern Tuscany (two Istituti Tecnici per Geometri-Technical Schools for Surveyors and a Liceo Scientifico-Scientific High School) became involved in it during the school year 2006-2007. To meet their requirements an ad-hoc scheme of formative course for teachers and a new range of learning activities had to be designed (with a strong slant on local seismic history and the evaluation/reduction of building vulnerability). Initially viewed by teachers with some scepticism, EDURISK has succedeed in winning the general approval, as witnessed by sophisticated research projects developed by the involved classes, all of which have voluntereed for a second year. According to the teachers, the "Terremoti come e perché" volume, though primarily designed for use in junior high school, does also meet the requirements of senior high school's early years.

A multimedial data base on seismic vulnerability evaluation (with special reference to masonry buildings) and vulnerability reduction has been designed. As an ad-hoc educational tool for senior high schools which specialize in the training of surveyors

and builders, an ad hoc educational tool. Its prototype (on CD-Rom) will be made available from September 2007 to the Pontremoli (MS) and Castelnuovo Garfagnana (LU) Technical Schools for Surveyors, which have undertaken to test it as a contribution to the preparation of the final version.

The EDURISK project website has been updated and it has been constantly in use both for distributing didactic materials and information via the restricted access sections, and to distributing/collecting the end-of-year evaluation questionnaires.

Task 2 – Learning activities for teachers

An analytical report of the learning activities implemented within the project and a general evaluation of the activities' educational impact is attached (Appendix 3). This section gives general information on the experimentation and a short description of its main results.

Learning activities for teachers implemented within the project (2005/2006 and 2006/2007) have interested 50 Comprehensive Institutes [CI] and Didactic Directions [DD] of 9 Italian regions, totalling 565 teachers and about 12.000 students.

In the experimentation's second year (school year 2007-2008) more than 400 teachers were involved for the first time ever (Tab. 6).

Regions	Schools [CI & DD]	Teachers	Classroms	Students
Calabria	5	98	107	1974
Campania	1	67	35	742
Emilia Romagna	1	19	16	313
Liguria	8	49	49	756
Marche	1	23	23	496
Sicilia	14	103	182	3.716
Toscana	5	36	37	655
Umbria	3	22	14	287
Friuli Venezia Giulia	3	20	16	320
TOTAL	**41**	**437**	**479**	**9.259**

Table 6. Regional distribution of participants to the project (2006-2007)

As to the prevailing categories of involved schools, nursery and primary schools together reach 61% of the total, junior high schools 31% and senior high schools 8%.

Tuition for teachers has been provided according to a model already tested in previous years and which include: a preliminary meeting restricted to school directors and didactic coordinators; an 8-hours, 4 modules training course on seismic risk addressed to the teachers meaning to take part to the experimentation; and an end-of-year meeting dedicated to an evaluation of the completed experience. Supporting materials were distributed during the training course and online through the "restricted access" section of the EDURISK website.

Mid-term meetings for the discussion of specific problems have also been held whenever possible.

In the areas where the topic of volcanic risk has been addressed, the basic 8-hours, 4 modules training course for teachers has been integrated with a further 2 modules dedicated to an overview of the local levels of volcanic risk and volcanic hazard and to the uses of a psychological approach in the management of emergencies (Tab. 7).

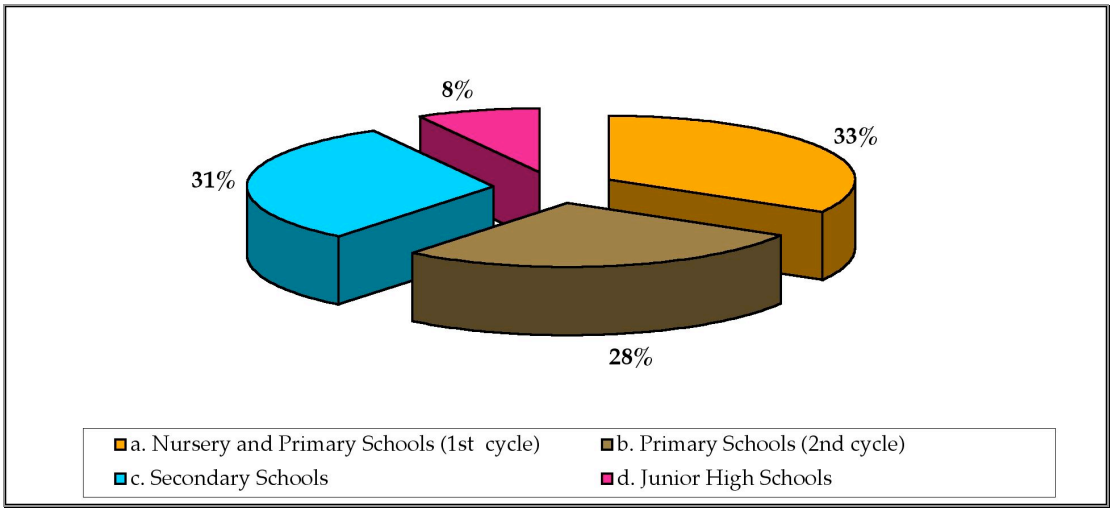


Figure 3. Types of schools participating to the EDURISK project *(2006-2007)*

Module	Topics
EDURISK project	General aims of the project; introduction to the learning resources; evaluation stages; distance learning web site for teachers and students.
Seismicity	General principles, seismicity characteristics of Italy and its regions, historical local events.
Hazard and Risk	Seismic hazard; hazard maps as a tool to understand the local environment; seismic risk; risk defining elements; mitigating the risk in your town, at school and at home.
Psychological emergency	Psychological emergency and mitigating actions; psychological effects in an earthquake: physical and pathological aspects; what to do in case of an earthquake; the role of educators as the initial source of psychological assistance.
Volcanic hazard and risk	Italian active volcanoes, volcanic hazard estimation and risk; how to reduce volcanic risk.
Psychology and volcanic risk	The contribution of psychology to face the volcanic risk, befroe, during and after a volcanic crisis.

Table 7. Contents of the training courses

Date	Town	Place	Schools [CI & DD]	Teachers
CALABRIA				
22/11/2006 23/11/2006	PALMI	2° Circolo Didattico S. Francesco	2° Circolo Didattico S. Francesco	35
			Direzione Didattica 1 Circolo "De Zerbi"	14
			Scuola Media Minniti	18
			Scuola Media P. Milone e zagari	11
24/11/2006	MARTIRANO LOM. (CZ)	Istituto Comprensivo Martirano Lombardo	Istituto Comprensivo Martirano Lombardo	20
MARCHE				
03/10/2006	OFFIDA (AP)	Istituto Comprensivo di Offida	Istituto Comprensivo di Offida	23
CAMPANIA				
20/11/2006 21/11/2006	ERCOLANO (NA)	Istituto Comprensivo di Ercolano	Istituto Comprensivo di Ercolano	67
SICILIA				
23/10/2006	PALERMO	Dipartimento di Protezione Civile Regionale	Direzione Didattica F.P. Perez	3
			Direzione Didattica Pallavicino	14
			Scuola Media Statale "G. A. Borghese - XXVII maggio	3

			Scuola Media Statale "Archimede"	4
			Istituto Comprensivo 2 S. D'Aquisto	13
24/10/2006		Ist. Annibale Maria di	Scuola media Mazzini	5
31/01/2007	MESSINA	Francia	Istituto Comprensivo Gravitelli	12
29/01/2007				
30/01/2007	LIPARI (ME)	Istituto comprensivo	Istituto Comprensivo Lipari 1	35
			Istituto Comprensivo "A. Manzoni"	14
			Istituto Comprensivo Trecastagni	5
			Istituto Comprensivo di Lentini "Notaro Iacopo"	5
26/10/2006				
08/03/2007	CATANIA	Sezione INGV Catania	4° IC "D. Costa" Contrada ex Saline Augusta	7
		Serv. Regionale di	Istituto Comprensivo "F. Crispi	11
27/10/2006	RAGUSA	Protezione Civile - Provincia di Ragusa	Istituto Comprensivo "M. T. di Calcutta" di Monterosso Almo	3
TOSCANA				
			Istituto Tecnico per Geometri "P. Belmesseri" Pontremoli (MS)	11
			Istituto Tecnico Commerciale e per Geometri "L Campedelli" Castelnuovo Garfagnana (LU)	6
26/09/2006	FIVIZZANO (MS)	Sala Consiliare	Liceo Scientifico di Castelnuovo G. (LU)	3
			Istituto Comprensivo "A. Moratti" di Fivizzano	9
27/09/2006	FIVIZZANO (MS)	Sala Consiliare	Istituto Comprensivo "F.T. Baracchini" Villafranca in Lunigiana (MS)	6
EMILIA ROMAGNA				
12,/10/2006				
13/10/2006	MINERBIO			
18/10/2006	(BO)	Istituto comprensivo	Istituto comprensivo	19
LIGURIA				
			I. C. "A. Manzoni -G. Ungaretti"	11
			Istituto Comprensivo di Porto Venere	6
11/09/2006			Istituto Comprensivo S. Stefano Magra"	2
12/09/2006	LA SPEZIA	Sede della Provincia	Istituto Comprensivo di Vezzano Ligure	5
			Istituto Comprensivo Ameglia	10
			Ist. C. "P. Bastreri" di Arcola	3
13/09/2007			I. C. Borghetto - Brugnato	3
14/09/2007	LA SPEZIA	Sede della Provincia	Scuole Comunali di La Spezia	9
FRIULI VENEZIA GIULIA				
06/02/2007	SGONICO (TS)	INOGS	Istituti Comprensivi di Trieste, Tolmezzo e Codroipo	20
Total	**Total**		**Total**	**Total**
24	**15**		**38**	**445**

Table 8. Training courses held in the school year 2006-2007

Tab. 8 shows the final calendar of the training courses held during the school year 2006/2007 by several researchers belonging to the involved Research Units, occasionally with external contributions by local experts (Tab. 9).

Region	Experts and contributors
Friuli Venezia Giulia	Peruzza L., Camassi R., La Longa F.
Emilia Romagna	Camassi R., Bernardini F., La Longa F.
Liguria	Piangiamore G., Solarino S., Pessina V., Camassi R., La Longa F.
Toscana	Camassi R., Bernardini F., La Longa F., Servizio Sismico Regione Toscana, Comune di Fivizzano
Umbria	Camassi R., Pessina V., Castelli V., La Longa F.
Marche	Castelli V., Camassi R., La Longa F.
Campania	Nave R., Camassi R., Crescimbene M., La Longa F.
Calabria	Camassi R., La Longa F., Nostro C., Baroux E., Frepoli A.
Sicilia	Camassi R., La Longa F., Crescimbene M., Azzaro R., Piccione C., Andronico D., Cascone M., Protezione Civile Regionale Sicilia

Table 9. Experts and contributors to the training courses

During the school year the interaction between the EDURISK personnel and the teachers involved in the experimentation has been mainly kept up through the EDURISK website and/or by electronic mail.

Date	Locality	EDURISK staff
May 2, 2007	Ercolano (NA)	Camassi R., Nave R.
May 7, 2007	Palermo	Camassi R., La Longa F.
May 8, 2007	Messina	Camassi R., La Longa F.
May 9, 2007	Catania	Camassi R., La Longa F.
May 15, 2007	Palmi (RC)	La Longa F., Frepoli A.
May 16, 2007	Martirano (CZ)	La Longa F., Frepoli A.
May 21, 2007	Minerbio (BO)	Camassi R.
May 22, 2007	Offida (AP)	Castelli V., La Longa F.
May 22, 2007	Fivizzano (MS)	Camassi R.
May 22, 2007	La Spezia	Camassi R., Piangiamore G.
May 24, 2007	Gubbio (PG)	Castelli V., La Longa F.

Tab. 10. End-of-year meetings 2006/2007

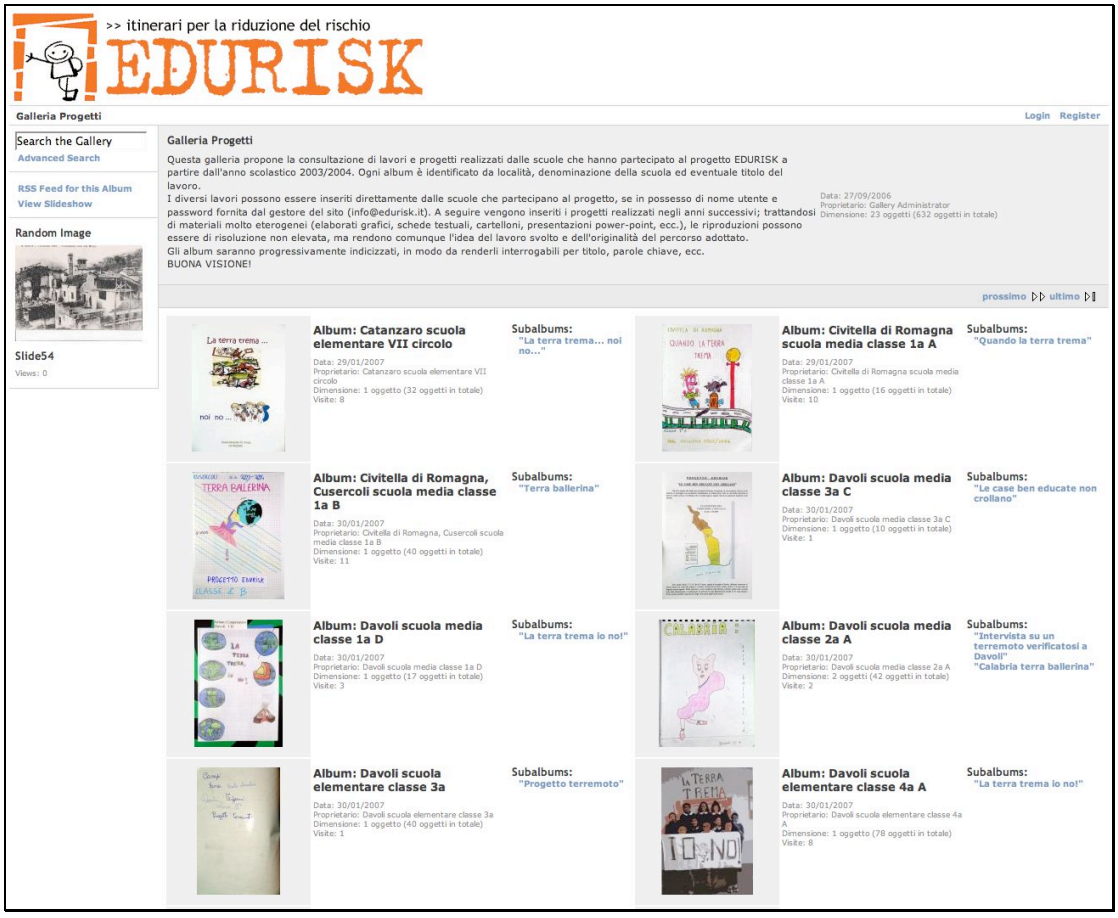


Figure 4. Preview of the web gallery

In May 2007, as per schedule, end-of-year meetings have taken place in every the involved schools. The EDURISK personnel has met the teachers involved in the experimentation for an eye-to-eye discussion of the work done and its future perspectives, preliminary to the required compilation of online evaluating questionnaires (Tab. 10). Many teachers agreed to formalise the learning experience developed along the year by compiling a "learning unit" and synthetic report. A very

wide range of very interesting "results" has been produced: didactic units, texts, drawings, graphic works, posters, researches, powerpoint presentations, games, brochures and more (Appendix 4). They are being inventoried and digitalized with a view to their forthcoming exhibition within the EDURISK website. A preview (Fig. 4) from the earlier project is currently on show there (http://www.edurisk.it/gallery2/main.php).

To obtain a statistically significant evaluation of the whole educational experience, the teachers were asked to compile an online questionnaire (organized in 11 research areas and 50 items) and a significant sample complied.
The topic of seismic risk reduction is generally agreed to be of great educational importance; the importance of a multidisciplinary approach is also much appreciated.
The formative courses for teachers have obtained the full approval of 77% of the compilers; 58% believes that some aspects (for instance the psychological ones) should be treated more extensively. The project website has been mainly used as a reference tool but more than 50% of the compilers has found it difficult to use it as a didactic tool within the lesson in the classroom.
The EDURISK educational tools have been generally much appreciated, with the best marks being given to the nursery school kit, followed closely by the "A lezione di terremoto" notebook; the "Noi e i vulcani" is extremely popular too, even if a few details are felt to be particularly complex. The "Terremoti come e perché" booklet has also been appreciated. The didactic guide for teachers ("A prova di terremoto") has been carefully perused; the most popular learning units are those put under the headings a "how to do" and "how to know"; the "how to be" area, though of paramount importance within the EDURISK project, seems unfortunately to have been the one less explored by classroom users. As to the evalution of the experience as a whole, almost 70% of the participants are fully satisfied with it, and an outstanding 95% express their general, if qualified, satisfaction.
Apart from this comprehensively favourable judgment, the analysis of the questionnaires points out many interesting aspects that will have to be carefully considered, among them some critical signs that will be extremely useful to adjust the formulation of future activities

3. Specific problems which have prevented success

The EDURISK project has had to cope with a few basic hindrances, partly of a structural kind and foreseen from the start, partly stemming from unforeseable specific circumstances. Among the latter the difficulties arisen in renovating the Aeolian didactic exhibitions hosted in structures that are in a bad condition. An other problem, partially solved, was the identification of the rightful owner of the INGV Aeolian Islands Visitor Centres, which to all intents and purposes have completely stopped a part of the program from being implemented. Likewise for the "Didactic earthquake" subproject, which had to be put on hold, until the Pavia EUCENTRE makes available its shaking table. In the meantime, the allotted funds have been relocated – by DPC request – to finance the setting up of the "Tutti giù per Terra" exhibition in Foligno, from 26 September 2007 onwards.
Structural hindrances fall under three headings: planning, communication, resources.
Planning: this project, like its earlier namesake, started later than the school year and this is why a large-scale EDURISK experimentation has been possible only in the school year 2006-2007. Italian schools are required to prepare beforehand the didactic

programs to be developed along a school year. The Piano di Offerta Formativa (POF) for the new school year (starting in September) should be compiled at the end of the previous school year (May-June). Any project to be included in the new year's POF, will have to be submitted for approvation to the scholastic authorities at the very least some months before the start of the school year; deviations from this rule are possible, in single cases, but obviously not on a large scale.

Communication: communicating with the EDURISK-experimenting schools has proved an harduous task indeed. Several strategies were adopted but none was totally successful. Communicating by surface mail, phone and fax, and above all through the hierarchic channels, is both slow and unsatisfactory, especially when one has to try and optimize a series of activities (formative courses, end-of-year meetings) that involve several dozens widely-scattered institutes at the same time or within a narrow time-frame. Communicating via the web and electronic mail is not always possible, many schools still lacking Internet access and many teachers having a low level of informatic literacy. Consequently, great care must be devoted to liaison work with the schools and to creating personal communication channels according to specific needs and requirements.

Resources: from its start the EDURISK experience has grown much larger than the available financial and human resources would have justified it to be. The inherent scarcity of specifically dedicated funds has required to draw on institutional funds and to have recourse to co-financing by local administrations (namely the regional governments of Tuscany, Emilia Romagna, Friuli etc) for the production of specific educational materials and to replenish dwindling supplies of materials as more and more schools enlisted for the experimentation. This has entailed a few operational discontinuities and problems in the management of the reprinted materials (some administrations asked for the insertion of their logos as an acknowledgement of their intervention, or even to be entrusted with the direct management of the re-printed stuff).

Chronical understaffing and the optimization of human resources is the most harrowing of the problems involved in EDURISK management: of the several people working on the project, no one is doing it full time. As a result everyone shares in a bit everything, from the most sophisticated planning of new educational tool to the most mundane secretarial work. While this caring and co-operative approach adds depth, involvement and even charm to the workings of the EDURISK community, it it undubitable that the weight of "mere" secretarial work has increased to such an extent to make it absolutely necessary to appoint a full-time operator. Likewise for the development of the EDURISK website, which needs to be expanded, given a multilingual version and generally adequated to function as an efficient distance learning tool.

4. **Deliverables achieved with this project**

Deliverable 1	Nursery school kit *"Se arriva il terremoto"*
Description	The original nursery school kit *"Se arriva il terremoto"* included four loose pictorial cardboard plates for children and a guide for the teacher. In 2005, when the kit was re-edited prior to its English translation, the loose plates format was abandoned for a traditional booklet format, that seems to be more convenient for use in the classroom. The 2006 reprint keeps the booklet format, but the kit now includes 10 volumes for children and a partially updated guide for the teacher. The English versions has been improved; French, German and Spanish versions have been made.

Figure 5. Covers of the kit for nursery schools

Deliverable 2	Booklet ″A lezione di terremoto″
Description	The original ″A lezione di terremoto″ notebook did not undergo relevant modifications. The Friulan and Slovenian versions (printed in 2004 on behalf of the Comune of Gorizia) have been checked by native-speaker seismologists. The English translation of 2005 has been recently checked and updated. French and German have been made; the Spanish one is currently being completed.

Figure 6. Covers of the booklet for primary schools

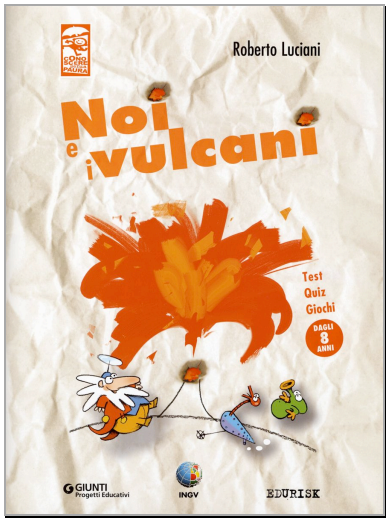
Deliverable 3	Booklet "Terremoti come e perché"
Description	The secondary school volume *"Terremoti come e perché"* was completely revised, the more complex passages were rewritten striving for a better readability, the assortment of pictures and the graphics were improved, and a new cover was designed. For the time being no attempt has been made to translate it into English. Three regional appendixes to the volume have been designed and realized. They follow the same editorial model and index adopted by a brochure issued by the Research Unit INOGS on the 30th anniversary of the 1976 Friulan earthquakes. The regional appendixes present the main characteristic of seismicity on a regional level, starting from the overview of a significant seismic sequence and going on to describe the regional situation with respect to hazard, risk and seismic classification. The prototypes have been realized using institutional funds and with the partial support of the involved Regions' Civil Protection Departments. They are going to be employed within the current experimentation (from next school year) and will afterward be revised accordingly.

Figure 7. Covers of the booklet and regional supplements for secondary schools

Deliverable 4	Website www.edurisk.it
Description	After a general revision the project website (www.edurisk.it) has been reactivated. From then on, owing to the lack of fully dedicated human resources, it has been possible to ensure the constant updating of a few strategic sections only (News, Teachers' reserved area, Questionnaires). Lately, a stand-alone section connected to the interactive workshop "All Fall Down" (http://www.edurisk.it/tgpt/index.html) , and a prototype of virtual gallery of the projects realized by schools have been recently activated. The whole informatic structure should be regenerated and an English translation of the whole website is of vital importance.

Figure 8. "All Fall Down" section of the EDURISK website

Deliverable 5	Booklet "Io e i vulcani"
Description	The latest comer in the EDURISK series is the notebook "Io e i vulcani", an educational tool for the primary school, written and illustrated by Roberto Luciani. Like its predecessors, this volume is the result of a multi-layered process of planning, elaborating and revising which involved researchers belonging to the Napoli, Roma and Bologna Research Units. The resulting product is brilliant indeed, as witnessed by the glowing praise heaped on it by the Ercolano, Lipari and Catania Province schools who first used it within the Edurisk experience. English, French, German and Spanish translations are currently being prepared.



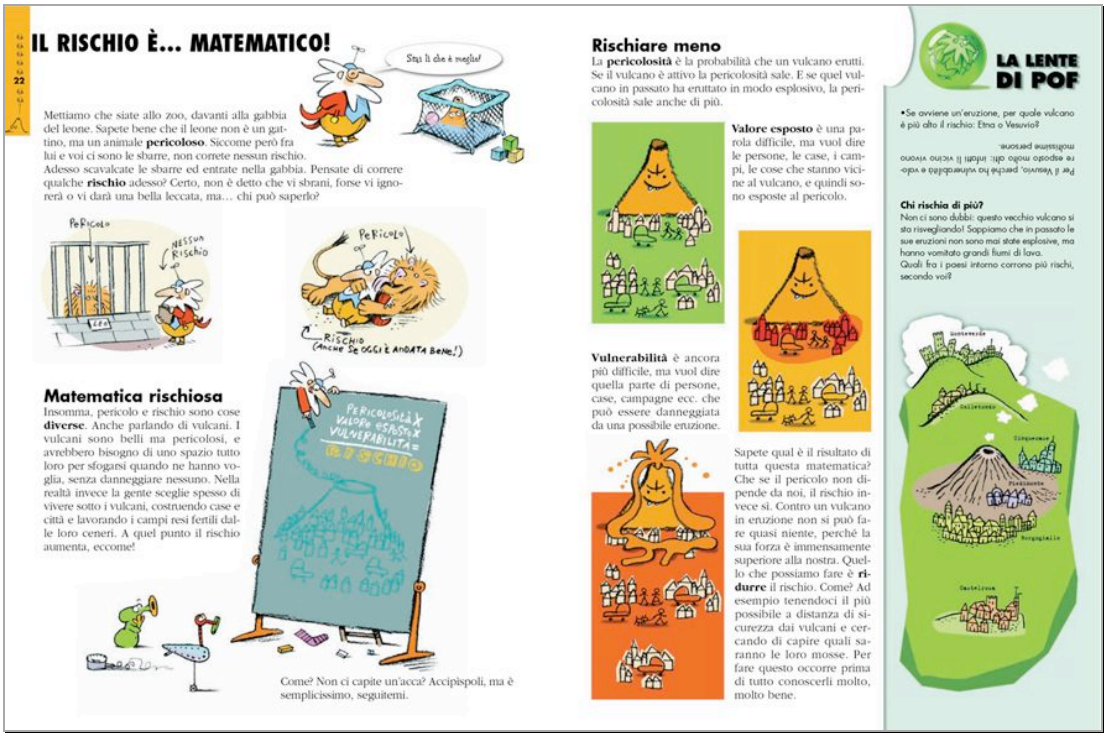
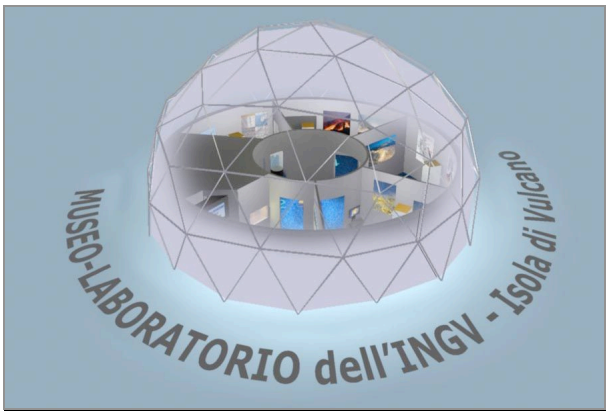
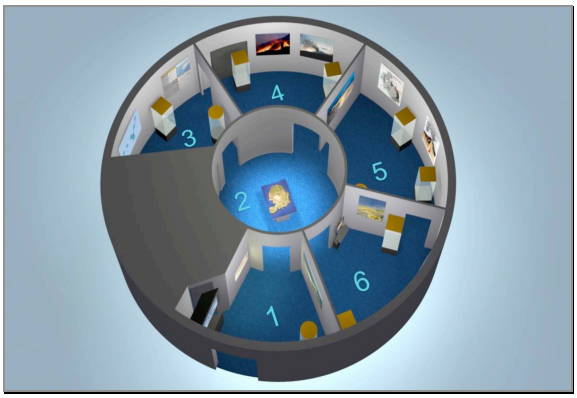


Figure 9. Cover and layout of the booklet on volcanic risk for primary school

Deliverable 6	Renovation of the Eolian didactic exibitions
Description	The scheduled renovation of the didactic exhibitions in situ at the INGV Volcano Centers of Vulcano and Stromboli could not be started for the time being, owing to extremely serious problems deriving from the bad conditions of the hosting structures. The Center of Vulcano has also an unfavourable position, far from the tourist tour; so we decided to move the educational activities in two structures close to the Porto di Levante and to project a new Volcano Center, using part of the exhibition of the Centro Carapezza. We worked to identify the rightful owner of the second structure (the first was already a INGV commodate) and of the area which host the centre. This problem reaches a satisfactory solution in May 2006. At the same time we worked to project the new Volcano Center (Appendix 5) and also some new exhibits have been prepared.





The projected exhibition is

1. Reception
2. Interactive exhibit of Vulcano
3. Man and volcanoes: myth and history
4. Volcanoes in the World, in Italy, in the Aeolian Island
5. Vulcano's geological history and the 1890 eruption
6. Volcanic monitoring and right behaviour to reduce volcanic risk.

Figure 10. The project of the new Center of Vulcano and a diorama representing the island of Vulcano

Deliverable 7	Educational courses on volcanic risk
Description	Some of the educational projects realised during the school year 2006-2007 have addressed the topic of volcanic risk. The projects involved 67 teachers in Ercolano (Vesuvian area), 35 in Lipari (Aeolian Islands) and 19 in Catania and Trecastagni (Etnean area). To meet their special requirements, the basic 8-hours, 4 modules training course for teachers was integrated with 2 modules dedicated to an overview of the local levels of volcanic risk and volcanic hazard and to the uses of a psychological approach in the management of emergencies.

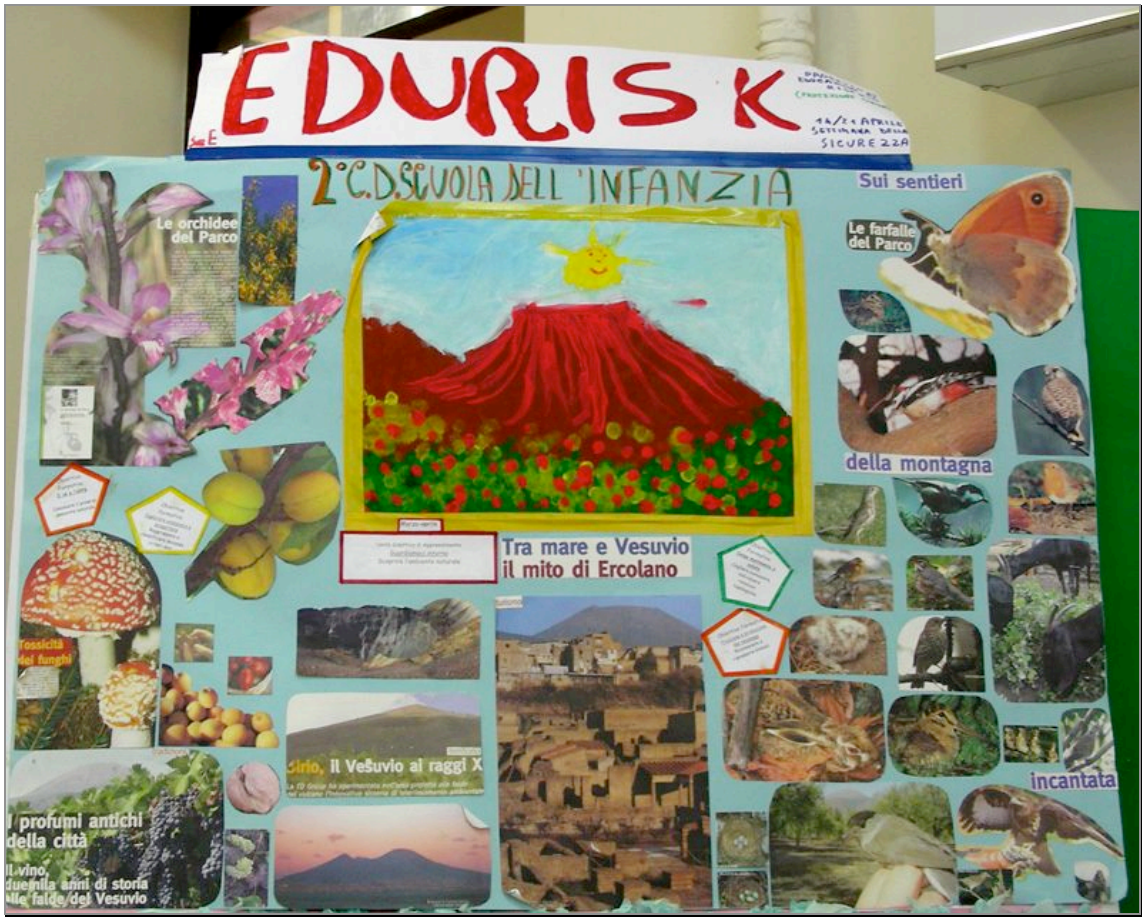


Figure 11. A poster on Vesuvius by Nursery School, Ercolano (NA).

Deliverable 8	Educational itinearies for High Schools
Description	Three senior high schools of northern-eastern Tuscany (two Istituti tecnici per Geometri-Technical Schools for Surveyors in Pontremoli and Castelnuovo Garfagnana; a Liceo Scientifico-Scientific High School in Castelnuovo Garfagnana) became involved in the EDURISK experience during the school year 2006-2007. To meet their requirements an ad-hoc scheme of formative course for teachers and a new range of learning activities was designed, with a strong slant on local seismic history (with special focus on the local strong earthquake of 1920). The suggestion was favourably greeted by the teachers and some very complex research project were started and are to be extended over the next school year.

Figure 12. Some ruins of the 1920 earthquake found by students of the Techical High School "Belmesseri", Fivizzano (MS) Branch.

Deliverable 9	Exibition "We All Fall Down"
Description	EDURISK and 'ConUnGioco' developed "**We all fall down"**, an exhibition with a strongly interactive approach, designed to be easily assembled and transported and addressed primarily to pre-teens schoolchildren. The visit includes an interactive itinerary and a learning area. A fully-furnished toy house withinteractive areas on the outside that give visitors the possibility to reproduce experiences and phenomena felt during an earthquake. In the **Learning Area** visitors choose which earthquake aspects they wish to investigate and which itinerary to follow among those available. Learning experiences are carried out, using tools easily available at home or school, to understand the earthquakes fundamental scientific concepts, such as their origins and dynamics, instruments and recording devices, seismic characteristics of the individuals' areas, geophysics and volcanic notions to help in the understanding of this phenomenon. The area dedicated to questions on the origins of the phenomenon is divided into three sections: The **Why** area contains scientific explanations compiled throughout the course of history by humankind in different world regions as well as their beliefs and myths on seismic events. One therefore has the opportunity to challenge his or her beliefs and attitudes and seek answers forming personal accounts or visual representations that can explain, often through vision and imagination, the phenomenon just experienced. The second section includes the ***What*** and ***How*** and follows the Science journey and its attempts to explain a phenomenon that until only the past century was still a mystery. An introduction to the Wegener theory is presented followed by the theory of plate tectonics and detailed analysis of specific earthquakes mechanisms. Attention is also given to monitoring methods, analyses and mitigating measures. The participants have the opportunity to work together around each workstation putting together simulations and observing representations that will prompt them to ask further questions and seek appropriate answers. A third section describes the ***Who, Where*** and ***When*** and includes a summary of the seismic knowledge collected in various places and verbal accounts presented as collections of images and descriptions of earthquakes and their related phenomena. In this section, it is also possible to learn about earthquake events occurred in the specific area where the exhibition is being held inside a smaller parallel exhibition, assembled in collaboration with schools and local institutions. The third area (Action area) presents the best behaviours to follow both individually and collectively when reacting to an earthquake. As earthquakes cannot be predicted, preparedness to their possible occurrence and preventive measures to reduce their effects represent the best approach. This principle is symbolically represented as a return home in the

	form of an additional domestic reproduction where it is possible to verify the lessons learnt in the previous areas through objects and simulations. The exhibition can therefore include a second house similar to the first one where each workstation controls a piece of furniture in the house. The visit is organised in two moments: the interactive itinerary and the knowledge workshop. The latter constitutes of learning group activities, lasting approximately one hour in a dedicated area. These activities cover various subjects in different formats: all the themes proposed in the interactive itinerary can be expanded in workshops following different designs.

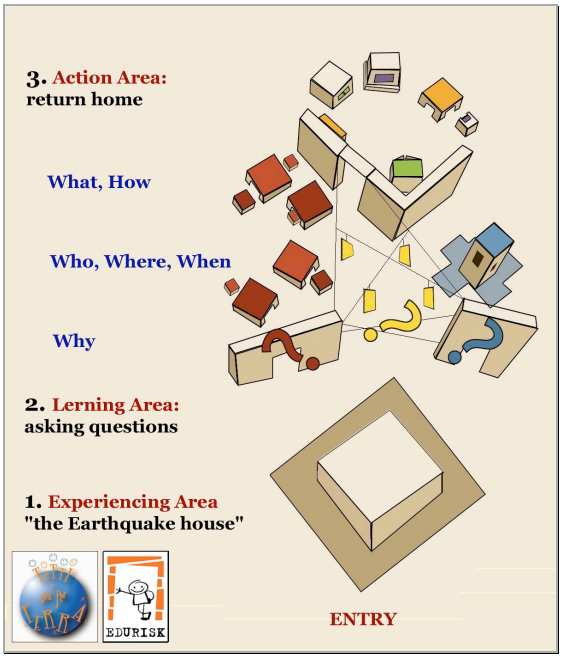


Figure 12. Simplified scheme of the interactive laboratory "We All Fall Down" and some pictures of the exibits

Deliverable 10	Multimedial tool on vulnerability evaluation and reduction
Description	The original project included the realization of an educational multimedial tool on CD-ROM on the topic of seismic vulnerability (evaluation and reduction), to be used both in the normal scholastic programmation by senior high schools and by adult technicians as a reference work. The themes tackled include: 1. Building typologies and vulnerability factors; 2. Seismic vulnerability of the Italian building patrimony; 3. Vulnerability reduction techniques. The prototype will be made available from September 2007 to the Pontremoli (MS) and Castelnuovo Garfagnana (LU) Technical Schools for Surveyors, which have undertaken to test it during the next school year as a contribution to the preparation of the final version.

Figure 13. Preliminary layout of the CD-Rom on vulnerability for professional high schools

Deliverable 11	Training system on seismic and volcanic risk for teachers
Description	This deliverable does in fact coincide with the Task 2 report

Deliverable 12	Distance Lerning System
Description	The experience made until now show that the EDURISK website can function adequately as a distance learning tool for teachers. However, judging from the opinions vouchsafed by the teachers who compiled the evaluating questionnaires, it would be premature, for the time being, to try and substitute distance learning tool to the more traditional, face-to-face model of formative course in situ that has been used up to now. This is not to say that the model of distance learning through the Internet should be abandoned, but rather that it is still too advanced with respect to the current abilities of those that should benefit from its use. According to the opinions vouchsafed by around 300 teachers who compiled a detailed online questionnaire to carry out their final evaluation of the EDURISK experimentation, a significant portion of compilers agrees about the paramount importance of the Internet as a mean to disseminate information. At the same time, however, many teachers say they find difficult to access the web and deplore the lack of free-use stations and swift connections. These practical problems are enhanced by the lack of enthusiasm for the Internet mode of communication and poor informatic skills professed/shown by a large portion of over-50 teachers. This evaluation is confirmed by the fact that when - in June 2007 - the EDURISK-involved teachers were asked to compile a simple online questionnaire on the informatic tools available to them within their schools, no more than a dozen of them had anything to contribute as an answer.

Figure 14. Restricted area of the EDURISK website

Deliverable 13	Virtual itineraries through the seismic history
Description	The multimedial tool "*Virtual itineraries through the seismic history of Italy*" (issued within the previous project as a prototype) was revised: its final version has been released for educational use in the secondary schools. An English version is also available.

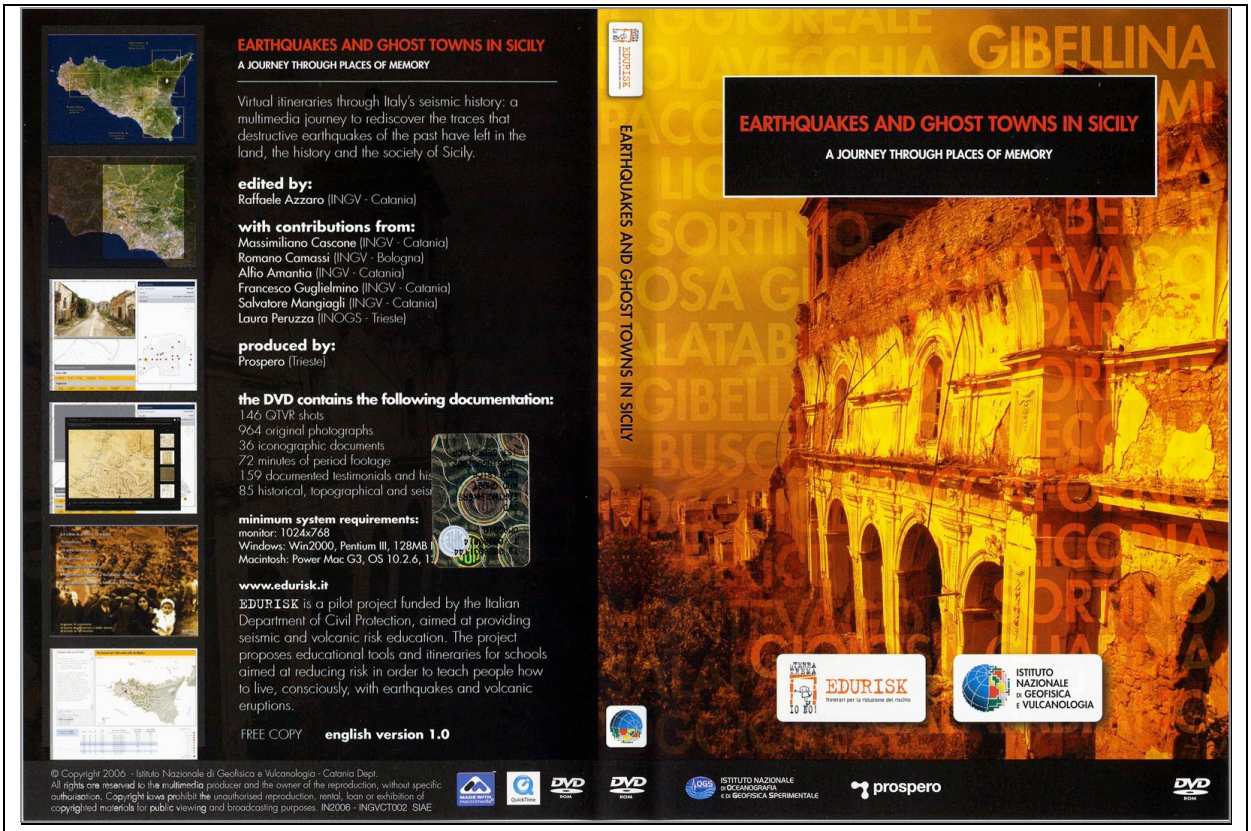


Figure 15. Cover of the English edition of the DVD on virtual itineraries

5. Publications which have arisen directly from this project

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Appendix 1 – Digital copy of the main reviews of the EDURISK educational tools
Appendix 2 – Digital copy of requests for cooperation
Appendix 3 – Extended evaluation report (in Italian) on the activities' educational impact
Appendix 4 – Preliminary inventory of educational projects carried out by schools in the frame of the EDURISK project
Appendix 5 – The new Vulcano Center: extended project