THE DEVELOPMENT OF AN EDUCATIONAL SYSTEM FOR A LONG-TERM TRAINING ON SEISMIC AND VOLCANIC RISK

Abstract
One of the tasks of the European Project UPStrat-MAPA (Urban Prevention Strategies using Macroseismic Fields and Fault Sources) is to develop an educational system aimed at long-term training, reactivity on seismic hazard and risks. The task will be carried out by sharing the expertise of partners of the project to set different actions, encompassing programs and educational material for students, teachers and general public, and to design an educational information system. The educational system is going to be developed by starting from the Icelandic educational program tested on schools in the last decade by EERC (Earthquake Research Centre). The task will develop educational tools especially designed for children, and aims to make use of the most spread information channels, in order to outreach information on seismic risk and how to cope with earthquakes. The interactive travelling educational path on earthquakes and volcanoes, aimed at risk-reduction by increasing awareness, is an interactive experience using a multimedia approach, in order to have a very flexible, easy-to-share tool for the public. The interactive travelling educational path on earthquakes and volcanoes is a multimedia tool that allows the user to choose the level of risk they are interested in. The program was developed for “education”. The educational path, which is also a travelling exhibition, has to deal with issues related to seismic and volcanic hazard and risks, especially in urban areas. The whole education-information system developed in the framework of UPStrat-MAPA is structured to represent both a way to convey project results to the scientific community and to strengthen people’s risk awareness and their training to face to imminent and/or volcanic events.

The EERC has had considerable cooperation with the village of Hveragerði, located 12 km west of the Centre. During an excursion for a new shopping centre in 2004, the contractors uncovered a surface fault running right through the building site; the building permit was subsequently lowered from a 3 story to a single storey building. It was decided to clean up the fault and cover it with a transparent floor to allow people see it (although a mat had to be placed on the floor as some people refused to walk over the transparent floor). The EERC manages the Icelandic Strong-Motion Network, established in the mid-eighties, providing a nation-wide coverage of the most important seismic zones (Sigþjórsóttur, 2004). In 2007, the Centre established a small-aperture strong-motion array in Hveragerði, the ICE-Army network, to record significant earthquakes in the region, estimating the quantitative estimates of the spatial variability of their strong ground motion, and shed light on earthquake source processes (Halldórsson et al., 2009).

Of the eleven monitors, the EERC placed one on either side of the fault and visible to those who peer down into the fault. The network measured Peak Ground Accelerations in Hveragerði from the range of 51% g to 10% g (Halldórsson et al., 2009). No catastrophic collapse of structures or physical injuries occurred in Hveragerði during the event, however the damage was extensive, (Sigþjórsóttur et al., 2009) and many were visibly upset.

The learning method is based on a “constructivist approach”, which means that learners build or construct new ideas on top of their old ideas. In designing the educational interactive path, this approach has to take into account the knowledge of target visitor groups, particularly the knowledge of their distinctive learning styles and particular learning needs (Figure 3).

In an attempt to catch the attention of the younger generation, the NCDC developed caricatures that young people could relate to. A professional designer was brought in for the task who suggested a young male character; however, the NCDC wanted both a male and female character. They were given names Álvar (the boy) and Álvar (the girl), which are acronyms derived from the word civil defense in Icelandic (Almannavarnir and Almannavörn).

The interactive travelling educational path on earthquakes and volcanoes is a multimedia tool that allows the user to choose the level of risk they are interested in. The program was developed for “education”. The educational path, which is also a travelling exhibition, has to deal with issues related to seismic and volcanic hazard and risks, especially in urban areas. The whole education-information system developed in the framework of UPStrat-MAPA is structured to represent both a way to convey project results to the scientific community and to strengthen people’s risk awareness and their training to face to imminent and/or volcanic events.

One suitable tool for public education can be through videos. This tool is intended to reach the broader audience and hopefully the ones who are not aware of the risk at all, making use of internet opportunities.

Often it is not easy for general public to get correct information on natural hazards and risk mitigation actions, and people have little preparedness of what to do in case of an earthquake or other natural event. The rate of general public preparedness could be tested by street-interviews, carried out asking people how they would react during an earthquake and volcanic event (Figure 4).

The interviews will be supported by video material and images of natural disasters, in order to show the real impact that such events could have on human life and to raise people’s perception on seismic and volcanic risks. The following step will be to assess people’s level of safety if they feel in their own home in case of earthquake and to draw their attention to simple preparedness and security measures.

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