CDMHR 2015 Conference: Training Exercises for Disaster Resilience

Coventry University
Priory Street, Coventry
CV1 5FB
+44(0)24 7688 7654
Welcome

Welcome to the Conference hosted by Coventry Centre for Disaster Management and Hazards Research. We hope you find the event enjoyable and rewarding.

With the increasing number and scale of natural and manmade disasters, the building of disaster resilience has become crucial from local to national levels so as to allow communities to be better prepared for uncertainty.

Training and exercising are essential for effective disaster management and these may range from traditional table top exercises to the computer aided learning environment and to full scale exercises. Training and exercising are regularly used to develop, maintain and share the knowledge, skills and attitudes for Emergency service personnel and they have been recognised to be an effective vehicle for enhancing disaster resilience. Challenges remain however, in terms of the level of fidelity and in validation and evaluation. This conference aims to facilitate discussion in the following themes:

- Approaches to delivering disaster risk reduction training in local communities and schools;
- Best practice of training and/or exercising carried out in the emergency services;
• Innovative methods for training exercises, from low fidelity to virtual world;

• Methodologies for evaluating training and exercises: assessing technical and non-technical skills, and learning at individual team and organisational levels.

The conference opens a channel for academic and professionals to share best practice in planning, designing and delivering training and exercises for the emergency services. It also provides an opportunity for analysing range of approaches to enhance the effectiveness of training and exercising for increasing resilience to disasters.

About Us

The Centre for Disaster Management and Hazards Research brings together leading practitioners and specialist academics to support the development international agendas of professionals in the Disaster, Risk and Emergency Management field.

We design, deliver and accredit major training programmes, and undertake specialist consultancy assignments linked to the latest developments and challenges facing the sector.

We boast one of the largest collections of specialist practitioners and academics in the sector with expertise spanning multi-disciplinary fields. The applied research group is divided into 6 units:

• Relief and development

• Community resilience

• Natural hazards

• Emergency planning

• Pedagogy for training and exercising

• Crisis and continuity management

Our work activities, policy support and networks extend across 49 countries, with clients ranging from government institutions and specialist NGOs to private sector companies. We pride ourselves on delivering cutting edge solutions to your professional development needs through CPD courses, master classes, Diploma, Degree and MSc courses and specialist conferences and workshops. Our portfolio also includes funded applied research activities and supervisory support for Postgraduate Research students.
Delegate Information

Registration Desk
During the conference the Registration Desk will be open from
16th July Thursday 9am
17th July Friday 9am
University 24 hour Security can be contacted on 024 7688 7363

Conference Venue - George Eliot Building
Point of Contact: George Eliot reception - 024 7688 8256

Catering
Coffee and biscuits are provided on both days during the breaks.
Lunch will be provided with delegates who paid the conference fee. Delegates will receive lunch tickets for both days on arrival.

Gala Dinner on Thursday 16th July
For those who wish to join the Gala Dinner on the 16th July please register online for the Gala Dinner at http://www.coventry.ac.uk/events/training-exercises-for-disaster-resilience/conference-registration. Unless you are an invited guest dinner is not included in the conference fee and will be at your own expense.

Smoking
The University operates a no smoking policy in all buildings.
## Training exercises for disaster resilience

### Day 1 (16th of July)

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<td>Registration</td>
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<td>09:30</td>
<td>09:35</td>
<td>Welcome speech and house keeping</td>
<td>Matthew Blackett and Yung-Fang Chen</td>
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<td>09:35</td>
<td>10:35</td>
<td>Why Simulation Exercises are fundamental to develop Crisis Management Capabilities</td>
<td>Edward Borodzicz</td>
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<td>11:15</td>
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<td>Guts &amp; Guile: A Proactive Approach to Engaging the Public Sector in Training and Exercising</td>
<td>Rebecca Pritchett</td>
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<td>Will they be using live ammunition? - lessons learnt from disaster simulation exercises at Portsmouth University</td>
<td>Richard Teeuw</td>
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<td>Gala Diner</td>
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## Programme

### Day 2 (17th of July)

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<td>Community Resilience and Crime in Kenya</td>
<td>Louise Skilling</td>
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Speakers’ Profiles

**Dr Su Anson**, Research Analyst, joined Trilateral in 2014 and is part of the crisis management team. She contributes to projects and research related to emergency preparedness and social media. Her areas of expertise include emergency management, risk governance, social marketing, and qualitative research methods. Su has worked on a number of EC funded research projects conducting research with key stakeholders internationally. Her background and undergraduate degree is in Marketing. She has a PhD in emergency preparedness from Aston University.

**Dr Matthew Blackett** completed his PhD at King’s College, London, where he utilised his computing and geographic skills in the remote sensing of earthquakes and volcanoes. Following this, he completed a post-doctoral position, also at King’s College, where he ran a project comparing urban energy balance models. During his time at King’s College, Matthew was a tutor and lecturer both there and at the London School of Economics. Matthew started a lectureship at Coventry University in 2010 and since joining, has maintained his research interests and, given a research fellowship, was a visiting researcher at the University of Alaska, Fairbanks, in 2012.

**Prof Edward Borodzicz** was appointed Assistant Dean of the School of Business and Enterprise at UWS in 2014. Edward is also a visiting Professor at The Resilience Centre, Royal Military College of Science, Cranfield University, and the Cabinet office Emergency Planning College.

Edward was trained as an Anthropologist and Psychologist graduating from London, University of Kent Canterbury and Brunel Universities. Edward’s research interests include: risk, crisis and resilience management, risk and human behaviour, disaster response, socio-technical systems failure, corporate risk and business continuity, security and resilience, terrorism, business continuity management and ethnographic research and simulations and games for training. Edward has worked extensively over the past 17 years with the emergency services, local and central government agencies, a variety of companies and key organisations and Universities throughout the world.

Edward’s PhD thesis was based on simulation training for complex inter-organisational response to crises among the UK emergency services. Edward continues to work closely with the emergency services to improve their ability to respond to non-standard situations. Prior to joining the University of West of Scotland, Edward developed and directed MSc programmes in Corporate Risk and Security Management at Southampton University, and an MSc in Risk, Crisis and Disaster Management by distance learning at Leicester University. Edward has also supervised a number of successful doctorates in Crisis related topics, and continues to actively supervise PhD students in this area.
Dr Yung-Fang Chen is Senior Lecturer in Disaster Management and Emergency Planning at Coventry University and Director of Centre for Disaster Management and Hazards Research Applied Research Group. The focus of her research is on the methodology of planning and evaluating emergency response training and exercises. Her current projects include tasks for post disaster assistance, in particular, shelter and housing and community reconstruction, effective risk communication between stakeholders, community resilience, and e-learning pedagogy. She is also involved in training university students to deliver disaster risk reduction training for communities and schools.

Luke Fletcher has over 5 years’ experience in the Disaster, Crisis, and Emergency & Business Continuity Management industry. He has worked on a number of international projects with governmental institutions and private sector organisations. Previous roles have involved work as an operational emergency responder to more strategic crisis management team consultancy training.

Luke recently received the Course Tutors Award for Overall Academic Achievement for obtaining the highest score in his BSc (Hons) Disaster Management and Emergency Planning at Coventry University where he is soon to complete his final year.

Over the past 11 Months, Luke has been working as an Emergency Response & Crisis Management Advisor with the Stirling Group in the UAE where he has been conducting research into the development and delivery of disaster training exercises.

Stefano Grimaz, Civil Engineer. Director of the Safety and Protection Intersectoral Laboratory at the Department of Chemistry, Physics and Environment of the University of Udine. Professor of Engineering Seismology, Safety and Civil Protection at the Engineering Master Degree Courses of the University of Udine. He carries out research on natural and man-made risk assessment and management with a holistic and interdisciplinary approach. The research activity aims to develop decision making support tools for improving resilience of communities, complex organizations and enterprises in facing disasters, accidents and crisis. He is author of more than 100 papers in the field of industrial, civil and territorial safety and risk prevention.

Mark Hart joined OCTO in June 2012 following leadership posts and a broad range of experience gained in local government, central government and the Armed Forces.

Mark is a principal consultant at OCTO and accordingly is engaged in a wide range of OCTO business. He works extensively on project development, and specifically with clients, scoping advice and support, and as an accomplished tutor, team leader and exercise coordinator. Amongst his range of current projects, Mark is OCTO’s lead consultant working for the European Commission on crisis management matters.
Since 2008, he worked within the Greater Manchester Resilience Forum, leading Manchester City Council’s business continuity and civil contingencies portfolios. During this period, resilience was embedded across the Council’s broad services and through significant partnership working, a strengthening of multi-agency co-ordination and co-operation across the conurbation and deeper public / private sector collaboration. Mark led the development, planning and training/exercising of a number of local capability work streams including mass fatalities, CBRN response and recovery and integrating the voluntary sector into crisis structures.

An earlier career in the Royal Navy combined wide operational experience with appointments in navigation, warfare, strategic planning and command with posts in the Ministry of Defence in joint concepts and doctrine, strategic analysis and defence policy. Mark spent three years as a lead planner for the naval component within the Defence Crisis Management Organisation and delivered highly effective crisis operations for counter terrorism, humanitarian evacuation and military operations with a host of strategic and operational partners; many put into practice in an international context. Earlier appointments included lead planner for preparing and executing aircraft carrier focused Task Group deployments into the Arabian Gulf and specialist boarding operations across a wide spectrum of military activities.

Barbara Lucini is PhD in Sociology and Methodology of Social Research, researcher and casual lecturer at Itstime (www.itstime.it) – Department of Sociology – Catholic University of Sacred Heart, Milan, Italy; where she is also project coordinator of the long term project IDRA – Itstime Disaster Resilience Action.

She has been training coordinator, lecturer and project management training for diverse regional and national agencies focusing on emergency volunteering training, civil protection systems, volunteer management, relational training methodologies, strategies, techniques, emergency and risk communication, educational materials.

She was also national ccoordinator of the Italian translation, adaptation and printing of the Italian version of Riskland – UNISDR.

Tony McAleavy is the Undergraduate Course Director for the BSc Disaster Management and BSc Disaster Management & Emergency Planning programmes at Coventry University in the United Kingdom. He is based at the Centre for Disaster Management & Hazards Research where his teaching and research focuses on emergency preparedness, response and recovery, with a special interest in command and control, and multi-agency interoperability. He holds a BA (Hons) Business Administration and MSc Disaster Management & Sustainable Development from Northumbria University, and is presently writing-up his doctoral thesis. The study uses linguistic and visual metaphor to enhance multi-agency interoperability within Command and Control in UK and US emergency management. He also holds a Certificate of Achievement for “Contributions to Emergency Management” from the U.S. Federal Emergency Management Agency (FEMA).
Prior to his transition into full-time academia in June 2012, Tony spent over ten years in a variety of emergency management roles. He is a former Ambulance Service Emergency Medical Systems Operator, and H.M. Coastguard Officer. Tony also spent five years in local government emergency management, rising to the position of Civil Contingencies Manager within one of the largest local government organisations in the United Kingdom. His emergency management experience includes operational, tactical and strategic levels of command across a broad range of incidents. This includes pre-hospital medical emergencies, maritime search and rescue, industrial and HAZMAT/CBRN incidents, natural hazards such as flooding and snow storms, and terrorism. He also holds commendations for his actions during emergencies from a number of agencies. Most notably from the North East Ambulance Service for assisting a 999 caller in successfully performing infant CPR, and also from H.M. Coastguard for stabilising a heart-attack victim and coordinating the heliborne recovery of the patient from a small leisure craft.

**Ron Mountain, BA, MES, MSc, PgCertHE, AIEMA, MEPS** graduated in Geography from the University of Toronto, and went on to complete a Masters of Environmental Studies, from York University (Canada). He studied at the London School of Economics and Political Science, where he obtained an MSc in Politics. Ron worked for fifteen years in the field of emergency planning and management. As the Deputy Head of Emergency Planning for the London Fire Brigade/London Fire and Emergency Planning Authority, he specialised in industrial emergency planning and exercising, including work under the Control of Major Accident Hazards (COMAH) Regulations. Ron is actively involved in two UK professional societies, sitting on the COMAH/Pipelines Working Group of the Emergency Planning Society, and the National Council of SIESO. He is an Associate of the Institute of Environmental Management and Assessment.

Ron is Course Director for two Coventry University postgraduate courses – the MSc in Emergency Planning and Management and the MSc in Disaster Management. He teaches on a range of courses, including Bachelors and Masters Courses in both Emergency Planning and Disaster Management. His research interests are in the field of emergency planning and management – including Integrated Emergency Management, the implications of the UK Civil Contingencies Act for intervention in respect of emergencies, risk and vulnerability assessment, industrial emergency planning and resilience, and theories of disaster intervention. He undertakes consultancy work in emergency preparedness and emergency preparedness training, and has made a number of presentations in the area of his research interests.

**Moustafa Osman** is International humanitarian relief and conflict/stabilisation expert and a Visiting Lecturer of Disaster Management at Birmingham University and Queen's University Belfast (UK). He has extensive first-hand experience in disaster risk reduction, preparing for and responding to complex emergencies and natural disasters including assessment, setting up operations, programme design and implementation, monitoring and evaluation. Moustafa is a reference point and regular commentator on
humanitarian issues in international media and events. He is a master trainer for SPHERE (humanitarian charter and minimum standards in humanitarian response) and INEE (Education in Emergencies) in English and Arabic. He is an Associate Trainer with INTRAC, a UK Government Deployable Civilian Expert (DCE) as part of the Stabilisation Unit and member of Professionals in Humanitarian Assistance and Protection (PHAP) and RedR. Since 2006 Moustafa has been working as independent consultant to UN and other major humanitarian agencies (e.g. currently Strategic Adviser to START Network); until end 2012 he was also the Head of the Humanitarian Department at Islamic Relief Worldwide. Moustafa has over 20 years’ experience in humanitarian and post conflict rehabilitation in over 70 countries. Currently he is the founder director of Osman Consulting Ltd - Disaster Management Experts.

Nurmalahayati Nuradin was involved in humanitarian aids during the tsunami in 2004 in The Aceh province Indonesia. She worked with children and women to promote adequate services until 2008 when lately she joined the Ar-Raniry University as a junior lecture in science education faculty. Her major is chemistry, graduated from Bandung Institute of technology and currently doing a PhD in Institute for Risk and Disaster Reduction UCL She is looking how disaster risk reduction concept can be integrated into the chemistry curriculum Indonesia and under supervisory of Professor Peter Sammonds and Professor David Alexander.

Gill Price has more than twenty years’ experience from the international relief and development sectors much of this drawn from managing NGO projects and programmes predominantly in Africa. She has been involved in a range of work to support the development of individual and organisational capacities, often in hostile or complex settings and with limited resources. In 2006 she set up a field based training programme for RedR in the immediate aftermath of the Indian Ocean tsunami and has been actively engaged in the design, implementation and review of humanitarian training and capacity building initiatives since then. Gill holds post graduate qualifications in Construction Management and International Development and is currently the International Programmes Director with the International NGO, RedR UK.

Rebecca Pritchett MSc CBCI is the North Worcestershire Civil Contingencies and Resilience Manager, representing Redditch Borough, Bromsgrove and Wyre Forest District Councils.

She is responsible for corporate business continuity and incident management planning, as well as participating in a variety of Local Resilience Forum Groups; including chairing the Human Aspects Group and being the lead practitioner in the review of DCLGs National Site Clearance Guidance.
Prior to this role Rebecca spent over two years as an Emergency Planning Officer at Worcestershire County Council and previously held a Governance role within the Office of the Public Guardian, within the MOJ.

Over the last three years, she has guest lectured on the BSc Emergency Management Degree at Coventry University, regarding practitioner approach to emergency planning and practical implications of plan writing. Her emergency management experience includes working with all levels of command across a range of incidents from wide-spread flooding, COMAH incidents and severe weather.

Rebecca holds a BSc (Hons) in Physical Geography, from Aberystwyth University and MSc Disaster Management & Sustainable Development from Northumbria University.

Jean-Baptiste Roman, the conference coordinator, is currently studying an MSc Disaster Management from Coventry University. In his dissertation, under the supervision of Doctor El Parker, he is looking at how sustainable technology can be applied in an urban area to drive cities resilience through different attributes such as buffer capacity, self-organisation and learning capacity. His field of interest is: Cities resilience; the development and reconstruction in post-disaster; Community-based approach; and new technologies that can be implemented in Disaster Risk Reduction.

Dr. Aiko Sakurai started herself involved in disaster practice since the 2011 Great East Japan Earthquake and Tsunami as education sector manager at Save the Children Japan. At her current position in IRiDeS, Tohoku University since May 2014, she has been conducting field studies on developing a knowledge based and sustainable disaster education model based on disaster experiences. She is a member of Ishinomaki City Disaster Prevention Disaster Promotion Council.

On the occasion of the 3rd World Conference on Disaster Risk Reduction in Sendai, she organized a public forum on disaster education as secretary general of all Japan disaster education liaison network with Cabinet Office of Japan, the Ministry of Education and others. She holds Ph.D. in international educational development.

Jazmin Scarlett obtained a 2:1 in BSc (Hons) Geography and Natural Hazards at Coventry University in 2013. Integrating her interests in natural hazards and disaster management, her thesis, which is being presented today, was awarded with one of the highest grades amongst Masters Students within the Environment Centre of Lancaster University and graduated with a distinction in MSc Volcanology and Geological Hazards last year.

Jazmin is now a PhD student at the University of Hull working with Dr
Rebecca Williams, Prof. Greg Bankoff and Dr Briony McDonagh investigating how society and volcanoes influence one another in a reciprocal fashion on St. Vincent and Martinique with a special focus on the role of culture.

Louise Skilling, BSc (Hons), MSc. has served as a Police Officer with West Midlands Police. She has a BSc in Development and Health in Disaster Management, and an MSc researching ‘Street Girls and their vulnerability to HIV infection in Freetown, Sierra Leone’, from Coventry University. Louise has researched groups at risk of HIV infection in South Sudan on behalf of Population Services International (PSI) and worked for Mines Advisory Group (MAG) for five years as their Senior Community Liaison Advisor monitoring and evaluating their programmes globally in conflict and post conflict settings. Louise has contributed to the ‘sourcebook on Socio-Economic survey’ produced by Geneva International Centre for Humanitarian Demining (GICHD) and the book ‘Researching the police in the 21st Century: International lessons from the field’. Louise is currently undertaking a PhD studying how communities in Kenya can build their resilience to improve their safety in terms of crime and violence.

Mark Taylor A retired UK senior police officer with a police career spanning 30 years, Mark’s areas of expertise include public order; crisis and disaster management; incident command; operational planning; exercise and training development and delivery. He is now company director of Total Resilience (a not-for-profit social enterprise) delivering consultancy and training services on community resilience; emergency/disaster/crisis/business continuity related planning, risk management and organisational learning. Mark is also a part-time lecturer at Coventry University, covering emergency planning, disaster management, community resilience and health and safety related subjects. His current research is focused on organisational learning in relation to effective crisis and disaster/emergency management.
Dr Richard Teeuw: Principal Lecturer in applied geoinformatics and manager of the MSc in Crisis and Disaster Management at the University of Portsmouth. My career started at Stirling University, as a PhD researcher examining the Sierra Leone diamond fields. Extensive experience of using geomorphology, GIS and remote sensing to map and monitor geohazards and natural resources. Consultant on projects for oil and mineral production companies, as well as for the Environment Agency, DfID and the overseas development agencies of Canada (CIDA), Germany (GTZ) and Japan (JICA). In recent years my research has focused on free geoinformatics applied to disaster risk reduction activities, particularly in low-income countries, with ongoing projects in the Caribbean, Nigeria and Sierra Leone.

Ms Rianne C. ten Veen is a humanitarian aidworker with research and environment specialisms and significant project management experience in dealing with complex emergencies. After a decade at Islamic Relief Worldwide, she now works with Osman Consulting Ltd as Head of Research and is also an Associate Lecturer at the Open University teaching on interdisciplinary modules around environment, ethics and development. She is qualified in Sphere and INEE and a member of RedR. She has an LLM, an MA in International Politics, an MSc in Development Management, and a Post-Graduate Diploma in Environmental Policy.

Dr Jieh-Jiuh Wang is a planner, emergency manager and a research fellow specializing in disaster and risk management, sustainable development, urban planning and urban design with special emphasis on systematic planning for specific conditions.

He obtained his Ph.D. from the Graduate School of Arts and Sciences, Columbia University in May 2006. Earlier in 1998 and 1996, he received the Master of Science from the Graduate Institute of Building and Planning, National Taiwan University and the Bachelor of Architecture from Department of Architecture, Tunghai University respectively. In addition, he is also the member of many professional organizations. Currently, he holds the position of associate professor at Architecture Department of Ming Chuan University, Taiwan.
Extended Abstracts

- Susan Anson, Hayley Watson and Kush Wadhwa, Increasing community preparedness for multi-hazards through online training
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Increasing community preparedness for multi-hazards through online training

Susan Anson¹,¹, Hayley Watson¹, Kush Wadhwa¹

¹Trilateral Research & Consulting, London, United Kingdom

Risk communication and education are common approaches to preparing communities for different types of hazard. These approaches involve the exchange of information about potential risks between different stakeholders (e.g., between institutions and the public) (Wood et al., 2011; Covello et al., 1986). For instance, the 2004 Civil Contingencies Act requires Category 1 responders, including the emergency services and local authorities, to provide communities with information about likely emergencies. However, organisations responsible for communicating with their communities about local risks may lack the necessary knowledge and skills to do so. Haddow, Bullock and Coppola (2013) suggest that emergency manager’s lack of training in public education and risk communication is one of the reasons for the lack of success of public preparedness education campaigns. Online training, in the form of computer aided learning environments, is increasingly being used to provide organisations with the knowledge and skills required to develop a risk communication strategy. For example, in the United States online training in risk communication is provided by the Centers for Disease Control and Prevention (CERC, 2014) and the National Consortium for the Study of Terrorism and Responses to Terrorism (TRACC, 2013). However, there is limited supporting research on the processes used to develop online training tools for emergency management and their role in enabling organisations to develop a risk communication strategy.

This paper examines the potential of an online training platform that may be used by Category 1 responders, and their equivalents across Europe, to develop and maintain their knowledge and skills in communicating with communities regarding multi-hazards. The online platform is currently being developed during the EU funded project, TACTIC² (Tools, methods and training for communities and society to better prepare for a Crisis). TACTIC is a two-year project aimed at increasing preparedness to large-scale and cross-border disasters amongst communities and societies in Europe. The project partners from across Europe (UK, Germany, Poland, Turkey and Greece) are responsible for case studies examining preparedness for terrorism, floods, earthquakes and pandemics/epidemics. The case studies are used to test self-assessments designed to enable communities to assess how prepared they are and to provide them with web-links to good practices in communication and education.

¹ For further information, please e-mail: susan.anson@trilatralresearch.com

² http://www.tacticproject.eu/
TACTIC focuses on two self-assessments with the aims of 1) Enabling organisations to develop and improve their approaches to risk communication and education in order to increase community preparedness for multi-hazards, 2) Providing a platform for the public to learn about how to become better prepared for large-scale and cross-border crises. Once finalised, the self-assessments for organisations and the public and the good practices will be featured on the TACTIC Online Self-Assessment Platform (TOSAP). As illustrated in Figure 1, based on the results of the self-assessment, good practices will be recommended. For instance, the organisational self-assessment involves users of the TOSAP answering a series of questions designed to understand the existing approaches used to prepare their community. An example question that is included in the organisational self-assessment is “What are the aims of your communication activities?” The TOTAP then evaluates the user’s responses and subsequently provides the user with appropriate guidance and good practices on developing a risk communication strategy. Furthermore, organisational users of the TOSAP will have access to the results of the public’s self-assessment in order to use this information to develop a risk communication strategy that is based on the information needs of the public.

![Figure 1 - Structure of the TOSAP](image)

The design of the TOSAP involved a multi-step process beginning with gathering the requirements of the platform, including user (i.e., organisations and the public) requirements, functional requirements, technical requirements and soft/hardware requirements. User requirements (e.g., adjustable font size, onscreen cues, multiple languages) were identified by the TACTIC partners and as recommended by Kulak and Guiney (2012), through the development of eight use cases which examined the various purposes that the platform would be used for and the processes that both organisations and the public would go through to access and use the platform for the different hazards that TACTIC focuses on. For instance, one of the use cases focused on how an organisation could use the TOSAP to improve their existing strategy designed to communicate the risk of terrorism and prepare the public to respond to future terrorist attacks. Step by step information was outlined on how the user would access the TOSAP and the menu options
they would select for this particular use case. Once the requirements were identified and translated into functional (e.g., simple registration on the login page) and technical (e.g., open source solution specifications) requirements, multiple Learning Management Systems (LMS) were reviewed. As TACTIC focuses on developing a long-term learning framework for improving community preparedness, a LMS was considered most suitable due to them providing: “institutional support, course development, teaching and learning processes, course structure, student support...as well as evaluation and assessment” (Psycharis, Chalatzoglidis and Kalogiannakis, 2013: 12). Of eight LMSs reviewed, Moodle was chosen as it is open sourced and best met the user requirements identified. The next stage involved adding the content (i.e., a series of questions) of the self-assessments and database of good practices to Moodle, as shown in Figures 2 and 3 on next page.

Adopting a user-based approach to the design, and to validate the user requirements identified by TACTIC’s partners, an initial version of the TOSAP was demonstrated to potential users (non-governmental organisations, emergency services personnel, media, community representatives and businesses) during a workshop in London covering the case study examining community preparedness for terrorism. The TOSAP included draft versions of the self-assessments and the good practices in order to gain their overall feedback for the solutions being presented, and for feedback to be gathered on any additional requirements that workshop participants had. In order to facilitate the process of participants providing feedback, the scenario of a potential terrorist attack in London was presented to encourage them to consider how the TOSAP and its associated content can be used to prepare communities for this type of risk.

![Figure 2 - The Database of Good Practices](image)

*Figure 2 - The Database of Good Practices*
Following the presentations on the scenario and TOSAP, participants provided their feedback to the rest of the workshop. Akin to a focus group, this process involved the generation of data and insights from the interaction between participants (Finch and Lewis, 2003). A key insight identified during the workshop concerned more clearly identifying the organisational users of the TOSAP and then tailoring the TOSAP to those particular users. For example, in London where the workshop took place, in addition to Category 1 responders being responsible for community preparedness, businesses also play a significant role. The workshop participants acknowledged the value of targeting the TOSAP at businesses. Additionally, the content of the TOSAP was discussed in relation to who would be allowed to add content to the TOSAP as well as discussions concerning content and terminology that is tailored to the TOSAP’s different users. For the workshop participants, the display of the TOSAP was also considered important in terms of: 1) Being easy to use (e.g., having less menu options), 2) Being visually pleasing (e.g., ensuring appropriate images are used), 3) Showing the user’s progress in completing the self-assessment (e.g., using a time bar) and 4) Being available as a mobile application. In the longer-term, a key issue raised focused on the sustainability of the platform and once the TACTIC project ends, who would host the TOSAP. Suggestions included that the TOSAP be hosted by a reputable UK humanitarian organisation.

In the addition to the workshop in London, the TOSAP was presented and feedback sought in workshops in Germany, Northumbria (UK) and Turkey. Similar findings were found across these countries. For example, participants in the Turkey workshop also discussed the sustainability of the platform and its availability as a mobile application.

Going forward, the findings from the four workshops will be used to further refine the self-assessments, good practices and the TOSAP in order to increase the likelihood of its adoption. A second round of workshops will be held later in 2015 in order to discuss and validate each of the tools in a multi-hazard context.
Acknowledgements

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References


Analysing the effectiveness of training exercises in connection to the motives behind their development

Luke Fletcher

1Coventry University – Department of Geography, Environment & Disaster Management

2Stirling Group – Crisis & Continuity Management Division, UAE

Introduction

Training exercises have long been considered a highly effective method of improving preparedness to emergencies, disaster and crises. An abundance of research is available evidencing exercise benefits and almost every textbook on disaster planning emphasises the added value that they bring to response organisations (Perry 2004). Research suggests that training exercises; test the capabilities of emergency responders, allow responders to familiarise themselves with equipment and procedures, increase public and stakeholder confidence, improve interoperability between responding entities and arguably the “most critical” function of an exercise is to detect difficulties in executing the strategy or tactics proposed in the plan (Peterson & Perry 1999, Bharosa, Lee & Janssen 2010, Kincaid, Donovan & Pettit 2003, Renner 2001, Swedish Civil Contingencies Agency 2011). Whilst these numerous benefits have been identified, it can be argued that ulterior motives behind the development of an exercise have the potential to negatively affect the intended outcomes and subsequently impact the overall effectiveness of the exercise. Dr. Poulin (2013) argues that “Ulterior motives play a significant role in hindering effective response, whether it be a concern for profit, the pursuit of status or attempting to keep some error from becoming public” and Perry (2004) states that “many flaws in a response are due to corrupt individuals working to achieve their ulterior goals”. This paper therefore critically analyses the resulting effects that ulterior motives can have on training exercises if the exercise has been developed with one of the following motives in mind; improving public perception, abiding to legal/regulatory enforcement and budget allocation requirements, competitive showcasing & capability attesting, and rehearsing the response to a specific scenario.

Public Perception

A commonly recognised benefit of disaster exercises is the effect that it has on improving public confidence in the response capabilities of responder organisations. Exercises constitute a type of public information and ensure that the public is confident in the knowledge that the government is aware of potential hazards, has robust plans for dealing with them and regularly tests the plans (Perry 2004). Following a disaster, the public’s confidence in an organisations response capability can often be lessened, particularly if the disaster appears to have been mismanaged or if the public’s belief is that it could have been prevented in the first place. As a result, many organisations conduct an emergency exercise
to assure members of the public that procedures are in place and response agencies are more than capable of dealing with potential hazards (Perry 2004, Renner 2001). However, this motive behind conducting exercises has the potential to reduce the benefits of the exercise for exercise participants.

Exercises designed with the intention of improving the public’s perception can result in a lack of realism, reduced learning and a lack of confidence in the exercise planning team from exercise participants. The lack of realism transpires as scenarios are developed in such a way as to highlight the efficiency and effectiveness of response teams to members of the public and thus exercises participants are informed of the scenario prior to its commencement. As a result, elements of the exercise become staged. Learning opportunities are lessened as the exercise becomes more of a rehearsed play as oppose to a test of responders reactions. The lack of confidence from responders emerges as their belief in the exercise dwindles and thus their motivation for participation in future exercises is dampened (Donahue & Tuohy 2006). Additionally, exercises can have the potential to negatively affect the public’s perception of response organisations. In May 2015, a survey was conducted by Rasmussen Reports which identified that 82% of U.S. voters were concerned that military training exercises were being conducted to increase government control of the country. Whilst their reasons for wanting to conduct such exercises may have been for the benefit of responders, the suspicion that an ulterior motive was behind their development resulted in negative outcomes (Rasmussen Reports 2015).

Legal/Regulatory Enforcement and Budget Allocation

Perry (2004) states that ‘Disaster Exercises are even institutionalised in that they are mandated by legislation and executive rules’. These enforcement policies have historically proven effective in ensuring that emergency response organisations conduct regular exercises. However, the term ‘Box Ticking’ has often been used to describe the negative approach to emergency management taken by many organisations in order to comply with such regulations. If the motive behind the conduct of the exercise is simply to ‘tick a box’ then it’s effectiveness will arguably be reduced as the exercise is not taken seriously and rather seen as a hindrance to normal day to day activities. This can result in a lack of support and belief in the planning of an exercise and a lack of motivation from participants. This is often the case within organisations whereby emergency response is a secondary role for staff and thus training and exercising is seen as unwanted consumption of valuable time. The result of which is that little benefit is gained from the exercise but organisations have ‘ticked the box’ as far as legal and regulatory requirements are concerned. This type of infectious thinking can filter down the organisational chain if the opinion is shared by senior management. Exercise participants equally believe that emergency exercises are a just a ‘box ticking’ exercise and thus little time and effort is input into training (Skiba, Doig, Marcella & Pirie 2014).

These regulatory requirements usually result in organisations allocating a budget to spend on emergency training exercises. However ‘because exercises are expensive and invoke resources’ exercise planners tend to focus on ensuring exercises are developed cheaply as oppose to selecting the most effective exercise for the benefit of exercise participants. Consequently the overall effectiveness of the exercise is decreased as ‘short cuts’ are taken and vital elements of the exercise left out (Brauner et. al 2014). Phelps (2010) argues that
developing exercises for the right reasons and ensuring adequate funding and effort is put into their development and delivery can be the difference between having ticked a box and truly being better prepared.

**Competitive Showcasing & Capability Attesting**

A lack of effective communication and coordination between responder teams has historically caused issues with interoperability in response to disasters. Emergency response exercises provide a platform for cooperation between different response teams allowing relationships to develop as well as improving knowledge of each other’s roles (Perry 2004). Regular exercises allow response teams to present a ‘united front’, especially as ‘too often companies (response agencies) can be played off against each other if a coordinated response is not obvious’ (Renner 2001). However, competition between response teams has the potential to reverse the desired outcome of the exercise (increased interoperability) as relationships between teams become more hostile. These issues can arise if the exercise is designed to attest to the capabilities of response teams and to inform senior managers or senior public officials of emergency management efforts. Whilst exercises allow these individuals to witness the performance of the response agencies, such presence can have negative results as pressure is increased on responders to please superiors, thus distracting them away from the task at hand. Competition within teams and between teams can be fierce as each attempt to prove themselves. Additionally, these types of exercises are often rehearsed and the scenarios are provided to responders prior to the exercise in an attempt to deliver the ‘perfect’ response to the VIP observers.

**Rehearsed Response**

Borodzicz and Van Haperen (2002) argued that “crisis simulations should be scrutinised and designed carefully to avoid limiting the range of trained experiences to only those outcomes that are thought of and used by exercise designers”. An approach adopted by some organisations is to attempt to develop scenario checklists for every conceivable incident thus enabling responders to learn and ‘perfect’ the response to every potential scenario. They argue that if they can respond effectively during exercises in accordance with these predicted possible scenarios than they will undoubtedly conduct an effective response. Arguably, rehearsing the response to a high risk scenario does have benefits in that it can improve the confidence of responders and allows other responding organisations to observe and identify lessons learned. However, as Perry (2004) states, it is “simply not possible to anticipate every event” and this approach can develop a false sense of security for responders and response organisations. Responders are learning to act rather than develop their technical and non-technical response skills. Therefore by ensuring that responders are unaware of the scenario prior to an exercise, organisations can better assess the effectiveness of the plan and the capabilities of responders.
**Conclusion**

This paper has argued that whilst there is almost universal acceptance that disaster training exercises provide numerous benefits, the extent to which the exercise is effective in achieving an organisations desired outcomes is dependent upon the motives behind which it has been developed. It has been identified that improving public perception, adhering to legal/regulatory requirements, attesting to capabilities and developing an effective rehearsed response can be positive benefits resulting from the conduct of disaster training exercises but if designed with these as the desired outcomes of the exercise, then other potential benefits can be dramatically reduced. By ensuring that training exercises have been conducted for the right reasons and by making sure that the appropriate individuals, time, effort and funding has been input into their design and delivery, the overall benefits of the exercise could be significantly increased. This paper hopes to promote further in depth research into the conduct of disaster training exercises, highlighting the issues and barriers that alter their effectiveness and how best to overcome them?

**References**


The SERM-ex full-scale exercise was organized within the activities of the school of Seismic Emergency Response Management (SERM), provided by University of Udine (Italy). The SERM-ex exercise was held in the town of Venzone (Udine, Italy), from the 28th April to the 8th May 2014. SERM-ex aimed at training rescue personnel of the Short Term Countermeasure System of the Italian National Fire Department, as well as testing new procedures of assessment, developed with the scientific support of the SPRINT-Lab of the University of Udine.

The Short Term Countermeasure System (STCS) of the Italian National Fire Department is the system of technical expert teams that intervenes immediately after a significant earthquake, in order to evaluate the seismic damage on constructions for emergency management purposes. After the experiences of the L’Aquila (2009) and Emilia (2012) earthquakes in Italy, the SPRINT-Lab researchers of University of Udine started collaboration with the STCS for defining and improving the procedures for the damage assessment and for the definition of decision-making support tools. In particular, after the 2012 Emilia earthquake, the response of STCS was revised and reorganized splitting the procedure in two main phases: the first aimed at the recognition and characterization of criticalities, and the second aimed at the execution of short-term countermeasures (i.e. temporary works) on damaged constructions.

The exercise was organized in the small village of “Portis Vecchio” (Venzone, province of Udine, Italy). Portis Vecchio was chosen since it was abandoned after the 1976 earthquake, as it was located under an impending rock-fall landslide; nowadays, it shows a situation of “how it was” immediately after the 1976 earthquake. This case of real post-earthquake scenario has been recognized as extremely useful for full-scale exercise sessions purposes.

The SERM-ex exercise was designed, in particular, to simulate the response of the STCS to an earthquake with the same intensity as the one that in 1976 struck the area (Friuli earthquake, 6th May 1976, Mw: 6.4). On 28th April at 8 a.m., an earthquake was simulated hitting the municipality of Venzone. STCS was activated with the scientific support of SPRINT-Lab researchers of University of Udine and with the Italian National Fire Department personnel of Friuli Venezia Giulia Region (Italy).
During the first hour after the alarm, the area with the major damage was identified, thanks to the aerial support of a helicopter took off from Venice airport of the Italian National Fire Department (about 100 km far). Furthermore, the on-site STCS personnel used new remote sensing technologies to recognize and characterize the identified area; specifically, the aerial view was obtained thanks to a fixed-wings drone. In few time, the aerial views permitted to circumscribe the main damaged area to the village of Portis Vecchio. Consequently, trained STCS personnel carried out a radio check survey on the entire municipality; this procedure was piloted for the first time during the SERM-ex. The radio-check survey relies on the rapid assessment of the safety conditions regarding both the street access and the buildings. Pre-codified criteria support the surveyor while he/she recognizes the different situations during a quick walk along the streets. The surveyors transmit the evaluations to a local back-office using a modified version of the standard equipment radio. The radio-check procedure permitted to characterize a residential area of about 5 km² in half a day with five teams of 2 firefighters. The outcomes of this characterization lead to the definition of the “Quick Check Patrol” EmerMap. The EmerMaps (Emergency Maps) are thematic maps developed in order to support decisions during the emergency. The first EmerMap created after the radio-check survey permitted to identify the points of attention in the municipality of Venzone, i.e. the streets or buildings revealing unsafe conditions that could affect the street access.

The second day of the training, 3 teams of STCS surveyors evaluated more in detail each point of attention (previously recognized during the surveys of the first day), thanks to the TriagEdEm form. SPRINT-Lab researchers defined the TriagEdEm (Triage of the built Environment during the Emergency) form ad-hoc for the rapid triage of buildings during an emergency. The STCS teams for the survey were composed by 2 in-place-trained STCS personnel, 1 SPRINT-Lab researcher and 1 STCS-TAS (Topography applied to safety and rescue) personnel. The SERM-ex exercise tested both a paper and a tablet-based version of the TriagEdEm form, considering different situations depending on the availability of electronic devices and internet connection. With a working internet connection, the surveyors can send in real time the information to the “Local command unity” emplacement, where the TAS team is deployed and where experts check, elaborate and archive the data. On the other hand, if no internet collection is available, the survey team uploads the data directly at “Local command unity” at the end of the day and the data are immediately controlled. The TriagEdEm data permitted to create the “Characterization of the Attention Points” EmerMap.

The EmerMaps permitted the STCS decision-makers to characterize the situation of the area affected by the earthquake (for the SERM-ex exercise). Thanks to ad-hoc indicators, the data were represented on maps, consultable both on paper map and on a local webGIS. Therefore, decision-makers could recognize and delineate the strategies for managing the emergency response. In particular, STCS decision-makers identified two points of special attention, which required short-term interventions in order to guarantee the safety of the street access to the small village of Portis Vecchio and to the ancient graveyard of the village.

The SERM-ex exercise tested also the phase and the procedures concerning the design and execution of the short-term countermeasure on the identified buildings. Despite these procedures were well known and applied since the earthquake of L’Aquila (when the SPRINT-Lab researchers supported the Italian National Fire Department in their definition),
during the SERM-ex exercise, the procedures were tested both for a “standard” intervention (defined according to already tested solutions) and for an “experimental” solution. The “standard” intervention concerned the stabilization of the entry portal of a severely damaged church facing the access to the village graveyard, in a site of historical and artistic interest. The “experimental” intervention (on a former kindergarten) aimed at safeguarding the utilization of the main street crossing Portis Vecchio: the collapse of the façade of the highly damaged building could severely affect the street access. Therefore, the experimental intervention consisted in the construction and installation of a wooden trellis to contain the potential collapse of the damaged façade. SPRINT-Lab researchers and STCS personnel defined and designed the interventions with the cooperation of the local competent authorities (Municipality and the Superintendence for historical heritage).

The SERM-ex exercise permitted to test and validate the procedures for the deployment of the STCS after a relevant earthquake. The exercise permitted to validate the methodologies and the procedures for:

- the automatic accomplishment of the EmerMaps from the radio-check and TriagEdEm surveys;
- the use of combined aerial and on-ground surveys on a wide territory;
- the utilization of the TriagEdEm forms through tablet- or paper-based forms;
- new typologies of short term countermeasures, aimed at securing the street access.

The SERM-ex exercises ended with a debriefing on the developed activities. The outcomes of the debriefing were very positive and they highlighted the following items:

- the EmerMaps, conceived and elaborated as decision-making support, proved to be very useful for the definition of the strategies for managing the emergency;
- the collected information and their final representation in the EmerMaps permitted to define the priorities of intervention by adopting a multi criteria approach, depending on the identified scenario;
- the utilization of webGIS permitted to share the outcomes in real time with decision-makers far from the affected area;
- the adoption of ad-hoc designed indicators permitted to communicate the results in a simple and complete way, and the decision-makers could outline the strategies of intervention considering different criteria;
- the exercise proved that it is possible to transfer the knowledge on the adopted methodologies and procedures also on-field, i.e. during the evaluations (capacity building);
- the exercise permitted to define and design a new typology of short-term countermeasure, for guaranteeing the street access in case of threaten façade collapse on a street.

After the exercise, taking into account the results of the debriefing, the National Fire Department has adopted officially the procedures tested during the SERM-ex exercise.

Detailed description of the single phases are reported in the blog of the SPRINT-Lab team ([http://sprint-uniud.blogspot.it/](http://sprint-uniud.blogspot.it/)).
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Training of resilience practices: two case studies of mixed - reflexive methodology for Italian Civil Protection volunteering

Barbara Lucini

1Itstime- Italian Team for Security, Terroristic Issues & Managing Emergencies, Department of Sociology, Catholic University of Sacred Heart, Milan, IT

Since 1992, the Italian civil protection service has been a fundamental social actor managing and responding to the emergencies and the crises that have occurred in our country. Before the National Law no. 225/1992, “Institution of the National Civil Protection Service”, there wasn’t any organised National organisation but, rather, the emergencies and crises were managed by technicians and technical professionals. This law introduced the principles of coordination and collaboration during all the phases of a disaster such as mitigation, prevention, management, response and restoration.

Training activities have not always been the focus of the national, regional or local policies on civil protection and emergency management: there have been scattered activities based on the personal, professional interest or will of the people involved in the civil protection system.

Over the last few years, attention has turned to the training for civil protection professionals and volunteers, depending on the geographical region, the economic resources, the political orientation and the willingness of the volunteers and the civil protection professionals: it cannot be considered a functional and continuous activity but it creates disjointed, varied training, for civil protection and above all for the voluntary sector.

In this social context, the High School of Civil Protection in the Lombardia Region is one of the best examples of training activities and educational proposals for volunteers and professionals in the fieldwork of disaster management and civil protection. It covers diverse subjects: technical, administrative and volunteerism.

The most important problems the school has to face are the lack of training continuity, turnover of managers due to changes in the political arena and the lack of economic resources.

It is possible to highlight these general features and their effects within the case study analysed. The High School of Civil Protection in the Lombardia Region is constituted by a partnership and legal agreement between the training offices of the School itself and the sector of civil protection, security and immigration of the Lombardia region.

The School and its training activities are organised according to the training and scientific Commission of the School and the representatives of the Lombardia region.
The first case study considered the social dynamics and training implications of the workshop entitled “Civil Protection for the University”.

The aims of this two-day workshop were:

1. to build a preparedness culture in case of emergencies for university students in the Lombardia region, creating a “culture of emergency” based on shared information and dissemination among students.

2. as a sort of latent aim, to recruit younger people as future civil protection volunteers.

This was not a declared objective, but it was based on the deep needs of generational change of civil protection volunteers.

The group of participants was organized to include a variety of civil protection personnel: volunteers and regional, provincial and local experts. This was done in order to guarantee a multitude of ideas, perspectives and professional competences.

This aspect could be considered as a positive attitude to foster cooperation and enhance the interoperability of disaster managers and volunteers, but it was not the case because of different approaches to working together for a common aim.

In fact, the decision to divide the nineteen participants into mixed subgroups was made by the tutor and the lecturer, creating mixed subgroups that were more representative of diverse roles and training understanding.

Three mixed subgroups were created working on three different topics that were:

- the civil protection service: its aim, activities, personnel
- two important civil protection activities: prevision and prevention
- the other two civil protection activities: restoration and mitigation

In order to achieve the aims of the workshop itself, three different outputs or educational materials were produced as a result:

1. a video displaying the evolution of the National civil protection service
2. up to five video interviews with regional and local officers, ordinary people, and volunteers to understand the importance of the civil protection service in cases of crisis and emergency
3. two roll-ups showing the four phases of a potential crisis or disaster such as prevision, prevention, restoration and mitigation

The training activities, the training methodology and the educational materials elaborated were discussed at a common meeting between the lecturer, the tutor and the training Commission of the High School.

Further, the training activities themselves were evaluated by a customer satisfaction survey delivered to the participants at the end of the workshop.
The second case study relates to a two-day workshop on “Educational Material for civil protection volunteers – Stage 1”.

There were fourteen participants and the four working groups were devised as on the previous course, but instead of using a resilient reflexive method as was done for the first workshop where it was possible to create a resilient training experience for the participants itself and not just as an aim or outcome of the workshop, for this second workshop, the trainer considered a training method based on the resilient legitimation of a latent leader for each working subgroup due to the controversial attitudes of the participants.

Because of these conflicts and the difficulty in obtaining cooperation and team working, the lecturer and the tutor decided to divide the participants into the smallest groups possible.

This second workshop used the following educational and training materials: a course program (contents, objectives, training methodology), two training videos, suggestions and guidelines for the use of training methodologies.

The evaluation of the workshop was carried out as for the previous workshop, but the final feedback was negative due to: the lack of cooperation and collaboration among the participants, the irregular presence of the participants and the conflicts caused by the different roles played by the participants, i.e. what prevailed in this context was the old hierarchical model of a disaster management organisation (command and control style) instead of the implementation of collaborative patterns required within the civil protection voluntary system.

Analysing the training methodologies of the two workshops as described above, it is possible to detail some worthwhile evaluations in the fieldwork of resilience practices for training:

1. the theoretical design of the workshops was based on three sociological approaches i.e. phenomenological related to the reflexive approach of resilient training, symbolic interactionism aimed at the construction of the quite similar image of working groups and social constructionism theories
2. considering the theoretical design and its structure it was possible to set the methodological principles in order to achieve the aim of the training experience itself.
3. particularly, attention was focused on the multiple circle of resilience, which seems to be a typical feature of training of resilience practices producing various resilient perspectives such as: resilient methodology adopted by the lecture aimed at changing the training methods in order to achieve resilience in the training experience; the resilient practices and methodologies raised by professionals and emergency volunteers; the resilient features, feasibility, adequacy of the educational and training materials. (Lucini, 2015)
4. the design of the workshops was the same. The aim was not only linked to the production of outcomes such as educational materials, but also to create or enhance the professional resilience of the participants. Specifically, professional resilience has been identified as (Lucini, 2014): “the proactive and prosocial attitudes oriented to help people affected by disaster in a professional way, and, at the same time, helping

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colleagues trying to avoid burn out or other diseases among the colleagues themselves.” The workshops stressed the importance of professional resilience in non-crisis time and not only focusing on crisis time. Further, they highlighted the possibility that resilience can be taught as proactive attitudes able to improve the professional and training experience and decreasing the personal and professional vulnerabilities (Lucini)

5. the findings of these two workshops state that the educational policies on resilient training and civil protection training need to be revised, according to the principle that “resilience” can be taught as well. Even if it is important to discuss how it is possible to define resilience, in which context and according to specific training methodologies

6. the findings also reflect the idea that it is fundamental to advance the vision from professional resilience to a professional resilient community such as stated in Lucini (2014): “[...] we should consider that professional resilience is not only based on capacities used to avoid burn out. It also is based on the collaborative and organizational patterns that make up the civil protection organizations in which the volunteers are involved.”

In conclusion, these two resilient training experiences were based on two diverse methodological approaches: one on the reflexive and resilient method aimed at building up both the educational material and the working groups; while the second can be considered as a “resilient training method” to solve the controversial attitude of the participants, and to facilitate the achievement of the aims of the workshop itself.

These training findings allow the professionals and experts involved in this fieldwork to enhance the training policies and methodologies so as to highlight the importance of resilience and adequacy for the design of training experience as well as for the participants and the professionals.

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SEVESO III – An Opportunity for Enhanced Community Resilience to Major Accidents in Great Britain?

Ron Mountain

Senior Lecturer in Disaster and Emergency Management, Coventry University

For more than 30 years, the risk associated with high hazard industries in Europe – involving both process and storage activities – has been regulated on the basis of a series of European Seveso Directives. These Directives have been implemented through country-specific Regulations in European Union member countries – in Great Britain, the Control of Industrial Major Accident Hazards (CIMAH) Regulations, followed by the Control of Major Accident Hazards (COMAH) Regulations. This regulatory regime has recently been updated – with the SEVESO III Directive having been adopted on 4 July 2012, and the corresponding GB Regulations – COMAH 2015 – which came into effect on 1 June 2015. (HSE(a) n.d.). Of particular importance to community resilience is a complementary set of Regulations – The Planning (Hazardous Substances) Regulations 2015 (which also came into effect on 1 June 2015) – which implement the land use aspects of Seveso III in England (similar, separate regulations apply to Wales and to Scotland) (HSE(b) n.d.).

Important changes being brought in by Seveso III and the implementing country-specific regulations include an enhanced requirement for the provision of information to the public about the risk posed by high hazard industries and, more fundamentally, a requirement for consultation with the public so that they have an opportunity to influence decisions made in respect of such industries (European Council Directive 2012/18/EU).

The Conference Presentation will briefly outline the participatory rights enshrined in the environmental governance foundation of these changes – the European Aarhus Convention – which aims to protect and enhance the rights of persons to live in an environment that is conducive to their health and well-being (UNECE1998). It will then set out the key provisions of the Seveso III Directive and COMAH 2015 (UK Government SI 2015/627) and The Planning (Hazardous Substances) Regulations 2015 (UK Government SI 2015/483), in respect of public participation in environmental decision-making.

The Presentation will consider aspects of the broader societal backdrop to these changes such as mistrust of government and private industry, together with an expectation that business acts ethically and that government ‘delivers’ on the provision of services. (Edelman UK n.d.) It will then go on to discuss the key features of community resilience to disasters and of resilient communities (Twigg 2009); (UK Government 2011).

The Presentation will then, through a review of work that has been undertaken by a number of different researchers, consider factors that may influence future prospects in the UK for these aspects of the revised SEVESO regulatory regime. From the perspective of the public,
relevant factors include: perceived risk ‘acceptability’; criteria that may be important for effective public participation in environmental decision-making; and possible barriers to effective public participation. Research suggests that, on the face of it, none of these factors present insurmountable barriers to increased public participation Reynolds (2011); Hartley and Wood (2005).

There may, however, be more fundamental barriers to participation – such as the increased costs that may be incurred by both industry and government, at least in the short-term, and whether or not these can be borne in the context of some industries running on tight margins and with cut-backs in the budgets of public sector organisations. There is also the question, as raised by some academics, of industry ‘motivation’ behind some long-standing approaches to community involvement such as the Responsible Care Programme. If these – and if any community involvement predicated on Seveso III – are seen by stakeholders as essentially no more than ‘public relations exercises’, then ultimately, they may serve to discourage rather than to promote and enhance public participation in the implementation of Seveso III Givel (2007).

The other countervailing consideration is the concern expressed by some stakeholders about security and commercial confidentiality – a concern that has traditionally been seen as a reason to withhold information from the public. (Cefic n.d.)

Finally, in addition to the practical considerations for enhancing participation (which may benefit from applied research, such as that which is reviewed as a part of the Presentation), and the more fundamental issues involving economics and stakeholder interests, there is the matter of the normative position taken. One such position is clearly implied by European Directive 2003/35 EC:

“Effective public participation in the taking of decisions enables the public to express, and the decision-maker to take account of, opinions and concerns which may be relevant to those decisions, thereby increasing the accountability and transparency of the decision-making process and contributing to public awareness of environmental issues and support for the decisions taken.” (European Directive 2003/35/EC)

One can adopt the position of fundamentally favouring and encouraging pluralistic participation of a wide ranging range of stakeholders – crucially, including the public and the ‘public concerned’ in decision-making about high-hazard sites – or not.

The Presentation will argue, in the context of current, broader circumstances in Great Britain that are giving rise to a need for enhanced resilience to a range of risks extending beyond industrial risks, that SEVESO III does, indeed, represent – at the very least – an opportunity for enhanced community resilience to industrial major accidents in Great Britain.
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Connecting Disaster Risk Reduction with the chemistry lesson in the classroom: a preliminary study from Banda Aceh-Indonesia

Nuralahayati Nurdin¹

¹Institute for Risk and Disaster Reduction (IRDR), University College London, Gower Street, London, WC1E 6BT

email: nuralahayati.nurdin.13@ucl.ac.uk

This paper will assess to which extend the concept of the DRR has been connected with the chemistry lesson in Senior High School in Banda Aceh-Indonesia. The country has experienced various natural disasters such as earthquakes, volcanic eruptions, landslides, tsunami, floods, forest fires, and epidemics. It is a country that considers being one of the most vulnerable countries in the world (McGeown 2010 in prevention web).

One of the biggest globally known disasters was the wake of the tsunami that happened on December 26, 2004 in Aceh province. This catastrophe has caused 173,741 death tolls, 394,539 people displaced and many infrastructures were damaged. According to the National Disaster Management Coordinating Board, Banda Aceh, a capital city of Aceh province, had the biggest impact with 78,417 death tolls from 269,091 total populations (Wibisana, B.H 2009 : 6-8) This extreme number of the death tolls and victims implicitly showed the urgency of mainstreaming Disaster Risk Reduction within a formal education system.

Therefore, a study on this has been conducted to investigate how DRR could be brought into the Secondary High School (age 16-18 years old) in Indonesia using the chemistry in the classroom. This preliminary research was conducted in Banda Aceh, Aceh province, Indonesia in October 2014, covering 17 schools around Banda Aceh. The 14 school representatives (head master/curriculum section) and 26 chemistry teachers from grade X and XI involved in this research. This research has used a survey and Focus Group Discussion (FGD) methods to collect the data from set out respondents.

According to some school representatives who participated in the Focus Group Discussion, they confirmed that the implementation of disaster education in schools was used to be the main priority when some NGOs involved in the school programme in early decade of post-tsunami rehabilitation. Currently, the programme has been discontinued due to the lack of funding and supports from the government when the (non-government) humanitarian assistances finished in Aceh. However, from general discussion the schools recognised the necessity of disaster education for the Aceh province due to the frequency of calamities such as, earthquakes, flood, landslides and forest fires. Supporting this, the chemistry teachers also agreed that disaster education should be addressed as part of school programme to increase student awareness. They believed that embedding the real life
problem to school lessons would increase students’ interest on the difficult subject like chemistry. Nevertheless, they expressed their concerns that teachers need to be prepared to introduce the new topic in the lesson with the proper knowledge and guidance to organise the lesson system.

In the general discussion with respondents showed that the implementation the DRR concept into school curriculum might face several challenges for both teachers and student as the new curriculum (curriculum 2013) just has been enacted and implemented in Banda Aceh and is not widely understood by all the teachers in Banda Aceh. Even some training has been given, but the implementation is still far from the objective. Some schools argued that the implementation of this new curriculum still lack of guidance, which give a confusing situation for school particularly teachers.

Interestingly, all teacher respondents from the survey are considered that DRR concept is likely can be taught as part of chemistry curriculum in the classroom and considered being a tool to increase student awareness and communicating the risks of disasters. The entire respondent trusted that the dissemination of the DRR concept into chemistry curriculum is potential to be applied. The emerging notion was that climate change topic would become the most likely potential topic to address the issue, as well periodical system, chemical properties and its reaction. This suggestion would primarily refer to the identification of particular chemistry topics that was proposed and listed together with the teachers during the FGD.

In particular, using the periodical system where student can work on hazard mapping by identifying the hazards from different resources is one of the options suggested. The idea would be similar to mind mapping learning. For example when student learn periodical system, student will be asked to put the relevant hazard that they might think to be linked. Equally the climate change topic is also likely to be one of potential topic to develop student understanding about the impact of using the fossil fuels.

In doing this, it suggested that using a video media can be one of strategy, as well as visiting historical related disaster places like museum tsunami, mass tsunami cemetery which located in Banda Aceh area. However, the time constrained also need to be considered in implementing the research in the classroom to as the basic competence can be achieved in the end of the lesson under the education system in Indonesia.

In general, the study found that the participants agreed that making a connection between disaster risk reduction concept and the chemistry lesson is highly possible in current curriculum setting by identifying the lesson plan, to find out the most related subject with the DRR. Based on the finding from this research, the recommendation for the next stage has been made.

The next research will focus on climate change issue that is included in the chemistry lesson. The consideration made based on the Aceh situation which experiencing various natural calamities such as floods, droughts, forest fires, and coastal erosions as a result of the changing temperatures The development has been made to enrich student knowledge by addressing specific issue on how climate change can give the impact on ocean and ground water system. The research will employ mixed methodology research design comprising two
phases. The first phase will include the teaching intervention (pre, post test and hands-on experiments) and the second phase will be semi-structure interview in order to probes students’ understanding on the topic.

By the end, this research gives an account of applicable strategies to integrate Disaster Risk Reduction into the senior high school chemistry curriculum that would raise awareness to contribute attitude changes of students in Indonesia. Therefore, the impact can be widened into society through the dissemination of the knowledge both directly (informing) and indirectly (attitudes) into wider family or relatives and community as a whole. This research can be as a model for another schools across Indonesia in developing their disaster related curriculum. This model also expected can be adapted by another countries, which have the similar problem with Indonesia.

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Approaches to deliver disaster risk reduction education:
including DRR in the school curriculum: a case study from Viet Nam

Moustafa Osman\textsuperscript{1}, Rianne C ten Veen\textsuperscript{2}, underline presenter

\textsuperscript{1}Founder, Director, Osman Consulting Ltd - Disaster Management Experts
\textsuperscript{2}Head of Research, Osman Consulting Ltd - Disaster Management Experts

The United Nations declared 2005 - 2014 the UN Decade of Education for Sustainable Development (DESD) and designated UNESCO to lead the initiative. The UN DESD calls for the integration of the values inherent in sustainable development into all aspects of learning to encourage changes in behaviour for a more sustainable and just society for all. With over 70 per cent of its population at risk of natural disasters, Viet Nam is one of the countries most affected by the impacts of climate change. In this context, schools and their surrounding communities are under constant threat. The Viet Nam Ministry of Education and Training (MOET), UNESCO and Samsung Education for Sustainable Development (ESD) Initiative in Viet Nam made significant steps to create an enabling environment for schools and communities to identify their own risks and threats and to develop and implement joint plans. The ESD Initiative, a public-private partnership, boasts outcomes from the policy level to the grassroots level, impacting school and community preparedness and education while informing national curricula development, providing innovative tools for teacher training and mainstreaming of ESD themes which will be used for further national implementation and international replication. Where OC was a consultant to this project, this presentation will share how this approach came about, what was achieved and what other countries could learn from it for their own DRR. The initiative had the following components (and still relatively new so limited academic articles yet on it - all the more reason for Coventry University to be at the forefront of this):

1. Awareness raising for:
   - School principals;
   - parents;
   - media;
   - local authorities;
   - national authorities;

2. Community action plan

3. Disaster risk reduction (DRR) in schools
   - Assessment tool;
   - Preparedness plan.
4. E-learning primary teacher-training courses
   - Disaster risk reduction
   - Climate change
   - Biodiversity conservation/ environmental education

5. Media communication plans

6. Awareness raising of satellite imagery for evidence-based decision-making

In more detail, the project had the following components, which have significant transferable elements available for other contexts, to be edited to reflect the different vulnerabilities in different countries. The presentation at Coventry University will focus on the why and how of the different components and how they contribute to disaster resilience.

1. Awareness raising

The goal was to create an enabling environment for Education for Sustainable Development through awareness raising sessions for school principals, parents, media and national and local authorities in the areas of (i) disaster risk reduction and (ii) climate change and biodiversity conservation/environmental education. Activities included:

- Selection of beneficiaries of the awareness raising sessions (these same beneficiaries would further on develop the Community Action Plans, described below).
- Development and application of questionnaires to identify awareness raising needs of beneficiaries.
- Development of content for awareness raising sessions.
- Implementation of awareness raising sessions in Hue and Ha Noi:
  - Awareness raising session on disaster risk reduction for school directors, community members and parents, media and local authorities in Hue.
  - Awareness raising session on climate change and biodiversity conservation/environmental education for school directors, community members and parents, media and local authorities in Hue.
  - Awareness raising session on disaster risk reduction for national authorities in Ha Noi.
  - Awareness raising session on climate change and biodiversity conservation/ environmental education for national authorities in Ha Noi.
- Revision of awareness raising material following implementation in Hue and Ha Noi.
- Official endorsement by MOET of awareness raising material.
2. Community Action Plan

Community Action Plans (CAPs) will be developed through Community Learning Centres as an intersectoral response to challenges of climate change, disasters and biodiversity loss. They will be linked to provincial climate change plans and to schools activities to create the enabling environment. These CAPs will be developed to identify and respond to the main risks, threats and challenges of communities in their locality through projects and activities that can be implemented in a participatory manner, with support of authorities, the private sector and other stakeholders. Activities included:

- Development of guidelines for developers and guidelines for facilitators on how to develop a CAP;
- Implementation of capacity building training and visioning exercise for CAP developers team in Hue;
- Development of CAPs;
- Consultation workshop with experts to provide inputs on draft CAPs in Hue;
- Refinement and finalisation of CAPs;
- Awareness raising session on CAPs in two CLCs;
- Official endorsement of CAP guidelines and methodology by MOET.

3. Disaster Risk Reduction in schools

Assessment tool

The overall objective of this tool was to empower education institutions in identifying risks and threats and be better prepared to develop the school preparedness plan. Activities included:

- Finalisation of the assessment tool;
- Final testing of the tool in five schools in Hue;
- Revision of the tool following implementation in Hue;
- Official endorsement by MOET of the assessment tool.

Preparedness plan

Schools to make use of preparedness plan form and guideline on its use to develop a school preparedness plan based on results of the assessment of risks and threats. Activities included:

- Development of a form and guidelines on how to develop a preparedness plan;
- Implementation of training on how to develop preparedness plans for community, parents, teachers and school principals in Hue;
- Finalisation of the plans;
- Revision of the form and guidelines following implementation in Hue;
- Official endorsement by MOET of the form and guidelines.
4. E-learning teacher training

OC contributed to one of the three e-learning teacher-training courses; these courses were in the areas of (i) disaster risk reduction, (ii) climate change and (iii) biodiversity conservation/environmental education. Teachers are being supported in delivering lessons to students in these areas and in leading development of preparedness plans for schools. A final e-learning teacher training kit was made available nationwide at the conclusion of all project activities. Activities to achieve this included:

- Development and application of questionnaires to identify teachers’ training needs in the three areas;
- Identification of teachers’ training needs on ICT and implementation of training in Hue;
- Development of (i) guidelines on content development and structure for e-learning primary teacher training and (ii) content development and structure for e-learning primary teacher training;
- Development of content for the three courses;
- Development of e-learning courses, based on content developed;
- Teachers from five schools in Hue follow the three e-learning courses, develop lesson plans and deliver lessons to students;
- Monitoring of the delivery of lesson plans to students in Hue;
- Revision of the three courses following implementation in Hue;
- Official endorsement by MOET of the e-learning teacher training kit and dissemination nationwide.

5. Media communication plans

Media were invited to participate in the awareness raising sessions as members of the community and they were supported in development of communication plans to better inform the wider public on climate change, disaster risk reduction and biodiversity conservation. Media also publicised activities the schools carried out, contributing to the enabling environment.

6. Awareness raising of satellite imagery for evidence-based decision-making

Not done by OC, but significantly related, was that experts in remote sensing will develop user-friendly courses and material and conduct awareness raising sessions on the use of satellite data and imagery as a tool for disaster preparedness and climate change response. Awareness raising will be conducted for (i) national authorities; (ii) local authorities; and (iii) community action plan developers, including school principals, parents, community and media.
Ingenious activities securing a just world

Katerina Pateraki, Rishi Gupta

Coventry University
Priory Street, Coventry
ab3180@coventry.ac.uk
aa8553@coventry.ac.uk

Current use of the world’s resources is inequitable and unsustainable. As the gap between the rich and poor widens, poverty continues to deny millions of people around the world their basic rights. Greed disturbs peace and reduces our ability to deal with climate change which may in turn lead to an increase of natural disasters.

“Development cannot be sustainable if it does not address the challenge of climate change....When young people have decent jobs, political weight, negotiating muscle and real influence in the world, they will create a better future”

United Nations Secretary-General Ban Ki-moon (UN, June 2015)

Sustainability requires a holistic global approach while the UK and the wider world are faced with a shortage of engineers and scientists, who are the very people needed to preserve and improve our planet and our well-being (Royal Academy of Engineering, 2009).

Currently, women make up approximately a third (33.5%) of all higher education students in Science Engineering and Technology (SET) and only 14% of engineering undergraduates. In a fast changing and interdependent world, education can and should help young people to meet the challenges they will confront now and in the future.

The aim of this project is to develop ingenious activities to engage with 15-18 year olds to inspire and stimulate an appreciation of engineering as a global and social subject.

Practising humanitarian field workers were involved in this project to develop a set of 10 workshops based on key global engineering issues. These workshops were designed to show the students the importance of appropriate technology selection, practical engineering in the field and will encourage them to see engineering in a more global and social light. Participating engineers were from humanitarian agencies such as Practical Action, Engineers Without Borders and Serve On through to global engineering companies such as Siemens.

The workshops are based on hands-on experience from real life scenarios and they comprise of a short participatory theory element, for example: what are the hazards and who are the vulnerable people around the world and how to make a difference. Additionally activities involve practical-fun elements such as role play, design and building that pick up students’ interest and engagement.
Role play, simulation and activity led learning are useful ways to bring out learning in development processes. Innovative learning provides the space and opportunity to explore complex issues which actively involve learners. They can also be used to introduce students to the application and value of participatory learning techniques within both international development and organisational learning and management (The global engineer, 2008).

Most of the workshops demonstrate the social benefits of engineering and the principle of resilience to young people. All workshops were funded by the Royal Academy of Engineering (RAEng) and will be delivered at Coventry University or in schools. This gives school students the opportunity to learn more about the use of engineering in disaster and conflict situations. They also explore the concepts of development, community resilience and the principle of being humanitarian. These workshops advocate resilience and raise awareness of Disaster Management and Humanitarian Engineering.

Feedback from the students and engineers has been positive and encouraging. We are now working with a set of local schools. We are also seeking ways of making these workshops sustainable and demonstrate their impact on a wider humanitarian engineering and resilience agenda, suitable for male and female entrepreneurial engineers.

**Keywords:** Community resilience, Disaster management, Humanitarian Engineering, Outreach, Employability; Women in Engineering.

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Organisational Approach: Training on Fully Integrated Security Management

Gill Price\(^1\), Heather Macey\(^2\)

\(^1\)RedR International Programmes Director
\(^2\)County Coordinator Pakistan Humanitarian Forum

Introduction

Humanitarian crises continue to grow in complexity and scale. Statistics from the Aidworker Security Database reveal an increasing trend in security incidents affecting aid workers over the last decade. National staff is disproportionately affected by these security incidents (HPN, 2010). Through its work on humanitarian safety and security, RedR has found that at organizational level, the security personnel and procedures that are put in place often form an additional or specialist part of operations rather than an integral part of day to day business. This highlights the need a more holistic approach to managing personal and organizational security, with a shared focus on the delivery of safe and effective humanitarian operations.

In response to these concerns, in 2013/14 RedR implemented a “Safe and Effective Programs through Fully Integrated Security Management” (FISM) programme in Kenya. This was an 18 month pilot project supported by Office of US Foreign Disaster Assistance (OFDA), and implemented in partnership with the Harvard Program on Humanitarian Policy and Conflict Research (HPCR) and thirteen operational NGOs. It built on learning from an earlier organisation-wide Security Management training programme for CARE International in Kenya. The project aimed to further enhance the capacity of organisations to deliver safe and effective humanitarian operations by delivering capacity building in security.

Post-project completion follow ups and an external evaluation conducted at the end of the project found that the pilot was considered highly relevant and effective with outcomes ranging from quite limited in some cases to transformational and irreversible in others.

This paper is based on the project’s monitoring data and an external evaluation of the FISM project conducted by Bjorn Ternstrom (Team Leader) and Florence Oduor in April 2014. Methods to collect these data included key informant interviews with staff and participating organisations involved in the project. Project outcomes and impact were captured through comparison of baseline self-assessments with observations or changes in organisational practice exemplified by participants that were linked to the training and capacity building activities provided.

In this paper, we will highlight the innovative aspects of the capacity building methodologies used for the FISM project, and the lessons learned through this pilot around training methodologies. These findings confirm and build upon a review conducted by InterAction
and the European Interagency Security Forum on how to create effective security training for NGOs (Persaud, 2014).

**Methodology and design of the FISM capacity building project**

FISM was implemented through a blend of online and face to face training, discussion, action-planning, and participatory activities. The project was organised in five essential phases: Start-up, including organisational self-assessments as baseline; Face to face training targeting four staff categories; eLearning and dissemination meetings; Concluding face to face workshops and organisational post self-assessment; and finally Programme closure.

Moving beyond the transfer of individual knowledge, or working on specific elements of security management (for example, developing Standard Operating Procedure) the project sought to facilitate organisational integration of security management in each stage of the project and employee life cycles through the application of six key design principles. The key design principles RedR applied in the FISM project are:

1. A holistic approach to security management and a **focus on infrastructure**, not just component parts
2. Creating an organisational culture of **shared, not isolated responsibility** for security across the organisation
3. Building **awareness and capacity in strategic areas** and among key staff, and ensuring they have sound knowledge, skills and confidence in managing their own security
4. Strengthening **cross departmental relationships** and consistent attention to security across all operational functions
5. Defining a **new role for security specialists** and empowerment of security staff as change agents
6. Addressing the need for **institutional support driven by senior management**

**Results of the FISM capacity building project**

Overall the evaluation concluded that FISM has been highly relevant to the participating organisations. The effectiveness of the project was also assessed to be high. This conclusion follows from “significant multi-source evidence that effects have gone beyond knowledge development and individual behaviour change”. A broad range of process/procedure/structure and physical changes have been implemented by participating organisations. All organisations made improvements to security plans, security procedures and/or Standard Operating Procedures, while some also included security in the staff inductions and/or appraisals. Over the course of the project most of the NNGOs had appointed Security Focal Points and these positions were generally still in place during follow ups. All organisations interviewed had implemented changes to a varying degree. The participants themselves identified these changes as initiated and/or supported by the FISM project. These observed changes in organisational behaviour and structure were assessed as sustainable or even ‘irreversible’ in organisational change terms.
The following aspects of the methodology and design of FISM were found to have contributed to its success:

**Integration:** The project took a cross-departmental approach to capacity building by targeted staff across departments: Senior Managers, Security, and Human Resource and Programme staff. This was done to increase awareness and foster integration across the organisation. Interviews confirmed that Programme and Human Resource personnel often have insufficient knowledge, expertise and support to practically integrate security management into every aspect of their work. Our experience confirmed the importance of awareness raising, better communication and interdepartmental coordination rather than further developed security knowledge and expertise alone. Notes from follow ups during the course of the project recorded “improved collaboration noted in all organisations especially between HR, Security and Programmes.” In the evaluation, the project’s emphasis on integration was consistently highlighted a real strength. Examples given of organisational change implemented indicate that some of the organisations now implement programming that is safer for their staff and material resources. The integrative approach has repeatedly been cited as crucial to organisational changes implemented.

**Engaging senior management:** Lack of senior management support had consistently been identified as a problem in implementing improved security practices, during follow up of RedR’s mainstream personal safety and security and security management trainings. Although the FISM project was designed with specific activities to address this constraint, difficulties were still experienced in keeping senior management on board particularly as part of the on-line learning activities and in the latter stages of the project. The importance of senior management engagement and commitment was confirmed in a number of the interviews during the evaluation.

**Soft skills development:** Evidence from the internal follow ups and interviews conducted during the evaluation indicate that new skills for security staff around relationship mapping and a positive attitude from all kinds of staff in seeing ‘security as everyone’s responsibility’ were key elements in organisational changes that have taken place. This supports the assumption about the need to complement security staff skills with training on how to influence organisational behaviour and the importance of broad engagement of all relevant staff in understanding and effecting improvements in security management.

**Blended learning:** The evaluation confirmed that a blended approach is an effective way to build skills. Views about on-line and e-learning components were mixed. This partly reflects constraints with access and technical maturity issues. The project evaluation notes that the process of developing these components involved a steep learning curve for both RedR UK and Harvard in the design of appropriate media and finding an efficient, effective and collaborative approach to doing this. Much of the challenge is in capturing the interactive, situational character of face-to-face training methodology while addressing the need to predefine content in order to develop good e-learning tools. Different participants have had different preferences regarding the components included. All were appreciative of face-to-face trainings and on-site visits (monitoring and mentoring).
**Longer term approach to building capacity:** The project evaluation results and findings from the monitoring and mentoring visits confirm that a longer term approach to learning and capacity building is an effective way to facilitate improvements in individual and organisational awareness and behaviour around security. It also provides a better basis for assessing the impact of the capacity building support provided. Improvements in organisational security practice were noted in all participating organisations to some degree and in several cases, there was tangible evidence of improvements in the provision of humanitarian assistance as a result of changes in security management and practice. Examples include changes to the patterns of food distribution to mitigate losses and risk to beneficiaries and involvement of community members in monitoring security risks.

**Conclusion**

The capacity building approach and methodologies adopted were very effective in facilitating improvements in security management. Those cited of particular value or significance includes the organisation-wide approach to integration of security, and recognition and support for the role of security staff as change agents.

The longer term and blended nature of capacity building facilitated an incremental approach to enhancing capacity in individual and organisational security management and practice. One aspect which was not explored and will be included in future projects is attention to the potential for networking and peer support between participating organisations in further improving their security management capacity beyond the scope of the project.

**References**


Guts & Guile: A Proactive Approach to Engaging the Public Sector in Training and Exercising

Rebecca Pritchett¹,

¹North Worcestershire Civil Contingencies and Resilience Manager

This presentation will look at practitioner experience in running training and exercising programmes for incident management and civil contingencies within the civil service and local authority settings; including achieving corporate buy in and building demonstrable resilience.

Engagement in training and exercising of plans within the public sector is always a challenge. In times of austerity there are greater demands on the time of senior managers, therefore training and exercising plans are never seen as a priority, until it’s too late. Drawing on practitioner experience within the Public Sector this presentation will examine the tried and tested methods to achieve this goal. In order to build resilience, bold actions need to be taken, tangible benefits need to be proved and steps need to be taken to link it to the existing organisational culture.
The World Bank (2011) refers to Kenya’s capital, Nairobi as one of the most crime-ridden cities in Africa, where crime and violence is a daily occurrence for most Kenyans. This paper will discuss the relationship between community resilience and crime using qualitative research that took place in Kibera, the largest informal settlement in Kenya; a lower-income area that is considered to have one of the highest crime rates in Nairobi. The risks posed to the residents of Kibera becoming a victim of crime and violence will be discussed and the protective factors the residents have developed as individuals and as a community.

Resilience is understood by some academics in terms of risk factors and protective factors. Lemyre et al (2008) use a Risk Assessment and Management (RAM) approach to consider community resilience in terms of crime, disasters and violent extremism. Crime, disasters and violent extremism are considered hazards and the risk posed by the hazard is determined by the probability of the hazard occurring, multiplied by its consequence.

Lemyre et al’s (2008) RAM approach places an emphasis on prevention to avoid a crime from occurring, building the community’s capacity to effectively respond and have coping mechanisms in place to address an incident once it occurs. Lemyre et al (2008) state that building communities that are resilient to crime should mean both working to reduce crime rates and reinforcing communities to deal with high crime rates.

**Protective Factors**

Previous studies have shown how crime decreases as a ‘sense of community’ increases and demonstrated a relationship between crime and community cohesion (Wedlock, 2006). Other academic research has shown a link between social control as an aspect of community cohesion and a decrease in crime (Sampson and Raudenbush, 1999; Lee, 2000; Hirschfield and Bowers, 1997).

Wedlock’s (2006) study found that some key factors of community cohesion were also measures of social control, which could also be considered ‘proactive measures’ within the RAM framework. A ‘sense of community’ contains aspects of social control through whether people felt safe walking after dark, whether neighbours looked out for each other, trusted each other and pulled together to improve the community. A ‘sense of belonging’ also had elements of social control or guardianship, for example whether respondents knew people in the area and felt that they belonged to the neighbourhood, which implied an element of socialisation or being part of the neighbourhood. The results from Hirschfield and Bowers’
(1997) study suggest that even in disadvantaged areas levels of crime were significantly lower than expected where there were high levels of cohesion.

Community cohesion can be a protective factor to crime; however the residents from Kibera who were involved in this study did not display factors that suggest there is a ‘sense of community’. Residents would not always know or trust their neighbours. Kiera has a transient population and is often considered a place to stay in Nairobi whilst earning money before returning to you home area ‘upcountry’. Although, the findings from this study supported part of Sampson and Raudenbush’s (1999) research that identified that social control can take the form of people being prepared to pull together and intervene in deviant or criminal activities for the public good.

The findings from the research suggest that residents are at high risk of becoming victims of robbery, burglary (both domestic and commercial) and rape. Residents of Kibera have adopted protective factors such as not walking at night, paying for ‘protection’ if they have to walk late at night, or walk in a group if it is early in the morning to minimise the risk of being a victim of robbery and rape. Business owners pay ‘youth’ to provide security to their businesses within the settlement during the night to reduce the chances of being burgled. Various organisations operating within Kibera have provided training with the objective of reducing people becoming victims of crime, this has included self-defence training for young women and awareness raising on issues such as human trafficking, Gender Based Violence (GBV) and human rights. Schemes introduced by the government like the National Youth Scheme (which provides employment to youth in Kibera) and the installation of lights throughout the informal settlement have, according to residents, assisted to some degree with crime prevention.

Wiseman (2006) is of the opinion that the real foundations for resilience and healthy communities is long term investments in the core public infrastructure. Access within Kibera is limited, in the past it has only been accessible on foot but the government has begun to build roads into Kibera which has improved the situation and should assist the police and other emergency services to access it.

**Response Capacity**

The police should be the response capacity that deal with, and contain crime but in Kenya the police lack the capacity and resources to respond to crime adequately, especially within informal settlements. The residents of Kibera lack trust and confidence in the police and the justice system due to corruption. Challenges within the police have been acknowledged and the Kenyan police ‘force’ are currently going through a police reform. It was recognised that police officers need to take responsibility for the power that comes from being a police officer and be prepared to justify their decisions and actions. These two issues are vital mechanisms to ensure police actions are for the benefit of the public and trust and cooperation is built with the police. This is imperative in Kenya where it is documented that generally Kenyans regard the police as ineffective and have low levels of trust in them (Republic of Kenya. National Task Force on Police Reforms, 2009). Oversight bodies such as the Independent Police Oversight Authority (IPOA) and National Police Service Commission (NPSC) were established to deal with complaints against the police and ensure that justice and fairness is upheld; however the general public lacks knowledge about their role and
would benefit from awareness campaigns and training to understand how and where they can report police misconduct. This would assist with progressing the police ‘force’ into a service for the benefit of the public. As a consequence of a lack of procedural justice, community members within Kibera have developed alternative coping mechanisms to deal with crime in their area.

**Coping Mechanisms**

In Kibera mob justice is a coping mechanism used to deal with criminals and acts as a form of informal social control. It is considered to be more effective than relying on poor policing and allowing offenders not to be brought to justice. Mob justice is also seen to act as a deterrent to would-be thieves. In the village of Soweto East, where the rate of robbery is particularly high, the community has established a volunteer group who patrol at night. Community members have made contributions so the volunteers are equipped with knives, long sticks, pangas, torches and whistles whilst they patrol.

Mob justice is a favoured approach because it means there are consequences for offenders, as many question the legitimacy of the criminal justice system. The Kibera Women’s Peace Forum follows cases of child rape when they reach Kibera court to ensure the trial is fair. In situations where cases are about to collapse due to suspected corruption and tampering of evidence, Kiera Women’s Peace Forum protest and involve the media to ensure the case continues and a fair trial is given.

**Summary**

Communities within Kiera have built their resilience against crime through developing protective factors that help them avoid or reduce being exposed to crimes. Self-defence training and awareness raising about topics such as human rights, GBV and human trafficking is believed to have assisted with developing protective factors through increasing knowledge.

In societies where there is an absence of a police service and a lack of a viable system for justice the public begin to rely on other means of regulating behaviour (World Bank, 2011). It is argued that as long as there is bribery and corruption in Kenya, nothing will stop the public from taking justice into their own hands and stoning, lynching and necklacing will remain a form of justice (Mosongo, 2014).

Raising awareness amongst the general public about IPOA and their role to prevent impunity and enhance professionalism within the police, needs to be disseminated widely. This will empower people with knowledge that can be used to hold the police accountable for their actions. It is hoped the police will develop into an effective lawful preventative and response capacity that works in collaboration with the community; this would ultimately build community resilience to crime.
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An approach to disaster experienced through children in an educational program at school

Aiko Sakurai

International Research Institute of Disaster Science (IRIDeS), Tohoku University

1. The Reconstruction Mapping Program

This paper described changes of the children’s findings and perceptions about their community’s reconstruction through implementation of the Reconstruction Mapping Program (RMP). It applied methods of town watching and mapmaking to a school-based disaster recovery educational program at a 2011 Great East Japan earthquake’s tsunami-affected elementary school in Ishinomaki, Miyagi Prefecture. The RMP was started in 2012 through partnerships among the City Board of Education, Kazuma Elementary School, university researchers, and an international non-governmental organisation (NGO). The program learners were fourth grade students at the school. The program was practiced by using “periods for integrated studies” (sogoteki na gakushu no jikan) in a school curriculum.

There were three goals of the program. The first goal was to make the children face their disaster experiences through walking around the school district where the reconstruction and recovery process was underway and to give them a chance to be proactively involved in the process of reconstruction. Second, the program was to keep records of the school district’s reconstruction process as a “map” of the community’s on-going reconstruction activities and for the school’s educational program. The third goal was to share the records with other Japanese schools and the rest of the world for future disaster prevention. The 2013 program activity flow is shown in Figure 1.

To evaluate the impact of implementation in terms of the objectives of the program, three years of produced maps were analysed to understand how children perceived their community’s reconstruction through town watching. In addition, pre- and post-implementation surveys were conducted in the 2013 and 2014 school years among the fourth grade students at the school.
2. Findings

2.1 Records of the Community’s Reconstruction by the Fourth Grade Students

During the town watching, the children were divided into 12 groups; the whole school district was divided into 12 areas. Each group visited one designated area, kept records of the reconstruction process, and interviewed people in the community. Information discovered during the town watching sessions was categorised into six groups as shown in Table 1 and was presented on each area’s map with colour-coded seals. This colour coding was developed by the author to show the transition of the community’s reconstruction stages.

<table>
<thead>
<tr>
<th>Code/Colour</th>
<th>Description of Discovery Points</th>
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<tbody>
<tr>
<td>Silver</td>
<td>A place/thing newly built or fixed after the tsunami</td>
</tr>
<tr>
<td>Yellow</td>
<td>A place/thing currently under construction or under repair</td>
</tr>
<tr>
<td>Orange</td>
<td>A place/thing in preparation of reconstruction, such as a vacant lot that has been cleared of rubble for the start of reconstruction</td>
</tr>
<tr>
<td>Red</td>
<td>A place/thing that children think of as dangerous or that induces anxiety</td>
</tr>
<tr>
<td>Gold</td>
<td>Other places/things, including places/things that children think are fun, beautiful, or a place of pride</td>
</tr>
</tbody>
</table>

Fourth grade students produced the reconstruction maps of 2012, 2013, and 2014. The maps represented their observations of their community’s reconstruction and the proportion of colour-coded points by year. It revealed that reconstruction was progressing in the area as a whole from 2012 to 2013 because the share of red sites that indicated anxiety or danger sharply decreased from 28% to 20%. The gold sites that indicated particularly notable places/things, such as places that are fun or beautiful, and the silver sites that indicated newly built or fixed places/things increased. The children recorded the progress of the reconstruction in their community by themselves. However, in 2014, the proportion of red sites increased and the silver sites decreased. This could be partly explained because the 2014 fourth grade pupils could not remember how their community looked before the 2011 tsunami since they were only five years old at the time. As a result, once the pupils got to know what happened in their community, they noticed the dangerous places more than the other places.

2.2 Changes of Children’s Perception Before and After the Program in 2013 and 2014

In 2013 and 2014, the pre- and post-implementation surveys were conducted among the fourth grade pupils at the school to compare their perception of their community through the program activities. One major finding in 2014 was that the children’s desire to contribute to the community’s reconstruction process increased after the program from 50% in the pre-implementation survey to 89% in the post-implementation survey. Another
change in 2014 was found in the frequency of conversation about the reconstruction with family members and the community.

**Conclusion**

From the analyses of the pre- and post-implementation surveys in 2014 and the three-year maps in 2012, 2013, and 2014, it was found that the first two objectives of the program were achieved. The program helped motivate children to contribute to the process of reconstruction. It also helped to keep records of the reconstruction in the community. Though the fourth grade pupils did not remember what the community used to look like since they were five years old at the time of the 2011 disaster, the records kept by the pupils could be utilised for educational materials to learn how the community could recover from the tsunami disaster.

The Sendai Framework for Disaster Risk Reduction (SFDRR) 2015–2030 was mentioned as one of the guiding principles: “In the post-disaster recovery, rehabilitation and reconstruction phase it is critical to prevent the creation of and to reduce disaster risk by ‘Building Back Better’ and increasing public education and awareness of disaster risk” (UNISDR, 2015). Therefore, fostering children who are willing to contribute to the community’s reconstruction could be one way to “building back better”.

**References**


Introduction

Risk perception is a socio-psychological approach for understanding how individuals view and think about the hazards they are exposed to. The community and personal perceptions of volcanic hazard, risk, vulnerability and resilience of those living in close proximity to an active volcano are often poorly understood because of a lack of empirical evidence on the subject. This growing field of research is becoming increasingly important because studies have revealed strengths and weaknesses in hazard education through participants’ retained knowledge of the phenomenon, through education and/or experience (e.g. Dominey-Howes and Mino-Minopoulos, 2004; Barberi et al., 2008; Paton et al., 2008; Njome et al., 2010; Ricci et al., 2013). Knowledge of the public’s understanding and perception of volcanic hazards and risks during volcanic crises or periods of quiescence is important for education programs (Barberi et al., 2008). Effective hazard preparedness and management must be based on a real knowledge of the needs of the at-risk population (Barberi et al., 2008).

The most effective methods for exploring participants’ risk perceptions, awareness, and knowledge of impacts is through questionnaires and/or semi-structured interviews (Bird, 2009). These methods also shed light on their views regarding preparedness, confidence or trust in stakeholders and the anticipation of the future, including self-efficacy (Johnston et al., 1999; Johnston and Benton, 2000; Ronan and Johnston, 2001; Gregg et al., 2004; Graves, 2007; Gaillard, 2008; Haynes et al., 2008a).

St Vincent and La Soufrière

St. Vincent is a volcanic island with a population of approximately 102,918 (Central Intelligence Agency (CIA), 2014). It is located within the southern part of the Lesser Antilles, with St. Lucia 42km north of St. Vincent and Grenada 109km south (Robertson, 2005a) (Figure 1). The island’s capital, Kingstown, is located in the south. Running centrally north to south is a volcanic mountain range, with the active volcanic centre La Soufrière in the north (Figure 2).
La Soufrière consists of a young pyroclastic cone which has been the centre of historic eruptions (1718, 1812, 1902 and 1979) and remains active. The main hazards associated with the volcano are ash fall, pyroclastic density currents and lahars.
Methods

A questionnaire was formulated with 39 open and closed questions organised in 8 sections, covering: the natural hazards experienced on St. Vincent; knowledge of La Soufrière (for example: when did the volcano erupt last); the volcanic hazards of La Soufrière; preparedness for a possible future eruption; confidence in officials (scientists, national authorities, media); receiving information (for example: who should provide information regarding the hazards associated with the volcano); the future of La Soufrière (for example: how much control a person feels they have in protecting themselves and their family) and demographics.

In total, 100 questionnaires were distributed to the general population through personal recommendation – where respondents recommended others who would be willing to complete a questionnaire. The distribution was across the red (highest risk), orange, yellow and green (lowest risk) designated hazard zones (Figure 2), with a 100% return rate. 47 males and 53 females participated with an age range of 18 to 60 years and over.
Results

Results show that participants thought that tropical storms (average n=90), earthquakes (average n=55), landslides (average n=79) and floods (average n=72) threatened their family and their community once every 5 years or less, whilst only 4 thought that volcanic eruptions occurred as regularly (Graph 1). 23 of the respondents did not know when a volcanic eruption would threaten them (Graph 1). St. Vincent has erupted 4 times in 297 years, with an average repose period of 87 years, only 25 respondents thought that La Soufrière posed a threat every 75 or 100 years.

Graph 1. The hazard saliency of natural hazards experienced on St. Vincent. The results are responses to the question: “How frequently do you think the following natural hazards are likely to occur on the island?”

The majority of participants believe the volcano to be dormant (61%). When asked what controls whether or not La Soufrière erupts, 33% answered God and only 8% used basic volcanic or seismic knowledge, such as: “magma comes up from below and explodes,” to describe what makes the volcano erupt. For knowledge of primary, secondary and indirect hazards associated with the volcano overall, lava flows (80%), ash fall (88%), volcanic gases (73%), damage to crops and loss of livestock (88%) and migration (84%) received the most response while on the other hand, lahars (35%), lightning strikes (48%), an increase in hospital admissions (55%) and mental health related problems (44%) gained the least amount of awareness.

When asked how prepared participants were for a future possible eruption, 41% believed they were not prepared and those who did say they were prepared, responded with having a disaster/evacuation plan or immediately evacuating (n=13). The participants believe the government to be moderately prepared (28%) and the emergency services not at all
prepared (29%). The National Emergency Management Organisation (NEMO) are believed to be the ones responsible for preparing communities for a possible future eruption. In terms of where people wanted to receive information from, scientists from the Seismic Research Centre and the Soufrière Monitoring Unit ranked first, while emergency services and the government ranked second and the radio ranked third.

25% of respondents believed that the next volcanic eruption will occur within the next 50 years, and the majority of this type of response originated from the red, orange and yellow hazard zones. Those in the green hazard zone believed their houses would not be affected by an eruption however, in terms of self-efficacy, they felt the least amount in control, with those in the red zone scoring themselves higher at moderate (‘3’ on a 5-point Likert scale). In response to the question, “what would you like to know about La Soufrière?” the majority responded with: “when will the volcano erupt again?”

There was good basic knowledge of the volcano (e.g. “when did the volcano erupt last?”), perhaps due to shared experiences and also the Annual 1979 Eruption Commemoration held in April. The week aims to raise awareness of the volcanic hazards. However, older participants (30 years and older) of this study did not appear to transfer knowledge from workshops into their answers, indicating a generational gap in knowledge.

Discussion

The heightened hazard saliency towards three of the natural hazards (tropical storm, landslides and flooding) is due to participants being exposed to them almost annually, as they coincide with one another during the wet/hurricane season. Responses of ‘don’t know’ for volcanic eruptions indicates that not only is the threat not at the forefront of their mind, but their own uncertainty in when it could happen. There is usually recognition of hazards within communities, which are prioritised in order of personal threat to the individual, along with all other personal daily issues a person must face (Cutter et al., 2008). This ordering system can lead to risk and vulnerability reduction not becoming salient concerns until after the disaster occurs (Cutter et al., 2008).

There is a misperception among respondents regarding what constitutes the definition of a dormant or active volcano, perhaps owing to when the volcano erupted last, for example it will remain dormant until it erupts again. Similarly, Gregg et al. (2004) found that the community living in the shadow of Kilauea believed it would not erupt again once the immediate eruption had stopped. On St. Vincent, Christianity is the most dominant religion with 88% of the population identifying as Protestant (CIA, 2014). Divine action in response to volcanic eruptions in the Caribbean region has been noted in historic eruptions of La Montagne Pelée de Martinique, La Soufrière of St. Vincent and Soufrière Hills of Montserrat (Chester and Duncan, 2010). It was noted that Vincentians view the volcano with a small element of superstition (Robertson, 1995). However, Chester (2005) believed that superstitions towards geological hazards was a part of a society’s geoculture.

The perception that NEMO should be responsible in preparing the communities indicates a low personal interest in risk, but having a high expectation of government responsibility (Johnston and Benton, 2000). Lindell and Whitney (2000) suggest that the transfer of responsibility for personal safety to others results in a reduction in preparedness.
One of the key findings is that a generation gap in knowledge exists, whereby school children are well-informed through school education, being taught about the dangers of volcanic eruptions, gaining a basic understanding of terminology and the hazards associated with La Soufrière. An important component of this education are daytrips to the summit of the volcano with an accompanied scientist (be it a volcanologist, seismologist etc.) from the Seismic Research Centre of the University of the West Indies. However, those that are 30 years of age and over have a lesser understanding of the volcano and its hazards as many do not actively engage in awareness workshops regarding the volcano or other geophysical hazards that threaten St. Vincent (earthquakes and tsunami) (Robertson, 2014 via pers. comm.). On the other hand, the experiences of those who remember the last eruption in 1979 and stories retold through oral tradition of the 1902 eruption determine their preparedness for future events. Crosweller et al. (2013) further identified this attitude with stating that older interviewees expressed that the younger generations do not benefit from the ‘1979 experience’ and these older individuals were more likely to hold a ‘risky’ belief.

References


Introduction: The relevance of this presentation to the conference aims stems from the perceived role of exercises as a means of deriving organisational learning. But just how effective are organisations at learning the lessons identified through the conduct of exercises or the management of incidents? How may organisational learning be optimised? Given this as a starting point, the research in question evaluated a UK police force from the perspective of its effectiveness as a learning organisation with regards to major incident management.

Problem Statement: The role of the UK police service with regards to major incident management is primarily concerned with the co-ordination of the multi-agency response. Any failures in this regard pose a high risk of potential organisational crisis and consequent reputational damage.

Motivation: Toft and Reynolds (1997) inextricably link risk and crisis management with effective organisational learning. This research sought to evaluate the effectiveness of a UK police force as a learning organisation - with major incident management identified as the focus given its potential as a causation factor for creating a crisis situation.

Approach: The research employed a literature review to identify key concepts of crisis; organisational learning; essential linkages between these two concepts; relevant UK doctrine and guidance on emergency planning and major incident management (including considerations for associated training and exercising); and key models associated with organisational learning and crisis. A mixed methods approach was taken in evaluating a police force that espoused the principles of organisational learning, with associated policies, procedures, and a long established de-briefing process.

Results:

Fink (2002) defines a crisis as any situation that has the potential to increase in scale; come under close media scrutiny; adversely affect an organisation’s operations; negatively impact upon the organisation’s positive image or damage the bottom line. He also introduces the concept of the ‘prodrome’ - or warning sign of a potential or impending crisis (Fink, 2002). Booth (2000) establishes a ‘Reputational Crisis’ as ‘the loss of the common estimation of the
good name attributed to an organisation’ (p. 197) regarding it as a ‘follow on’ crisis arising out of another organisational crisis.

With the UK police service’s effectiveness based upon the ability to police by public consent, its ability to build and maintain ‘the trust and confidence of citizens by delivering an effective response to all incidents’ (ACPO/NPIA Practice Advice on Critical Incident Management, 2007, p. 6) is critical. Consequently, any serious failure to effectively co-ordinate the multi-agency response to a major incident may lead to a ‘reputational crisis’ for the police force concerned, if not the wider UK Police Service.

With the true test of any emergency plan being determined by its activation and subsequent effectiveness in dealing with any given emergency (Emergency Preparedness, Chapter 5, 2011). The ‘cycle of emergency planning’ establishes that emergency plans should evolve over time as lessons are identified through live incidents, exercises and reviews and these are addressed through amendments to the plan (Emergency Preparedness, Chapter 5, 2011). Therefore, to be effective, plans need to be trained, tested, exercised and regularly reviewed (McConnell and Drennan, 2006). This requires the organisations concerned to be ‘learning organisations’.

The ‘learning organisation’ may be defined as ‘an ideal type of organisation’ (Easterby-Smith and Lyles, 2003, p.2) which is ‘skilled at creating, acquiring and transferring knowledge and at modifying its behaviour to reflect new knowledge and insights’ (Garvin (1993), cited Gorelick et al, 2004, p.26).

In part, the UK police service relates ‘organisational learning’ to post incident/exercise debriefing processes that offer an opportunity to identify ‘potential or required improvements to systems...’ (ACPO/NPIA Manual of Guidance on Keeping the Peace, 2010, p. 53).

Key concepts of organisational learning include self-isomorphic learning (Toft and Reynolds, 1997) – learning arising within a large organisation with a number of sub-units providing similar functions and services. They also identify ‘active foresight’ as the goal of any effective learning organisation. A concept according closely with Fink’s (1986) view on the importance of proactive and early prodrome identification combined with an effective early response in crisis management.

Toft and Reynolds (1997) establish that a recurrence of unwanted incidents for identical or similar reasons suggests problems with the organisational learning process. They distinguish between the concepts of ‘lessons identified’ and ‘lessons learnt’. This is a key issue related to the exercise process and the effectiveness of any subsequent organisational learning. The conduct of any form of organisational inquiry - such as a debrief, has the potential to identify lessons to be learnt. Whether or not any effective organisational learning, or change occurs, determines whether the ‘lessons identified’ have been translated into ‘lessons learnt’.

Various academic models were identified in support of the research process. These include Turner’s Six Stage Disaster Sequence Model (Turner and Pidgeon, 1997) which identifies a post disaster organisational learning stage (Stage 6 - Full Cultural Readjustment). The point
is made however, that organisational learning post disaster is not inevitable (Turner and Pidgeon, 1997; Toft and Reynolds, 1994). Reason’s Swiss Cheese Model of Defence is relevant with regards to the introduction of the concepts of layered defences to crisis, and ‘active’ and ‘latent’ failures. ‘Active failures’ are the obvious failures associated with frontline operators. ‘Latent failures’ are concerned with high level decisions and actions that lie dormant until such time as ‘they combine with local triggering factors [e.g. ‘active failures’ or unusual conditions] to breach the systems defences’ (Reason, 2006, p. 247). If care is not taken, there is a potential for post incident/exercise debrief processes to focus on the ‘active failures’ as opposed to the hidden and potentially more important ‘latent failures’.

In evaluating the effectiveness of organisational learning, the research compared various organisational activities against the organisational learning theories and related models. The research methods included document reviews; a comparative case study approach; interviews of some key personnel and a survey of the organisation’s police officers.

The document review included a review of a Management of Risk Review document and the organisation’s ‘organisational learning’ policy documents. The Management of Risk Review (2011) fails to establish the relevance of ‘organisational learning’ to risk management. The policy documents identify that ‘a vital component of the debriefing process is ensuring that...areas identified are acted upon and all available lessons are learnt’, but lack any clarity on the assignment of responsibility for organisational learning and fail to distinguish between and establish how ‘lessons identified’ translate into ‘lessons learnt’.

The case study review examined the ‘lessons identified’ in the post incident debrief reports of four similar adverse weather related major incidents over the period 2008-2012. It established the fact that, over the five year period in question, for each of six identified key areas of concern (early warning; command, control and co-ordination; audit trails and log keeping; failure to identify and declare a major incident; plan testing, exercising and reviewing; and the role if the Adverse Weather Office) lessons identified in at least one previous debrief for the period were repeated.

Broadly speaking, the interviews established ‘reputational damage’ as a source of risk to the organisation; major incident management as a potential cause of reputational crisis; and ‘learning’ as having a role in effective risk management. Perhaps more significantly, the interviews established effective organisational learning processes operating in other parts of the organisation, notably the Professional Standards Department Organisational Learning Matrix. This was however, limited in scope with a restricted organisational remit and not widely known about. This indicated a lack of self-isomorphic organisational learning.

The survey of police officers was partly focussed upon issues of role/rank related major incident training and exercise exposure. A low response rate (6.4%) means a limited ability to generalise on the data derived. However, in terms of potential ‘prodromes’, the high percentage (64%) of participating police officers of all ranks who did not consider themselves to be ‘adequately trained and fully competent to provide an effective and professional initial response to a major incident’ should raise concern.
Conclusions:

In delivering effective emergency planning and major incident management processes, recognition is required of the requirement for effective planning, training, exercising and de-briefing and the close relationship between the concepts of risk management and organisational learning. Effective organisational learning requires an active desire to learn, supported by structures and mechanisms that enable this to happen (Easterby-Smith and Lyles. 2005; Argyris and Schon, 1996).

From the perspective of major incident management, the research established an organisation aspiring to be an effective learning organisation i.e. demonstrating an active desire to learn, but lacking the effective structures and mechanisms to deliver it. Despite an effective post incident/exercise debriefing process, it lacked an ability to effectively translate the ‘lessons identified’ into ‘lessons learnt’. A lack of ‘self-isomorphic learning’ failed to identify various effective organisational learning systems already operating within the organisation. Finally, across the command structure, a potential lack of major incident related training and exercise exposure, meant a consequent lack of confidence and competence in performing major incident management related roles.

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Will they be using live ammunition? Lessons learnt from disaster simulation exercises at Portsmouth University

Richard Teeuw¹, Naomi Morris¹, Carmen Solana¹, and Phil Crook²

¹School of Earth & Environmental Sciences, University of Portsmouth;
²Hampshire Fire & Rescue Service

Students on the Crisis and Disaster Management MSc course Portsmouth University participate in various disaster management training exercises. These are initially a series of half-day desktop exercises, using the UK approach to emergency response. However, the final training consists of a 3-day simulation exercise (SimEx), using United Nations Disaster Assessment Coordination (UNDAC) approaches, for disaster response in a low-income country.

SimEx2015, organised by Portsmouth University in conjunction with Hampshire Fire & Rescue Service (HFRS), was a multi-agency exercise, involving staff from HFRS, HART (paramedics: Hazardous Area Response Team) and the British Army, as well as NGOs, notably a Serve On rapid response team, with GIS mapping experts from MapAction and Medicins Sans Frontiers. The complex disaster scenario was a major earthquake hitting a politically unstable, low-income coastal nation, with ethnic tensions and territory disputed with neighbouring countries.

Figure 1. Map of Portsmouth region, with the names of the “countries” hit by a major earthquake in the training exercise.
Day 1 involves initial mobilisation and arrival in the disaster zone (Langstone Harbour & Hayling Island), setting up an On-Site Operations Coordination Centre (OSOCC) for the managing of damage surveys, search and rescue (SAR), finding safe areas for displaced people, needs assessments and the production of situation reports for the host government, UN managers and SAR teams.

On Day 2 the OSOCC moves to Fort Widley, a site used by HFRS for urban search and rescue training. The MSc students get to observe rescues from collapsed buildings, of “quake survivors” (drama students), carried out by personnel from HFRS and HART. Other teams with MSc students continue the previous day’s surveys on Hayling Island, liaising with the OSOCC.

On Day 3 a situation report is requested for a refugee camp in a demilitarised zone. The “refugee camp” is located in an Army base (Thorney Island), with soldiers acting as UN peace-keepers, keeping apart rival ethnic groups (played by drama students) and guarding the camp from “freedom fighters” – who launched a surprise attack on the camp – lots of smoke and (blank) machine-gun fire! The final part of the exercise was a set of situation summaries from the MSc student teams.

Figure 2. Left: urban Search & Rescue in “earthquake damaged buildings”. Right: information management in the OSOCC.

A brief video, summarising the SimEx activities, can be found via this weblink: http://www.port.ac.uk/uopnews/2015/05/11/crisis-students-battle-with-disaster/

Immediately after the SimEx there is a ‘hot debrief’ involving all of the participants, with discussion about key aspects of the exercise. The MSc students were assessed on (i) their individual performance during the SimEx and (ii) via a critical review of the exercise, with an assessment of the Strengths, Weaknesses, Opportunities & Threats associated with the scenario events as they developed.

What lessons were learnt from SimEx2015? There was unanimous agreement that the exercise went well (despite disruption by stormy weather) and achieved the desired learning outcomes, for both the MSc students and the participating emergency response organisations. That said, the SWOT analysis of the exercise, produced by each student as part of their assessment, highlighted many issues that can be resolved for next year’s exercise, notably the need for:
- better familiarisation with UN procedures and terminology;
- more training on data collection, GIS mapping and information management;
- giving the MSc students experience of a variety of tasks;
- having some bad weather back-up activities and simulated damage data.

In a ‘hot debrief’ questionnaire survey, the MSc students reported that the main skills that they had learnt from the exercise were: (i) teamwork under pressure; (ii) data collection and information management skills; (iii) security awareness on deployments. Most of the participants - both students and professional emergency responders - thought that the exercise was particularly useful for testing communication and information management, within teams and with other organisations (Table 1). Next in the ranking of useful outcomes from the exercise was the practice in mobilising for the emergency scenario, as well as the demobilisation and handover activity.

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<th>1</th>
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<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td>Mobilisation</td>
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<td>0.00%</td>
<td>17.24%</td>
<td>31.03%</td>
<td>51.72%</td>
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<td>5</td>
<td>9</td>
<td>15</td>
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<tr>
<td>Testing Logistical Practicalities</td>
<td>0.00%</td>
<td>6.90%</td>
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Table 1. Responses to the question: “What aspects of the exercise did you find most useful?“ Rating: 1, not worthwhile; to 5, extremely useful & helpful.

In conclusion, the exercise was generally successful in meeting its objectives of testing disaster responders under difficult conditions, using UN procedures for 3 days and 2 nights. Most of the participants found all aspects of the exercise to be useful. That said, there were a few worrying bits of feedback from the students, along the lines of: “Could the scenarios be less intensive, with less disruption of standard practices...?”
An evaluation of the ‘Emergency Response Exercise Programme’ in Taiwan

Jieh-Jiuh Wang, Associate Professor, Architecture Department, Ming Chuan University

Shy-Yuan Maa, Assistant Professor, Urban Planning and Disaster Management Department, Ming Chuan University

Yung-Fang Chen, Senior Lecturer, Department of Geography, Environment and Disaster Management, Coventry University, UK

Huan-Chang Hsiao, Director, Fire Bureau of Taichung City Government

Yi-Yin Yang, Project manager, Ridge Emergency Management and Security Affair Consultants Co. Ltd.

The ‘Emergency Response Exercise Programme’ is the first of a series of hybrid control-post and computer-based exercises that target the training of tactical decision-makers when responding to disasters occurring in Taiwan. The aim of the programme is to improve the coordination, communication and decision making skills of staff working in Emergency Operation Centres (EOC). To improve the effectiveness of the exercises, the programme has five major features: (1) flexible scenarios, (2) localised contexts, (3) integrated decision-making support systems such as hazard mapping and real-time Geography Information Systems, search and rescue operation support systems, dispatch systems, and recording database of disaster operations resources systems, (4) performance evaluation, and (5) recordable and traceable data. The programme does not only contain scenarios for different types and scales of natural and man-made hazards, but also provides scenarios to train personnel from different agencies and at different levels that are involved in responding to disasters.

The aim of the paper is (1) to explain how the ‘Emergency Response Exercise Programme’ was designed; (2) to assess the effectiveness of the exercise and participants’ performance; and (3) to provide recommendations for future exercise designers.

Keywords: disaster management, exercise, war games, control post, scenario, education, training, Emergency Operation Centre

Introduction

The origins of exercises can be traced back to primeval hunting and fighting skills, air warfare simulations and current classroom exercises for school students. Modernised exercises started from a military paper based table top exercise during the Franco-Prussian War 1870-1871. Maps, sandboxes and chessmen were used to simulate the old battles between two camps for instructional purposes (National Fire Agency 2012).
Exercises have been used widely in emergency services to facilitate the knowledge, and skills needed to respond to potential disasters. They can be divided into seminar, table-top, control post, life exercises (Home Office 2006), both computer-based and hybrid.

Chen et al (2008) summarises several advantages of running disaster response exercises. First and most importantly, exercises are used to test, up-date and improve ‘emergency plans’, ‘operational procedures’ and ‘the management of the organisation’ (Home Office 1998). Secondly, it serves as an educational platform to train decision-makers to respond to different types of real world scenarios. In particular, the flexible, adaptive, accuracy and effective skills and competences required to deal with crises and emergency events (Ford and Schmidt 2000). Many articles also stress the importance of establishing teamwork skills in order to survive in uncertain and dynamic environments, such as communication and coordination (Schaaftal et al 2001). Lastly, an exercise is also a useful governmental tool and medium allowing policy dissemination to the public (Perry 2004).

It is generally recognised that a hybrid computer-based and control post exercise can be one of the most cost effective type of exercises as this can avoid the weaknesses and challenges of traditional exercises, including (1) the difficulties of simulating a real event, (2) a lack of evaluation methodologies, (3) the difficulties of retaining the skills and knowledge obtained (Ford and Schmidt 2002); and (4) a lack of progressive training (Green 2000).

The methods of planning and delivery of such exercises in Taiwan in recent decades have improved tremendously; however several weaknesses still can be found: (1) script based exercises prevent effective learning, (2) unrealistic time scales avoid emotional experiences such as stress and pressure, (3) focus tends to be on the technical skills whereas non-technical skills are also important when decision making, and (4) political publicity counts for more than educational purposes (Chen et al 2008). An additional shortcoming is that due to the organisational culture, the strategic commanders have become the ‘inspectors’ of the exercise rather than the exercise participants (Maa 2015).

**The ‘Emergency Response Exercise Simulation Programme’ in Taiwan**

To tackle the challenges of exercises as described in the previous section, it is proposed to develop a series of hybrid control-post and computer-based exercises to ensure the high fidelity of scenarios and progressive learning activities. The ‘Emergency Response Exercise Programme’ borrows military concepts of ‘war games’ to allow participants to make decisions step-by-step in simulated scenarios. The characteristic is to use supervising staff to provide exercise participants (decision-makers) sufficient relevant information to allow them to make decisions in a more realistic environment (National Fire Agency 2012).

The Programme is aimed at training decision-makers working at the tactical and strategic levels of agencies involved in responding to different types of disasters. The scenarios include single and complex hazards. The exercises can be used to test participants at different levels and from different organisations, depending on the selection of the master scenario events list (MSEL) and proposed injects. By participating in such exercises, key technical and non-technical skills can be improved. Participants could become more familiar with the functions and role of an Emergency Operation Centre. Further they will be able to
understand the differing roles and responsibilities of other agencies and as a consequence can make a more considered best solution to problems encountered.

To avoid the weaknesses of traditional exercises, designers can also use the following concepts to design and deliver improved exercise programmes:

1. Non-revealing of the master scenario events list (MSEL) so participants cannot 'rehearse' before the exercise
2. Using both verbal and decision-making support systems to feed injects to allow the flexibility of the exercise delivery
3. Using ‘grouping’ to facilitate the communication and coordination between strategic and tactical decision-makers from different agencies
4. Using real time scales to simulate the decision-making process so participants can experience the stresses and pressures during the progress of an incident
5. Using formal debriefing to facilitate learning outcomes
6. Emphasising the use of non-technical skills to manage multiple incidents
7. Evaluating the effectiveness of the plans and procedures of activating the Emergency Operation Centre

Five major features can be found in the ‘Emergency Response Exercise Programme’ all of which are vital to the success of individual exercises:

1. Flexible scenarios to train decision makers at different levels: the scenarios are designed to be suitable for testing the decision-makers from local to national levels (Figure 1). The flexible master scenarios events list and inject allow participants to choose the types and scales of the incidents to suit the training needs.
2. Localised context: the simulated environment is based on the real geography and hazard risks to be found in Taiwan.

Figure 1: Illustration of the Geography Information System and the description of the scenario

3. The use of the integrated decision-making support systems: hazard maps, search and rescue operation support systems (Figure 2), and database of disaster operations resources (Figure 3) are all included in the exercises.

Figure 2: Illustration of the search and rescue operation support system
Systems and performance evaluation: the evaluation criteria are set to assess the effectiveness of the system and participants’ performance, including technical and non-technical skills. A structure debriefing is used to enhance learning outcomes.

Recordable and traceable data: The exercise system utilises a strong backup system to record the activities and decisions that have been made during the exercises so it can be recalled and discussed post exercise.

Evaluation

- Evaluation framework

Several evaluation frameworks have been promoted over the past few years, such as Racer (1996), de Freitas and Oliver (2006), Chen (2010) and McCreight (2011). The evaluation criteria include learning outcomes, usability and interactivity, immersion, and learner controls.

The ‘Emergency Response Exercise Programme’ utilises assessment criteria to evaluate the exercise structures and systems, and the effectiveness of participants’ performance from both the technical and non-technical skills perspective. The technical skills include the understanding of the plans and procedures, the familiarity of the available resources and information, the effectiveness of seeking external resources, managing the communication with the media and the level of prevention of future or secondary hazards. Non-technical skills include coordination, communication, leadership, teamwork, situational awareness, decision making, emotional management, and fatigue management.

A Likart scale questionnaire is provided for the participants at the end of the exercise. To understand better the feedback from the participants, a structured debriefing is designed to be used at the end of the exercise session. Based on the discussion, the instructor provides constructive feedback to the participants. At the same time, participants have the chance to reflect on their own performance and practices and have the chance to discuss these with other participants.
Prototype exercises

In order to test the practicality of this programme, five prototype exercises were conducted. In total, 123 participants joined the exercise from which 92 valid questionnaire responses were received. The results of the evaluation of the exercise are shown in Figure 4. It is shown that most participants felt they had done well in the teamwork and coordination; while in the technical skills, most of the participants felt they had performed well in the decision making and were able to seek for necessary resources and information. Most of the participants felt that they were not familiar with the emergency plans and operational procedures. They did not do well in the prevention of future risks. It is suggested that future training should focus on the risk perception and relevant regulations.

Conclusion

To avoid the traditional weaknesses of the exercises in Taiwan, the ‘Emergency Response Exercise Training Programme’ is the first series of hybrid exercise that combines control post and information decision making supportive systems. The Training Centre of National Fire Agency has adopted the system and continues to utilise the series of exercise to train their trainees.

The modular exercises provide a good selection of scenarios. It also reduces the time to write scenarios and the time for planning exercises. The representation of the hazards scenario and the use of information supportive decision making systems facilitate higher fidelity and learning outcomes. It is proposed that the exercises can be utilised not only for the emergency services but also other relevant organisations from both governmental and private sectors in order to reduce the impact of future disasters. The exercise utilised a full scale evaluation and debriefing methodology to enable participants to review and reflect on their performance post disasters. It is possible to share the successful experience with wider audience in the disaster management discipline.
Reference list


National Fire Agency (2012) Handbook of delivering exercises at local government. [地方政府舉辦地震兵棋推演指導作業手冊。]


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