Building an evidence base for public education post the Canterbury earthquakes: A Research Workshop 13 September 2011

J. Lindsay
M.E. Hughes
D.M. Johnston

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Institute of Geological & Nuclear Sciences Limited, Wairakei Geothermal Research Centre. P.O. Box 2000, Taupo 3352

D.M. Johnston, Joint Centre for Disaster Research, Massey University/GNS Science. P.O. Box 756, Wellington 6140

M.E. Hughes, Joint Centre for Disaster Research, Massey University/GNS Science. P.O. Box 756, Wellington 6140

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CONTENTS

ABSTRACT ..... **III**

KEYWORDS ..... **III**

1.0 INTRODUCTION **1**

2.0 PUBLIC EDUCATION IN NEW ZEALAND **2**

3.0 SCHOOL EDUCATION RESEARCH: LOOKING TO THE FUTURE **4**

4.0 POST-EARTHQUAKE RESPONSES: PRELIMINARY FINDINGS FROM RECENT STUDY **5**

5.0 PUBLIC UNDERSTANDING OF HAZARDS INFORMATION **6**

6.0 SCHOOL EDUCATION PROGRAMMES: "WHAT'S THE PLAN STAN" **8**

7.0 WEMO'S SCHOOL'S PROGRAMME **9**

8.0 POST VISIT IMPACT OF EQC-FUNDED DISASTERS SCHOOL PROGRAMMES **10**

9.0 FUTURE DIRECTIONS – COLLABORATIVE PUBLIC EDUCATION APPROACHES – DISASTER AND EMERGENCY MANAGEMENT IN THE ASIA PACIFIC REGION **11**

9.1 Background 11
9.2 Public Education Goals, Disaster and Emergency Management – Australia 11
9.3 Public Education, Disaster and Emergency Management - New Zealand 12
9.4 Recommendations 12

10.0 COMMENTARY: PUBLIC EDUCATION IN AN EMERGENCY MANAGEMENT CONTEXT **14**

11.0 CONCLUSIONS **19**

12.0 ACKNOWLEDGEMENTS **20**

13.0 REFERENCES **20**

13.1 Selected Readings 20

FIGURE

Figure 1 MCDEM National Public Education Strategy (p.16) 3

ABSTRACT

A workshop entitled Building an Evidence Base for Public Education Post the Canterbury Earthquakes was held on 13 September 2011 at the Joint Centre for Disaster Research (Massey University, Wellington campus). The workshop was organised by Dr. David Johnston, as part of the New Zealand Natural Hazards Platform, to provide a small group of researchers and practitioners an opportunity to share recent, current and planned public education activities.

The presentations, summarised in this report, informed a discussion regarding future public education efforts and highlighted the need for ongoing cooperation between the research and practice communities. The workshop also carried forward some of the themes regarding the differences between public education and crisis communication that arose at an earlier workshop held in Christchurch on 7 April, 2011. This report also provides additional discussion of this issue.

KEYWORDS

Risk, communication, public education, hazard, disaster.

1.0 INTRODUCTION

Public education is an important component of emergency management in New Zealand. The Ministry of Civil Defence and Emergency Management' National CDEM Strategy (2007) has "increasing community awareness, understanding, preparedness and participation in civil defence emergency management" as its first goal. This ongoing priority was enhanced by the experiences of the 2010/11 Canterbury earthquakes. There was an identified need to capitalise on the lessons from these events and from recent studies to improve current and future public awareness efforts.

To facilitate this, a workshop entitled Building an Evidence Base for Public Education Post the Canterbury Earthquakes was held on 13 September 2011 at the Joint Centre for Disaster Research (Massey University, Wellington campus). The workshop was organized by Dr. David Johnston as part of the Natural Hazards Platform following enquires from a range of government agencies. The purpose of the workshop was to provide a small group of researchers and practitioners an opportunity to share recent, current and planned public education activities.

Several of the participants made brief presentations, summarized in this report[1], which then informed an open format discussion regarding future public education efforts and highlighted the need for ongoing cooperation between the research and practice communities. The presenters and others attending all contributed to the discussion and benefited from the exchange of ideas.

The workshop also carried forward some of the themes regarding the differences between public education and crisis communication that arose at an earlier workshop held in Christchurch on 7 April, 2011. This report also provides additional discussion of this issue that explores how public education and crisis communications relate to the '4 R's', and how public education can improve the trust and credibility of CDEM agencies which form the basis for successful crisis communication.

The following sections follow the workshop format with the lead for each session identified followed by a summary of the discussion.

[1] The summaries were provided by the presenters in most cases and edited for content and space by this report's authors. The authors thank the participants for their cooperation and acknowledge their contributions.

2.0 PUBLIC EDUCATION IN NEW ZEALAND

Dr. David Johnston

Professor

Director, Joint Centre for Disaster Research, GNS Science / Massey University

Dr. Johnston summarised the national approach to public education in New Zealand. Public education around natural hazards in New Zealand is delivered both at a national and local level through a variety of mechanisms. Activities are undertaken by a variety of agencies, such as schools, NGOs (e.g. Red Cross), museums, Crown Research Institutes, universities, government agencies (e.g. CDEM Groups, Earthquake Commission) and other groups (e.g. Royal Society, via activities such as the New Zealand Media Centre and teacher fellowships).

Within the emergency management sector the 2006 New Zealand National Public Education Strategy sets out the strategic framework for public education for the 2006-2015 period. This national education programme has multiple elements including:

1) media advertising (television, radio and print);
2) advertising in the "Yellow Pages" regional directories;
3) a dedicated website (www.getthru.govt.nz);
4) printed brochures;
5) a household mail drop (with emergency plan and check list);
6) promotional display stands and drink bottles;
7) a "Disaster Awareness Week";
8) school resources ("What's The Plan Stan? – www.whatstheplanstan.govt.nz);
9) public relations, sponsorship and promotional activities;
10) online CDEM public education toolbox[2].

Other initiatives, such as the "Consistent Messages Project", have aimed to produce a set of agreed messages around natural hazards. The National Public Education Strategy also recognizes how the messages and methods need to evolve over time to support a wider and deeper understanding of the hazards and emergency measures. This is depicted in Figure 1 (below) which is extracted from the MCDEM strategy.

[2] Ministry of Civil Defence and Emergency Management (MCDEM). 2011. *The Way Forward – Strategic Framework for the National CDEM Public Education Programme 2006 – 2015* Full Report Downloaded October 25 2011 from http://www.civildefence.govt.nz/memwebsite.nsf/wpg_URL/For-the-CDEM-Sector-Public-Education-Public-Education-Strategy?OpenDocument

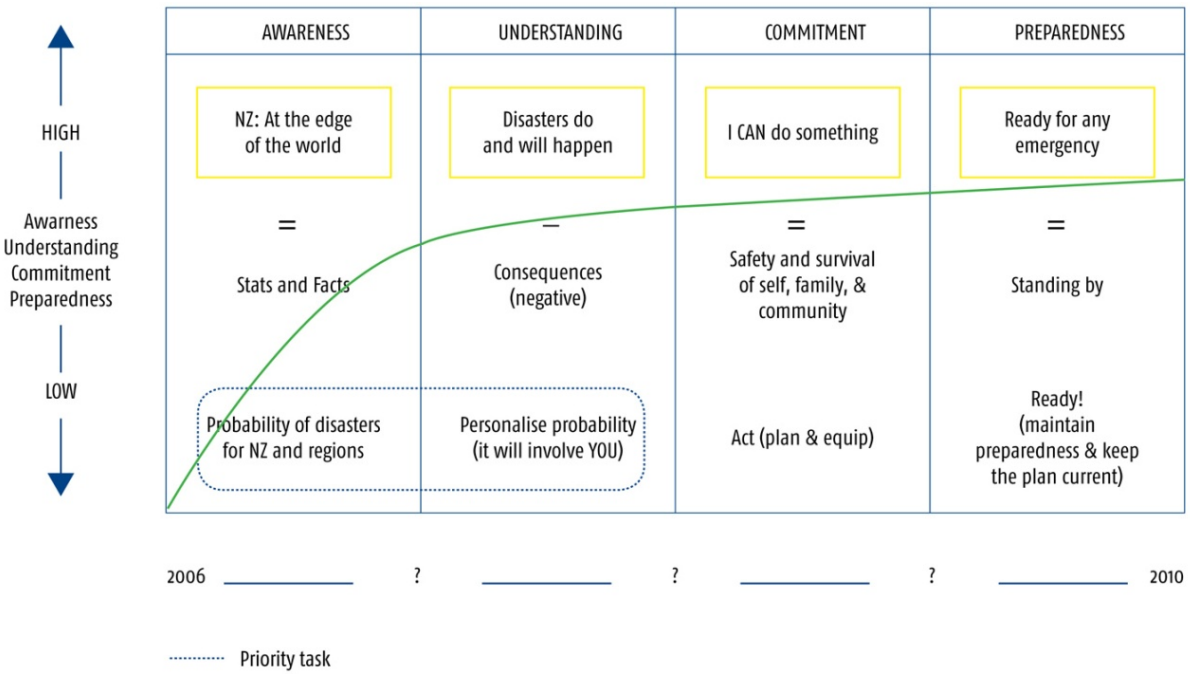

Figure 1 MCDEM National Public Education Strategy (p.16)

At a regional level, CDEM Group plans outline a range of public education initiatives delivered at a local and regional level. Current efforts are based around a mix of media advertising, printed material, public outreach and community-based programmes in schools and community groups (e.g. community response plans).

With the wide range of messages and content, participating groups and delivery mechanisms, research following the Canterbury earthquakes has highlighted the need to explore ways to better harmonise many of the public education efforts in New Zealand and to develop flexible approaches to the changing needs of a range of targeted audiences following disaster events.

3.0 SCHOOL EDUCATION RESEARCH: LOOKING TO THE FUTURE

Professor Kevin Ronan

Chair in Clinical Psychology

School of Psychology & Sociology, Central Queensland University

Professor Ronan presented findings from a recent study he has conducted with David Johnston and Kylie Crellin. This research has been submitted for publication and the authors shared this abstract.

> Youth preparedness for disasters is a growing area of research. However, studies to date have tended to rely largely on cross-sectional, correlational research designs. The current study replicated aspects of the one other study to date that has used a quasi-experimental strategy to evaluate youth preparedness for disasters. This study evaluated whether children were more knowledgeable and prepared for hazards generally, but also more specifically in relation to the roll-out of a new tsunami warning system. Using a pretest-posttest with benchmarking design, the study found that following a brief school education program, supplementing a larger community-wide effort, children reported significant gains in preparedness indicators including increased knowledge as well as increases in physical and psychosocial preparedness. Within group effect sizes compared favorably with those from the one other experimental study in this area used to benchmark current intervention-produced findings. Given that this is only one of two experimentally-based studies in an area of research largely dominated by cross-sectional designs, future research should consider the use of experimental designs, including those that are pragmatic and fit with school needs. While the current approach has limitations that need to be considered, it also has some real advantages, including being used more extensively in fieldwork studies that evaluate various types of interventions. Through increased use of experimental design strategies, researchers can then also have increased confidence that educational programs are the source of increases in disaster resilience in youth and their families.

4.0 POST-EARTHQUAKE RESPONSES: PRELIMINARY FINDINGS FROM RECENT STUDY

Dr John McClure

Professor

School of Psychology, Victoria University of Wellington

Professor McClure presented his findings from a recent study, conducted with Celine Wills, David Johnston and Claudia Recker, which is reported on in the *Australasian Journal of Disaster and Trauma Studies* (Volume 2011–2). The abstract of their paper, "How the 2010 Canterbury (Darfield) earthquake affected earthquake risk perception: Comparing citizens inside and outside the earthquake region", is:

> This study examined changes in the judgments of the risk of earthquakes before and after the 2010 Darfield, Canterbury earthquake in three cities: Christchurch (Canterbury), Wellington and Palmerston North. Christchurch citizens were chosen because of their direct experience of the earthquake, whereas Wellington and Palmerston North were chosen because their citizens were likely to have different earthquake expectations. Whereas many citizens in Wellington have long expected an earthquake, this is less likely in Palmerston North. Palmerston North therefore provides a comparable sample to Christchurch before the Darfield earthquake. Participants judged the likelihood of an earthquake in different locations before and after the Darfield earthquake. Participants judged earthquake likelihoods for their own city, for the rest of New Zealand, and with participants in Wellington and Palmerston North, the likelihood of another major earthquake in Canterbury. Christchurch participants also reported damage suffered in the earthquake. Expectations of an earthquake occurring in Canterbury were low before the Darfield earthquake in all three samples and rose significantly after that earthquake. Palmerston North expectancies of an earthquake in their own city also rose after the earthquake. In contrast, Wellingtonians' expectancies of an earthquake in Wellington were higher before the Darfield earthquake and did not rise after that earthquake. These findings clarify the effects of earthquakes and prior expectancies on risk judgments about earthquakes inside and outside the directly affected region.

5.0 PUBLIC UNDERSTANDING OF HAZARDS INFORMATION

Julia Becker

Community Resilience and Hazards Planning

GNS Science

Julia Becker presented the findings from her doctoral research. Her thesis, *Increasing Household Preparedness for Earthquakes: Understanding how individuals make meaning of earthquake information and how this relates to preparedness*, has been submitted and the following abstract summarises her work.

> New Zealand's susceptibility to experiencing damaging earthquakes makes managing the associated risk a societal imperative. A prominent component of earthquake risk management is fostering household earthquake preparedness. This involves encouraging people to acquire survival items (e.g. food, water, torches, and other essential items), implement mitigation measures (e.g. retrofit buildings), make emergency plans, learn survival skills and engage in socially-based preparedness activities.
>
> Despite considerable effort and expenditure incurred by emergency management to encourage such activities, levels of overall preparedness remain low in New Zealand. This identifies a need for more effective earthquake education programmes. To develop more effective programmes, it is important to understand how people make sense of hazards and how they make decisions about how to manage the associated risk.
>
> One particular gap in current understanding relates to how individuals render earthquake hazard and preparedness information meaningful and how this influences actual preparedness. In particular, questions remain about how individual, community and societal factors interact to influence how people interpret risk and decide whether to prepare or not.
>
> Using symbolic interactionism as the theoretical paradigm, this thesis explores the earthquake information meaning-making and preparedness processes. A series of qualitative interviews using grounded theory methodology were undertaken in 2008 with household residents in three New Zealand locations at risk of earthquakes. The interviews explored personal, community and societal influences on how people interpret and impose meaning on earthquake information and how the outcome of this process relates to undertaking actual preparedness actions.
>
> Three main types of information were identified: passive; interactive; and experiential information. Each type of information makes unique contributions to the interpretation and preparedness process. Passive information has a more restricted effect, and interactive and experiential information a wider-ranging effect. People utilize all these types of information when interpreting and making meaning of hazard and preparedness issues.

Consequently, future earthquake education programmes should accommodate passive, interactive and experiential information in their design and implementation. Information influences, and is influenced by, several factors including: awareness and knowledge of earthquakes and preparedness, understanding earthquake consequences, thought and discussion, skills, information seeking, salient beliefs, emotions and feelings, societal influences, intentions to prepare, and actual preparedness. Key societal influences on meaning-making and preparedness include: community (community participation, sense of community), leadership, responsibility (responsibility for preparing, responsibility for others), social norms, trust, and societal requirements. Earthquake education programmes also need to take such factors into account in their design.

6.0 SCHOOL EDUCATION PROGRAMMES: “WHAT’S THE PLAN STAN”

Victoria Johnson

PhD Student

Joint Centre for Disaster Research, GNS Science / Massey University

Vicki Johnson presented the results of her study on "What's the Plan, Stan?", the Ministry of Civil Defence & Emergency Management's teaching resource for school-based disaster preparedness education and emergency planning. This study aimed to assess the implementation of "What's the Plan, Stan?" and to identify some of the impacts of developing and promoting a single, national resource for disaster preparedness education in schools. Vicki conducted seven focus groups in different regions of New Zealand with primary and intermediate school educators, as well as an online survey of participating teachers and interviews with local and regional civil defence staff. The devastating earthquake in Christchurch on February 22, 2011 uniquely impacted the results of this study. Teachers who have used "What's the Plan, Stan?" have a very positive impression of the resource. A number of challenges to widespread implementation of the resource include lack of a national outcomes-based strategy and competition with other school-based safety and life skills programs for children. Also, the study found many teachers are grappling with how to discuss disasters and conduct earthquake drills in school in the aftermath of the Christchurch earthquake.

7.0 WEMO'S SCHOOL'S PROGRAMME

Karlene Tipler

Emergency Management Advisor,

Wellington Emergency Management Office (WEMO), Wellington City Council

Karlene Tipler presented on the Wellington City Council's public education programme. The key points covered in her presentation were:

- The value of empowering communities to be self-reliant and that this empowerment was not based on fear but instead could replace the fear people felt
- The importance of preparing oneself and one's family as part of the wider community's readiness efforts
- Establishing realistic expectations of the risks communities face as well as the assistance and support they can expect from the Wellington Emergency Management Office
- Using public education for clarifying misconceptions - i.e. the different role of a Civil Defence Centre vs. that of a Welfare Centre or the erroneous belief that there is a vast army of CDEM personnel waiting to be called into action in an emergency
- Increasing public hazard awareness so that the public is more informed and knowledgeable about impacts and terminology (e.g. the meaning and risk of liquefaction etc.)

8.0 POST VISIT IMPACT OF EQC-FUNDED DISASTERS SCHOOL PROGRAMMES

Edith MacDonald

Group Manager, Visitor Learning

Museum of New Zealand Te Papa Tongarewa

Understanding the long term impact an education programme at a museum has on student learning is rarely measured. Although there is anecdotal evidence that students coming to a museum will learn and the experience adds to the curriculum that is taught in the classroom, there are only a handful of studies that attempt to quantify the learning. In light of the recent Christchurch earthquakes, there is a need to understand how and what learning results from museum disaster programmes and, if necessary, to alter the programme to meet the programme objectives. Te Papa, in partnership with EQC and GNS, is launching a pilot programme to measure the impact of the Disasters education programme on disaster preparedness.

In partnership with EQC and GNS, Te Papa will assess the impact of the Disasters programme on student learning. Five schools (with intermediate age classes) will be selected to participate in the study. Two weeks prior to coming to Te Papa, Te Papa education staff will visit the school to obtain pre-visit data. A survey will be conducted with the teacher and students will be asked to:

- Draw a picture of how their house is prepared for an earthquake
- Mind map how their class and school is prepared for an earthquake
- Sort pictures or actions into two piles: will help during a quake and will not help during a quake

Two weeks following their trip to Te Papa, a Te Papa educator will visit the school and collect post-visit data. The same measures of the Pre-Test will be used in addition to asking students to sort pictures of Te Papa spaces in order of the location they preferred. In small groups, they will be asked to brainstorm their visit and what they liked and did not like. There will also be a follow-up interview with the teacher.

One week after their visit, a survey will be provided to the schools to disseminate to the parents of the students. This survey will assess if the learnings the students experienced at Te Papa are taken home and discussed. The survey will be administered through the school for logistical reasons. Based on the results, the Disasters programme may be augmented to better meet the objectives of the programme.

9.0 FUTURE DIRECTIONS – COLLABORATIVE PUBLIC EDUCATION APPROACHES – DISASTER AND EMERGENCY MANAGEMENT IN THE ASIA PACIFIC REGION

Dr. Miriam Hughes

Public Education Advisor

Joint Centre for Disaster Research, GNS Science / Massey University

9.1 Background

Discussions around public education as an integral part of risk management and risk reduction are back-grounded by the recent earthquakes in the Canterbury region in New Zealand, cyclone Yasi in Queensland, flooding and bushfires in various states in Australia, and the earthquake and subsequent devastating tsunami in Japan. In addition, there have been a number of disasters in the larger Asia Pacific region which have also had a huge impact on the population of the countries in which they occurred. As part of her work with the Joint Centre for Disaster Research, Dr. Hughes travelled to Australia in July of 2011 to gain a better understanding of the public education programmes, initiatives and approaches currently in use in the states of South Australia and Victoria. This research will become part of a larger body of work that examines and analyses public education programmes and initiatives, and their subsequent evaluation from within New Zealand, Australia and internationally.

9.2 Public Education Goals, Disaster and Emergency Management – Australia

Briefly, the goal of public education within the disaster/hazard management context is to better educate and prepare communities in how they can help themselves before, during and after a hazard event, and to encourage the adoption of proactive “preparatory” behaviors which in turn can lead to a reduction in loss of life and property damages, and an increase in levels of personal safety during hazard events. Traditional approaches to public education within disaster and emergency management in Australia, from a multi-state perspective have included the following elements and approaches:

- Training / test exercises
- Emergency communications
- Evacuation plans
- Mutual aid agreements
- Warning systems
- Resource inventories
- Provision of special resources
- Public Information
- Community awareness/education
- Disaster plans

Experiences in managing the recent incidents of both multi-state flooding and cyclone Yasi have led for a call to re-think these traditional approaches, particularly in view of the historically low disaster preparation rates across a variety of hazards within the country. These low preparation rates have led to loss of life, property and livelihoods, particularly during the devastating Victorian bush-fires of 2009. State and federal emergency management agencies are exploring ways in which to manage Australia's varied hazardscape from within a single set of 'all hazard' guidelines and tools. While still in very early development this approach acknowledges the importance of public education approaches that are embedded within the community as it is community participation and " buy in" which strongly influences response and recovery timelines and progress.

9.3 Public Education, Disaster and Emergency Management - New Zealand

The presentation then examined some of the current public education programmes and initiatives within New Zealand. These include:

- What's the Plan Stan - Ministry of Civil Defence and Emergency Management's school based disaster and emergency management programme.
- Get Ready-Get Thru - a public education programme led by the Ministry of Civil Defence and Emergency Management (MCDEM).
- Shake Safe – 2001 initiative funded by the EQC to install seismic restraints in low income homes in the Hutt Mana area in the lower north island in NZ – no true evaluation has been carried out – why is this important? Hot water tanks make a hell of a mess...

Another project that was undertaken in New Zealand in the past was the Quake Safe Schools Exercise[3]. These exercises were conducted to raise awareness in households of mitigation options by introducing the concepts to children at a young age. The intention was to encourage parents to take action as a spin-off of their children's involvement in the exercise. This was similar to the project Te Papa is now running with the EQC as discussed above.

9.4 Recommendations

Early indications from within the research show that while there are many public education programmes underway in both Australia and New Zealand, evaluation of these programmes as to their effectiveness is limited at best.

[3] Finnis, K. 2007. Community-based public education initiatives: Report to the Earthquake Commission. Research Report 2007/01. Joint Centre for Disaster Research. Wellington: Massey University/GNS Science

Given the sheer number of programmes in both countries it can be argued that:

- There is no need to ‘reinvent the wheel’ as there is much expertise already in the field which can be utilized in the future.
- Development of new programmes is most likely unnecessary.
- Clarity is needed around "who is doing what and where" within public education and disaster management.
- Better sharing of information between agencies and a more collaborative approach will help build an understanding of multi-agency approaches. This will make the development of evaluation tools and guidelines within public education and disaster management a much easier task.
- An evaluation of current programmes is needed in order to guide future public education.

The task of evaluating what is "out there" within the field is perhaps the single biggest challenge. Clear, consistent, and widely disseminated evaluations of current programmes and initiatives will allow for the development of both benchmarks and best practice guidelines. Such guidelines can be used to inform the implementation of current provisions and the improvement of public education within disaster and emergency management in the future.

10.0 COMMENTARY: PUBLIC EDUCATION IN AN EMERGENCY MANAGEMENT CONTEXT

John Lindsay

Assistant Professor

Applied Disaster and Emergency Studies, Brandon University

Public education is a broad concept and its application in emergency management crosses into every aspect of the field – all "four R's" in the New Zealand context. It is not, however, a balanced approach and there is some confusion between the concepts of risk or hazard communication, public education and crisis communications. Examining these differences and the wider application of public education helps to frame the current projects discussed in this report. A discussion of what information is provided to the public and why this changes within the emergency management context is important to then understand how each separate part of this broader risk communication spectrum needs to vary.

The first divide is recognised by Fitzpatrick and Mileti[4] between what they term 'hazard communication' and 'warning communication' as the two parts of 'risk communication'. These are not particularly useful terms to use, as the concepts of hazard and risk are closely linked and may even be considered synonymous by some readers while warnings are not the only type of communication during events. However, they do make the important distinction between the communication activities that occur before an actual event aimed at "informing citizens about the nature of the risk" (p71), and information provided "in times of impending emergencies and disasters … to an endangered public to elicit public protective actions" (p.71). It is interesting to note that they cast both types of communication as one way from official sources to the public.

Public education in the emergency management context is most commonly associated with efforts to increase individual, family or business preparedness. The messaging promotes a mix of activities aimed at increasing readiness to respond to an emergency. Some of these activities are planning oriented, such as establishing a family rendezvous point, while others are more 'physical' activities like collecting together the components of an evacuation kit. This messaging also blurs across to the promotion of desirable responses to hazard impacts, exemplified by the 'duck and cover' range of messages, and by steps that can improve recovery outcomes such as having copies of insurance documents or medical prescriptions.

During an impact, public education all but disappears to be replaced with crisis communication – a discretely different undertaking. The United States' Centers for Disease Control[5] recognise the variations in participants and logistical constraints that differentiate crisis communication from the pre-event elements of risk communication. More importantly, the difference in how the audiences receive, process and act on the information in the two settings should influence how the communication is undertaken.

[4] Fitzpatrick, C. and D. Mileti. 1994. Public Risk Communication in R. Dynes and K. Tierney (eds.) *Disasters, Collective Behavior and Social Organization*. Newark: University of Delaware Press

[5] Centers for Disease Control and Prevention (CDC). 2002. *Crisis and Emergency Risk Communication*. Downloaded October 21 2011 from http://www.bt.cdc.gov/cerc/pdf/CERC-SEPT02.pdf

If the nature of the emergency allows for a clear warning period, the crisis communication may still employ elements from public education campaigns. If, for example, a community had been using public education to promote evacuation and/or shelter actions related to warnings, these same messages may be repeated to reinforce their use in the impending event. Other hazard specific measures, such as not driving through flood waters, may be communicated at this time even if they were not common messages in the pre-event stage.

Then, during the impact period and into the immediate post-impact periods through to recovery, both the information and the style of communication must change[6]. Crisis communication is focused on informing the public about the events that are occurring and on setting expectations for the imminent future. The pre-planned campaigns that characterise public education are set aside for a journalistic approach that seeks to provide current information on a very dynamic situation. This imposes its own challenges relating to the conflicting pressures for accurate and timely information. This is difficult when the situation is rapidly changing – waiting for accuracy sacrifices timeliness. Since confidence in the value of the information plays a key role in the uptake of the information it is crucial that crisis communication constantly struggles to get this balance correct.

Crisis communication also represents a shift in distribution method as well. While public education campaigns and crisis communication may both use a medium such as radio to communicate to the audience, the public education campaign will likely be organised through an advertising department and rely on prepared messages broadcast as part of the station's normal advertising rotation. Crisis communications, on the other hand, will be processed through the newsroom and be broadcast, potentially live, as part of the station's news reports. This difference has its own implications.

This shift in the relationship may mean different personnel are involved between the emergency management office and the media representatives, as well as a change in how the information is shared. Public education campaigns are jointly developed, usually with a series of exchanges, until there is confidence that the broadcast message will be successful. Crisis communication is more likely to rely on press releases, interviews and briefings to present the information to the media. The two-way exchange, if it is even allowed, will be in a question and answer format that may become adversarial. Here the station will view the emergency manager as a news figure and not a paying client.

During an emergency there may be information that is not particularly 'newsworthy'; in the sense that it does not meet the criteria that a news editor would normally apply to decide if the information was included in a story. However, this may be information that the public needs and that the emergency management office wants to disseminate. For example, following a flood there may be information regarding the safety of drinking water. If there is an urgent health risk the news editor may find this important enough to include when the announcement is first made but after several days into the event this is no longer 'news'. Here then is a situation where elements of public education – in this example information on how to treat drinking water – needs to be processed through a crisis communication lens.

[6] CDC (2002)

Finding this balance during an emergency is the true test of the public information officer, media manager or similar position(s) within an emergency management office[7]. It highlights the fact that the type of information, the means to communicate that information, and the relationships of the people involved – the emergency management staff, the media staff and the 'audiences' – are crucial to the success of the communication. The issue of different audiences will be discussed below.

Continuing with an examination of the changes to communication across the '4 R's', the post-impact or recovery related public education tends to be a variation of crisis communication dealing more with the consequence vulnerabilities than public education about recovery per se. Messages about building inspections, transportation detours, potable water supplies etc. are dynamic but are unlikely to have the same degree of uncertainty that characterises information during the impact and immediate response phases. This information is likely to still be using the crisis communication channels but with the same challenges mentioned above.

There may also be prepared information that takes more of a public education format but is only actively distributed following an impact. A brochure may be written and printed in advance, for example on how to clean flood damaged homes, and then circulated just to homes that were inundated as part of the recovery efforts. This type of information will rely on the public education campaign skills and relationships.

Finally, the least common of the '4 R's' in risk communication is 'reduction'. Information provided to the public regarding hazard mitigation does not receive the same attention that readiness and response messaging does. Information about the hazards is prevalent as it is seen as an important foundation to increase the public's awareness of the need to prepare, and it may have relevance to specific response actions. Small scale mitigation practices – securing hot water cylinders, bracing shelves etc. – can also be incorporated into household readiness campaigns. However, the connection between the hazardscape and the role of community planning, land use, building codes and other practices in mitigating risk is less common - though the fallout from the Canterbury earthquakes and the review of the Resource Management Act 1991 may affect this discrepancy.

With the distinction between public education and crisis communication established it is easier to focus on what constitutes success for both. This became apparent at the April 7 workshop held in Christchurch[8] – most of the discussion revolved around crisis communications issues but it was evident that the connections and separations between crisis communications and public education either had not been recognised during the Canterbury earthquake response or at least were being blurred in the post-earthquake review process. This workshop was held, however, during the height of the transition from response to recovery and therefore the misunderstandings may have been amplified by that shift in focus that the participants were going through.

[7] Scanlon, J and A. Frizzell. 1979. Old Theories Don't Apply: Implications of Communications in Crises. Disasters 3:3
[8] Winstanley, A., K. Cronin and M. Daly. 2011. Supporting communication around the Canterbury earthquakes and other risks: A learning workshop 7th April 2011, *GNS Miscellaneous Series* 37

Respecting this distinction will also ease the examination of the relevant literature for researchers and practitioners interested in public education. For example, Mileti and his colleagues[9] summarise the main research findings and make recommendations to improve the success of public education whereas Reynolds and Seeger[10] discuss crisis communication and develop the idea to include elements of emergency risk communication. Either of these sources can serve as a starting point for those seeking a better understanding of the two aspects of risk communication. More specifically aimed at the issue, Nielsen and Lidstone[11] point out gaps in both theoretical and practical understanding of 'public education' as it is applied in an emergency management context.

The other key contribution to the discussion is the importance of perception to the success of any communication. The role that risk perceptions play in influencing people's behaviors and actions is well established[12]. Fitzpatrick and Mileti[13] note that, at the time, most of the research had been focused on warnings, but that it was clear that both pre-event messaging and actual warnings combined to affect risk perception and that, in turn, risk perception could change how people reacted to the messages. The role of pre-event public education in establishing the level of trust and credibility the public has in its' emergency management agency is worth exploring[14].

Factoring risk perception into the discussion also draws in the issue of different audiences. Past research has shown that people factors, not hazard differences, matter more to the success of public education campaigns[15]. Factors such as age, gender, ethnicity and education can all influence the success of public education in changing beliefs or in prompting action. It is worth recognising that these same factors underlie vulnerability and that any assessment of 'audiences', especially if aimed at addressing the needs of the most at risk, must account for these differences[16].

In the same way, crisis communications need to recognise that there are different audiences during the response[17]. It is important that information is aimed at specific audiences and that messages meant for one purpose are not assumed to be adequate for others. Aggregate information doesn't always serve the purposes of the impacted communities, nor will general hazard information necessarily explain specific impacts. For example, Vicky and Peter Hyde, speaking at the April 7th workshop[18], made the point that certain messages, such as "65% of the city has power", which may have been aimed to reassure a national and international audience that the situation is under control, did not help impacted locals who wanted to know the status of power at a street or at least neighborhood scale. It is also vital that emergency management officials understand that the different audiences for crisis communication will not necessarily mirror the different audiences for public education.

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The research literature from public health also deals with similar issues and the CDEM community in New Zealand can benefit from looking at the experiences and practices of health communication. The concept of health literacy goes beyond the simple issue of whether or not people can read pamphlets or medication instructions and includes instilling a broader understanding of the social and economic determinants of health[19]. In the same vein, hazard and disaster public education can go beyond informing people of the physical process underlying the hazards and the appropriate home preparedness measures. While this kind of information is important, the reality is that current programmes have, at best, mixed success in achieving high levels of compliance – the recent assessment of New Zealand preparedness finds less than one-fifth of households are fully prepared[20]. While all increases in preparedness are positive, this report highlights the need to continue to look at alternatives that lead to community resiliency.

To this end, public education should include explaining both the hazards and the determinants of vulnerability[21] so the wider social and economic issues are given the same relevance as the physical processes. Since disaster vulnerability is collectively generated it is imperative that the population understands how and why some societal decisions can marginalise portions of the community and lead to greater vulnerability[22]. Addressing home and business preparedness is important, but the resiliency of the community as a whole is more than the sum of these individual actions. Addressing the needs of the most vulnerable in the community requires an appreciation of the collective responsibility for resiliency and public education directed to increasing our community's disaster literacy and will be an important step in achieving this.

[19] Nutbeam, D. 2000. Health literacy as a public health goal: a challenge for contemporary health education and communication strategies into the 21st century. *Health Promotion International*, 15:3

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11.0 CONCLUSIONS

The workshop was a valuable opportunity to exchange ideas and further the discussion of both the needs and means of public education for emergency management in New Zealand. The main points for further consideration are:

- **Public education for emergency management goes beyond the NZ CDEM sector and therefore harmonisation is important.** There are other sectors, such as health and education, which distribute information and promote activities directly and indirectly contributing to the public's understanding of risks and solutions. This could include, for example, a school science curriculum discussing climate change or a public health office promoting safety for older adults. There are also other jurisdictions, as demonstrated by Dr. Miriam Hughes' presentation, which may have messages that are different from NZ messages, but are still available to local audiences. It is important that these messages from other sectors and jurisdictions are considered in public education strategies and harmonised when possible.
- **Public education practices need to capitalise on the existing research.** CDEM practitioners and others involved in public education can draw support from the research literature to help make programs more effective. At the same time the research community needs to find better ways to disseminate research findings and make the information available and usable by the practitioner community. Both Victoria Johnson's and Karlene Tipler's presentations highlighted how the relationship between the research and practice communities can be supportive in both directions.
- **More research is needed on public education to further support best practices.** This is a dynamic field and new information is needed to refine practices and identify new opportunities for improvement. Dr. John McClure, Dr. Kevin Ronan, and Julia Becker all presented on aspects of the public education field that are deserving of further exploration. The importance, for example, of how perceptions of risk affect the impact of different messages can make a significant difference in the effectiveness of a campaign.
- **Ongoing evaluation of public education programmes is critical to future success.** Public education programmes must be assessed on their influence, not just their outputs, as demonstrated by Edith MacDonald's presentation on the programme at Te Papa. This evaluation is another opportunity for greater cooperation between the practice and research components of the CDEM field.
- **The differences between public education and crisis communications need to be recognised in the research and practice.** Communicating with the public is framed by the context in which the information is being shared. Different public education methods and messages, as discussed at the workshop by Dr. David Johnston, need to be suited to their audiences and settings. Equally important is the shift to crisis communication, as explored here by John Lindsay, which will involve new information, a different and more dynamic relationship with the audience, and constraints on time and resources available for communication. In New Zealand many practitioners and researchers operate in both the pre-event public education and response oriented crisis communications contexts so it is even more imperative that the distinctions are acknowledged.

Public communication– including hazard awareness, preparedness promotion, warnings and other response messaging and recovery related information – is a diverse and complex part of emergency management. This workshop was just one step towards a greater understanding of the issues and an important contribution to encouraging more cooperation between practitioners and researchers.

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www.gns.cri.nz

Principal Location

1 Fairway Drive
Avalon
PO Box 30368
Lower Hutt
New Zealand
T +64-4-570 1444
F +64-4-570 4600

Other Locations

Dunedin Research Centre
764 Cumberland Street
Private Bag 1930
Dunedin
New Zealand
T +64-3-477 4050
F +64-3-477 5232

Wairakei Research Centre
114 Karetoto Road
Wairakei
Private Bag 2000, Taupo
New Zealand
T +64-7-374 8211
F +64-7-374 8199

National Isotope Centre
30 Gracefield Road
PO Box 31312
Lower Hutt
New Zealand
T +64-4-570 1444
F +64-4-570 4657