ISSN 1972-1552

Epitome

Volume 4, 2011

Geoitalia 2011

VIII Forum Italiano di Scienze della Terra

Torino, 19-23 settembre 2011

REGIONE PIEMONTE

MUSEO REGIONALE DI SCIENZE NATURALI

Geoitalia

Federazione Italiana di
Scienze della Terra, Onlus

activity and quarrying, science exhibits and nature trails. The recognition of the economic value of geodiversity will lead to the production of regional guidelines for Geoconservation integrated quality management system, suitable for tourism and sustainable development strategies. An international advisory board will evaluate yearly project advancements, proposed strategies and products.
One of the main target of the project is to improve public awareness on major earth science challenges, both from the hard and applied Earth Sciences point of view. Since the general public, both the young and adults, have a sort of illiteracy with respect to Earth Sciences, we plan to get them involved in an easy but complete way in to the subject. We experienced in the last few years two approaches to disseminate and share geodiversity and geoheritage contents in Piemonte; the first one involved local partners, such as primary and secondary schools (proposing specific research-action curricular activities) or science museum (both at the local and regional level), for the design of scientific exhibits focused on specific subjects related to the impact of dramatic geologic events (vulcanos, earthquakes, floods, coastal hazards, etc) on human presence and activitiy; the second one was focused on road exhibits (European researcher's night, ESOF-European Science Open Forum- science in the city) where several scientific experiments, dealing with multi-faceted geological subjects, were developed such as the following: plate tectonics experiments; models of slope instabilities; the discovery of the fossil record and the reconstruction of past climate changes; the exploration of the decorative stones of Torino's historical buildings; awareness of fibrous mineral (asbestos) and mineral particles impacts on health; classification of mineral collection by using the five senses. These live experiments or games are the ideal start for the present project, and we plan to improve both their scientific content and the general organization. From these past experiences we will focus on new outcomes of the project, that will include didactic tools for educators, schools and public in general, together with more traditional museum exhibits, real and virtual geological tracks, interactive websites and training courses for geonaturalistic guides.
The produced material will be shared with teachers for local school projects and natural science museums of Piemonte. Moreover, long-term objectives and short-term targets for geodiffusion actions will meet the requirements of local communities in the geothematic areas. Local partners will offer human and financial resources for the achievement of the geodiffusion objectives.
Last but not least, geological literacy of children, young persons and adults will thus have a positive deep impact on every day life and on our future.

U1-18 Orale D'Addezio, Giuliana

10.1474/Epitome.04.1040.Geoitalia2011

RESEARCH AND EDUCATIONAL OUTREACH

D'ADDEZIO Giuliana[1]
1 - Istituto Nazionale di Geofisica e Vulcanologia

Presenter e-mail: giuliana.daddezio@ingv.it

Key terms: natural hazard; research; education

The Istituto Nazionale di Geofisica e Vulcanologia (INGV) is one of principal Italian institution dealing with Earth Sciences research. INGV is also in charge of the real-time seismic and volcanic surveillance, and of the early warning and forecast activities. Italy is a seismic and volcanic country and it is therefore important the social role of a correct information on natural hazards and its implication on social and cultural aspects. The Laboratorio Didattica e Divulgazione Scientifica of the INGV organizes intense educational and outreach activities in the consciousness that preparedness is the best way to live with and to mitigate natural hazards.
These activities partially respond to a significant demand from the Society; one question is which are the most effective and authoritative approaches to be developed to fulfill this demand. The Annuario Scienza e Società 2011, even if outlines a scarce level of scientific knowledge among citizens, highlights a growing demand for information on science and technology. For the majority of people the main source of scientific notions are newspapers, where the exposition of science-related news is constantly increasing. On the other hand, public Conferences that allow a direct relationship with researcher represent the most reliable scientific informative contest, as well as the Web sites of scientific institutions and the researchers blogs. These data emphasize the importance of the social role of science institutions and the need of an active and responsible involvement of research in educational outreach. This represents one of the aim of our educational activity. This talk give an overview of our activities with regards to research-community interactions.

U1-19 Orale Magagna, Alessandra

10.1474/Epitome.04.1041.Geoitalia2011

INTERACTIVE ACTIVITIES TO STIMULATE DEBATE AND CRITICAL THINKING ABOUT ISSUES RELATED TO EARTH SCIENCES AND SUSTAINABLE DEVELOPMENT

MAGAGNA Alessandra[1], GIANNATEMPO Cristina[1], FERRERO Elena[1]
1 - Università degli Studi di Torino

Presenter e-mail: alessandra_magagna@yahoo.it

Key terms: Earth Science education; Sustainable Development; Exhibition; Action-research

During the International Year of Planet Earth (2007-2009), the Department of Earth Sciences (University of Turin) and the Museum Craveri of Natural History (Bra, Cuneo) promoted the project "Understanding how the Earth works: from local situations to global processes". In this context, two geothematic exhibitions about Cape Verde were designed, both accompanied by guided tours and practical laboratories addressed to students of different ages (from nursery to secondary school), as well as workshops dedicated to in-service teachers. The exhibition "Knowing the volcano in order to live together with it" (February - April 2008) was the subject of an action-research carried out as part of a master's degree course in Natural Sciences. The research concerned the design of interactive activities related to the exhibition, the collection and analysis of data on the performance of these activities during the guided tours conducted with the students.
The aims of the interactive activities were to generate emotional involvement, to stimulate interest and curiosity, to develop debates among visitors, to widen view points on topics of relevant scientific and social value: volcanism, hazards and sustainable development. The activities included discussions about questions with many possible answers, in order to trigger a process of discovery driven by the rise of multiple viewpoints. During the tours the museum guides (people involved in the action-research) moderated the discussions, helping both students and teachers in debate as well as in personal reflection.
The action-research project undertaken enabled us to assess the effectiveness of this teaching strategy, in order to establish possible modifications on activities during their execution as well as in view of future events.
To achieve this goal the research followed different ways: a quantitative analysis was completed on the worksheets elaborated by students during these activities, as well as the satisfaction questionnaires filled by students and teachers. From the qualitative point of view, the level of interest and participation of pupils and teachers were monitored during tours and, in some cases, it was possible to have a feed-back concerning the implications in the following classroom work.
In this research, the qualitative aspects were crucial: despite the quantitative data analysis allowed to study the mental representations on socially relevant themes in students of different ages and to collect multiple points of view in this regard, the interpersonal relationships that occurred with students and teachers during and after the guided tours provided the best evidence of the value of interactive teaching strategies adopted. For example, the guided tours stimulated interest for the topics discussed: this was demonstrated both during the visits, through questions and observations, both in the classrooms, through the request for further details. Some special cases allowed to investigate these aspects. The exhibition was subsequently staged at other institutions, where the activities were offered again, with positive feedback.
In conclusion, the effectiveness of the interactive activities and of the teaching strategies proposed was proved, as well as the possibility to re-propose them outside the context of the museum for which they were conceived.

U1-20 Orale La Longa, Federica

10.1474/Epitome.04.1042.Geoitalia2011

STRATEGIES FOR SEISMIC RISK REDUCTION: OUTREACHING SCIENTIFIC KNOWLEDGE OR PROMOTING AWARENESS, TO EDUCATE?

LA LONGA Federica[1], CAMASSI Romano[1], CRESCIMBENE Massimo[1]
1 - Istituto Nazionale di Geofisica e Vulcanologia

Presenter e-mail: federica.lalonga@ingv.it

Key terms: risk education; outreach; science teaching; awareness

This work develops a critical reflection on the activities for information, training and education conducted by a group of researchers of the INGV in recent years.
In particular, our analysis, from an epistemological point of view, is between:
- science outreach, the link between science and the world;
- science teaching and its role of contact between science and school;
- risk education, imaged as a process able to develop a culture of risk in relation to the territory in which we live.
These issues are critically analyzed on the basis of experience gained since 1995.
The educational methodologies tested in "peacetime", out of seismic events, with the EDURISK Project are compared with those experienced during the emergency in Abruzzo.
Increasingly today, we refer to prevention as a primary strategy of defense against risk.
But very often the responsibility of making prevention falls on the others as government, institutions, local authorities and the citizen perceive themselves as powerless against the inevitability of natural events and refer to the rulers for the implementation of effective prevention policies.
As researchers, what are the most effective actions we can take to influence the risk reduction and motivate the choices of people? Before an event occurs, how can we influence the views and choices that people do or not do to reduce the risk?
The effectiveness of our interventions must be based on scientific information, on a specific training, or must be reached to develop values, actions, awareness?
Our interventions must be oriented and developed to inform, to train or to educate?

U1-21 Orale Manni, Riccardo

10.1474/Epitome.04.1043.Geoitalia2011

THE PALAEONTOLOGICAL MUSEUM IN AN APPROACH GEOETHIC

MANNI Riccardo[1]
1 - La Sapienza University

Presenter e-mail: riccardo.manni@uniroma1.it

Key terms: palaeontology; museum; fossils; mystification

The protection of scientific data with respect to incorrect interpretations or misrepresentation has ethical significance, especially when it depends on the information to the public. Striking were the cases of Man of Piltdown and the Indian researcher Vishwa Jit Gupta. Man of Piltdown was a sensational case in which one or more researchers deliberately altered the fossils found causing serious damage to image both the academic world and the scientific theories. The event organized by Gupta was equally sensational, because mystifying the paleontological data, he put the crisis in different palaeogeographic and palaeoclimatic models well established. But the mystification and alteration of scientific data can be made even in a more insidious way, because they often inconspicuous, where the fossils are preserved, that is in the Museum of Palaeontology. In fact, when a specimen is badly restored or is assembled incorrectly, the information given is altered and distorted.
The Paleontological Museum, frequently have fossils that are perfect at first sight. Only a closer look it turns out that often have been largely restored. There are parts rebuilt and then colored so well that at first you do not always notice it. The information of what is artificial reconstruction and what is original material must be immediate and clearly perceptible. It is always necessary to specify when a cast replaces an original finding. Other times you see skeletons assembled in questionable positions, as if the still image of a slow-motion. It is frequently the case of dinosaur skeletons that seem ... fly. More frequently, the skeletons are assembled according to theories no longer in vogue, partly because the replacement is often costly and difficult. Just think of the bipedal dinosaurs: until a few years ago it was believed that they had the same posture of "kangaroo". It is now believed, after detailed analysis of functional morphology, bipedal dinosaurs have tail and neck more or less parallel to the ground. However, many museums display their dinosaur skeletons still with

Geoitalia 2011 - Convegno: VIII Forum Italiano di Scienze della terra
Simposio U: Etica , Cultura e Divulgazione delle Geoscienze
U1 – Geoetica e cultura geologica: il contribuito delle scienze della terra ad un rinnovamento culturale della società

Autori
F. La Longa [1], R. Camassi [2], M. Crescimbene [1]
[1]Istituto Nazionale di Geofisica e Vulcanologia Roma,
[2] Istituto Nazionale di Geofisica e Vulcanologia Bologna

Titolo
Strategies for seismic risk reduction: outreaching scientific knowledge or promoting awareness, to educate?

This work develops a critical reflection on the activities for information, training and education conducted by a group of researchers of the INGV in recent years.
In particular, our analysis, from an epistemological point of view, is between:

- science outreach, the link between science and the world;
- science teaching and its role of contact between science and school;
- risk education, imaged as a process able to develop a culture of risk in relation to the territory in which we live.

These issues are critically analyzed on the basis of experience gained since 1995.
The educational methodologies tested in "peacetime", out of seismic events, with the EDURISK Project are compared with those experienced during the emergency in Abruzzo.
Increasingly today, we refer to prevention as a primary strategy of defense against risk.
But very often the responsibility of making prevention falls on the others as government, institutions, local authorities and the citizen perceive themselves as powerless against the inevitability of natural events and refer to the rulers for the implementation of effective prevention policies.
As researchers, what are the most effective actions we can take to influence the risk reduction and motivate the choices of people? Before an event occurs, how can we influence the views and choices that people do or not do to reduce the risk?
The effectiveness of our interventions must be based on scientific information, on a specific training, or must be reached to develop values, actions, awareness?
Our interventions must be oriented and developed to inform, to train or to educate?