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EDUCATION AND EARTHQUAKE HAZARD PREPAREDNESS: HOW DO THEY FIT TOGETHER?

Gemma MUSACCHIO[1], Ásthildur Elva BERNHARDSDOTTIR[2], Susanna FALSAPERLA[3], Mónica Amaral FERREIRA[4], and the "UPStrat-MAFA Outreach Working Group"[1,2,3,4,5]

"UPStrat-MAFA Outreach Working Group": Solveig THORVALDSDOTTIR[2], Alexandra CARVALHO[5], Maria L. SOUSA[5], Sonia RAPOSO[5], Rosella NAVE[1], Fabio SANSIVERO[1], Carlos. S. OLIVEIRA[4], Ragnar SIGBJÖRNSSON[2], and Gaetano ZONNO[1]

In the context of natural disasters, education is a method to achieve mitigating actions in case of severe damage caused by different sources. In regions prone to seismic activity, education is only a part of what can be defined as "earthquake hazard preparedness". Nevertheless, it is a significant part indeed, as it involves the building of awareness, the establishment of a culture of prevention, and even the increase of safety when it acts on the process of making future decisions. Bearing this in mind, the UPStrat-MAFA (Urban disasters Prevention Strategies using MAcroseismic Faults) projects relied on education to promote risk mitigation. Throughout the two-year long project (from 2012 to 2013), we analysed the weight that seismic-related topics have in the current education system within three European countries prone to seismic hazards. Highlighting the major weaknesses we found, we developed strategies to cope with the urge of a culture of safety.

We are aware that children have a great potential as: (1) they are capable to learn behaviours that will be recalled in case of danger, (2) they are our best choice in terms of spreading culture of safety and best practices through a domino-effect (Cardona 2007; Stoltman et al. 2007; Wisner 2006; Kuhlicke et al. 2011), and (3) they represent citizens who will play a role in the future decision-making process. Therefore, we focussed on compulsory education to give a ground level evaluation of what is accessible to pupils and students. Assessments of the educational curricula on natural hazards and accessibility to risk reduction information have highlighted how schools worldwide are greatly unprepared in their natural hazards education (Komac et al., 2013). The study revealed that seismology-related topics are not mandatory subjects, while state education plans might not provide efficient raise in awareness because of unconscious learning underestimation. Children do not approach hazard education at an early age, namely when non-cognitive side of awareness has a better chance to be imprinted in mind. Conversely, valuable results may be lost by not teaching in late years of compulsory education, allowing in-depth understanding of the subject. Except for Iceland, Natural Hazards and related Earth-Science subjects become part of science education only at late age and only if students have chosen science curricula. In conclusions, schools and the need of a more efficient education in seismic and volcanic hazards do not seem to be tuned up.

Moving from this evidence, we took actions for earthquake hazard education encompassing various tools that might be attractive for children. Hands-on and learn-by-playing approaches are among the best choices to raise children interests. Accordingly, we developed a video-game (Figure 1), which revealed to be a successful tool. This educational game provides a very useful way to help

[1]Ph.D, Istituto Nazionale di Geofisica e Vulcanologia, Italy- gemma.musacchio@ingv.it
[2] Ph.D, Earthquake Engineering Research Centre, Selfoss, Iceland- aeb@hi.is
[3]Ph.D, Istituto Nazionale di Geofisica e Vulcanologia, Italy- susanna.falsaperla@ct.ingv.it
[4]Ph.D, Instituto Superior Tecnico, Lisboa, Portugal- monicaf@civil.ist.utl.pt
[5] Laboratorio Nacional de Engenharia, Lisboa, Portugal

students gain knowledge and preparedness awareness, develop life-skills and positive safe habits in all ages. The game is available online for free.

Figure 1: Treme-Treme is a videogame to play while learning appropriate behaviors in case of earthquake

We have also observed that people often lack understanding or motivation to absorb information provided by media, concerning earthquake hazard and risk. Since education is not just schooling and is not only meant to reach children, we prepared five audio-video products addressed to a broad audience, from children to adults (Figure 2). Research has shown that the memory of a disaster remains preserved in the social sphere only for a certain period of time, unless it is kept vivid in the minds of people, or they are reminded by the provision of information (e.g., media, web) and the socially active preservation of the memory (Wisner, 2006; Biernacki et al., 2008; Komac, 2009; Komac et al., 2013). In the videos produced in the framework of the UPStrat-MAFA project, public perception and interviews with experts are presented to keep vivid the memory of disasters that might hit lands prone to earthquake hazards.

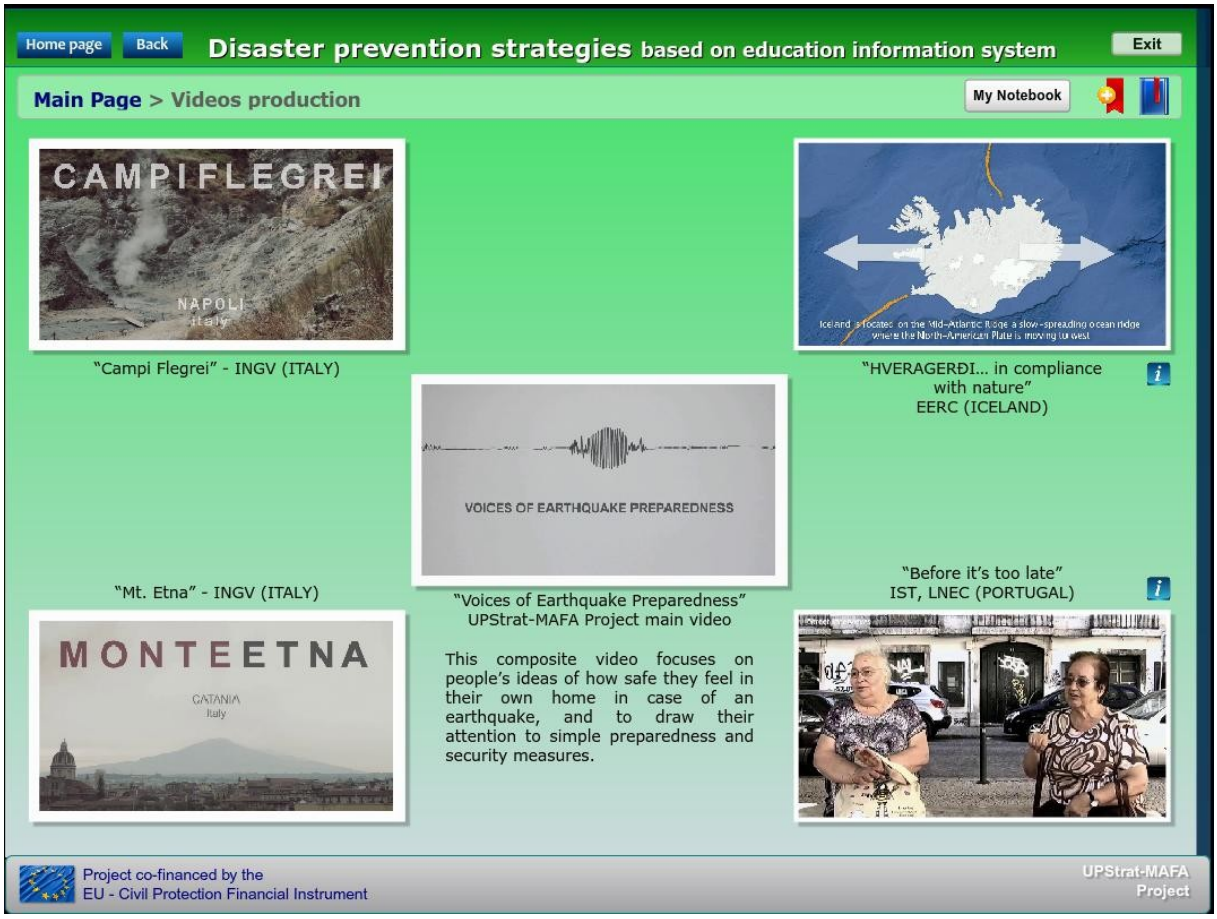

Figure 2: A snapshot from the multimedia application developed to present the achievements of the UPStrat-MAFA project. Front pages of the five audio-video products are shown.

An educational shake table is a versatile tool for educational purposes. It's a good tool to describe and investigate how forces act, as also to identify some of the factors that help make buildings earthquake-proof including cross bracing and tuned mass dampers. Instituto Superior Técnico adapted its digital educational small shake table to demonstrate in classes the dynamic performance of buildings/structures (Figure 3).

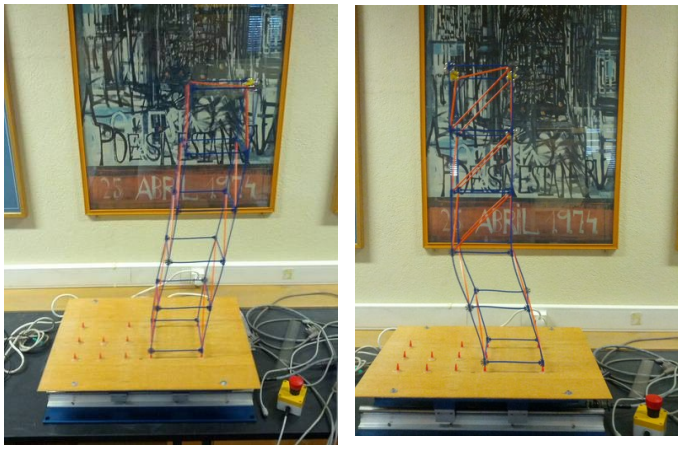

Figure 3: IST teaching demonstration

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