Developing a Public Online Learning Environment for Crisis Awareness, Preparation, and Response

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ABSTRACT

This article describes the design and development of an online immersive learning environment focused on enhancing the general public’s awareness of, and preparation for, crisis situations. This research has sought to answer the question “Is it possible to develop a timeline based immersive and engaging training environment for mass self-study education in crisis preparedness?” The system developed is based on the Pandora+ training environment and integrates original collaborative European research work carried out on eLearning and Crisis Management over the last ten years. The research reported here not only describes the design of the Pandora+ training environment but also the outputs from a pilot trial in Lisbon run by the POP-ALERT EU FP7 project. Where appropriate, the results were also compared to those from a large EU survey on crisis preparedness and attitudes, also undertaken within POP-ALERT. The results of this article have resulted in an original and innovative system that has significant potential to transform the education of the public in disaster preparedness.

KEYWORDS

Crisis Preparedness, MOOC, Online Learning, Public Self-Study

INTRODUCTION

For the past ten years the lead authors have been involved in a research agenda encompassing the provision of, and support for, training for all stakeholders involved in crisis management. Predominantly, our wish is to make well-formed and easily accessible training materials available at relatively low cost, to improve the quality of public and professional response in crisis situations. To enable this work, the authors have been involved in a number of publicly funded research projects related to this research agenda, and this paper brings together outputs from three of those projects in the design and development of an online vehicle and training materials to help develop population awareness. Chronologically, the three projects are, the Pandora project, the dCCDFLITE project, both of which are described later in the paper, and finally the POP-ALERT project, which is the main focus of this work and is about to complete. POP-ALERT is an EU FP7 project involving eleven partners from seven countries across Europe. Its focus is the preparation of societies and populations to cope with crises and disasters in a rapid, effective and efficient way. The POP-ALERT team has undertaken

DOI: 10.4018/IJISCRAM.2017040102

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a thorough review of the literature on approaches, population behaviours (including willingness to prepare), first reaction strategies, awareness of risk etc. The focus of this work is not only on local populations but also vulnerable groups, such as tourists, expatriates, the elderly and refugees, and the effectiveness of the use of messages, audible alarms, pictograms etc. on these population groups. The POP-ALERT project has generated a framework encompassing a variety of tools and techniques to enhance population awareness, realised as an online dashboard, and concluded with local and distributed field studies to test the effectiveness of this framework.

To support the field studies in POP-ALERT, the authors utilised a bespoke version of Pandora+ (Bacon et al., 2015), which is the enhanced development of a product called Pandora (Bacon et al., 2012; MacKinnon et al., 2013), one of the key outputs from an EU FP7 project, which ran between Jan 2010 and March 2012. Pandora+ is an immersive, rich multimedia, training environment initially designed to provide realistic training for strategic level crisis managers, who, in the event of a crisis, need to work together to come up with a plan of action and take decisions as the crisis situation unfolds. The Pandora+ system is not however specific to crisis management, it is a sophisticated environment into which a wide variety of scenarios from any domain can be uploaded and executed. It has an event network approach, which presents trainees with a series of events that occur within a specified timeline and requires them to make decisions about what to do at specific points on that timeline. The timeline then has the capacity to branch the scenario depending on the answer provided by the trainee(s). An example of a different domain could be a trainee’s analysis of the rise and fall of the stock market in relation to specific events, and making decisions about stocks and shares to purchase / sell etc.

The Pandora+ environment was utilised in a field study in POP-ALERT that was used to train members of the general public in Lisbon in February 2016. The scenario focused on an earthquake as an example of a natural disaster. One purpose of the trial was to test the use of Pandora+ and the POP-ALERT dashboard on a small sample of the population as a pilot, before running it as a self-study massive open online course (MOOC) (Bacon et al., 2015), with members of the general public able to register and follow the training course at a time suitable to them and for a duration of their choosing.

In making the shift from training professional crisis managers, to a MOOC used by the public, changes to the Pandora+ environment were required, and this included taking on board the behaviours and approaches to training by the general population, when engaged with self-study. These changes came from lessons learned from the recent delivery of a MOOC on Entrepreneurship and Innovation, in which some of the authors were involved, as part of an Erasmus, Life-long learning programme project, called dCCDFLITE - distributed Concurrent Design Framework for eLearning in IT Entrepreneurship (FLITE for short), which ran from 1st Oct 2010 to 30th September 2015 (Bacon et al., 2015).

Combining the outputs of these three projects provides a unique and innovative system that aims to answer the research question “is it possible to develop a timeline based immersive and engaging training environment for mass self-study education in crisis preparedness?”.

The rest of this paper is structured as follows: it first of all discusses some of the key issues in attitudes and training of the general population in crisis response and the need to take into account behaviours, attitudes, willingness to prepare etc. It then discusses the factors to take into account from the educational perspective and the research around online education and MOOCs. Finally, it focuses on the design and development of a distributed version of Pandora+ required to train the general population in crisis preparedness, reports on the results from the Lisbon pilot, and then draws some conclusions and outlines future work.
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