

## **Edu-Risk 2002 Earthquake Education: a Journey for Seismic Risk Reduction**

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### **Introduction**

The Edu-Risk Project focuses on the development of educational tools to be used in the frame of courses and campaigns for seismic risk reduction addressed to school students of different ages and to adults trainees in damage assessing techniques.

They include:

- three educational tools (one for each of the three levels of the current Italian scholastic system: nursery, primary and secondary school) based on raw materials experimentally assembled in previous projects by the National Group for Protection against Earthquakes and professionally edited by educational press experts;
- a professional multimedial tool (CD-Rom) on seismic damage and seismic vulnerability of buildings for technical training purposes, to be used for teaching purposes by professional schools, the Civil Service and the Civil Defense Department;
- a multimedial journey among the traces left by past destructive earthquakes on Italy's landscapes and townscapes, addressed to the general public and stressing the role of this cultural heritage as a mean to awaken general interest for the topic of seismic risk reduction and the importance of historical memory as a tool for protection against earthquakes.

The College of the National Group for Protection against Earthquakes (GNDT-INGV) approved the Edu-Risk proposal (revised after an earlier feasibility-study) in July 2002. The approval was officially communicated on 25 September 2002 (incoming protocol INGV-Milano n. 230/2002, 1 October 2002) and funds reached the coordinating institute (INGV-MI) on 28 December 2002.

The actual work started in October 2002. A re-adjustment of the project's preliminary schedule was necessary, as one of its main objectives is a test of the efficaciousness of the Task 1 teaching tools on selected school populations. The regime of scholastic self-management requires each Institute (Didactic Circle; Comprehensive Institute, including Nursery, Primary and Secondary Schools) to prepare its Educational Offering Plan (EOP) - detailing learning activities for teachers and students, educational strategies and other resources on offer for the incoming scholastic year - before the end of the current scholastic year, in order to allow for its approvation by the internal consulting organs. It was therefore necessary - besides actually preparing the educational tools - that the selected schools be presented with a detailed working proposal, a comprehensive educational plan (and of course the finished educational products) early enough to allow for the inclusion of the Edu-risk test in their EOP (March-May 2003).

Consequently, the first semester of the Edu-Risk project activity was dedicated to achieving the Task 1 objectives. This will also allow to partially re-align the Edu-Risk project's development to the other current projects.

## STATE OF THE ART OF THE PROJECT

The Project has two objectives, that have been pursued as follows:

### TASK 1: BASIC SCHOOL

This Task has two objectives:

- preparing, for each of three basic (nursery, primary and secondary) school levels an educational tool structured, as to formats and contents, to met the educational requirements and learning abilities proper to each age level and offering the best scientific information available in Italy. Editing and printing are being undertaken - as subcontractor - by the Giunti Society for Educational Projects, one of the biggest Italian trademarks in educational printing;
- testing the educational tools to provide the financiers with a cost/benefit evaluation of the finished products. This evaluation will be one of the final results of the Project, as a tool to be put at the disposal of any scientific structures and/or Civil Protection departments wanting to plan educational campaigns.

In the first semester of activity (October 2002-March 2003) all involved Research Units and the subcontractor worked on the three tools and the organization of the testing campaign. The latter should be approved by the selected schools by May 2003, so that it may start by September 2003.

#### 1. A "how to behave kit" for 4-to-7-year-old children

It was decided that the educational tool addressed to children aged 4 to 7 years (Nursery School and Primary School, first cycle) should be a pictorial one advising on the correct behaviour to be followed in an emergency. This idea coalesced into a kit formed by a folder containing a Teacher's Guide and four cardboard pictorial sections of 2 leaves/4 pages each ("quartini").

The Guide explains how people/children should behave in case of earthquake and gives suggestions on practical activities (games, exercises) that the teacher can launch in class.

The four pictorial sections are meant for joint use by small groups of children and develop the theme of how to behave during an earthquake in four familiar contexts (at home, at school, in the street, in the park). Pictures will be by **Nicoletta Costa**, a well known Italian children books illustrator, accompanying rhymes by **Maria Loretta Giraldo**.

The rhymes and a preliminary story-board are being prepared. The illustrator will be left free to translate the message in images following her sensitivity and professional flair. This is why no definite graphic project has been produced.

#### 2. An "active notebook" for 8-to-10-year-old youngsters

For the second cycle of Primary School (children aged 8 to 10 years) the initial idea of a virtual game was discarded in favour of a more practical "active notebook", adopting the oversize notebook format ("quadernone"), extremely popular nowadays in Italian primary schools.

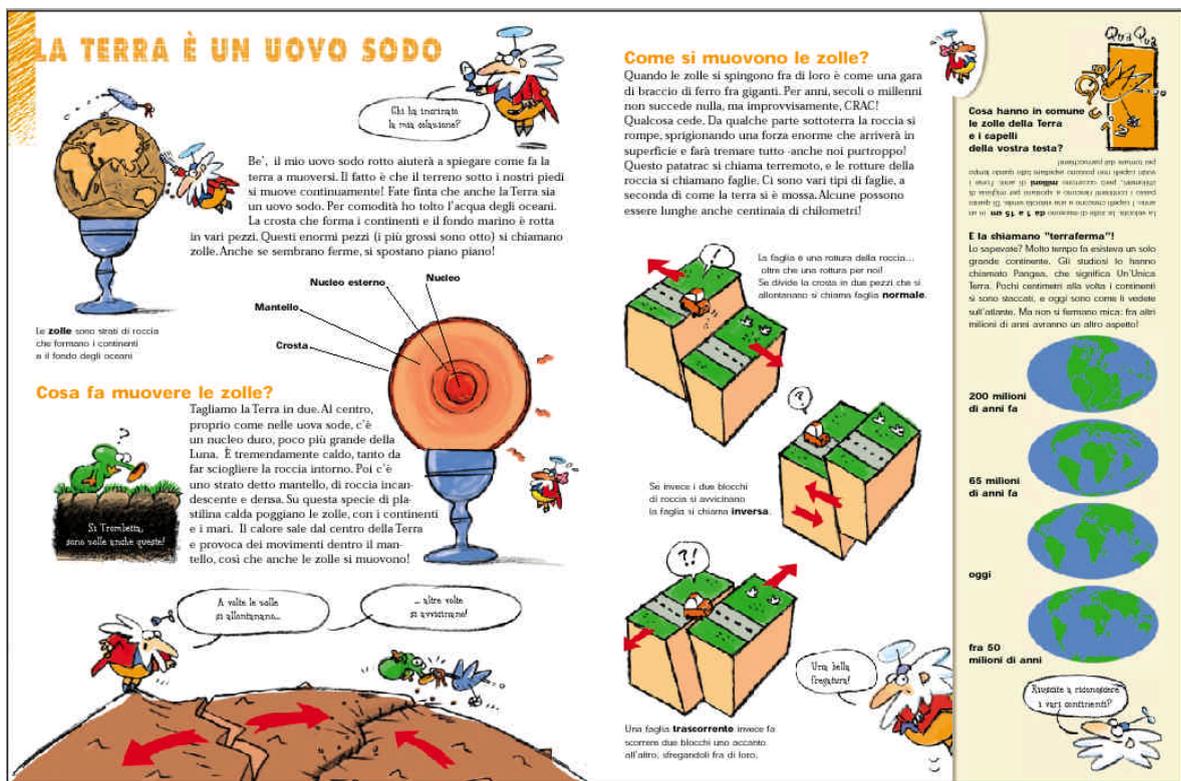


Fig. 1. Graphic layout of the active notebook for 8-to-10 year old youngsters.

Its graphic project (Fig. n. 1) has a mixed layout, with a wide assortment of realistic drawings (reproducing situations, models and schemes) and comic cartoons, employed to drive main concepts home and to provide the necessary “fun interludes”. Text and pictures freely combined help clarifying the phenomenon with examples from everyday life.

Each double spread will introduce a new topic, including written and pictorial items of information, suggestions for individual activities that readers could put in practice (easy tests, observations, etc.), and a selection of “seismic curiosities”. The last chapter will propose a “half-serious, half-fun” after-reading test (to verify the achieved level of knowledge), and a reference section with proposals for further reading and Internet links to be tapped.

The already well-tested character of Professor Pof (Fig. n. 2), a comic scientist with a following of funny assistants will have the double function of introducer and link between the several topics to be tackled.

To each 25 “active notebooks” there will be a 2-leaved section with working suggestions for the teacher, shaped as Teaching Units on which the whole class will work.

The graphic layout, list of pictures and an index of the text are ready. A children-books author is at work on the text, while the pictorial part is being prepared by an illustrator and a cartoonist. By mid-April the text should be available for revision to the involved Research Unit. A further revision is scheduled for the end of April on the paginated text, which will be in press inside the first half of May. At the same time an expert of educational techniques is at work on the Teachers’ Materials. Each stage of

this complex activity is being collegiately discussed and verified by all involved Research Units.



Fig. 2. Prof. Pof and his assistants are the guides inside the active notebook.

### 3. A volume for Secondary school teenagers

For Secondary school children (aged 11 to 13 years) it was decided to prepare a small volume drawing on the contents of the still unpublished booklet “10 Questions on Earthquakes”, based on an original project by Daniele Postpischl, revised by GNDT, ING and CNR experts on behalf of the Civil Defense Department. The volume about to be issued will maintain the “question and answer” layout, but it will strive for a more winning approach through a colourful mix of pictures (photos, classical iconography, technical drawings, cartoons - here used only as a signal for attention and not to convey any meaning) and an integral rewriting of the text by a professional young-adults books writer.

The graphic layout (Fig. n. 3) is ready. Iconography is being collected and selected. The text is being written and should be revised by the second half of April, allowing for the final product to be ready by mid-May.

#### Planning the testing campaign

In order to start the testing of the educational tool in a scholastic environment it is necessary to present the selected schools with a detailed working proposal to be approved by the internal managing organs (Institute Councils) by the month of May of each scholastic year, to be operational during the following.

Therefore, besides accelerating the stages of planning and producing the educational tools, a comprehensive educational proposal aimed at all school levels was prepared and some schools in the selected areas were contacted in order to define the areas and extension of the testing campaign. According to the comprehensive educational proposal, by May 2003 a sufficient number of copies of the educational tools will be available together with a proposal for a learning course for selected teachers from the various school levels, structured in four teaching modules (totalling 6-10 hours) and dealing with the main topics to develop with the students in order to:

- insert in a local context the acquired general information on earthquakes and seismic hazard;

- define the kind of risk to whom the school, students, teachers and their families are exposed;
- find out the initiatives that could help reducing it;
- suggest behaviours and psychological supporting tools for an emergency.

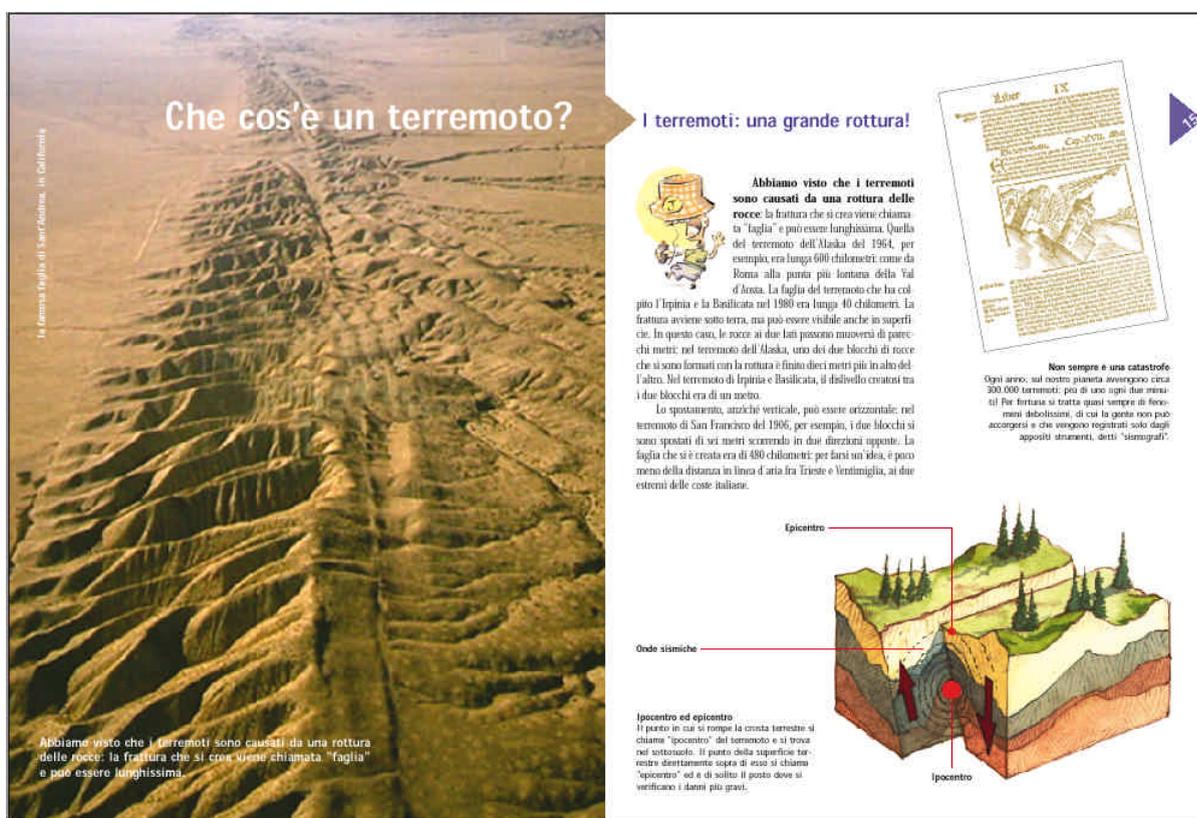


Fig. 3. Progetto grafico del volume per la fascia di età 10-13 anni.

The "Teaching the Teachers" activity will faithfully mirror the indications to be found in the materials made available to the schools (three educational tools, with main reference to the Teachers' Guides).

### Planning a dedicated server

A dedicated web server is being also constructed. It will be accessible under control to the teachers involved in the testing campaign, to whom it will make available: selected scientific data, detailed information on single local situations, specific proposals of didactic activities and a tutoring service. Its objective is allowing to develop the schooling activities in a long-term perspective. It will function as a prototype of Distance Formation System (FAD), open to further development after the conclusion of the Project.

### Selection of the test Institutes

The areas in which the testing campaigns will be developed must be at the same time not overlarge and representative of the national context. The first choice fell on the regions of Friuli-Venezia Giulia, Emilia Romagna and Calabria, very different from

each other as to cultural contexts and seismicity patterns. In order to achieve the maximum synergy between all local available resources it was deemed opportune to involve the local administrative governments in the selection of the test Institutes. In some cases the selection procedures have reached definite results, while others need further attention.

The planning has reached its most advanced stage in **Emilia Romagna**. The selected area is the **Mountain Community** of the **Forlivese Apennines**, including the municipalities of Santa Sofia, Civitella di Romagna, Predappio, Meldola and Bagno di Romagna with five Comprehensive Institutes. The campaign plan was jointly examined and decided in two meetings between the Edu-Risk staff, the representatives of the Mountain Community (Assessor for Culture and Assessor for Civil Defense), the Regione Romagna and the Province of Forlì, and the directors of the Comprehensive Institutes. It will be formalised on 9 April 2003, with the official presentation of the executive project to be proposed to the Institute Councils.

The test Institutes for **Friuli-Venezia Giulia**, **Calabria** e **Sicilia** (municipality of Catania) will be selected inside of the first week of April, so to allow the start of the required procedure to obtain the approval of the Test Projects by May 2003.

The Department for Civil Defense is being kept constantly adjourned on the development of the described activities.

#### **Monitorage of the campaign's effectiveness**

A constant monitorage of the real impact of the various initiatives of the testing campaign on teachers and students alike will be undertaken on a sample of classes representative of all age levels in the three test-areas.

#### **4. Virtual earthquake**

In order to start the testing campaign of the three finished educational products for the school at the earliest possible date (scholastic year 2003-2004) it was necessary to postpone the realization of the fourth Task 1 product, namely the multimedial CD-Rom reconstructing virtual scenarios of seismic damage to be used in the frame of training courses in evaluation of seismic vulnerability of Italian buildings, earthquake damage assessment and habitability checks.

During the first semester of activity, however, it was possible to complete the informatic elaboration of the data collected on 20 buildings located in Tuscany (Sienese area, Alta Val Tiberina and Garfagnana), to be uses as a database from which to select the material necessary for the realization of the product. Moreover, the logical planning of the product has started with an analysis carried out by the competent External Partner (Prospero) on some available prototypes (EVA, MEDEA).

#### **TASK 2: VIRTUAL ITINERARIES THROUGH THE SEISMIC HISTORY OF ITALY**

The product to be realized inside this Task is a professional CD-Rom structured as a virtual journey through Italian land- and townscapes on which past destructive earthquake have left their marks. The key element in this multimedial product will be a selection of Quick Time Virtual Reality navigations in Italian settlements deserted in the aftermath of some large past earthquakes.

After a careful examination of the huge database collected during the feasibility study, it was decided that the project would focus on a broad strip of country

extending from the lower margin of the Northern Apennines (including the near field of the 1997-1998 Umbro-Marchesan earthquakes) to the region of Molise (including the near field of the 31 October 2003 San Giuliano earthquake, Fig. n. 4).

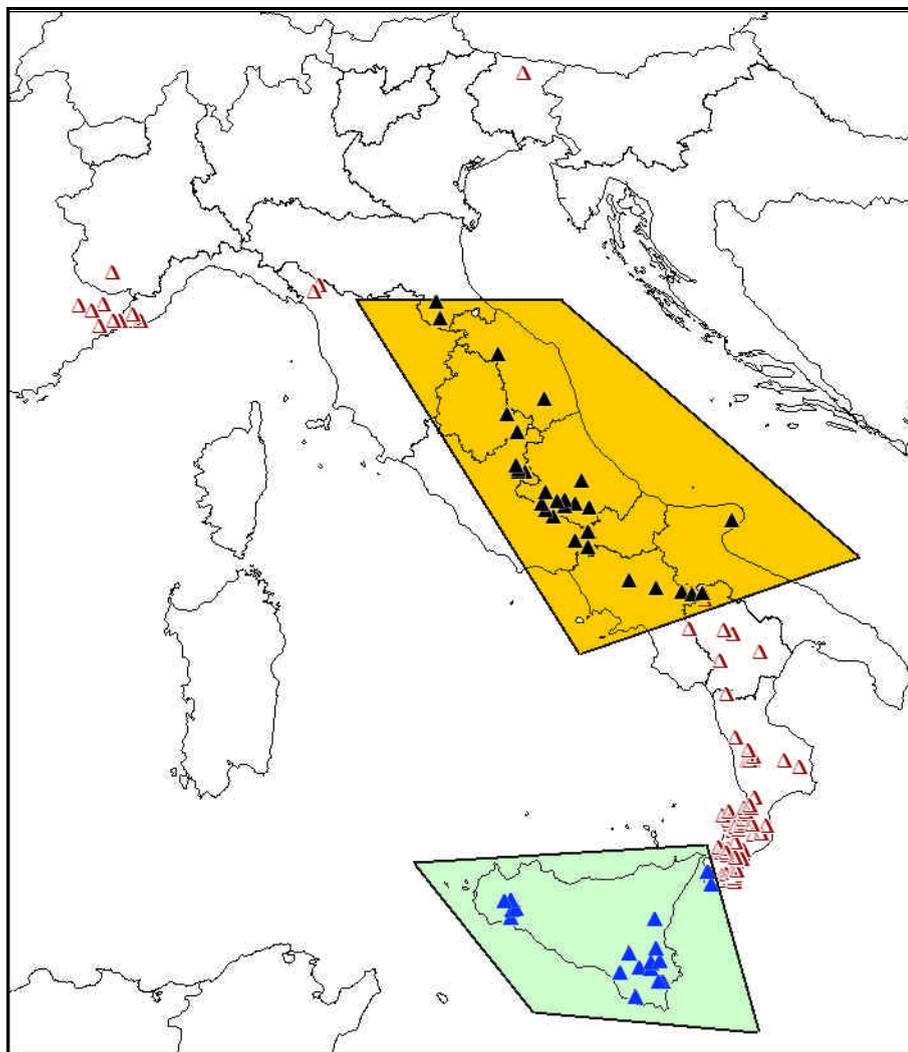


Fig. 4. Deserted sites in the aftermath of earthquakes and areas selected for the record-collecting campaign.

A bibliographical research is being carried on on the deserted sites identified in the selected area, and special care is being devoted to the collection of data on the cultural and anthropological aspects (legends, cults, mementoes, etc.) connected to the occurrence of destructive earthquakes. A first campaign for the collection of visual evidence on the selected sites has reached the planning stage and will be undertaken during next summer.

In the meantime an in-depth research has been carried out (mainly by the Catania Research Unit) on a selection of sites belonging to the Region of Sicilia, for whom a large photographic database had been previously collected. This will allow to proceed to the realization of an experimental prototype of the final product to be delivered at the end of the Project.

## **Conclusion**

The full rescheduling of the Project made necessary by the exigency for the educational school tools to be ready not later than May 2003, led the Research Units involved in the Project itself and the External Partners to concentrate all energies expendable in the first semester of activity in the realization of the aforesaid products. The features, contents and layout of the three educational tool for the basic school were defined in details and their actual realization will be achieved inside of May 2003.

At the same time, in order to pinpoint the sites in which to carry out the experimental testing of the aforesaid products, various schools were contacted. In the test area of Emilia Romagna the operation has reached the executive planning stage.

The informatic planning of both multimedial products to be realized by the Project has been started and - in the case of the Task 2 product (virtual itineraries through the seismic history of Italy) a first documentary campaign has been carried out on 12 sites, allowing for the preparation of an experimental prototype to be used as a pilot-experiment for the realization of the final product.