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Preparedness for Sudden Change: Lessons from managing large-scale disruption within a Bachelor of Nursing community

Final Report

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CPIT
TE MĀTĀPUNA O TE MĀTAURAKA

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Abstract

The recent earthquake disaster in Christchurch, New Zealand (2010-2011) is the focus of this 18 month study. Few resources about educational adaptation following large-scale disasters were available, when this occurred, making an examination of the local context and response critical for future planning. The setting was the School of Nursing & Human Services at Christchurch Polytechnic Institute of Technology (CPIT), and the program of interest, the Bachelor of Nursing (BN) programme, which has approximately 604 students enrolled and a teaching workforce of 45 full-time and 27 part-time staff.

A descriptive/exploratory case study design (incorporating the three phases of disaster response, recovery, and rehabilitation) enabled the research team to combine a wide range of data from interviews, a survey and documents and electronic sources.

Challenges identified involved managing both intangible and tangible resources, such as place and space, time, physical assets, roles and relationships. Change was continuous in the 'new normal' of the post-earthquake organisation. The actions taken by the School of Nursing & Human Services, to restore teaching and learning, form the core of the study.

Findings revealed the complexity of the wider community supporting teaching/learning activities, and highlighted the type of challenges that arise from sudden disruption to such a community. The process of the initial response to the disaster and meeting safety needs is described, as is the way in which the usual 'business' of teaching and learning was suspended, superseded, and reconfigured. The key themes of context, communication, leader and followership, decision making, taking action and action plans are derived directly from this very specific case. However, lessons can be learned from this experience that others can use, in the context of their own educational organisations to inform their preparedness for sudden change.

Introduction

CONTEXT

Christchurch city with its population of about 400,000 (and to an extent the greater Canterbury area), situated in the South Island of New Zealand, has suffered significantly from continued and catastrophic seismic activity for nearly two years since September 2010. The sequence of events was activated at 4.36am on September 4, 2010 when an earthquake measuring 7.1 on the Richter scale, with a rural epicentre close to Christchurch, occurred. This first event took place during the hours of darkness, and whilst causing alarm, much distress, widespread superficial damage to buildings and infrastructure, there was no loss of human life and only three seriously injured (Ardagh et al, 2012, p2109).

Aftershocks of varying magnitudes continued until, at 12.51 p.m. on the 22nd of February 2011, there was a major and significant aftershock (of magnitude 6.3) with its epicentre 5 kilometres from the CBD of Christchurch City. This earthquake event, unlike that of September, occurred during the middle of the day, at a time when citizens were dispersed across the city, largely away from home at work and school and separated from family. This event was catastrophic and associated with significant loss of human life.

Tragically, 185 people died and 6,659 persons were injured in the initial 24 hours. Many more people were anxious, distressed and/or shocked (Ardagh et al, 2012, p2109). It remains unknown what the long term health burdens have been on populations such as the frail elderly or those with chronic health issues exacerbated by stress or lack of essential resources.

Whilst lower on the Richter scale, this earthquake had the greatest vertical acceleration recorded globally to date. Coupled with the high proportion of unreinforced masonry-based colonial style buildings in the city, this led to widespread levels of property destruction and damage that had a sustained negative impact; the central city became an extensive exclusion 'red' zone which remains to this this day (O'Connor, Johnston and Evans, 2011; Canterbury Earthquake Recovery Authority, 2012). Infrastructure repair is expected to continue over several decades. Ongoing violent aftershocks have been a predictable sequel from these seismic events.

It was predicted that the seismic activity would gradually diminish. However, two significant further aftershocks (magnitude 5.6 and 6.3) struck on the 13th of June 2011, just as the city, to some small extent, was beginning to recover. Today Christchurch city remains the largest demolition site of a

central business district in the world and the seismic aftershocks continue with over 100 recorded events ranking over 4.6 on the Richter scale and over 10,000 in total (Geonet, 2012) since that first 2010 earthquake woke the citizens of Christchurch in the night.

THE LEARNING COMMUNITY

The setting for this study is the School of Nursing & Human Services[1], positioned within the Christchurch Polytechnic Institute of Technology (CPIT). CPIT is one of the major vocational sector education providers in Canterbury with over 24,000 students enrolled across the institute. There are two main campuses, one located immediately within the central city and another in a nearby suburb (predominantly offering trades-focussed programmes).

Four smaller off-site satellite offices are located around and on the boundaries of the city. CPIT offers a broad range of over 200 educational programmes of study, including foundation studies, certificates, diplomas, degree, graduate and postgraduate qualifications.

The School of Nursing and Human Services is one of the Schools in the Education & Applied Research Division of the CPIT organisational structure. Each Division has a nominated Senior Manager who participates in the Senior Manager's Forum. The Head of the School of Nursing reports directly to this Manager.

The School of Nursing and Human Services is the largest provider of undergraduate educational preparation for nurses in the South Island of New Zealand. Whilst both under and postgraduate nursing qualifications are offered, the three-year Bachelor of Nursing (BN) study programme is the most heavily subscribed.

The CPIT BN has a Nursing Council of New Zealand approved curriculum which is based upon an academic element, offered onsite through the medium of lectures and tutorials, with a small, albeit growing on-line capability. This theoretical phase is augmented by a significant clinical practicum component, which students complete under CPIT supervision with regional Health and Disability sector service providers. There were approximately 604 students enrolled in the BN programme in semester one, 2011, and a teaching workforce with 45 full-time and 27 part-time staff members across all years of the BN programme at the time of the earthquakes.

[1] *The School of Nursing at CPIT recently changed to the Department of Nursing in a CPIT organisational restructure. As the name change occurred after this research was undertaken, we refer to the 'School of Nursing' throughout this document for the sake of consistency and accuracy to reflect the context of the study.*

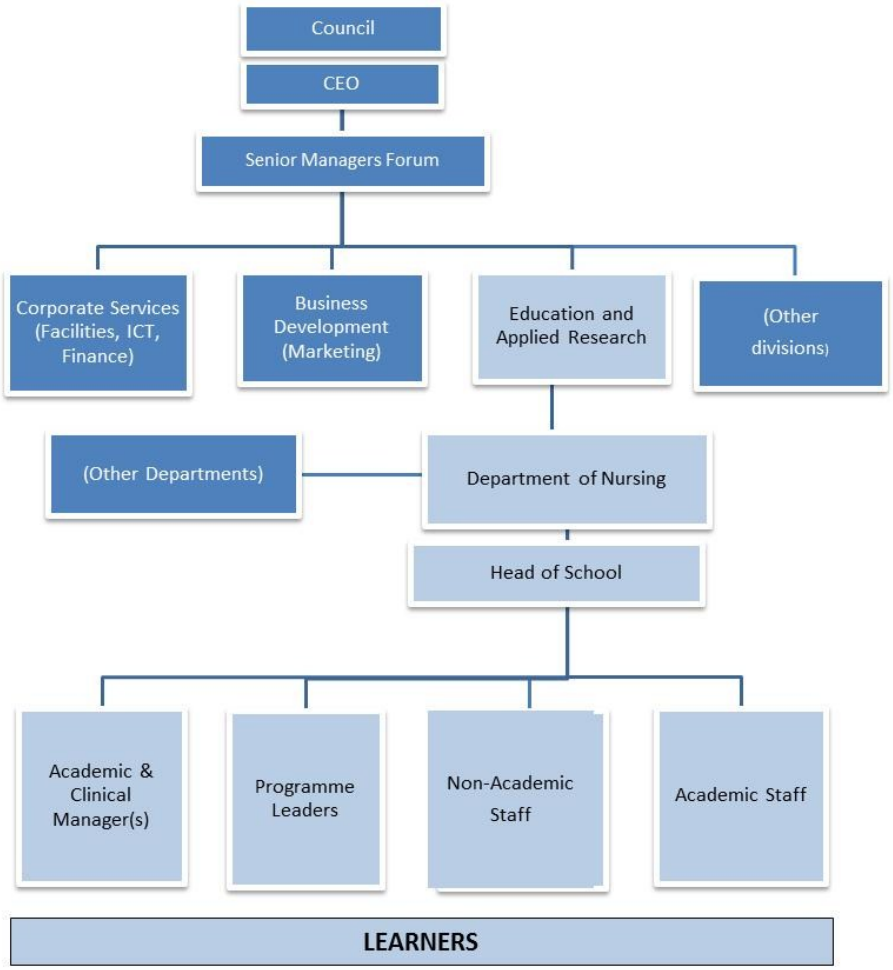

Figure 1: CPIT organisational chart as relates to the BN learning community

Whilst the first significant earthquake in September 2010 impacted upon the School of Nursing's work of teaching and learning, the essential elements of buildings, infrastructure and curriculum delivery process remained intact. The second earthquake led to emergency evacuation of the entire city campus. The CPIT city site was cordoned off by Civil Defence as part of the declaration of a state of national emergency. Following this emergency closure, the main CPIT campus (where the School of Nursing is located) remained isolated within a prohibited 'red zone' for approximately six weeks. There followed a period of restricted access and it was four months before all programmes were again offered from the city campus. During this period the School of Nursing negotiated use of some four rooms, one office space, a lecture theatre and a computer suite from a local University, some thirty kilometres from the city centre.

Immediately after the second major earthquake/aftershock struck on 22nd February 2011, CPIT staff and students were evacuated from the campus and advised to make their way to home and family. Because they could not return to offices and classrooms there was no opportunity for staff or students to collect personal belongings, including wallets, car keys, mobile phones or items such as spectacles. Vehicles remained in the car parks. Teaching and learning resources and paper-based

material was inaccessible inside the campus. Inside the buildings and offices there was considerable debris with shelves and file cabinets in disarray, fallen ceiling panels and broken floor surfaces with windows broken, exposing interior areas to the elements. Outside there was significant damage and destruction to buildings, paving and road surfaces across the entire city.

Considerable damage was also sustained by the Information and Communications Technology (ICT) systems and to varying degrees other organisational infrastructure. Isolation within the cordon revealed unanticipated and new problems, which became evident over time. Danger from continued and frequent aftershocks necessitated the continuance of the 'red zone' restriction, locking the CPIT campus within this. A severely compromised power supply, issues with liquefaction, leaking sewerage and ground water meant that there was no or little access to databases or any of the usual communication systems and the telephone system was overloaded and damaged. This situation was to remain unchanged for some considerable time (Meyer, 2011).

It is against this backdrop of destruction, shock, panic, fears about safety and uncertainty into the future that this research project was positioned.

WHERE TO FROM HERE

The ongoing earthquake series in Christchurch has revealed the complex nature of the wider community that supports teaching/learning activities, and highlighted the type of challenges that may arise from such sudden disruption to a community. The learning community has many 'layers and players', some obvious, others not so evident, at any given time. It is obvious that such a catastrophic event will have a disruptive impact on all learning community members, not just teachers and learners. There were challenges to managing both tangible and intangible resources such as place & space, time, physical assets, and roles and relationships, necessitating their reconfiguration. Priorities frequently altered with changing circumstances and it is anticipated this will continue for some time into the future.

Once the initial response to the disaster had been undertaken and physical safety assured, understanding and endeavouring to meet learners' needs was pivotal to achieving the best possible educational outcomes (Ramsden, 1992). This is particularly so in times of disaster and disruption where usual teaching and learning practices may be suspended, superseded, and/or reconfigured. However, the learners' needs remain, albeit reconfigured.

While there is some international evidence from disasters such as Hurricane Katrina, Hurricane Rita, and the Virginia Tech crisis (all occurring in the USA), both the emergency response and the educational systems in the USA are dissimilar in many respects to New Zealand. Little is known in New Zealand about adapting educational processes in circumstances such as this of a sudden, large scale disruption. Therefore close scrutiny of the local context and disaster response in regards to education delivery is warranted.

It is important to capture this information in a timely manner. Over time it is documented that an apathy factor will occur as the memory of the event begins to fade (Boyd, 2001). Avoiding this loss of important information was essential. The opportunity existed for this study to be virtually contemporaneous, and it has been, as Canterbury continues to be a seismically active region.

AIMS

The goals of this study were to:

- Identify and describe the impact of such a sudden, traumatic natural event on the capacity and processes required to deliver a teaching/learning programme within an unstable and changing context;
- Explore the most appropriate and optimal role(s) for education providers where there is sudden, large scale disruption to the learning community ;
- Determine the most effective ways to minimise disruption to programme delivery and student learning and;
- Provide recommendations for anticipating and actively managing change following disruption in tertiary education institutions, to ensure continuity of good teaching practice.

EXPECTED OUTCOMES:

- A description of educational adaptations required in sudden disruptive situations in the tertiary education setting;

- The identification of critical success factors for managing large scale sudden disruption in the tertiary education setting;

- To determine what constitutes practical action-orientated curricular and teaching practice guidelines for such situations. These include:

- Recommendations for development of educational practitioners' capabilities;

- Recommendations for development of organisational capacity;

- Evidence-based guidance for practical, action-oriented, suggestions for enhancing teaching and learning practices in order to achieve the best possible educational outcomes during times of sudden change and disruption.

- Consideration of not only the immediate circumstances but also future possibilities where the findings may be utilised and applied must be part of the vision for best possible educational outcomes. The methodology used will provide a framework that other organisations could use to examine their own disaster preparedness and mitigation strategies.

Literature Review

DISASTERS AND DISASTER MANAGEMENT

The impact of natural disasters has increased over recent years, with associated negative effects on high density populations, growing economic costs of loss and recovery (Goodwin Veenema, 2007) and increased technological vulnerability. The definition of 'disaster' for this project is based on the United Nations (International Strategy for Disaster Reduction) definition of disaster as a:

> *"sudden calamitous event that causes serious disruption of the functioning of a community or a society causing widespread human, material, economic and/or environmental losses which exceed the ability of the affected community or society to cope using its own level of resources" (UN/ISDR, 2004).*

Disasters differ from other organisational crises or problems; most cannot be managed by merely mobilising more people or resources. The term 'disaster management' is defined by Ashgar et al (2006) as:

> *"A collective term encompassing all aspects of planning for and responding to disasters, including both pre and post disaster activities namely, prevention, mitigation, preparedness, response, recovery and rehabilitation. It may refer to the management of both the risks and consequences of disasters' (Ashgar et al, 2006; p95).*

Disaster management enables us to make some sense of chaotic and complex event(s), by giving a better understanding of a current or past disaster in order to prepare for future event(s). According to Ashgar et al (2008), the use of disaster management models can 'manage, and possibly reduce the negative consequences of a disaster'.

A MODEL FOR MANAGING DISASTER

The traditional disaster management model consists of two phases: the first is pre-disaster risk reduction, and the second is the post-disaster recovery phase. The first phase includes prevention, mitigation and preparedness, while the second includes activities of response, recovery and

rehabilitation. These phases can occur as a continuous process in which 'activities run parallel to each other, with varying degrees of emphasis'. (Ashgar et al, 2008). Olshanksky and Chang (2009) define the four activities of disaster management:

> *"Preparedness involves building the capacity to respond quickly when a disaster occurs or is imminent. Response consists of the actions taken at the time of the disaster to save lives and minimise damage. Recovery involves the short-term restoration of systems and long-term restoration of the community to normal functions. Mitigation consists of activities designed to reduce vulnerability, so as to minimise the deleterious effects of future disasters". (Olshanksky and Chang, 2009; p200).*

Ashgar et al (2008) contend that a more comprehensive disaster management model would include hazard assessment and risk management activities, with a greater focus on evaluation and feedback into planning. This would require forecasting and assessment of possible disaster events to be given greater prominence in planning for disaster preparation. It is the recovery and mitigation phases of the disaster recovery model, with the opportunity to reflect, plan and assess risk, which can provide an opportunity to benefit from the experience of a disaster by better preparing for the future. This is illustrated in the adapted model below.

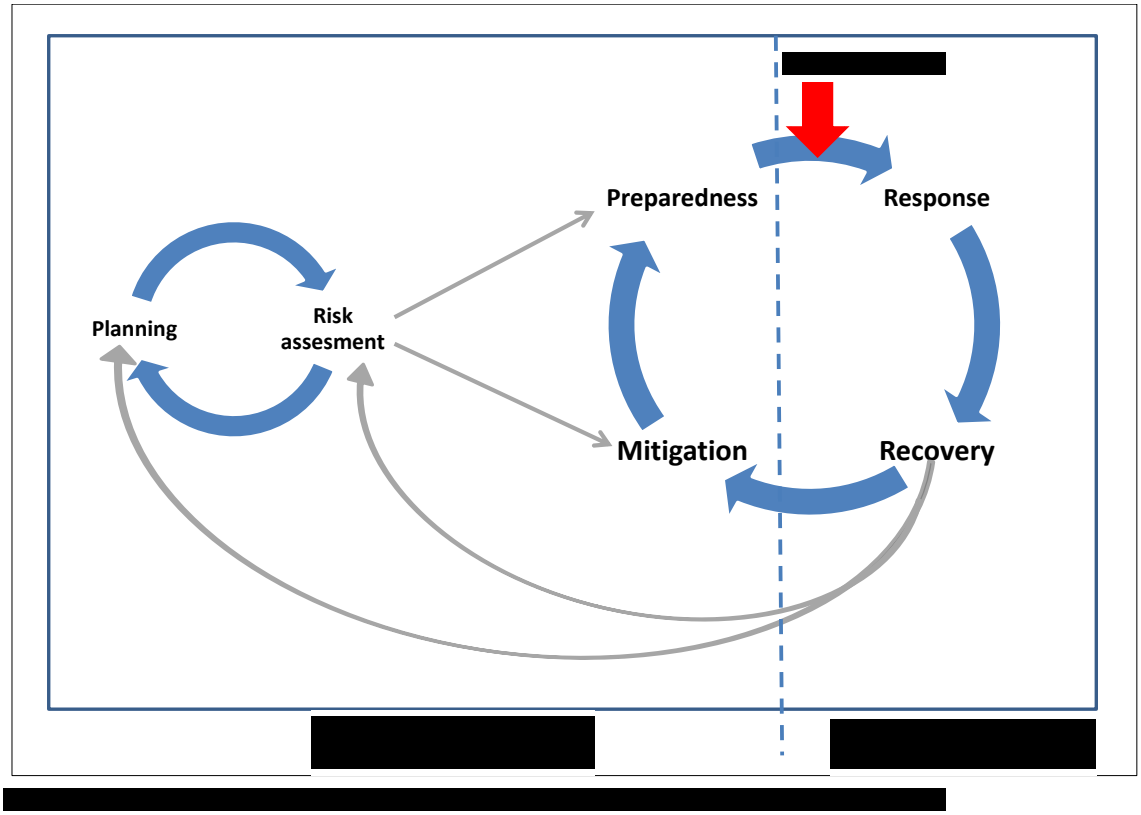

Figure 2: The Disaster Management Model

RECOVERY AND MITIGATION

Long-term recovery from disaster is a daunting challenge for any affected community. Olshansky and Chang (2009) note that planning and management of post-disaster recovery is emerging as an important new area of research, where previously the focus had been on mitigation.

Recovery is increasingly viewed as a 'dynamic and complex' process, which Olshansky and Chang (2009) contend not only provides an opportunity to improve conditions, but also to mitigate the impact of future disasters. Recovery is not merely an opportunity to recover a community, but to improve it (Olshansky and Chang, 2009).

Resilience is often described as a goal in the recovery phase (Olshansky and Chang 2009), meaning to create a community which can recover more easily in the event of any future disaster. The goal of creating communities which can 'bend' in a disaster, and bounce back ready to face any other event, enables a way in which to cope with uncertainty around risk forecasting.

How then can communities who have recently been affected by disaster, and are emerging from an immediate response, develop strategies for long-term recovery and resilience? Olshansky and Chang (2009) describe the importance of research, particularly that which supports decision-making and planning, for disaster preparedness:

> *"When a disaster occurs, planners and decision makers are unlikely to be able to draw on personal experience and institutional memory. Not only could this research be useful for dealing with recovery when a disaster occurs, but it could be especially useful for education and training planners and decision makers with no disaster experience about what to expect, and how they might proceed, in the aftermath of a future disaster". (Olshanksky and Chang, 2009; p206)*

Powell et al (2011) argue that during the immediate phase(s) following a disaster urgent insight is needed into the impacts on affected communities. Without timely research, decision-making in future phases may be made without evidence, therefore not as successfully. They call for researchers to adapt and undertake 'rapid response research' following a major disaster in order to improve theoretical knowledge of the recovery phase. This will greatly assist communities in the future, who, when struck by disaster and have no previous experience in recovery, will look to existing research for guidance.

Garnett and Moore (2010) suggest three key approaches to enhance disaster recovery, from a study of multiple international disaster responses. These are (1) to incorporate long-term recovery goals

into disaster response and planning; (2) incorporate research into recovery and harness lessons learned from international experience; and (3) develop an outcomes-oriented approach to disaster recovery planning.

This study aims to use timely, 'on-the ground' research methods to examine the experience of the CPIT School of Nursing in the 2010 and 2011 Christchurch earthquakes, in order to review the lessons learned. It is hoped that examining the actions taken both pre and post disaster will enable a better understanding to inform any future disaster planning and response. As well as researching the local context, literature relating to international experience has been reviewed and is discussed below.

TERTIARY INSTITUTIONS AND DISASTER MANAGEMENT

There is very little research and/or literature which specifically addresses disaster preparedness for tertiary educational institutions. Although a significant body of literature exists regarding the impact of, and planning for disasters in general, there are very few studies which concern the relationship to teaching and learning in a tertiary setting. An extensive review found that the few such pieces of research which existed were mostly international, in response to Hurricanes Katrina and Rita (USA) and floods and fires in Australia.

There are a number of descriptions of response to disasters, retrospective observations and reports on experiences among the literature. These were generally excluded from the review, unless they specifically focussed on *teaching and learning*. The goal of this study is to enable tertiary communities to better prepare for disasters; however, this is in regard to teaching and learning, rather than economic, social or psychological factors.

Overall, the literature which focuses on tertiary teaching and learning in a post-disaster environment largely consists of retrospective case studies which are mainly descriptive in nature (Chauvin et al, 2006; DiCarlo et al, 2007; Griffies, 2009). Some authors draw on international comparisons (SchWeber, 2008) or from published literature (Beggan, 2010; Cusack et al, 2010). As Cusack et al (2010) points out, it is fairly difficult to carry out research during and immediately after disasters, therefore it is not unreasonable that most research is of this nature and will describe the lessons learnt from a single event.

LESSONS FOR PREPAREDNESS

All the literature regarding disaster management of tertiary teaching and learning states the importance of planning as a central feature. However, none of the studies maintain that planning alone is the key to successful preparedness. Indeed, as DiCarlo, Hilton et al (2007) state "*preparedness and leadership are the cornerstones of success, but ultimately, institutions will depend on the resilience of their faculty, staff and students to survive in the aftermath of disaster*" *(DiCarlo, Hilton et al, 2007; p755)*.

Each of the authors cites a number of key elements in their development of best practice strategies for disaster preparedness in a tertiary teaching and learning setting. There is a commonality between authors in most key elements, although they are phrased differently. We have summarised these key elements into six 'themes', and discuss each in turn below:

1. Planning
2. Leadership and decision making
3. Communication
4. Safety and evacuation
5. Relationships
6. Reflection

PLANNING

All authors agree that good planning is essential for disaster preparedness. However, it is noticeable that those who are reflecting on their experience have strong views on what 'good' planning entails. Chauvin (2006) puts it succinctly by stating that preparedness 'is a process, not a plan'.

However, having a plan is an obvious first step. Beggan (2010) cites a 2005 national survey in America which found that only fifty percent of tertiary institutions surveyed had an IT disaster recovery plan. The literature highlights the need to incorporate risk forecasting into planning, and be evidence based. Chauvin (2006) argues that effective institutional preparedness planning is open and team-based, not carried out in a 'top-down' manner.

Having systematically developed a plan, Beggan (2010) identifies the need to periodically test it, in order for staff to 'automatically' know what to do in the event of a disaster, and also to check its continuing relevance. Chauvin (2006) agrees, stating the importance of regular review and individual familiarity with a disaster plan:

> *"Developing a preparedness plan and putting it on a shelf without periodic review, drill, evaluation and refinement is almost as ineffective as not having a plan at all. People at all levels within the organisation need to know where to access such a plan, what it contains, and specifically, how to use the plan relative to their roles. Individuals also need to understand how their roles and actions fit with what others do". (Chauvin, 2006; p279)*

DiCarlo (2007) argues that every School and administrative unit in a tertiary institution should have its own disaster plans, including communication systems and data back-ups. Chauvin (2006) agrees, stating that while an institution needs a 'master plan' for preparedness, response and recovery, it is essential for units to have specific plans and strategies, which also need to be periodically tested and reviewed.

Cusack et al (2010) suggest that all Schools of Nursing should have a disaster preparedness plan which is linked to the broader regional or national plan(s). Specifically, a formal agreement around the role of nursing schools in health services in the event of a disaster is recommended.

Furthermore, Chauvin (2006) contends that every individual should have a personal preparedness plan which they share with family and fellow staff members. Chauvin (2006) argues that there is a need for tertiary institutions to assist individuals in developing personal preparedness plans, particularly if they are new to the institution.

LEADERSHIP

As DiCarlo (2007) states, even the best plans will not be effective without good leadership. This is a strong theme among the literature. Leaders may arise from multiple levels during a disaster; however, the implementation of even the best plan will most likely require good leadership and decision-making, in addition to a degree of creativity (DiCarlo, 2007).

As Chauvin (2006) points out, knowing one's own role within a disaster plan, and how this relates to the role(s) of others, is an important part of preparedness. Having a clear chain of command will help reduce confusion in the immediate aftermath of a disaster. A good plan should identify key

personnel for essential recovery functions, so these individuals can automatically assume their role in the event of a disaster (Beggan, 2010).

In the event of a disaster, individuals may well need to step into a leadership role on behalf of a colleague, and this should have been previously discussed. The ability to adapt, to be flexible, to problem-solve in order to quickly make and implement decisions in uncertain and unexpected situations is as important as any plan, no matter how well constructed (SchWeber, 2008).

Studies also identified the importance of leaders being close at hand following a disaster, and where possible, able to carry out face-to-face interaction with both staff and students on a daily basis, in order to provide visible evidence of leadership and enhance communication.

COMMUNICATION

Another theme which is pervasive throughout the literature is the critical importance of communication. The need for 'ongoing preparedness for communication' (Chauvin, 2006) entails both alternative methods of communication, and contact lists for communication.

All literature describes the experience, to some degree, of communication failure during a disaster – cell phone networks unavailable, web-based applications not working etc.). Having alternative, pre-planned methods for communication are essential, as is being able to establish these systems as soon as possible in the event of a disaster (DiCarlo, 2007). Beggan (2010) suggests satellite telephones be issued to key personnel, and that a communication chain be clearly established.

As Chauvin (2006) notes, effective communication is the key to response and recovery at all levels. Where there is a void of information, it is likely to be filled with assumption and incorrect information. Establishing a communication channel, and frequently updating those affected with timely, detailed information is viewed as essential throughout the recovery phase:

> *"The importance of immediate and ongoing communication that is open and encouraging yet honest cannot be overemphasised" (Chauvin, 2006, p281)*

There is a growing body of literature (Bird et al, 2012; Dabner, 2011; Dufty, 2012; Merchant, 2011) on the use of social media (such as Facebook, Twitter etc.) as an effective method of disaster communication. According to Bird et al (2012), a lesson learnt during the Queensland and Victorian floods in Australia was that social media are a good way to disseminate emergency information, as they are effective, fast, and part of everyday life. Merchant et al (2011) also note the ability of

social media to both *push* information to individuals via social media, as well as *pull* information where needed.

Having a current, detailed list of staff and multiple contacts is suggested as being an essential preparedness strategy. In addition, regularly reviewing this list and determining responsibilities and procedures for communication to those on the list is imperative (Chauvin, 2010). Griffies (2009) makes the important point that it is worth having staff keep a list in the car, or in an evacuation kit, rather than being filed away in a cabinet or based on a single computer.

SAFETY AND EVACUATION

In the immediate aftermath of a disaster, the literature identifies that safety and evacuation are the most important priorities, and must always come first.

Chauvin (2006) notes the ability to assess and ensure personal safety centres around being able to find people, communicate with them and have strategies to move them to safe places – all of which should be part of a preparedness plan.

Obviously, the ability to ensure safety and successful evacuation relies on having practised strategies which staff and students are familiar with, and can adopt immediately in a disaster. For example, ensuring that students and staff know not to run outside during an earthquake, and where and how to go to evacuate safely, should be part of the regularly reviewed and practised plan.

RELATIONSHIPS

The importance of developing and maintaining strong professional relationships (both internal and external to the institution) emerged as another key theme from the literature. Having disaster preparedness conversations and planning sessions should enable faster and more useful responses in the event of a disaster.

As Chauvin (2006) notes:

> *"In many instances, these relationships will be essential to long-term recovery and the ability to sustain quality educational programmes and the teaching mission of an institution". (p281)*

For a School of Nursing, in particular, there are unique relationships which need to be considered in preparedness planning. Relationships with local healthcare providers, other tertiary institutions,

regulatory and professional bodies are a few of the key relationships identified in the literature (Chauvin, 2006; Griffies, 2009).

In addition, Beggan (2010) identifies the need for institutions in the wider sense to have contractual arrangements with utility providers and consultants whose services are necessary to enable the provision of teaching and learning. Telecommunications, IT and building services are obvious starting points, but many more could be pre-planned.

Relationships within institutions are also part of successful disaster preparedness. As both DiCarlo (2007) and Chauvin (2006) note, maintaining professionalism and perspective in the aftermath of a disaster is essential for successful recovery. The literature suggests that it is important for individuals to monitor themselves, and to support others, as the success of a tertiary institution will depend on the resilience of individuals and collegial relationships (DiCarlo, 2007).

REFLECTION

As Chauvin (2006) notes, despite the best planning we can never be completely prepared for a disaster. Therefore, evaluating strategies which were employed in a post-disaster period is essential in order to gain insight and improvement.

The literature suggests that learning from experiences continues to affect the planning of all institutions that have experienced the impacts of a disaster. This relates to the importance of review in the disaster management model; as discussed previously, the need to carry out timely and appropriate research in the post-disaster phase is crucial to more successful recovery and better preparedness for any future sudden events.

Methodology and Method

THEORETICAL FRAMEWORK

According to Asghar, Alahakoon and Churilov (2006) "the traditional process of disaster management" consists of two phases:

1. **pre-disaster** risk-reduction
2. **post-disaster** recovery phase

Phase 1 consists of activities such as prevention, mitigation, and preparedness, while phase 2 includes the activities of response, recovery, and rehabilitation (p.2). Given that this project explored a disaster that had already occurred, Asghar et al.'s (2006) post-disaster recovery phase, response, recovery, and rehabilitation, provided the theory and organising structure supporting the study design, the data sources, and the collection methods. The findings underpin recommendations for the future; therefore this aligns with Asghar et al.'s (2006) pre-disaster risk reduction processes of prevention, mitigation, and preparedness. It is hoped these findings will inform the tertiary sector's education community about appropriate and optimal roles for education providers when/if there is sudden disruption in the future.

DESIGN

This project used a descriptive/exploratory case study design, focusing on the three phases of response, recovery, and rehabilitation, over a period of 18 months. This approach was taken to ensure timely collection of data at relevant stages of the post-disaster recovery process. The very nature, scale, and impact of a disaster renders the post-disaster context time-sensitive in terms of decisions made and actions taken, thus it was important that the research design was able to capture the chronology within the data collection process; a requirement that a case-study design could meet.

Yin (1994) defines the case study as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (p. 13). Case studies are particularly appropriate where the

phenomenon cannot be studied outside the context in which it occurred (Yin 1994; Dubé & Paré, 2003) where gaining understanding of multiple aspects of a case within its context is important (Burns & Grove, 2009) and in-depth investigation is needed (Dubé & Paré, 2003).

Given the unexpectedness, and the complex interrelated events surrounding the 2010 and 2011 Christchurch earthquakes, a descriptive/exploratory case study design was most useful for exploring the consequences of this event in an educational institution, allowing for a greater degree of flexibility and versatility. A case study design permitted the research team to combine varying data collection methods such as interviews and the critical review of documents or electronic sources, whilst also allowing for the inclusion of relevant quantitative data from a survey.

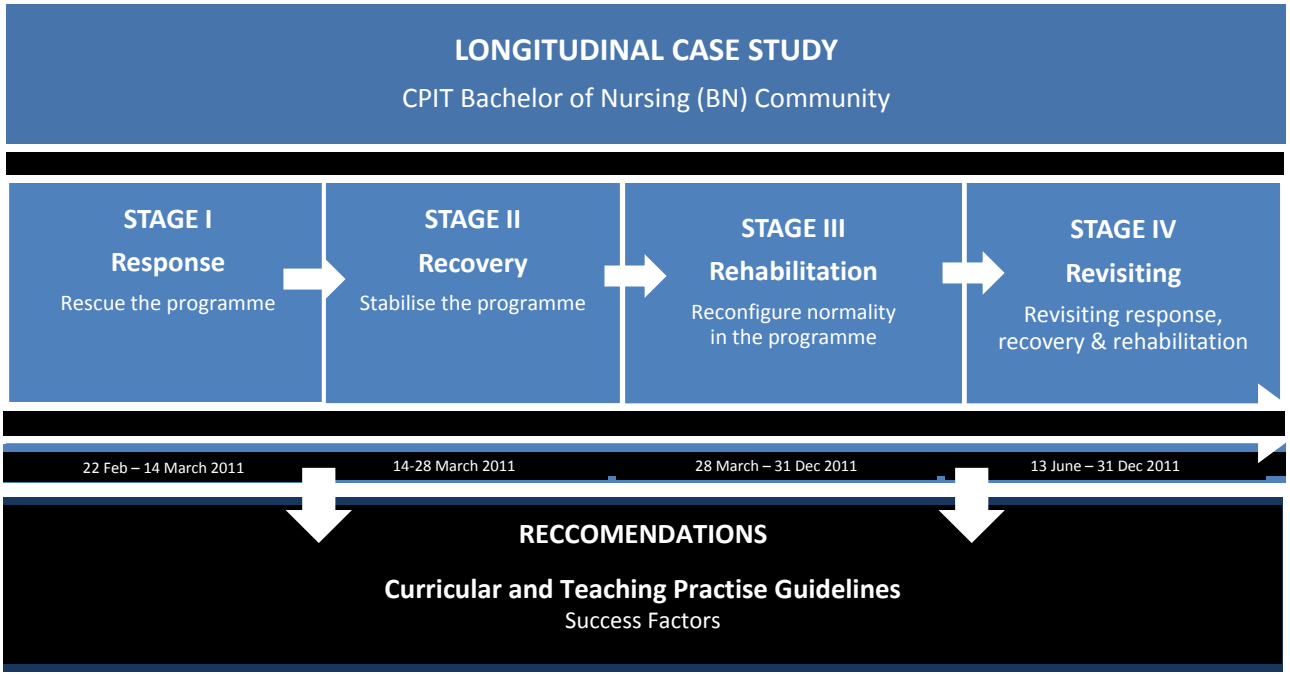

Figure 3: Case study design

FOCUSING THE RESEARCH ON THE POST-DISASTER RECOVERY STAGES

Effective disaster plans evolve from knowing what processes were relied upon, what assumptions were drawn on, and whether the organisational response actually worked during the event and its aftermath. The process of planning for best future response is predicated on sound understanding of what has previously occurred in terms of human and systems reaction. This study explored data appropriate to the three stages of post-disaster recovery identified in the theoretical framework underpinning this research.

RESPONSE STAGE:

In this stage the uncertainty that existed immediately following the sudden large scale disruption to the learning community and the priorities, decisions, communications, and activities necessary to 'rescue the BN programme' were explored. This stage also explored the assumptions made in terms of preparedness, and whether these were accurate or even relevant. The timeline for this stage is from 22nd February until CPIT entered the recovery stage on 14th March 2011.

RECOVERY STAGE:

In this stage the period in which the programme moving forward from the immediate rescue phase into recovering the programme was investigated. This captured the decisions, communications and activities necessary to stabilise the BN programme and ready the school for teaching/learning activities. The timeline for this stage is from 14th March until the 28th March 2011 when teaching and learning activities resumed.

REHABILITATION STAGE:

In this stage there was an exploration of the period in which programme delivery was reconfigured and 'normality' regained; however this was a 'new normal'. The School initially shared premises with another tertiary institution and then undertook a staged return to the CPIT campus by the end of 2011 when staff once again had access to their customary facilities, resources, and communication. The focus in this stage was identifying what processes worked successfully and what elements of the programme could be/were continued or curtailed.

REVISITING THE STAGES:

During the study period, on the 13th June, in what was the 'rehabilitation' stage, Christchurch again experienced two large magnitude earthquakes and their associated aftershocks. This unanticipated disruption, although less severe than the February earthquakes, had the effect of forcing the institution, the School of nursing, and individual learners, teachers, managers, and allied staff, to 'revisit' the stages of post-disaster recovery. This was factored into this research, with the investigators re-exploring the stages related to this new event, with participants.

Below (Figure 4) is a visual depiction of the significant earthquakes and their relationship to the three post-disaster recovery stages.

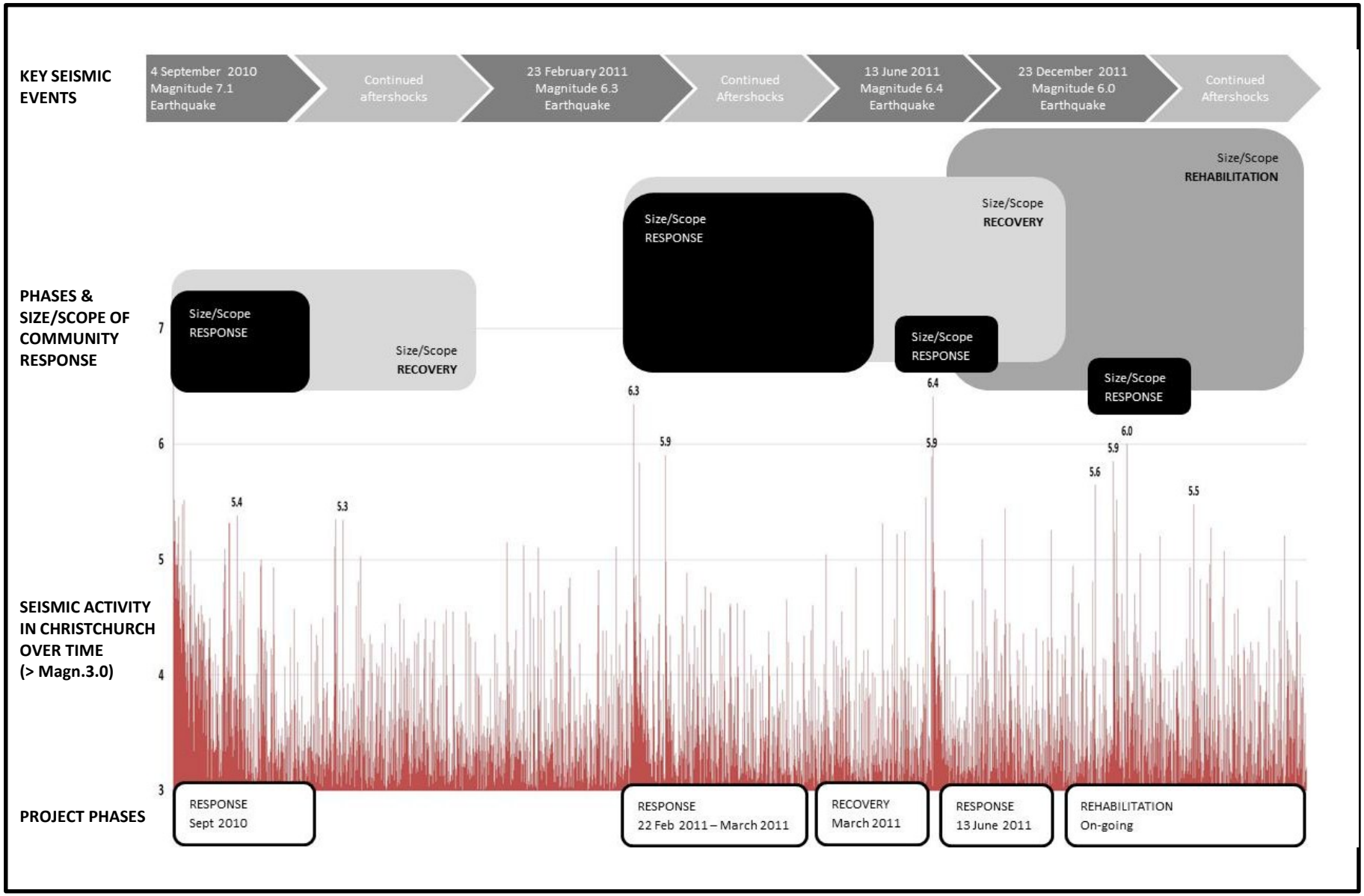

Figure 4: Earthquakes & Post disaster recovery phases

Seismic image from: http://www.geonet.org.nz/var/storage/images/media/images/news/2011/heli_chr/57167-4-eng-GB/heli_chr.png

ETHICS

In research projects, particularly those related to sudden and traumatic events, the wellbeing of research participants is the central consideration. The key ethical principles of confidentiality and anonymity are challenged when exploring a nationally and internationally publicised and unique event such as the Christchurch earthquake. The city in which this event occurred is well known, as is the educational institution. However, the benefits of undertaking the research and the risk mitigation processes need to be balanced against the ethical risks in determining whether the project should be undertaken.

The potential ethical concerns associated with this project included individual participant risks such as participant anxiety and distress related to 'reliving' the original event, risk of triggering self-recrimination i.e.: self-blaming; and jeopardy to participant employment status or professional reputation, for example, the risk of organisational censure of individual employees as a result of participant behaviour/decisions having been made/having failed to be made during the crisis. Potential organisational risks included possible public recrimination for decisions having been made/having failed to be made during the crisis; and identification of the institution leading to possible negative impacts, for example, on future student enrolments.

Strategies for reducing the risk of harm included:

- Ensuring sound design of the study: This was a 'no-blame' project which examined process,; it was not intended that individuals or their actions during the crisis were investigated in any way.

- Giving particular consideration to participant welfare: Informed consenting processes were put in place to ensure potential participants were aware of the possible impacts and the support strategies before consenting to participate. All participants in both the interview and survey phases of the study were offered support throughout data collection. Although data was gathered some months following the February disaster, revisiting the event may have placed some participants in a vulnerable position. Should unintended distress have occurred, arrangements were made for referral of participants to psychological and counselling services offered by CPIT with no personal financial burden associated with this support. All participants were advised of this opportunity prior to engagement with the

project and, if required, participants were to be supported in withdrawing from the project. Interviews were undertaken in a safe environment.

- Mitigating confidentiality concerns: Whilst the name of the institution is known, participants' identities were protected in a number of ways: (1) No names are used in the reporting of this project, although specific roles will be identifiable; this was made known to all potential participants prior to informed consent being gained; (2) Where possible and appropriate, participants are described by group, for example, academic staff, management, or IT staff; (3) The questions were designed in such a way as to not apportion blame; (4) All transcripts were returned to participants to enable them to make decisions regarding use of material.

The survey phase was anonymous to preserve anonymity and consent was implied by return of the questionnaire.

SAMPLING

OVERALL SAMPLING FRAMEWORK

Initially, an overall sampling framework related to the post-disaster recovery stages was determined for this study. Subsequently, the sampling for the (i) interview, (ii) survey and (iii) artefact (electronic/document sources) phases of the study were derived from this sampling frame.

Table 1: Sampling Framework

RESPONSE STAGE	**RECOVERY STAGE**	**REHABILITATION STAGE**
Staff		
-Management -Corporate services staff -Operations staff -Academic staff in the School -Management staff from School, Faculty & the larger organisation	As for the Response stage	As for the Response stage
Electronic/Documents		
-Organisational website	As for Response stage with the addition of	As for the Response and Recovery stages

-Organisation/School Facebook sites -Official communication (CPIT website, Faculty & School emails) -Organisational /faculty/school/disaster or emergency plan/s and any other relevant instructions	-Learning management system (Moodle) websites. -Timetables -Programme administration materials	

OVERALL GUIDING QUESTIONS

The following questions guided data collection and analysis in each stage of the study:

- What actually occurred in terms of risk forecasting, response and 'actual' management of the disaster? And how did these occur?
- What strategies emerged as most useful?
- What still needs to be accomplished in the future to ensure an optimal educational/organisational disaster response?

Phase 1: Interviews

The purpose of the interview phase was to investigate

1. the prevention, mitigation and preparedness in place:
    a. prior to September 4th 2010;
    b. after September 4th 2010;
    c. prior to February 22nd 2011;
    d. after February 2011.
2. priorities, and procedures for establishing these priorities:
    a. immediately following the disaster;
3. leadership activities, decision-making processes;
4. outcomes, actions, and communication processes;
5. communications undertaken between Feb 22nd and Dec 31st 2011.

Subsequently, the purpose was extended to revisit these aspects in light of the significant earthquakes again in June 13th 2011.

INTERVIEWS SAMPLE

Eleven participants were invited to take part in this phase of the research, and all agreed to contribute. Selected participants from the School of Nursing with key decision-making and/or operational roles related to the BN programme and BN learning community (5 participants), and staff in the wider organisation whose roles in the disaster response impacted on the BN learning community (such as Management, operations, and corporate services) (6 participants) were invited to participate in individual interviews.

INTERVIEW DATA COLLECTION

Data collection in this phase was undertaken through semi-structured, audiotaped, face-to-face interviews. An information sheet (see Appendix 1) was sent to potential participants. Upon their indicating an interest in the project, they were contacted by a member of the research team and given the opportunity to further discuss the project and their participation, with the research team being particularly mindful of the ethical issues related to this research (see ethics section above). Written consent was obtained at the time of the interview (Appendix 2). Participants were sent a copy of the questions guiding the interviews, prior to meeting with the researcher (see Appendix 3). The interviews lasted between 60-90 minutes. Interviews were transcribed intelligent *ad verbatim* for analysis.

INTERVIEWS DATA ANALYSIS

An iterative inductive analysis process was used to uncover themes from the data (Patton, 2002). The three researchers independently analysed the data in the transcripts, and then met regularly to discuss emerging findings. Discussion focused on both determining the common themes, and challenging individual interpretations (using verbatim quotes from the data) to ensure that interpretations were warranted. This process continued until the researchers reached agreement that the themes reflected the data, and were meaningful in terms of both commonalities and variations found in the data. NVivo software (version 9) was used to assist with data management during the analysis phase. All individual interview transcripts were imported into NVivo. When agreement about the themes was reached, the themes were entered into NVivo and quotes matched to these themes. This allowed for effective management of the large volumes of data that had been generated in the interview phase of the study.

INTERVIEW FINDINGS

This section presents the findings of the interview phase of the study. The data yielded a number of themes which arose from the descriptive narrative of participants. These themes are discussed here and will be illustrated with verbatim quotations. Whilst these themes, on paper, appear as if they are linear and discontinuous, they are not.

The following diagram (below) represents the major themes characterised by their relationship one to another. No one aspect stands alone and there is synergy across and between all of the constituent elements.

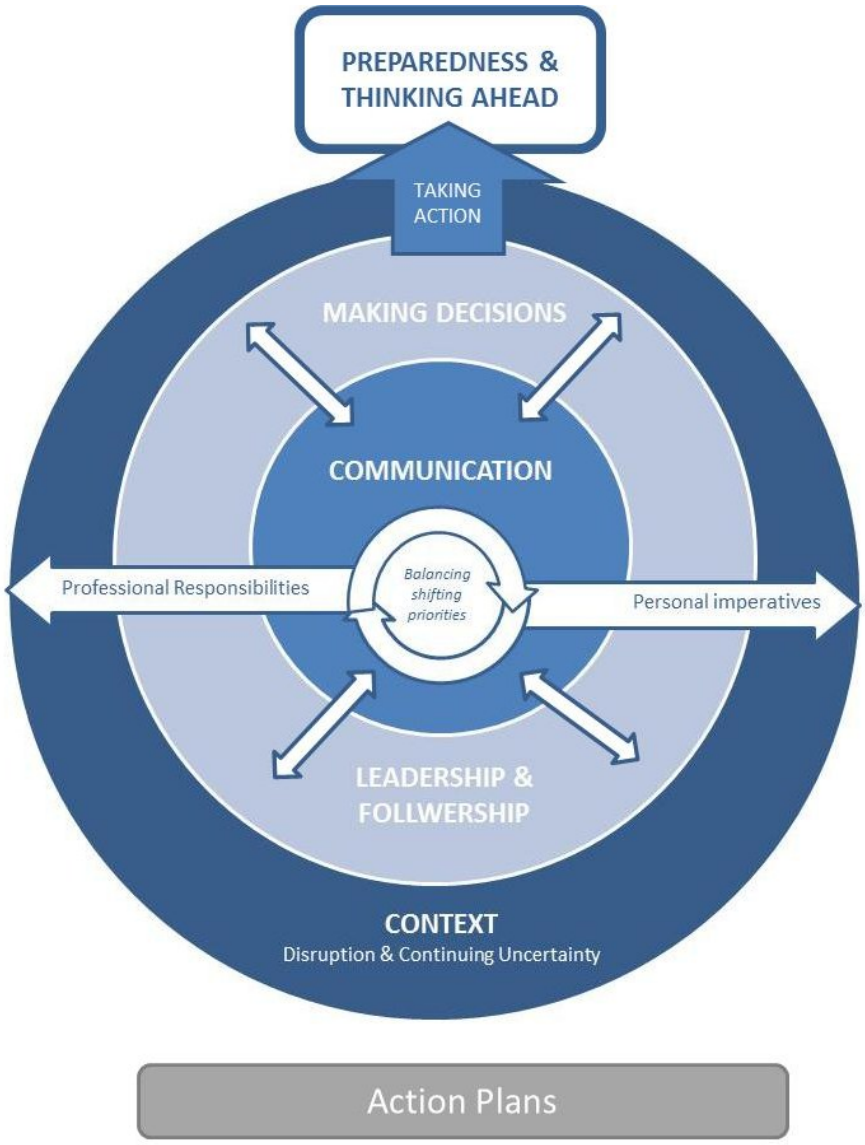

Figure 5: Emerging themes from the Research

THE INTERCONNECTED NATURE OF THE THEMES

Figure 5 portrays the themes that emerged from this study. The interconnections between these themes are explained briefly here to orientate the reader to the framework for the detailed explanations in this section.

Action Plans are located outside the circle of the other themes due to the formal and pre-planned nature of these. However, these plans provide the foundation upon which the other facets of the model sit. Written before a disaster to provide guidance during the emergency (for example: the Crisis Information Management System [CIMS]), these plans are of a more static nature, that while imperative in the rescue and response phases of a disaster, are superseded, over time, by dynamic decision-making and taking action.

The ***Context*** in this model surrounds, and is a major influence on, all the other themes. The nature of the context in the Canterbury earthquakes was overwhelmingly one of disruption and ongoing uncertainty.

Communication occupies a central place in the model, having a fundamental and vital influence on ***Leadership and Followership***, and the process of ***Making Decisions*** that is foundational to ***Taking Action***. ***Balancing Shifting Priorities*** is shown as a pivot point in this model, demonstrating the competing demands, on educators, of ***Personal Imperatives*** and ***Professional Responsibilities*** and how the priority at any given time may be 'see-sawing' and overlaying capacity for leadership and followership or making decisions.

CONTEXT: CYCLES OF DISRUPTION & CONTINUING UNCERTAINTY

The size, scope and continued nature of the disaster-created context made a difference. These events affected the entire city; the earthquakes could not be considered as a limited disaster or as occurring within only one area or one neighbourhood, the whole city was involved on each occasion, to a greater or lesser extent. This had an influence on the type of response required before, during, after or between any given seismic event(s).

Loss of infrastructure and resource was widespread and everyone had to pull together, using whatever was at hand. After the catastrophic February earthquake immediate response teams and emergency and disaster services were deployed into high risk areas within the central city; on subsequent occasions there was a diminishing requirement for those types of services. This was a new experience – most people had never been involved in an event like this before.

> *The February one hit everyone in a much greater way 'cause of our physical environment was so profoundly affected, those of us that were at work here in this building it was a huge thing to happen. And then being out there in the car park for hours, with the sirens wailing and the dust and everyone reporting comments about people dying and things. It was just like, truly like an apocalypse [i5].*

> *In the February one that was just so big and people getting to grips with the destruction around the place. All you had to do was walk out here and look at the Cathedral and you knew that was really bad [i4].*

The context was always uncertain and remained so - it was not until any earthquake had occurred that individuals could determine exactly how big an event it was or how serious the consequences were going to be. A persistent and enduring question was - what were we to expect – is this getting better or worse? As time passed, there was less variability in terms of changes to context. The environment became more resilient, in that there were fewer buildings to fall over or collapse, fewer items to break, smaller numbers of intact pipes to seep, therefore what infrastructure remained became more secure.

A lack of physical resources was more challenging at first. People depend on having access to what is considered essential external infrastructure and initially after the February 22nd 2011 event, power, water, toilets, food sources, heating and shelter were gone for the foreseeable future and adaptations had to be made. This sense of resource scarcity has also diminished over time, as adaptation has been accomplished, trust has been regained that eventually services will be restored and stock piles amassed, and the sense of vulnerability has become less acute, even though seismic activity continues to this day.

> *So all along last September that's what I was really aware of for this year and sort of February and then June and snow and everything else, this year's almost a joke.*
>
> *It's like, well whatever, throw us something else we'll get there [i8]…The way I look at it is that your personal situation created how you could manage in the professional role [i6].*

Suddenness was an aspect given emphasis by most participants; it was felt that they could not anticipate or foresee an earthquake. This was illustrated by the making of comparisons with other types of disasters. For example, an earthquake was described as being different to or unlike a hurricane or a rising flood. It was expressed that in those instances, unlike earthquakes, you could make a prediction that something is coming or going to happen at some point in the near or distant future. With earthquakes there was a constant sense of uncertainty about what will happen and when. The threat is constant - one earthquake always precipitates another. Just when this will happen is less certain. Although events subsequent to September 2010 were deemed aftershocks, they are always experienced as earthquakes. Every time there was an earthquake, it was never certain if was going to be a mild tremor and stop relatively quickly or if was going to escalate into a serious and potentially life threatening event.

> *And my biggest fear again is another earthquake happening before fire or anything now. But a year ago that wouldn't have crossed my mind, but my biggest fear coming to work every day is actually if there was another big earthquake what would happen? [i9]*
>
> *… (September) was sort of a novelty, it was a little bit exciting, everybody was talking about it…whereas in February it really affected us [i5].*

Continued uncertainty had another aspect as well. That was related to identifying the scale of an event and is portrayed in terms of understanding or coming to terms with what is happening. After September 2010, it seemed as if things might still be "okay". When the catastrophe of 22nd February 2011 occurred, events and tremor sequences just kept unfolding. A realisation of the scale and total catastrophe was described as deepening over several days. Participants all described this in a similar manner; that once you took in what a large scale event it was, this led to a type of stunned shock and they had to patiently wait to emerge.

> *It wasn't just an event which impacted on home, or work, or social life, or whatever, it was everything [i8]… Everybody's affected in such different ways in such a major event. And you have no idea how you're going to be affected [i6]…I think as nurses we're incredibly well positioned to manage these events in terms of our personal attributes [i8]…Its been a huge stressful event that I think to some extent we have underrated for ourselves that we've been through. We're got on with it, we've been kept busy, but I think you have to process it in some way [i5].*

This was a deeper experience for some than others, as was the response and reaction of individuals during an event. This seemed not necessarily to be linked to any immediate experience(s) of personal harm or loss. Some people were calm and collected and others agitated, irrespective of previous experience. Adaptation to the earthquake events happened over time and all participants (those with prolonged exposure) stated that over time seismic events of the same magnitude, which had seemed very alarming at first, were now perceived differently. Events apparently had less impact on many by June 2011. However this may be related to the perceptions around the physical environment and the decrease of threat levels (through demolition and the continued exclusion zone).

> *I think it was a minimal impact actually for here, I think for some individuals it was a very significant impact in terms of sort of the straw that breaks the camel's back so to speak, in terms of coping… People kept saying how wonderful the nurses were and how the nurses were just getting on with things. Well that's what nurses do it's part of what we deal with in a professional context all the time when you work in a clinical practice [i8].*

The access to teaching/learning resources and lesson plans was extremely limited.

I wasn't majorly concerned that we wouldn't be able to get things sorted for students. I think once again, as a nurse, you know there will be a way [i8]... And to me that was sort of quite an evident thing that we are part of the community and that our students can't separate that personal and student role out [i6].

ACTION PLANS AND TAKING ACTION

This theme 'action and reaction' is multidimensional and has several levels. An essential and guiding principle in emergency and disaster, both for preparedness and response, is that of using a plan. There is a legislative requirement in national and local governance that an education provider has a responsibility and must have a plan for occupational health and safety (OH&S) as well as a moral responsibility for the welfare of students and employees. Robust plans existed around site safety, which included evacuation of persons. This phase was accomplished and coordinated through the use of appointed controllers across the sector.

Most participants, with responsibility at an organisational level, voiced a feeling that the emergency actions taken were adequate in a global sense. There was no loss of life at CPIT and very few reported injuries to persons. For each earthquake event the initial evacuation was controlled and safety a first priority for the first twenty four hours. Those participants who represent Occupational Health and Safety planning, and coordinators, admit learning for future events based on their experiences during the February event

I mean people would react differently now I think; now they know. I think that throughout Christchurch people would react differently (i11)… It got better the next time 'cause we were better at it and I think the third time it was better again [i2]… We've learnt some of the problems in particular around communication, around things as well as how people take responsibility for that is another matter. I think we're in a better position as a result of that to be able to respond to any sort of future sort of things [i3]… So that like forty or fifty recommendations came to me, or us and we're put that into the new plan [i2]…

The Crisis Information Management System (CIMS) was instituted immediately organisation-wide, outside the School of Nursing and this differs from continuity plans, moving forward plans or a business continuity plan which is executive, overarching in that these are not relevant to teaching/learning but are rescue/response plans.

As part of the CIMS process that we took everybody had a certain role that they took, it's just the nature of the CIMS [i4]…In these circumstances I don't think the leader actually needs to be ankle deep in managing issues [i4].The CEO's not on it…this is an operational

group, she doesn't want to be tied up doing the nitty- gritty, she can be just hovering. Of course we'll keep her in the picture, but she doesn't need to be on that group [i2].

What was less well anticipated and perhaps less well managed, and this is likely related to such a significant natural disaster being a first real-time experience for everyone concerned, was the response of students and staff. Very few were aware of a disaster plan. This group seemed largely unaware of the corporate level emergency management strategy, beyond the printed instructions displayed on walls. Participants from this group spoke of not really knowing how to respond, where to go or what to do.

I don't know if we have a plan [i6] … … We probably had a general awareness that we had an emergency plan I don't think it was certainly in the forefront of my attention, put it this way [i3]… Except for the cards that are outside the, or in the toilets are they, with the earthquake and there's a bit of a disaster plan isn't there on those, on the cards? [i5] … No one read it, well someone may have read it but I don't know anybody that did, apart from me [i2] … I was aware of one and interestingly I just got sent it to update a few weeks ago and I thought, "Oh that's right we had one of those." (laughter) But at the time I don't think anyone remembered it, or thought about it quite frankly [i8]

The size and scope of the event had an effect on the response, that is, the actions people took.

September was a sort of a little novelty, in retrospect. It was a little bit exciting, everyone was talking about it and we had a couple of days off work (i5) … In the February one that was just so big for people to get to grips with, you just had to walk out here and you know it was really bad. I think in the June one everyone said 'oh here goes another one' and there certainly wasn't as much panic and confusion [i8) … With the whole fire thing there's a way of doing it and you go into fire mode and certain people get the batons and if you get a baton you check a particular area and then you go outside and your names... Well none of that happened, everybody was running out and it did occur to me, I wonder if there's anybody still in there [i10]

Site securement as a second phase was also timely, immediate and to a higher standard with each event.

We've learnt some of the problems in particular around communication, around things as well how people take responsibility for that is another matter. I think we're in a better position as a result of that to be able to respond to any sort of future sort of things [i3]…when February came we knew we had to do gas, electricity, water, sewerage, we had to check all those things off and we had actually proper checklists [i4].

What also arose from the interviews was a questioning of the notion of a plan as an organising principle in disaster responsiveness. This came through as statements made by participants, such as:

there was a lack of a plan in common; were we all talking about different plans, were there too many plans?

> *A detailed plan, I mean you can't, how can you predict what's going to happen on a day when everyone is in mass hysteria running around like. I think a general broad plan is ideal, but yeah I don't know if a detailed plan is much help than just a general plan on what to do [i9]… I think everyone's reaction at the time was to get out of wherever they were and that's not a good idea [i11] … You cannot imagine it, not that the entire institution's cordoned off and the health system's in disarray, that you can't drive from one side of town to the other, your house is falling down round your ears. Like there's no, none of us had a disaster, like people would have just thought you were a drama queen if you had a disaster plan of that magnitude. Like the CBD is going to get wiped out [i8]*

COMMUNICATION

Communication was seen as critical.

> *I think certainly, I mean the communication I think it was absolutely key [i6] … Probably the one thing that came through for me around the people side was how valuable people are that have really good communication skills and really good thinking and problem solving skills [i3]…It is absolutely critical 'cause otherwise rumours start up, people telling people things that they shouldn't be telling them, people doing the wrong things and it just goes bad [i2].*

People wanted, especially close to the event, clear and consistent information to inform their response and actions. The immediate needs during and after each earthquake were unfailingly engaged with physical safety, evacuation to safe areas and information that ensured continued safety and security – key facts such as when to leave the building, where was safe, how to remain in a safe environment - needed to get to the right people at the right time.

> *The sooner that information could go on the better because everybody could then plan their lives around it [i6]…One of the things, again the communication thing is one thing that I think we could have improved on [i3]… We knew we had to communicate with staff and with students[i7]…In February we all gathered in the car park dazed as anything really and we must have stood there it felt like at least an hour if not two before anyone said anything. No one came out with the official CPIT leadership banner and say, "this has happened, we're closing, we're evacuating, or whatever" [i5].*

Across time it was communication about 'what was going on' and 'the direction to take' and 'where to get' that was needed. This was a constant requirement in the short, medium and long term. This was described as a need for clarity, consistency and inclusiveness.

> *Probably, to me the most significant thing about a plan would be about communication and how you make sure that communication works in that context [i3] … I think the best thing that comes out of these disasters, any kind of disaster really, is forcing people to communicate [i11]…That was very difficult, there was nobody, there was nobody there to actually say what we should do and time ticked on…but I was trying to find people that could tell me what we should be telling people [i7].*

BALANCING PERSONAL IMPERATIVES AND PROFESSIONAL RESPONSIBILITY

This theme can be characterised by prioritising.

> *So, after December I think people were quite clear, you look after your home, your family, your neighbours and such first and then you say, "what can I do to help?" [i8]…I think the main priority was getting out of that building, but once you were out, everyone was out, everyone was just on their own [i9]…In February we sat down and actually (a) made sure all the staff were safe and then (b) worked the priority list of what we needed to do [i4].*

A personal or self-focus was described in the first instance in terms of attention to personal safety – for self; for others immediately around, regardless of whom; for family and then much later participants became aware of a sense of professional responsibility. This was an enduring response, through all stages of the disaster into the rehabilitation phase and was also repeated with each subsequent seismic event. Personal circumstances achieved a primacy for all participants, most especially in the period immediately following an earthquake event.

> *I think people's circumstances sort of changed all the time really, a lot of them didn't have water and didn't have power and here we are expected them to go into clinical and be with students…I think on the day, particularly February, everyone was concerned about their personal self and their family [i5]…I think where our personal lives impacted, we were able to work with that quite a lot as we got underway with managing our professional roles [i6]…*

A further item was the need for staff to have an acknowledgement of any on-going problems and issues, specifically around personal circumstances. Initially this related to essentials, damaged or lost homes, many people were in temporary accommodation, lack of basic services such as water, power and sewerage systems, children home from closed schools, travelling around the damaged city and

tiredness and distress. In the longer term this changed and became related to such issues as form of house repairs, the need to consult with earthquake authorities and insurers, etc., which were invariably within working hours but essential to move towards recovery and the new normal. Participants described this as a need to 'go in and out'.

> *I think there were enough of us involved in the re-planning, that if one person couldn't help there were others that would be able to pick it up and understand what we were doing. It wasn't dependent on just one or two people was it? There was a lot of collegial stuff going on at the same time [i5]…So it was just making sure your staff were comfortable and while at work you looked after them in terms of food and drink and things like that and made sure that if they did need to go they could go see EQC, or the insurances, or families, or whatever [i4].*

Another feature that was described occurred soon after the event, once people felt safe, was the need to do something to help – nurses need to nurse. Many of the nurse participants volunteered within their community, alongside colleagues known from the sector or a local health facility, as did some students.

> *I think the nursing culture did permeate…Well you just do it as experienced nurses, that's what you do. And in effect this at a bigger level is that same thing, that you've got a situation that's out of control, you had to, you're just doing that constant nurse's process of assessing, sort of in your head thinking, what do we have to do, how are we going to go about it, is it working? Change this, reassess, all that [i8]…It was like a little reunion it's sort of nurses being nurses isn't it? Sort of just wanting to help and feeling that they can help [i5].*

This teaching-learning community was a School of Nursing – nurses are trained to cope in and are familiar with a crisis – the staff are all registered nurses, holding a current practising certificate. There was considerable discussion about drawing upon the skillset previously acquired as a nurse during earthquake events.

> *…. wanted students to be treated like honorary staff, that's what they are, and if staff could they would expect staff to turn up to work if it was safe to do so and in a way that's how we treated it. That if students were safe to get there and it was safe for them to practise then they should do so… I had people that I had to convince, you don't need to do this, you need to concentrate now on looking after your family and getting your kids wherever, but they wondered from afar whether they could make contact with the students. I mean that's amazing how far people were prepared to go in terms of work loyalty and commitment to their job… In those first couple of days after the February earthquake just how much people wanted to help and that's nurses and students going out into the clinical workplace… But it was doing something practical,*

we all had to do something that felt like nursing related and for our profession… I don't know, wrote lists, nurses are good at writing lists [i5] .

I think you have to go with what comes up and maybe that's having an acute nursing background. You've got your core knowledge, your core skills and then you have to run with whatever happens on the day. And so maybe that feeds in to a certain extent to the way I feel it has to operate [i6].

Well you just do it as experienced nurses, that's what you do. And in effect this at a bigger level is the same thing, that you've got a situation that's out of control, you had to, you're just doing that constant nursing process stuff of assessing, sort of in your head thinking, what do we have to do, how are we going to go about it…I wasn't ever majorly concerned that we wouldn't be able to get things sorted for students. I think once again, as a nurse, you know there'll be a way… People kept saying how wonderful the nurses were and how the nurses were just getting on with things. Well that's what nurses do, it's part of what we deal with in a professional context all the time when you work in clinical practice [i8].

LEADERSHIP-FOLLOWERSHIP AND MAKING DECISIONS

Safety is paramount and it was perceived that leadership is critical in ensuring this. However, in this construct, there was again an evident layering. There was some questioning about how well this was achieved, in terms of 'who does what and what is to be done' - this was seen in divisions of what is done at executive level and what could be done at school level?

My view would be that an emergency response isn't a matter of hierarchy in the sense of that's what the institution says, that's what the faculty does, that's what the school does [i3]…In February you did get the feeling at times there were a lot of people running around doing a lot of things which possibly confused the situation a wee bit [i4]…I think I probably presumed the CEO or management team would deal with whatever the particular event was [i6]…I would like to see more people at the top of the tree take more command of the situation in the immediacy of the situation [i7].

This may have been because there seemed to be two separate channels of decision-making evident. Firstly on an internal level within CPIT and thence within Schools, such as the School of Nursing and Human Services. Much of this was functional and related to support with a purpose. The other was external supporters (those away from and remote to the disaster). They were seen as providing very important resources for CPIT, either in terms of material means or human resource.

- Emergence of leaders in different places for different reasons and tasks.

I mean there were cases of leaders who were absolutely floored by it and didn't know what to hell to do and there were people in very unlikely places that popped up and got on and did some really practical stuff in order to get things up and going [i1]…So people, yeah, even if I had had the authority before the event, that level of authority evaporates very quickly, unless you have a lot of confidence in a person. It's nothing to do with their rank it's about how clever you think they might be , whether their advice is good or not [i2]…I think there were, certainly the leader within the schools had to step up to the mark in terms of reconstructing their areas [i3].

- Roles were blurred – pragmatists versus thinkers.

*There were a number of stars who absolutely managed to think on their feet, really come up with some really innovative thinking about how we might get stuff to work. And that's the trait that I don't think I personally valued enough when I've been selecting staff and I've certainly been very conscious of it since [i1]…I also felt once you're away, all the technology and all the complex layers of stuff it's quite basic, get a piece of paper and a pen and as *** said, write it down and you delegate jobs and you prioritise and those are the basics really [i5]…I think around the institution there were certain people who I guess put their hands up and invigorated others and sort of made things happen, drove things along a bit [i8].*

The disaster suspends core business but there are still expectations around safety and welfare of staff and students. Managers had to activate this behaviour but it was not what the institution was expert in. A response was required but was multi-level – trying to deal with a disaster as well as teaching/learning. The people involved in the groups which made decisions and communicated them to others tended to self-select. The BN staff worked as small isolated pods according to role or subject. There was no sense expressed of a lack of management or control. Nor was there a loss of confidence in any of the decisions made at a school level.

There seemed to be a perception of a lack of visibility of the senior executives; were they involved? Should they be visible or not? Many stated that those at corporate level, such as the CEO, were little or not at all visible to the staff and students. Human Resources and some management schools were widely congratulated by external authorities but others not acknowledged at all after the resumption of 'normal'. However this was not critical to the BN community other than in terms of authorising resources.

A number of those senior management team who were making decisions, didn't actually come on site and have a look [i4]…we were just trying to find out from someone in authority what the call was [i7]…it was confusing some of the things that came out and that was the CEO expected us to come back [i5].

PREPAREDNESS AND THINKING AHEAD

We were not prepared for the February event – but is it possible to ever be prepared for something like that?

> *I mean again all the best planning in the world, it's very difficult to plan for something which is a huge magnitude that affects the whole city [i4]…There's nothing that we could possibly have hoped for to have gone any better, some of that's good planning, some of that's good practice some of its damned good luck…as an entity you are kidding yourself if you think that you can be prepared for every eventuality. So you have to have mechanisms and culture that allows you to cope with the unexpected is probably the best message I've got out of it [i1].*

We became better prepared after each major event. Each experience informed the next and knowledge about what to do became embedded, rather than requiring external direction or support.

> *I think we had some processes in place which made June a lot easier to deal with and realistically it wasn't such a large event…I think people recognised that we always had room for improvement after each event [i4]…I think that the institution in particular learnt some valuable lessons from September [i8]…I think each person on the floor should be confident [i9].*

In regard to teaching and learning, preparedness is a state of mind – not a rigid plan at teaching level – unlike Faculty Management level - where it is dangerous and dirty and needs rigidity. A disaster is chaotic and any control is a bonus. Uncertainty, a sense that something bad was happening but not sure quite how bad it was

> *Like anything though, it's the quality of the people and their relationships that actualise it that actually makes a difference [i3]…The health sector will be in disarray for a number of years because of the rebuilding and things like that, that has to occur. So in my head I'm bearing that in mind [i8]…being able to cope with the unexpected is the key thing, because we're proven that you can't plan for everything…There is no way that you would ever plan, or certainly there was no planning done for the scenario that we had [i1].*

A phased recovery and future proofing is needed. Into the future it cannot be certain in such a widespread and ongoing disaster, such as that in Canterbury, that things will return to normal, or if there needs to be adjustment to a 'new normal' as it has been referred to. People need to feel safe and secure on some level at least and need a sense of certainty about what the response will be if/when another earthquake occurs.

Phase II: Survey

SURVEY PURPOSE

Selected academic staff from the CPIT School of Nursing were surveyed in order to elicit their perspective of events in each stage of the disaster. The purpose of surveying the wider academic staff of the School was to gain a broader, 'School-wide' perspective regarding the events and stages of the disaster.

SURVEY INSTRUMENT

The survey (Appendix 6) comprised 31 questions developed by the research team.

- 7 'closed' questions (requiring a yes/no/unsure selection);
- 24 'open' questions, inviting a text response; and
- 3 demographic questions, asking about the nature of the participant's employment with CPIT. This was designed to elicit information about the seniority of roles within the sample group.

The survey was separated into three 'phases', relating to:

1. The 4 September 2010 Canterbury earthquake (6 questions);
2. The 22nd February 2011 Christchurch earthquake (14 questions);
3. The 13th June 2011 earthquake and the period ongoing from that date (5 questions).

Participants were asked to respond *as related to their professional role* in the CPIT School of Nursing. The survey instrument was piloted with an experienced academic and researcher. Minor changes were made to the survey instrument to enhance clarity of the questions.

SURVEY SAMPLE

Potential participants were determined using the following inclusion criteria:

- Full time employment at the time of the February 2011 earthquake; and
- Substantive teaching role within the BN programme.

Exclusion criteria were:

- Those who commenced teaching *after* the February 2011 earthquake; or
- Those who were employed with CPIT at the time of the February 2011 earthquake, but had since ceased their employment; or
- Those who were not employed in a full-time (35 hours or more) role with CPIT School of Nursing; or
- School of Nursing managers; or
- Staff involved with the research project.

There were 45 full time staff employed in the School, of whom 25 were eligible to take part in the survey. The 5 School staff members included in the interview phase were not included in the survey sample.

SURVEY DATA COLLECTION

The survey was constructed in Zoomerang, an online survey site that allows for both the creation and dissemination of surveys. All 25 eligible potential participants were emailed an invitation to participate (Appendix 4) and the information sheet (Appendix 5) which included a link to the Zoomerang online survey site. Respondents completed the survey online. A 'reminder' email was sent to participants, prompting their participation, one month later, and again two months later. Completion and submission of the survey implied consent to use the information in the way specified in the information sheet.

SURVEY DATA ANALYSIS

Survey data was entered electronically into the Zoomerang database. Excel software was used to assist with management of the data collected from the open ended survey questions. Descriptive statistical analysis was undertaken on the 'closed' and 'demographic' data collected. Open ended questions were analysed thematically by the researchers.

SURVEY FINDINGS

RESPONDENTS' CHARACTERISTICS

In total, 17 respondents participated in the survey (65.3% response rate). 16 respondents answered the three questions regarding employment with CPIT. One participant chose not to respond to this question as he/she believed this information could identify him/her. This response is not included in the response count for this section.

On average, participants in the survey had been employed by CPIT for 6.5 years. Fourteen respondents (82%) were course leaders, while three respondents (18%) were not. Most respondents (n=12) were at the CPIT campus during the February 22nd 2011 earthquake. during the June 13th 2011 earthquakes five respondents were at the CPIT campus, while four were not.

THEMES

The data from the survey reflected the same themes that arose in the individual interviews. These findings are reported here under those themes.

CONTEXT – DISRUPTION AND CONTINUING UNCERTAINTY

Comments from respondents highlighted the disruption and continuing uncertainty of the context. While respondents were not specifically asked questions in the survey related to this, the quotes that exemplify the responses received in each of the themes below often indicate the effect of the unfolding events.

ACTION PLANS

Respondents were asked to indicate their awareness of disaster plans, either organisation-wide or at the specific level of the nursing School, and of any risk forecasting, both prior to the September 2010 earthquake, and pre the February 2011 earthquake. The majority of respondents indicated they were not aware of any plans for the organisation (n=14, 82%) or the School of Nursing (n=15, 88%). Of the remaining three respondents, two indicated awareness of a CPIT disaster plan and one was unsure, (see Figure 5) while two (12%) were unsure of any School plan. Sixteen respondents (94%) answered in relation to risk forecasting, only two of whom recalled any risk forecasting, but that was in relation to the '*Avian influenza pandemic'*, or *'specific clinical risks'*.

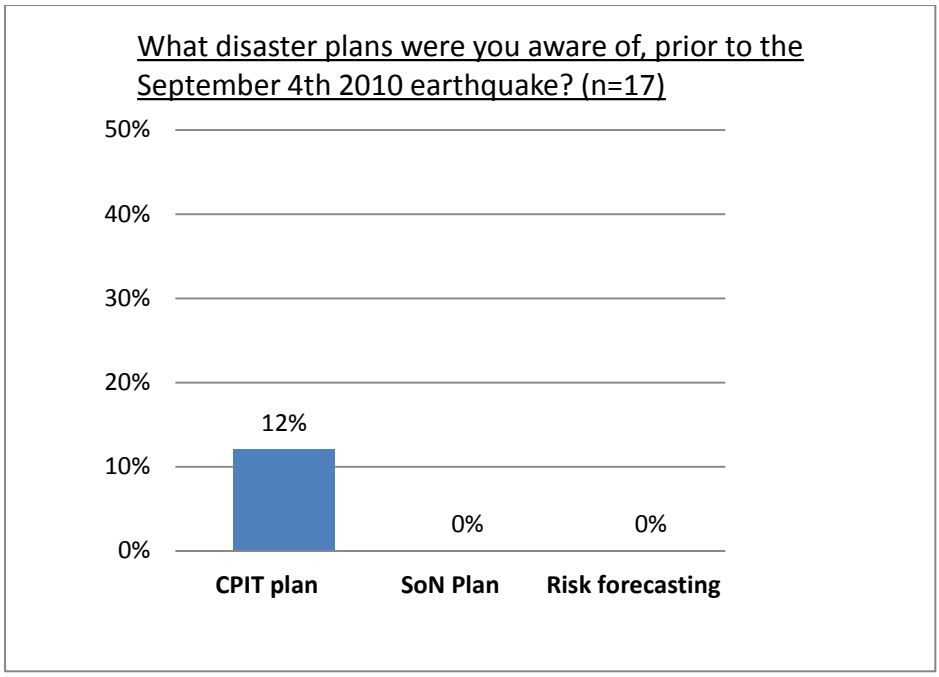

Figure 6: Knowledge of disaster plans and risk forecasting pre September 4th 2010.

However, when those who knew of plans commented on 'how' they knew about the organisational plan, these respondents demonstrated some diversity in what a disaster plan is understood to be. For example: one respondent answered:

> *I have ticked 'yes' as an answer to this - I knew that CPIT would have a major disaster plan, as I would expect from any large institution. Maybe it's from years of nursing where you know about disaster plans, and what to do if a person rings saying that they've got a bomb or if there's a flood, power loss, plane crash etc... so I knew that there would be a plan, but I didn't know specifically where to find it.*

Another described they thought this plan related to:

> *emergency plans and exits from buildings posted in every room and practised during fire drills.*

While knowledge of formal disaster plans may not have been common, school communication procedures were noted in relation to disaster planning with one respondent noting:

> *I'm unsure if it was a disaster plan as such, but knew that our contacts were stored on the emergency phone and that we would be kept aware of plans by phone (txts)/radio/email.*

When asked if they became aware of a specific School of Nursing disaster plan, after September 2010 but before the February 2011 earthquake, ten staff (59%) still indicated 'no', six (35%) now answered 'yes' and one (6%)remained unsure (See Figure 6).

Responses in relation to how people found out about this plan (n=7, 41%) ranged from specific and focused channels such as *Health and Safety briefing, school meetings, or email,* to less particular mechanisms such as *it was widely discussed* (highlighting the importance of informal mechanisms of information dissemination).

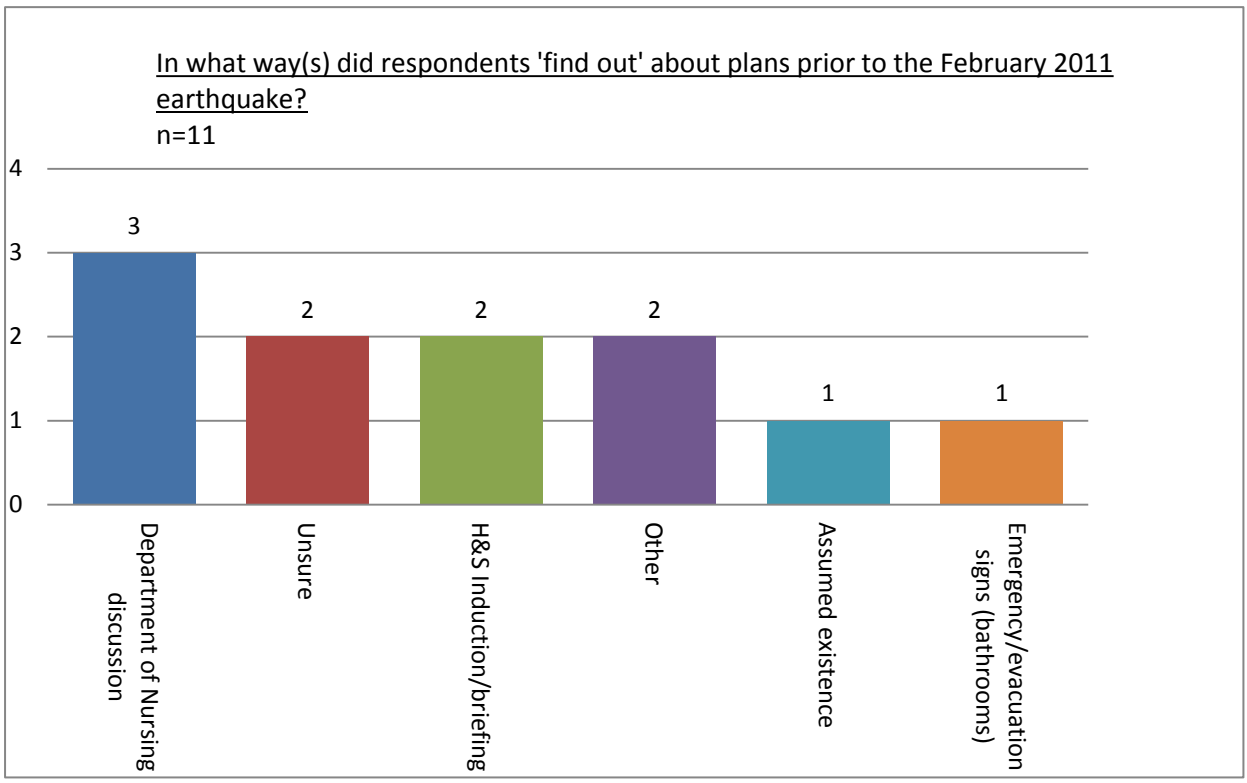

Figure 7: Ways plans were communicated

When asked what plans, if any, informed their actions on the day of the February 22nd 2011 earthquake, 13 academics (78%) responded with answers ranging from no plan (n=3, 21%):

> *Nothing formal that I recall, but the day is a blur.*

to using knowledge of the more familiar fire evacuation/emergency procedures as a basis for action in the earthquake, and relying on others with defined emergency roles such as marshals:

> *Based actions on Fire Training. Exit building after shaking had stopped and aimed to meet outside building as per Fire Drills.*
>
> *None other than general evacuation plan and just being directed by marshals.*
>
> *Waited for announcement from CEO*

to taking actions specific to earthquake procedures:

> *Just to stand in the door way while the shaking was happening and then evacuate in an orderly fashion. Not to re-enter the building.*
>
> *I knew to not run outside, and to check the other offices to make sure that staff were not harmed or trapped.*

COMMUNICATION

The degree of disruption and uncertainty immediately following the earthquake on 22nd February 2011 significantly impacted on the ability of individuals, and the organisation as an entity, to communicate both within and outside the organisation. This was recognised by staff. When respondents were asked whether communication channels were clear and direct, when and where they were needed, immediately after the February earthquake, the following comment describes the context of that time:

> *No. Chaos, absolute chaos. It could not have been anything else at that point. No-one knew the extent of the damage; the aftershocks were strong and caused panic every time one occurred. I cannot see how the situation could have been managed any differently. Everybody was so shocked.*

In the emergency evacuation from the buildings, many people left their possessions in offices or classrooms. Widespread structural damage to city infrastructure, such as power supplies, telephone networks, and the internet, further impeded communication even when people did have access to a phone. For some people this situation continued for prolonged periods after the initial February earthquake.

> *There were communication difficulties with cell phones left in offices and the internet being down, took some time to get communication channels up and running again.*
>
> *I had very limited forms of communication for a number of days due to limited cell phone coverage and no power.*

These very obvious issues with communication meant that staff accepted some degree of confusion in the communication channels:

> *I believe people worked to respond to situations as best as possible considering situation.*

> *Given the difficulties with power, phones etc I think they were as clear as could be expected.*

However, while it is possible to deploy a formal communication process fairly quickly, collateral information flow that may affect people's actions is not easily controlled in a disaster situation. CPIT's close proximity to the central city, where there was loss of life and widespread catastrophic damage, meant that alarming information was also disseminating from this source, and from the media, contributing to the confusion:

> *… much information was coming from distressed people who had just returned from town.*

Some staff indicated they perceived confusion and delays in communication in the immediate post-earthquake period, noting:

> *Seemed to be a lot of hanging around before information was given.*
>
> *Once we were all out of building in car park no senior managers took control that I am aware of.*
>
> *We were told to wait for an important announcement from CPIT. That was someone (can't remember who) standing on a box and saying "CPIT is closed. Go home".*

Several respondents answered this question not only in relation to the immediate period following the February 22nd earthquake, but to the early days of the response stage. Generally there was a positive appraisal of communication over this period with one respondent noting an improvement in communication from September to February.

> *To a certain extent. I think that the communication channels definitely improved in comparison to September, and really we were hampered by a lack of ability to contact people through power/internet/cell phone issues.*

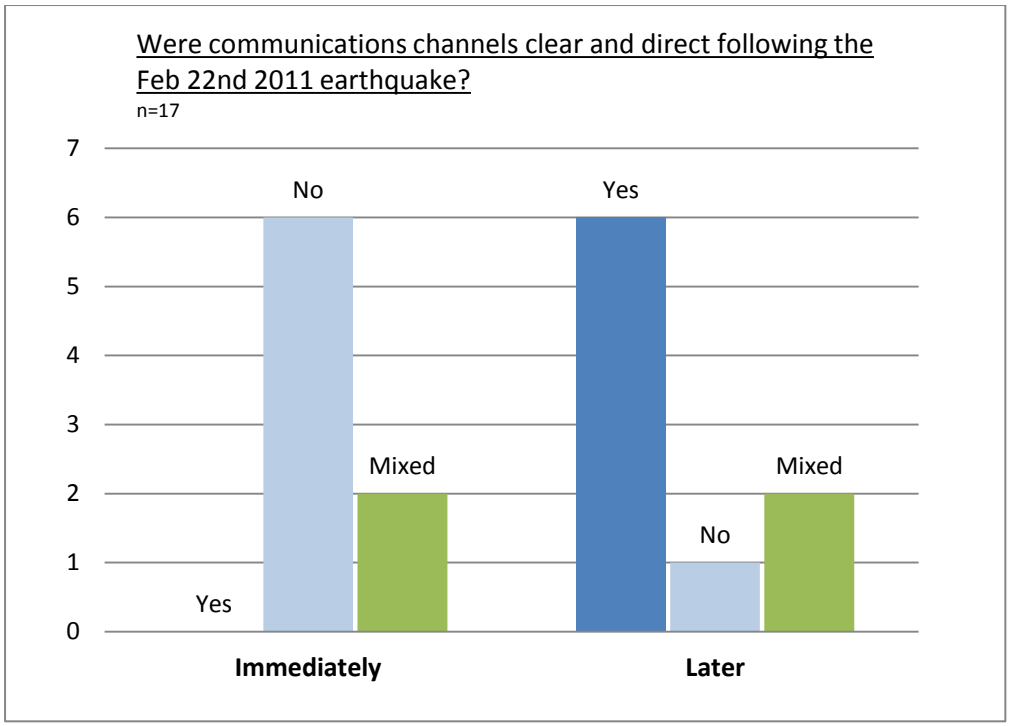

Figure 8: Were communication channels clear and direct post February 22nd earthquake

Other features of the communication channels used beyond the day of the earthquake, that drew comments from respondents, included the CPIT Website, social media sites (such as Facebook) and the texting system the Head of the nursing school used for communication with staff. The Head of School was specifically mentioned as being an excellent communicator in these circumstances, keeping staff well informed:

> *CPIT website useful. BN Facebook site useful, especially as Moodle down. Whole School text system useful to get messages to staff*
>
> *The Head of school was fantastic in sending out texts to update us...so yes. CPIT quickly got a pseudo website sorted and we got a Facebook page up and running.*

The issue of impaired communication from lack of access to the internet and phones due to infrastructure damage continued; however, not in a predictable way because of the differing levels of damage in various parts of the city. This meant that no one means of communication could be relied upon or could meet all needs:

> *…as good as could be expected. I relied mainly on radio broadcasts as didn't have access to internet and txt messages from our Head of School.*

A vital part of communications during the disaster related to how decisions were communicated to the learning community. Respondents were asked for their perceptions of how decisions made by senior management, regarding operational matters, were communicated to them.

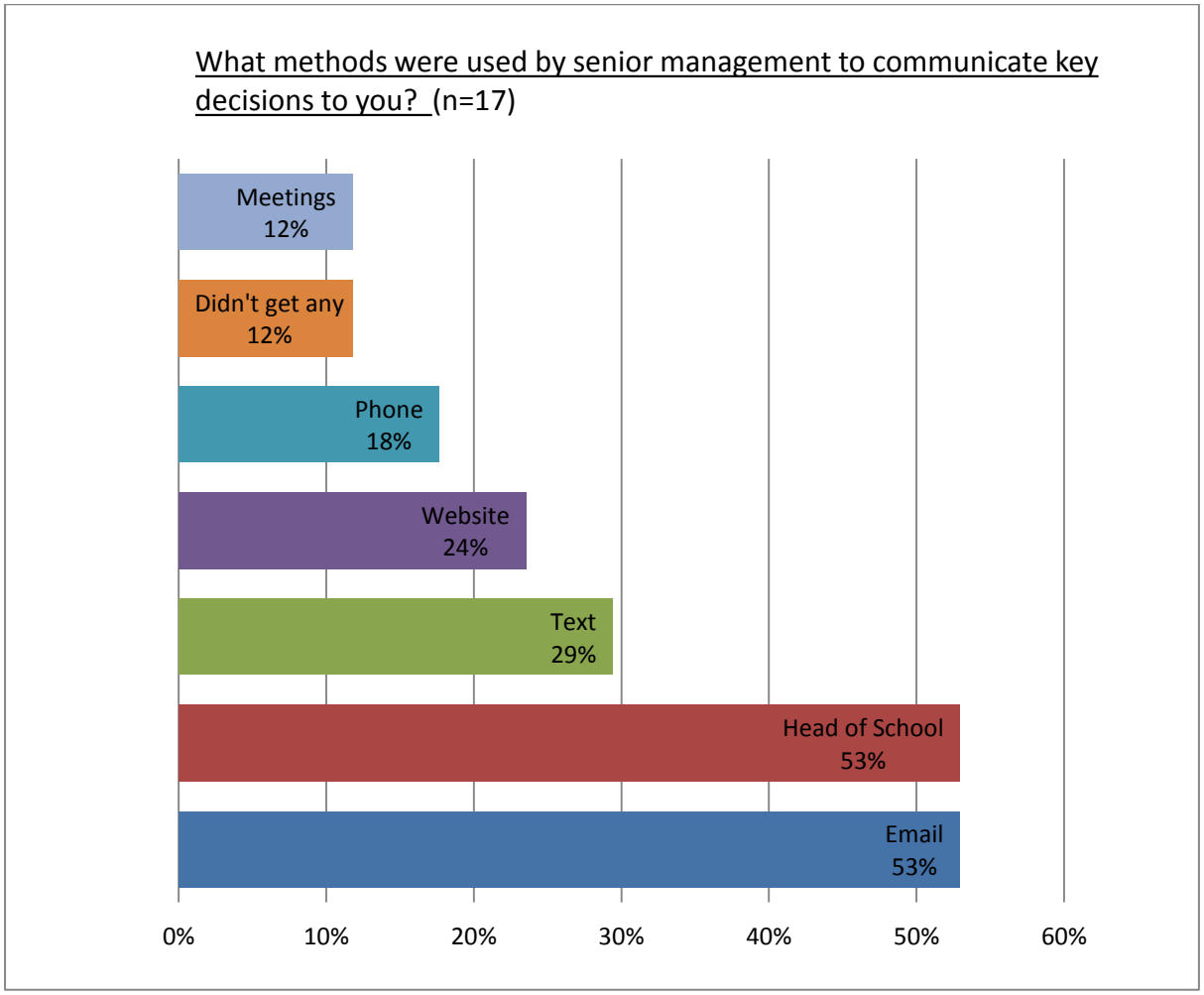

Figure 9: Methods of communication used by senior staff

Respondents commented in relation to both the 'who' and the 'how' of communicating operational decisions. One respondent noted:

> *There was a considerable effort made to contact us. Communication was consistent and regular and despite the disadvantages caused by mobile phones left in offices and the damage caused to the IT system. Managers worked really hard to keep people informed.*

Conversely however, another respondent in answering how decisions were communicated said:

> *They weren't as far as I know.*

What is unclear from the answer that "there was a considerable effort made to contact us" is the level of manager being described. However, other responses given lead to the conclusion that this relates to managers at the School rather than organisational level. The comments also reinforce the importance of communication from a level of management that staff are used to communicating directly with, in this instance the Head of School and Dean of the Faculty.

One respondent stated:

> *Our head of school kept us informed with regular emails and we could contact her on her home or cell phone at any time… Our Head of School hosted a shared lunch at her home for all nursing school staff and our Dean came to speak directly to us re decisions made.*

Another respondent also noted the importance of this event saying:

> *I think the get together at [the Head of School's] house for lunch was an important and vital chance for everyone to meet and discuss the issues.*

The stages of a disaster also have the potential to impact on staff's perceptions of communication. The period immediately following the disaster was full of confusion and staff movements on that day differed with individual circumstances, some leaving the campus earlier than others depending on their personal situations. One respondent said:

> *Never saw or heard from any senior managers on the day before I left.*

Despite the difficulties with phone and internet communication (as previously described) electronic media were the most used means of communication. Respondents noted cell phone messages and texts initially, then email, and finally Moodle and the website when they were accessible.

BALANCING PROFESSIONAL RESPONSIBILITIES AND PERSONAL IMPERATIVES: SHIFTING PRIORITIES

When priorities after the 22nd February earthquake were elicited, 100% of lecturers responded (n=17). Family was stated as the priority by 12 people (70.5%). Ten (58.8%) ensured colleagues were safe, and five (29%) ensured students were safe.

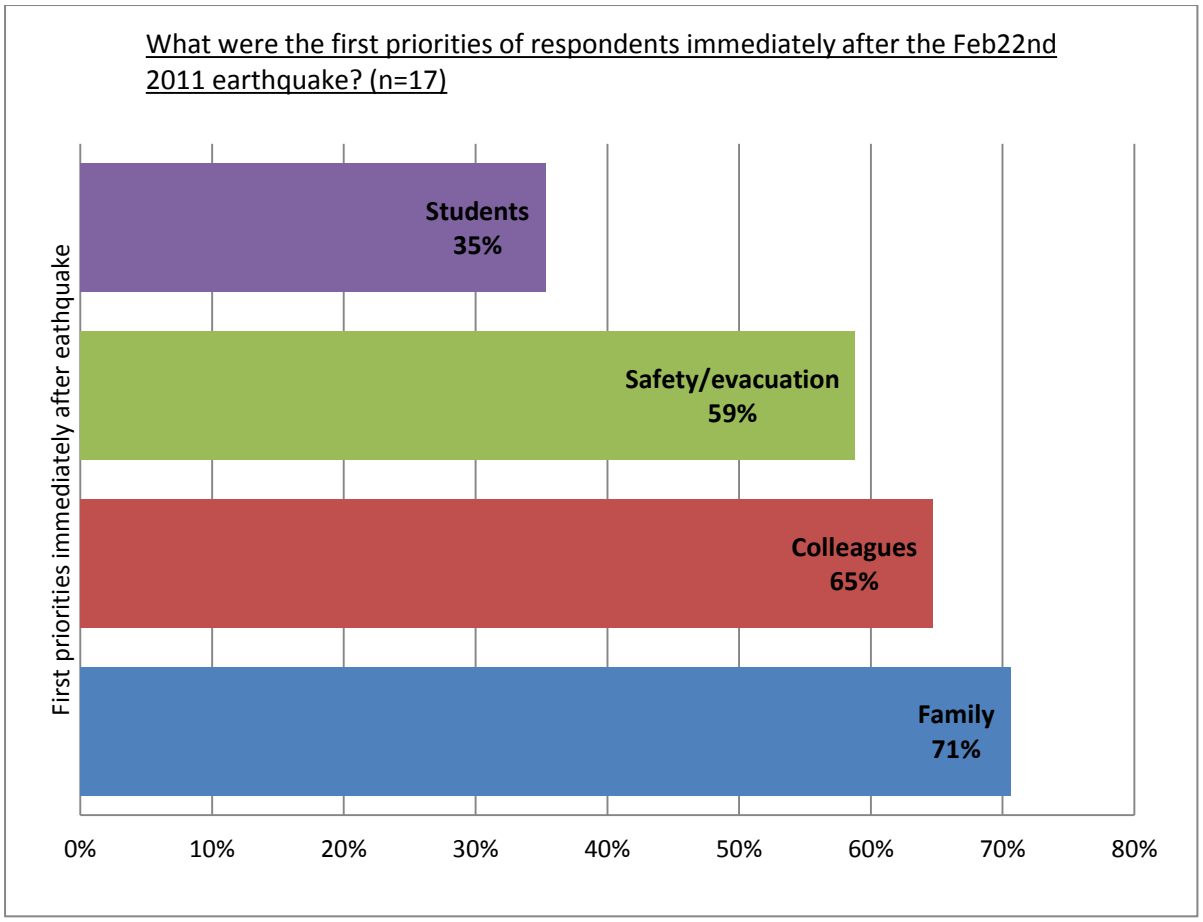

Figure 10: First priorities of respondents immediately after February 22nd 2011

However, prioritising is more complex than just citing these numbers suggests. While a number of respondents were clearly concerned for family and named them as their highest priority, it is evident in their comments that their sense of urgency about finding family was occurring contemporaneously with them attending to the safety of colleagues and students; showing how priorities shifted according to need as the disaster unfolded.

> *Finding my children.*
>
> *My family. Once I knew that my colleagues were safe and the building had been successfully evacuated.*
>
> *Contacting my family members to make sure they were ok. Ensuring colleagues and students were safe. Getting home safely.*
>
> *Get out of the building, check on colleagues, contact family.*
>
> *Protect myself under the desk then check on my colleagues, then we assisted students down the stairs & out of the building.*

To ensure those around were ok - not injured. To contact next of kin.

Running, made sure that all adjacent offices were clear and occupants OK. Then did the same for classrooms and toilets on floor.

Lower numbers of respondents citing students as the primary concern may be explained by a difference in immediate circumstances at the time of the earthquake when some lecturers would have been commencing a class, whereas others would not have responsibility for students at that time. After the evacuation it was evident that staff who had not been in class at the time also attended to student welfare.

Calming students, attending to extremely anxious student ... Accounting for colleagues, attempts to contact family.

Self and student safety - safe evacuation from the building with colleagues finding, students in the car park, contacting family.

One respondent, who was not at work at the time, notes that as soon as family were found to be safe, priority then shifted to professional responsibilities.

As I was not at work my focus was on my family and friends, after that was all sorted I then made contact with the Head of school and colleagues as possible

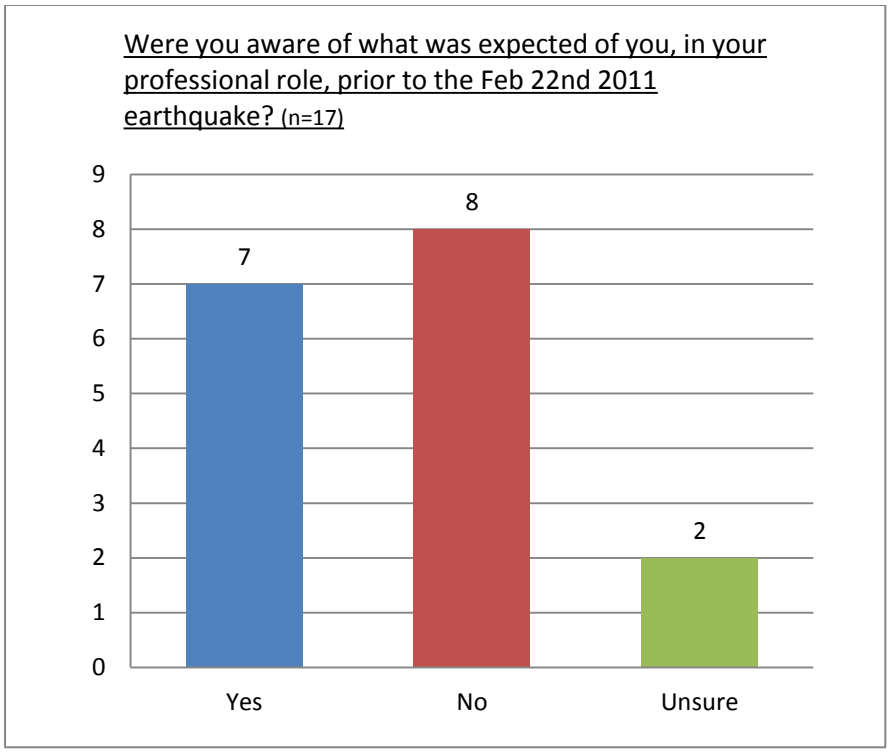

Figure 11: Role expectation prior to February 22nd 2011

Further respondents claimed to be unsure, but then went on to describe the role they took, all of which actions were focused on safety of students and colleagues.

> *Not really, other than if I was in a classroom to keep students safe, evacuate and keep updated through CPIT website.*
>
> *No, not really. I think I knew that a single nominated person was responsible for doing this checking, but I wasn't sure this had happened, so I did it myself anyway.*
>
> *Not really. My instinct or natural expectation was student safety as a priority. As students were spoken with and eventually left, I thought as a nurse, I wanted to head for the hospital to help, but was told the hospital was being evacuated.*

The remainder outlined roles not dissimilar in content to those who were unsure of their role, but these staff had a greater degree of certainty about what constituted the role they were assuming making comments such as:

> *I knew that we had a responsibility to take 'control' and advise students accordingly.*
>
> *Usual evacuation policy after that wait for direction.*

Interestingly, the one staff member not at work also exemplifies shifting and balancing priorities, finding a role to undertake from outside the immediate environment of the organisation:

> *I wasn't at work so no immediate responsibility to the workplace, however I commenced trying to sort ways of contacting students.*

LEADERSHIP AND FOLLOWERSHIP

Leadership after the February 22nd 2011 earthquake was, as has been discussed in the interview section, complex and multilayered. The comments given in the surveys from staff at the School level also reflect this complexity with extremes of opinion being evident:

> *Head of School and senior managers were absolutely excellent. I felt that the situation was well handled and calmly carried out.*
>
> *No leadership for a long time. We were left to fend for ourselves.*

Recognition of the context and the difficulties attendant on CPIT's location in the Christchurch CBD was taken into consideration by some respondents. Both in terms of the horrors of the disaster

> *I'm not sure if there was any [leadership] before I left. I personally just made a decision to go and locate my family. It was pretty clear we weren't going back in the buildings I remember saying come on who's coming with us and just started walking in a dazed and traumatised state. It was all so surreal people walking out of CBD covered in grey liquifaction like they had come out of World War 2. I had seen the basilica come down and that to me was like watching 9/11. I knew it was bad and just wanted to go home to my family*

and in relation to the restrictions on the organisation arising from the state of emergency and the campus being inside the 'red zone'.

> *To be honest, I think CPIT as an institution floundered a bit post February. But also - I think that the institution was confined because of the restrictions placed upon it by Civil Defence.*

Some comments identified those in explicit leadership positions in the School, and reinforced the importance of leadership and communication at this level of the organisation:

> *The Dean and Head of School.*
>
> *Head of nursing school, excellent job!*
>
> *Head of school and Dean above communicated plans from CEO but made decisions independently concerning staff & students.*

While others noted where leadership emerged, not necessarily from an identified leadership position:

> *Leadership was not really evident immediately following the quake, with the exception of [academic staff member], who was doing her best to evacuate, reassure, and avoid mass panic. Subsequently I was very impressed by the Head of School's calm demeanour and decisiveness, both toward students and staff*
>
> *Within our school people were great and took on specific functions to get things moving asap for students.*
>
> *Unsure about immediately, but [Head of School] was excellent in communicating on a daily base with the nursing team over the first few weeks .*

For some people, things seemed just to happen and it was not clear where the source of that leadership was:

> *Someone did make announcement that CPIT was closed, and for people to head home. I am uncertain who they were. In the next day or so, our Head of School attempted to contact everyone by cell phone and email.*

The perception that key roles and leadership were in the School was evident, as the CEO was thought to either not be involved, or that the CEO's decisions were around issues further removed from immediate matters.

> *Programme leader then Someone from Admin ?who. Not the CEO*
>
> *For me the leadership came from Head of School then CEO as decisions made around closure.*

MAKING DECISIONS

Decisions about resuming teaching were understood to be made at a senior management team level and communicated via the school management (Dean and Head of School). Most respondents identified the move to shared premises with Lincoln University as the key decision made about teaching and learning.

> *Decisions were made by the management team of CPIT that impacted on the decisions made by the school. These were communicated via the HOS to us all.*
>
> *Once teaching space had been found then a date was set to resume teaching. I think this happened at Dean and Head of School level*
>
> *I believe the Head of School and other senior CPIT staff made these decisions. We were informed via email that a re-location to Lincoln was required.*
>
> *Head of School in connection with other managers & safety team, CEO*

Once that decision had been made by the senior management, decision making then devolved to a School level, and staff had a greater perception of the School's, and their own, involvement in decision making that was essential to resuming teaching and learning. This occurred through various individuals and groups that worked together to plan the educational delivery.

> *Appeared to be senior consultation with all staff about resuming teaching, Head of School and the rest of the senior team did a superb job organising space at Lincoln.*
>
> *Met with HOS, Programme leader, Clinical co-ordinator & Academic leader to plan for moving to Lincoln University. Good communication from HOS.*
>
> *Key senior staff members assigned distinct roles & areas of responsibility*
>
> *Management of how individual papers in year one were to be delivered made as a year one team. Pooled online resources and adapted lesson plans to accommodate delivery of programme at Lincoln.*

Organising support for academic staff to resume teaching in the new context, for example orientation, was also part of the decision making.

> *We had orientation day and further meetings at Lincoln and were provided all information and new timetables by senior staff such as [Head of School and other senior staff within the School] and some Lincoln University staff.*

TAKING ACTION

Academic staff were asked to identify responses or strategies they considered most useful at the time of, and following, the February 22nd 2011 earthquake. These can be organised variously around those that were immediate or longer term, and those that impact on the personal or the professional sphere. In the immediate period following the earthquake personal and family safety and welfare concerns were necessarily of higher priority than professional ones in an educational context (where the work is non-essential to the preservation of life and wellbeing, unlike, for example, in the health care setting where this distinction is not so easily made). Strategies listed by respondents reflected this, and show a change over time as the situation became less urgent:

> *Having some key staff to keep students and staff away from buildings and falling debris. Someone did stand up 30 to 45 minutes later and updated the large groups of students and staff. This person was female but unsure what School.*
>
> *Initial closing of CPIT until deemed safe to return.*
>
> *Being able to go and check on family.*
>
> *To close CPIT - (delayed/ indecisive decisions after September Quake). More assertive decision making in February.*
>
> *Getting communication up and running.*
>
> *Head of School's cell phone messages to let people know what was going on were extremely helpful.*
>
> *Initially, really not much [useful strategies] that I can identify. I was fixated about the well-being of my family members. In the days following it was good to be kept regularly informed about decisions and progress.*
>
> *Not having to think about CPIT for one month. Our lives were in chaos and I personally could not have coped with thinking about work on top of that.*
>
> *School being closed so no pressure to leave difficult home circumstances.*

> *The information about the closure of CPIT was critical, having that broadcast on radios was very helpful. The website was helpful. Getting a school Facebook site up so quickly was excellent as students were then able to get their questions answered very quickly.*

The fact that this study was undertaken in a School of Nursing, however, did mean that there was concern for, and a relationship with, the School of Nursing's industry partners in the health care sector. A number of staff and students worked with the local District Health Board (DHB) to assist and found this a helpful strategy:

> *Meeting up with colleagues, working with the DHB.*
>
> *Asking staff and students re: availability to help in health sector as able.*

It was only later that the focus of what were considered useful strategies moved to educational concerns:

> *Being allowed in with security to obtain essential teaching resources.*
>
> *Keeping an updated contact list, enabling students and staff to re-enter the building slowly and in increments. Identifying strategies to accommodate anxiety during exams so that students could concentrate on the exam. The constant information that was provided regarding repairs to the buildings and vigilance.*
>
> *Rapid timetable planning & making teaching staff aware of their available classroom time to reorganise teaching schedules and course delivery. Moodle access to communicate with students. Communication from head of school very useful. School meeting at Lincoln to see others and ensure staff were ok very useful.*
>
> *Setting up a hub at Sullivan Ave (*This comment relates to the administration facilities that were set up at the Sullivan Avenue campus of CPIT while the city campus was behind the cordon in the red zone and thus inaccessible*).*
>
> *Having facilities available to access work information and to meet with other colleagues. Meeting with colleagues to work out time tables. Being able to use facilities at Lincoln and continue with teaching.*
>
> *Knowing when the organisation was likely to re-open.*

Staff were also asked which responses or strategies were 'not helpful' in the weeks following the February 2011 earthquake. Fourteen staff responded to this question, six of whom stated there were no unhelpful responses. For example:

> *No. I think everybody did what they could. At no point did I come across unhelpful responses.*

Not given what everyone was going through, I think people were given the time they needed given their personal circumstances.

I believe this disaster was handled well, unlike the September process which felt quite rushed.

Unhelpful responses or strategies identified included comments relating to safety issues, such as:

No-one took an account of students while there or when they had left. Absence of leadership. No-one knew who to talk to, to find out information or guidance. Seemed chaotic, like every person doing their own thing.

Loss of information and communication channels, which again included an element related to responsibility for students :

Limited access to computers initially so couldn't access a class list to check on students in clinical.

No knowing if I was supposed to get in contact with students individually. Not knowing initially when we will be starting back.

Losing IT access at CPIT - no access to electronic files etc. & email

The restrictive nature of procedures put in place when limited access to the city campus was finally granted by Civil Defence were unhelpful to staff when viewed in the light of a subsequent relaxation of these rules:

I think the strategy of getting in to collect items from our offices and only having 5 minutes with someone standing over you was extremely unhelpful; especially when 2 days later we had pretty much free access to our rooms, and it was a stark contrast.

Personal circumstances were potentially a mediating influence on what was perceived as unhelpful. Two comments demonstrate how some actions or inactions were personally stressful to some participants:

Taking so long to have a staff meeting where we could all connect for support was frustrating.

Some people were insensitive, as they were comparatively unaffected and let others know that.

Barriers specifically related to getting the teaching and learning systems up and running following the February earthquake included personal and professional circumstances. Personal situations had

an impact where the city-wide infrastructure issues impinged upon capacity to work from outside the polytechnic:

> *Lack of power at home; not being able to access resources at CPIT (not anyone's fault).*
>
> *Week 1 absence of electricity, water/plumbing.*

It must also be remembered that the efforts to resume teaching and learning activities were undertaken in a context of continuing aftershocks which many people found very tiring:

> *General fatigue due to continued aftershocks.*

Other barriers related to the lack of facilities and teaching resources, disrupted information and communication systems, and the time it took to reorganise a system for teaching and learning:

> *Accessing resources. Not having an office and access to IT equipment.*
>
> *It was more waiting for the systems to be put into place.*
>
> *Not having a laptop that had a capacity to handle my normal CPIT workloads - mine is an old notebook. However once Sullivan hub set up this issue resolved. My inability to access shared drive [CPIT server] from home.*
>
> *The biggest problem was communication platforms were down eg CPIT webpage and Moodle.*
>
> *Trying to contact students as we did not have access to contact details for students...we need a [student management system] site 'in the clouds'.*

Some types of learning experiences required within the BN programme also proved to be more difficult to manage post-earthquake, despite having facilities to share at Lincoln University:

> *Running a clinical simulation at Lincoln very challenging given the classroom settings.*

The generosity of Lincoln University in giving up some of their rooms to CPIT was greatly appreciated and is not underestimated. However, teaching an entire degree programme in one lecture theatre and two tutorial rooms did present challenges that drew mention from the respondents:

> *We were hindered by space and limited facilities, but that was to be expected. I think everyone was aware of the need to resume the courses and the necessity of working together to make sure that the important factors were maintained. All staff were working to the same end and this helped us to support each other and make the most of it.*

> *Limited range of facilities at Lincoln. Having to redesign much of the teaching to adapt to the classroom space assigned.*
>
> *Learning about the new facilities and systems.*

On a positive note, respondents reported the teamwork and individual attitudes among both staff and students that enabled barriers to be overcome:

> *I knew we would have to adapt to a new physical environment and a lack of some resources, but, like others, used common sense and "can do" attitude (which was common and prevailing)*
>
> *As part of a team we were asked to carry on teaching in a different venue; we did not have a clinical skills area to carry out workshops/tutorials but students & teachers all did their best to make the most of the learning opportunity as mutual gratefulness the course could still continue.*
>
> *Lots of teamwork and strategising made it run remarkably smoothly.*
>
> *It was fantastic to have IT support, such a team spirit and the flexibility of colleagues to achieve goals.*

However, a BN programme is a complex educational enterprise, with varying teaching approaches and differing student learning needs at different levels. It appears to not always have been apparent to all staff why particular decisions were made about teaching requirements for varying parts of the programme, nor why some courses may have been able to be taught in a more flexible way using online resources than others:

> *Felt there was significant inequity in who was teaching where etc within school of nursing, which became a barrier.ie some people just chose either to put everything online or not teach at all- a lot of staff just soldiered on because we had to for the students, and some seemed to be at Lincoln more than others.*

PREPAREDNESS AND THINKING AHEAD

Respondents were asked in what ways they developed their own preparedness following the September 2010 earthquake. Sixteen (94%) people commented. At that time, only a few had taken specific steps to prepare for another sudden event, such as an earthquake.

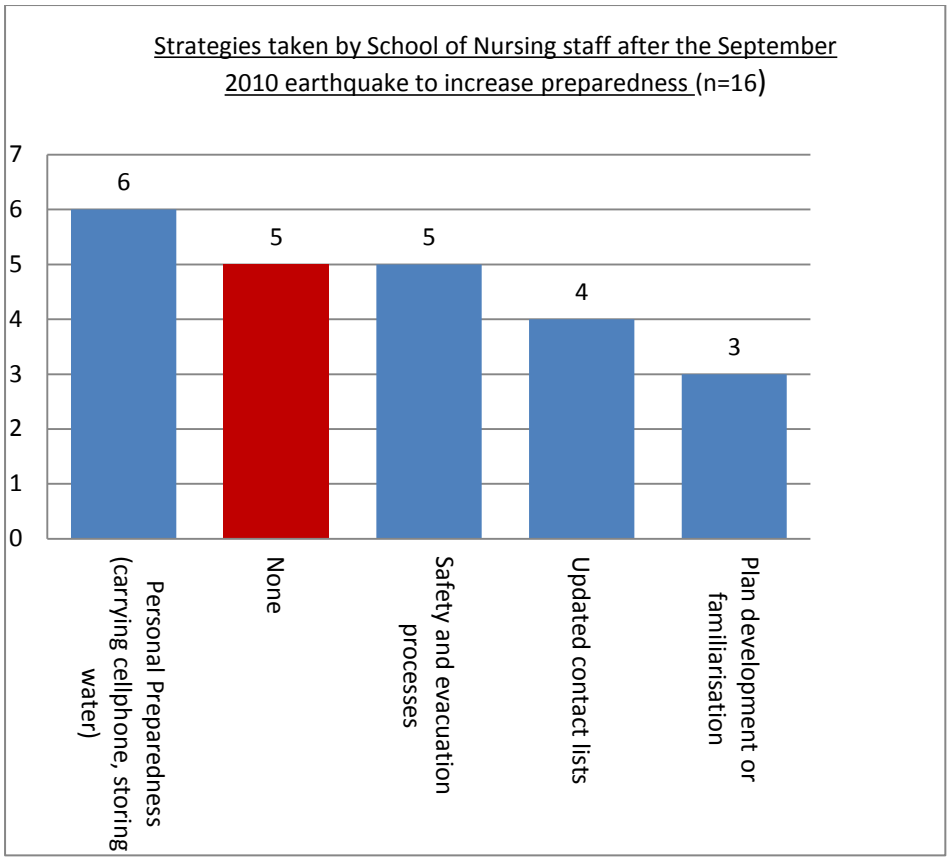

Figure 12: Strategies taken by School of Nursing staff post September earthquake

The impact of context was readily apparent in these responses. The questionnaire was answered after the subsequent February 2011 earthquake thus giving a point of comparison between the context surrounding September 2010 and the later, more catastrophic, disruption and continuing uncertainty of February. Comments were made reflecting this, such as:

> *I didn't, as I imagined Sept 4th was a one off event.*
>
> *The September earthquake did not seem as devastating because no lives were lost and it happened during the night. I don't think I took it seriously. We were fortunate because there was little disruption to our lifestyle.*
>
> *Didn't think it would happen again, head in the sand!*
>
> *I was very naive. I did listen to TV ads about being prepared but did not think about whether we would get more earthquakes. I was so busy being grateful at the time that there were few effects from September for my family. Then Boxing day, 22.2.11 and 13.6.11 happened!*

Several respondents noted that they attended to preparedness on a personal level, particularly around their capacity to maintain communication:

Cell phone changed to plan so not reliant on 'top up'.

Keeping cell phone on me. Very little otherwise.

Kept cell phone with me. Made plan to meet with family. Ensured bottled water and updated first aid kit at home. Did not expect another major EQ.

I have changed a few things: I now have a nice new handbag that stores all my important things (cellphone, car keys, wallet) and I take this with me to class.

Others developed survival kits and plans at home, and focused on safety in the event of another disaster, for example:

Put together a survival kit at home & read updated emails on instructions at previous work situation as to how to react in a future earthquake.

I already have plan at home for responding to an unexpected disaster.

How to get out of the building!!

Developed strategies for contacting my own close family and friends. Thought about where I was often in case of another ie: How do I get out of here.

Several respondents noted some changes in their preparedness in the educational setting. These were in relation to promoting the safety of students, and communications strategies. In one instance the respondent noted an increased attention to learning design for these different circumstances:

Made sure all students had correct email - not much else changed.

Made sure students were reminded at the beginning of each class about safe response in the event of an earthquake.

I also see my role as a lecturer as one who provides strength to students and shows them that we can cope in crisis and this is how we do it.

Increased flexibility in my approach to educational design increased. Increased awareness of evacuation procedures.

Respondents were asked to 'revisit' their preparedness in questions that sought their thoughts about what strategies they would consider using in another sudden event (such as another earthquake). Fifteen academics responded. One respondent was not sure about any future strategies. As previously, immediate safety and family were key priorities for future strategies:

A kit should be assembled for every School to be able to grab quickly and should include basic 1st aid, water, paper, pencils, radio, large torch, cell phone and spare batteries. Someone to physically gather names, contact details and where they were last seen or are currently heading on paper. Clear directions. Education and Preparation [drill] on potential disaster [besides fire].

Since returning to teaching in N block in July I started practising in class drop hold cover… Also I now take a list day one of semester of all students' names and current cell phone numbers and keep on me at all times.

Gathering children and heading home.

Make sure had phone, car keys etc on me - very disruptive not having personal items.

Others included strategies related to communication – both to families and in relation to professional responsibilities; this included ensuring they had the means to communicate available:

Facebook - social networking really came to the fore in this circumstance.

Am keen to get iPhone or similar so access emails/news and like more easily.

Contact by text, and website.

Offsite backup for IT.

Five respondents mentioned having contact lists for both staff and students. Two staff noted that having an opportunity for staff to get together would be a helpful future strategy:

Having a base for teachers to meet and facilities to access work information.

The other major area of preparedness mentioned related to teaching materials and the capacity to meet student learning needs in a flexible way:

Having on-line teaching resources prepared.

I have started to double my teaching resources & have an extra set at my home in case the polytech is closed again. Also have a pen drive with power points etc so can adapt to any teaching space.

Ensuring essentials are delivered or available - worrying less about niceties.

Given their experiences of September and February, respondents were asked whether their response differed at the time of the June 13th 2011 earthquake. The majority answered yes to this question (see Figure 13 below)

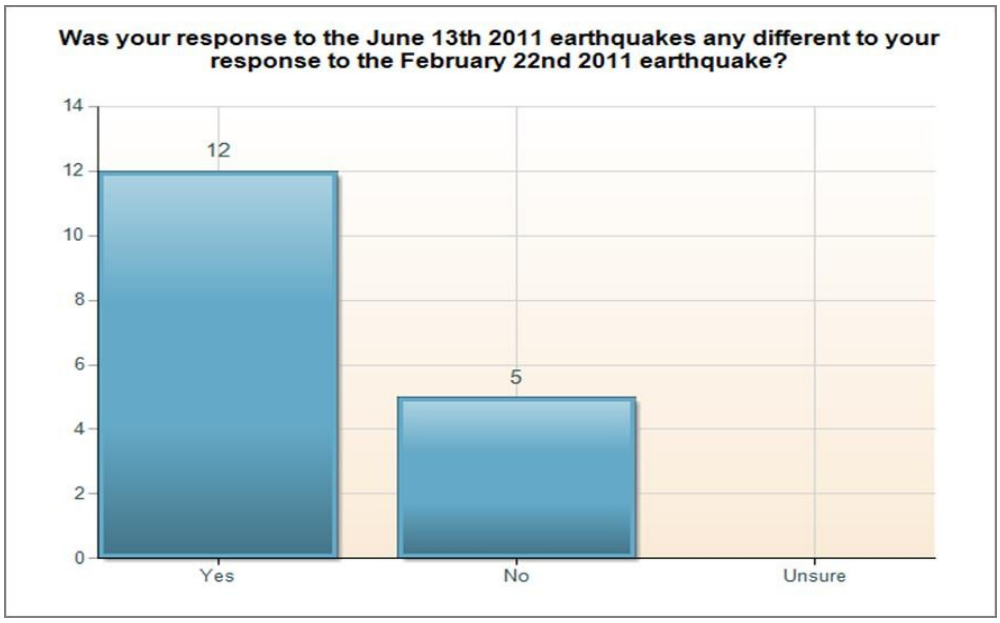

Figure 13: Change in response February 2011 to June 2011

When asked why their response differed, or not, thirteen respondents noted they were calmer than previously, while one, understandably, found June a worse experience as their home was significantly damaged in that earthquake. Responses of those who felt calmer linked this to a range of reasons including the magnitude of the earthquake, the safety of the buildings that remained, their own and the organisation's state of preparedness, but also highlighted some aspects that had not changed such as no list of students who were in the building at the time nor who left the premises:

> *I knew the building was deemed safe to occupy, and that the June quakes were less severe than Feb's, therefore I was more relaxed - and took more time to reassure other students and staff.*
>
> *Wasn't so disturbed. Most concerned about staff / students getting to their children and families and sorting out teaching later.*
>
> *Knew what I had to do. Get my gear and get out. Needed to check on family.*
>
> *A practised response, but this was different as the fear levels were different - no deaths, essential services up running a lot faster etc, can't compare the two really.*
>
> *I was less anxious to get home and realised I had to prioritise getting food and petrol. Not as overwhelmed.*

> *June 13th EQ did further damage in my personal part of town, but we were better prepared this time. Water and electricity was restored within a day or so. The CPIT was much better prepared with quick emails and phone communication established. Also hospital and city itself were quickly restored to pre June 13 EQ. Following immediate evacuation of CPIT building, there was stronger presence of CPIT staff giving directions. Still no list collated of students at CPIT or who had left.*

Beyond the changes in their own feelings of preparedness, and strategies for preparedness, staff were also asked about other strategies they thought would be useful following another sudden event. Fifteen responses were received. Their suggestions were related to areas such as communication and contacts for staff and students (one respondent raised the relevant issue that it needs to be considered where responsibility lies for this), the need to get staff together to support each other, and clear action plans:

> *I believe that we need to have a way in which to contact all students instantly. ie text messaging. Although - to what level is our responsibility? ie I could easily say that we need to know who our students are and where they are and if they're ok post a disaster, which is what I would want to do - but realistically... is this my responsibility? (or even the institution's responsibility). It did concern me that we had no way of recording who came out of the buildings... but then I also think that where/what would we check them against? I know that we now have a school list of staff, but who is responsible for 'checking' on those staff?*
>
> *Having access to all students' contacts so that different tutors have the responsibility to be in touch with a group of students. Share the responsibility.*
>
> *Perhaps it would have been good to get as many staff together as soon as possible to re-establish supports and begin talking about what could be done to get things up-and-running asap.*
>
> *Cloud based access to information including a list of staff contact details.*
>
> *Clear short guide on what to do, where to go (meeting place or go home) who and how to contact for further updates. Occasional reminders prior to and during semesters. Expectation stated that students who are able, should resume independent learning - textbooks and online regardless of closed CPIT.*

When asked how successful they thought the School of Nursing had been in restoring student access to teaching and learning activities, processes and resources, all seventeen respondents replied positively, for example:

> *I think it was very successful we worked with what we had at the time and adapted as necessary. This is reflective of our nursing backgrounds.*

I believe the School of Nursing has given students great support and students have managed incredibly well.

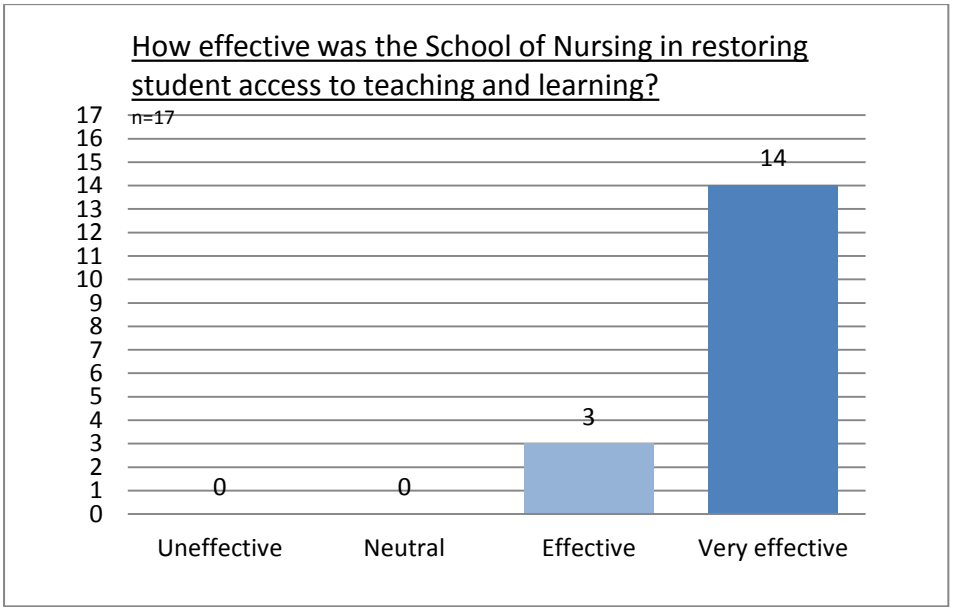

Figure 14: Effectiveness of School of Nursing in restoring teaching and learning access

Phase III – Artefacts

ARTEFACTS PURPOSE

The gathering of evidence from the electronic and documentary artefacts is of a corroborative nature to assist in the exploration of the preceding two phases – the interviews and the survey. Examining these outputs of decision making, planning, and action increased the rigour of the findings.

Very few artefacts were associated with the September 2010 earthquake as the physical facility at CPIT was undamaged and physically accessible after a short time. However, the enormity and impact of the magnitude 6.3 earthquake on February 22 meant that over time, electronic artefacts provided a narrative of an educational institute responding to, and recovering from, an unprecedented disaster.

ARTEFACTS SAMPLE

Data was obtained from the CPIT administrative and ICT systems, collected in electronic or hard copy form as appropriate and as available.

ARTEFACTS DATA ANALYSIS

Captured data was entered into a database or remained in hard copy as appropriate. Content analysis was undertaken as befitted the data collected.

ARTEFACTS FINDINGS

Key themes that emerged from analysis of the interviews and the survey are interwoven throughout many of the artefacts, which include emails, memos, web postings, media releases, procedure and management manuals, policies and plans. While the themes of Decision making and Leadership and followership, Action plans, Preparedness and Thinking Ahead were all evident in the artefacts, the critical focus of these was on connecting and engaging with staff and students, and communicating key messages at critical times. Communicating in times of crisis and profound uncertainty can

provide people with a sense of normality albeit in an uncertain and unstable context. This could be seen immediately following an earthquake and was repeated in every earthquake sequence when telephoning and texting, the ubiquitous way of 'staying connected', was no longer instantly available.

TEXTING BETWEEN MOBILE PHONES

Telecommunication in today's world is heavily reliant on cell phones and texting. However immediately following any earthquake event Christchurch city experienced complete overload and shutdown of cell phone communication systems as thousands of people concomitantly tried to contact close family, relatives and friends. Unpredictable cell phone access remained problematic during the first days following each event. In addition many staff, fleeing buildings during the earthquake, had no time to collect personal belongings which included their cell/mobile phone. When the Head of School (HOS) (Nursing), the first to instigate contact with staff, tried to contact them, this was within a setting characterised by disorder. The HOS had to rely on staff relaying text messages they had received to colleagues as and when they were able. It wasn't until staff were in a position to provide alternate cell phone numbers, that a full distribution list was developed to work as a conduit for necessary and relevant information to all school staff. Accurate and consistent information from a reliable source was invaluable, but extremely hard to provide at this time. Once staff had reliable and consistent access to cell phones and cell phone communication systems were stabilised, texting was used to provide key messages and became a source of collegial support, assistance and information.

THE STUDENT FACEBOOK SITE

The effectiveness of another relatively recent social media communication tool, ***Facebook***, for a specific purpose in times of crisis, uncertainty and instability, (Bird, Ling & Haynes, 2012; Dabner, 2011) was demonstrated in these first critical weeks after the 22nd February event. A School of Nursing Facebook site was established on the 28th of February 2011. This met two goals: it provided a crucial means of communicating with students in the community, and it also informed staff of the most pressing student concerns and issues.

There were 2,064 student visits made to this site in the first week of March, which increased to a peak of 4,260 visits over the following week. Students maintained contact and sought information by creating threads based upon topic - there were 71 posts in the 'pages' first week of operation, and a further 343 during the second week. A summary of Facebook visits towards the end of the following month, April, shows a considerable decrease in activity with only 136 visits in total as face-

to-face communication increased. At this stage the programme had been physically relocated and teaching and learning activities were well underway in an alternate location.

Social networking was shown to be invaluable, for example, when the Canterbury District Health Board contacted the HOS urgently requesting assistance from student nurses in the hospitals. 180 out of 600 students (approximately 30%) responded to a request posted on Facebook; this demonstrates the effectiveness of contemporary social media in restoring vital communication links.

ELECTRONIC MAIL (EMAILS)

Emails began emerging from CPIT on the 24th of February, with one of the first coming from the Dean of the School of Nursing, who along with others relayed messages of concern, sympathy and reassurance. These emails emphasised the salience of health and safety by encouraging staff to stay at home to deal with family and personal concerns. It also advised that CPIT remained closed and inaccessible within the cordoned-off 'red zone' imposed by Civil Defence. Staff were urged to access the CPIT web page for updates and management directives; despite functionality having not been fully restored, a static page was displayed advising of the closure of facilities until otherwise advised. By March 11, one month after the earthquake, a sense of moving forward, planning and decision making were appearing in emails as work was well underway to re-establish teaching and learning by procuring an alternative venue for staff and students. New teaching time tables had been completed, a tentative restart date mooted, and staff were being asked to consider ways in which they could make contact with class groups of students. Up-to-date information regarding programme start dates, venues and contact details was available on the CPIT website, despite a lingering sense of uncertainty as the aftershocks continued unabated.

A CEO memo to all staff on March 14 announced the restart of some programmes. In doing so the CEO acknowledged and thanked the staff for their efforts and capabilities over the last month and acknowledged how, despite exceptional circumstances, their efforts had kept students safe and assisted in restarting teaching and learning. A sense of preparedness and thinking ahead was apparent in emails as the recovery phase began. Many of the emails of this this period were to keep staff informed of progress towards re- establishing teaching and learning services and of the related decisions being made. As a result a sense of order began emerging out of previous chaos and a move into the next phase was signalled by an email memo from the CEO, paying tribute and appreciation to the tireless work of staff, which had achieved restored services and led to a date for the recommencement of academic programmes. Leadership, so important in times of uncertainty was also shown by Human Resource (HR) priorities that had a focus on the safety and welfare of

students and staff, as well as support for those who had suffered personal loss. By now the CPIT website was functioning as the primary communication forum, where clear and consistent communication was established, especially helpful for those staff who were working in remote locations.

With revised programme timetables now completed the focus turned to operationalising temporary physical teaching space that had been made available on the site of another local tertiary institution. HOS decision-making emails to Nursing staff listed what this move would entail, and gave a date for the first staff meeting to be held on the alternate campus. In support, an email from Information and Communication Technology (ICT) described what teaching-learning support services would be available for students and staff teaching at the new remote locations.

Attention in the period from 28 March onwards, (the recovery stage), was on reconfiguring programme delivery and regaining 'normality'; however, this was a 'new normal'. The nursing department initially shared premises with another tertiary institution before embarking on a staged return to the CPIT city campus by mid-year 2011. Staff would then have access to their customary facilities, resources, and communication. Artefacts over this period were mostly in the form of emails, with a few memos, plans and policies as staff once relocated had increased face-to-face contact and full access to computer and information systems.

On-going planning, development and attention to day-to-day practical issues became evident at this stage, demonstrating how not only the BN programme, but also key staffing roles were being enabled. The BN programme leader joined the HOD in providing emails with up to date information, support and encouragement. Examples included arranging printing, library access, retrieving teaching resources, teaching room availability, clinical placement information, and accessing Moodle (the online learning management system).

Emails sent throughout April continued to paint a picture of educational restoration: balancing teaching commitments and supporting off site programme delivery, while repairing, cleaning, restoring, and preparing facilities on the city home campus for the predicted eventual return of staff and students. Issues being communicated related principally to restoring safety back at the home campus and signalled a new approach to risk management. For example, reconfiguration of office facilities such as the stabilising of storage cabinets and heavily laden shelves that might put staff at risk of being injured and/or blocking egress. Remedial work to damaged heating systems was also on-going. The reappearance of regular activities such as CPIT's research office seeking research

opportunities demonstrated again a desire to return to normality, of action plans and of taking up professional roles.

Emails continued to detail practical issues such as the need to replace newly discovered damaged equipment, travel expenses for staff working off site and available facilities for returning staff which had begun and continued through April and May. Although limited access to campus buildings and offices remained in force, by early May staff located on specific levels of the Nursing building were, with the Dean's permission, able to occupy offices. An edict sent out over the following weeks reiterated that a health and safety induction was required by ALL staff before returning to these buildings, emphasising the importance of preparedness in regard to health and safety.

Emails from the CEO, Human Resources (HR), Dean of faculty and HOS, thanking staff, continued throughout this time, with one manager capturing some of the characteristics that enabled the School to survive as well as it did " …a big thank you to everyone in the faculty for your impressive adaptability, flexibility, professionalism, tenacity, perseverance and calm good sense this year." Supportive communication such as this is crucial for staff resilience and survival (Nicholls, 2012).

On May 24 an email announced that the School of Nursing would be officially returning to the central campus in the week beginning July 4. A flurry of emails followed in preparation for this move including those with dates for compulsory Health and Safety briefings.

ANOTHER SUDDEN EVENT - JUNE 13

By mid-June 2011 another several thousand aftershocks had been experienced in Christchurch, but none of which had any major impact on programme delivery. However in the early afternoon of June 13 two further and major aftershocks struck Christchurch. The first aftershock was 5.5 on the Richter scale, at 13.00 hours, with a second aftershock measuring 6.3 at 14.20hrs. This instigated another email from the acting CEO, shutting CPIT for a three day period. Staff and students were referred to the CPIT website and local media for updates. Closure of the institute was predicated on the need for engineering assessment of all buildings, and despite expert geotechnical reassurance that the city would continue to experience aftershocks of this magnitude, the June 13 events triggered another period of disruption and continuing uncertainty.

Within three days of the two significant aftershocks, the Acting CEO reassured staff that engineers had assessed all CPIT buildings and found that apart from minor damage sustained to one building, the structural integrity of others had not been compromised and the facility was once again open and operational. The library, however, remained closed for a further four days. Minor inconvenience

resulted; for example staff were required to supply their own water following the City Council's advisory notice to boil all water, but overall normal services resumed quickly. The urgency and concern apparent in emails subsequent to the February 2011 event was not apparent following the June 13 events. However, management email messages did convey a sense of concern for staff and their family's health and wellbeing as did similar supportive email messages from the CEO, Dean, and HOS. Academic staff emails to students offered support and encouragement around course work and assignments, and information regarding altered student assessment final amended dates was posted on the CPIT website.

Interim evacuation procedures in the event of further significant aftershocks were issued four days after the two June 13 events with clear instructions that reminded staff and students of evacuation assembly points. These were reiterated in September 2011 when emails were circulated with details of where evacuation procedures guidelines could be located. Staff were also urged to maintain efforts around student welfare as necessary.

While teaching and professional engagement with work-related roles were the focus of the institution throughout the months after June 2012 personal concerns, which were ongoing for many, were not ignored. Supportive emails sent out for staff included information about special leave with pay for staff to attend earthquake-related meetings; reminders of free counselling services; a school session with a stress management counsellor and HR encouraged staff to ensure they updated their personal details when/if their own circumstances changed, such as interim moves for home repairs. Effective communication of support strategies, such as those, was seen as integral to increasing people's resilience and in fostering their continued capacity during stressful events (Nicholls, 2012).

A variety of organisation-wide crisis-related plans and policy emerged during the latter part of 2011. For example, the Business resumption plan was being rewritten. Staff were invited to discuss a draft educational renewal recovery plan for greater Christchurch. Late in November 2011 a new Incident management plan was produced incorporating a number of civil defence and emergency response plans. An additional Health and Safety officer was appointed for the Nursing and Sciences building (increasing from one to two), and a Health and Safety orientation was drawn up for new staff. Consideration for staff health and safety remained a high priority with emails urging staff to discard unwanted stored material, which could be seen as potential hazards in on-going earthquake events.

Media releases regarding CPIT staff and student activities, in particular student nurses' efforts assisting in the health care system during the immediate days post February 2011, were placed on

the CPIT web site. CPIT's award for inspirational leadership in recognition for its rapid response to post earthquake challenges was also posted. CPIT dispatches relayed local radio interest and stories.

As a result of the Christchurch earthquake sequence over a nearly two year period, CPIT staff and management have been confronted with a disaster on an unprecedented scale that required a rapid response and astute decision making, all within a context of uncertainty, disruption and continuity. It became apparent in the artefacts gathered that, behind the scenes, decision making, leadership, action plans and preparedness underpinned all aspects of the response from the School of Nursing and across CPIT generally.

Recommendations

Through examining the experiences of the teaching/learning community, this study has provided an exploration and analysis of the CPIT Bachelor of Nursing learning community following a disaster. Unlike other studies of educational provision in and following a disaster, which have focused on the response phase of that disaster, this study looks at an earthquake sequence which occurred over a nearly two year period, moving successively through multiple cycles of continued instability and disarray.

These recommendations which arose out of the CPIT experience during the Canterbury earthquakes are offered as useful lessons for other education providers within and beyond New Zealand, to use as they find helpful. However, whilst we provide recommendations which have emerged from this experience, these must be qualified as they relate directly to this particular context, this specific disaster-related locale, and these people's response.

What is perhaps most important to take from our experience is that a plan does not, by itself, equal preparedness; every institution must look to its own context, consider its own priorities, and design methods of preparedness which will work for them. There is, unfortunately, no prescription, nor template, which can be dictated and adapted to form the basis of preparedness. Whilst we have focussed on the BN community at CPIT, there are implications for all types of educational providers.

We have learnt that we cannot fully prepare for all eventualities. However, we can improve our ability to recover and rehabilitate ourselves by taking steps toward preparedness in particular areas, and by considering the concept of preparedness in both a personal and a community context. We hope that considering this experience, and its subsequent scrutiny, other learning communities may be prompted to ask questions about their own situation, and use these recommendations to advance preparedness and to underpin actions which could empower them in their individual setting.

The other qualification to be made is that immediate site securement and ensuring staff safety through a well planned and executed evacuation is the most vital activity. The provision and delivery of education is a second level activity in the immediate aftermath of a disaster. Our basic human needs - clean water, warmth, food and shelter – must be the main priority for any community following a disaster. The sourcing and provision of these needs may be an ongoing priority for an extended period of time, as was the case in Canterbury. In the initial response phase, personnel involved stated that professional teaching/learning activity was very much secondary to ensuring

personal and family safety and the meeting of essential needs. The main role of an institution in this case will be to communicate with and support staff and students.

However, the preparation for the resumption of teaching and learning when community members are safe and secure is of obvious importance. The timely resumption of education will mean that both staff and students will be able to resume some degree of life 'as normal', which has been proven to have positive impacts in the aftermath of a disaster.

The recommendations from this study are derived from all the phases of inquiry. They have, for ease of reading, been grouped into the following domains which echo the aims of the study.

AIM 1: RECOGNISE AND IDENTIFY THE IMPACT A SUDDEN TRAUMATIC NATURAL EVENT WILL HAVE ON THE CAPACITY AND PROCESSES REQUIRED TO DELIVER A TEACHING/LEARNING PROGRAM WITHIN AN UNSTABLE AND CHANGING CONTEXT

1. **Encourage personal risk mitigation**

   Encourage staff (and students) to take steps toward personal risk mitigation. This could include (but is not limited to) considering personal and family preparedness plans, carrying personal belongings at all times and talking to colleagues about strategies for preparedness.

2. **Offer continued support and flexibility to all staff and students**

   Flexibility around staff and student attendance on the temporary campus was important. Having the flexibility for staff to work from home was imperative as daily tasks such as getting children to school, purchasing groceries or washing clothes was very difficult and time consuming for some weeks. Extra face-to-face hours were offered to teachers, but if these were not required they could be returned to a 'bank' and became available to other teachers and subjects. In many instances these were not required. Senior staff not assigned teaching were placed on 'stand-by' to provide support and back-up, if needed, into any/various courses as required. Offers of external help with marking from other educational providers in other parts of the country provided additional and much needed support, enabling teaching staff to focus on the tasks of teaching alone without the extra burden that ancillary but related work would impose.

   The programme leader changed role and offered student support, becoming the go-to' person for students' concerns. It is important for students to have a place to go with their issues – these ranged from IT concerns, problems with assignment boxes, rearranging around individual

scenarios such as transport and booked holidays that must now be cancelled, with rescheduled time tables and exams. Keeping anxiety levels down was important, especially around easily-solved academic issues, and in a context in which personal stressors exacerbate student concerns. This enabled students to focus more on learning ,rather than problem solving around their course. A key aspect was having someone who 'knows the rules' actually working individually with students. It was not possible, of course, to meet every small need that they had, but it was important to be reasonable and try to make things work for them.

3. Continue looking back - Reflecting on and learning from each event

The opportunity for staff to meet face-to-face and engage with each other and seek reassurance at a time not too distant from the disaster is important, to know that colleagues are all right. Debriefs must be put in place, both immediately, and at regular periods after the event, using different approaches (some face to face, some through more formal methods), in environments considered 'safe' in both a physical and emotional sense. They must also be 'for a purpose and purposeful'. Traveling around the disaster zone is both challenging and time consuming; therefore it must be for a worthwhile reason. For staff unable to attend, written notes of discussion, resolutions or outcomes need to be shared/disseminated widely to maintain a sense of community amongst staff.

4. Ongoing discussions about readiness and the continuing of regular drills and practice

Whilst they may seem tiresome, there is a good reason for regular and frequent safety drills. Fire/earthquake/evacuation drills should be scheduled and carried out often. Ensure staff are aware of, and communicate regularly to students important information such as emergency exits, evacuation procedures, and safety features such as an earthquake response position (drop, cover, hold).

Make evacuation procedures clear, concise and widely available. Maintaining awareness over time requires understanding of the dynamic nature of preparedness. Currently, there is a risk of over-focusing on earthquakes and not being as well prepared for other events. Rather than asking staff to memorise a plan, have regular discussions about what a response could look like in differing disaster scenarios, and ask questions about both personal and institutional preparedness. Ensure regular meeting of Health and Safety personnel, both amongst themselves (such as floor wardens) and with teaching staff.

AIM 2: FACILITATE AND SUPPORT THE DEVELOPMENT OF THE MOST APPROPRIATE ROLES FOR STAFF WHICH OPTIMISE THE CONSEQUENCES ASSOCIATED WITH DISASTER

Safety is always the first priority

Ensuring safety can only be achieved through a pre-planned, considered and well-co-ordinated effort. Staff cannot quickly react appropriately if they do not know what to do. Natural disasters, such as an earthquake, are not foreseeable, but can , to some extent, be anticipated. One element of risk assessment is preparedness.

The training of specific health and safety personnel must be undertaken and maintained in an ongoing way and supported through regular meetings with the designated Health and Safety Officers. This must take place well before any event. There also needs, crucially, to be succession planning in maintaining this well-trained 'event ready' group of staff. In a more general sense, everyone needs to have awareness of 'what to do' in specific events. It is not unrealistic to anticipate that at some future time, a disaster of one type or another might be encountered. However it is usual for people to be less sensitive to preparing for unknown threats unless there has been a recent, personal experience. Therefore, without scaremongering plans must be in place, which are straightforward and relevant to as many probable circumstances as possible. Make sure that such safety processes are widely promoted and as prominently as possible. Identify the level of awareness across the organisation regularly - assess just how many staff have read the 'sign in the toilet'. There must also be an orientation process around safety procedures for all new staff and all students on a regular basis.

It is useful for all staff to be aware of their role in a disaster – and to know how to get themselves, students and colleagues to safety.

HELPFUL STRATEGIES

1. **First aid equipment should also be kept outside the building**

   It was found at CPIT that First Aid equipment was stored within the buildings and was therefore inaccessible after evacuation had taken place and people were gathered outside. The small number of First Aid items kept with the floor warden's baton, which was carried outside, were inadequate.

2. Consider and communicate the role of 'floor warden'

Ensure that the 'floor warden' is well-known to all staff members. Ensure all staff are sufficiently well trained in knowing what to do, in case a designated individual is absent. The use of vests and hard hats to identify the designated individuals means that others can seek them out for assistance and will also respond better to instruction as it is evident that they are someone in authority.

3. Develop systems for knowing the whereabouts of colleagues, students and relevant others

At the time of the disaster there were issues around locating people and knowing that all personnel were clear of buildings, uninjured, safe and accounted for in the first instance; for example, staff may have been on or off-site or at various locations on campus. What was also problematic was lack of up-to-date student attendance registers. It was therefore hard to identify who was on-site and where to look for them. Staff with student groups at the time remained with these groups and took responsibility for their evacuation. Staff movement boards are also worth considering as, these can indicate whether people are on or off site. To be well utilised these need to be in prominent and easily accessed areas preferably near entry and access points. It is also helpful, if possible, that they are visible from outside a building so that re-entry is not required to see them.

Staff clusters now work in a different way. The staff in any given suite of office, should advise each other of their movements around the building during the day, enabling others to know their whereabouts in the event of a disaster. No-one should be left on the floor alone and at the end of the working day all rooms must be checked for occupancy. If it is anticipated that an office suite will be empty, such as during holiday breaks, those staff still working could do so from home if they will be the only one in on any given day.

4. Ensure there are easily accessible instruments for immediate mass communication

To avoid confusion across the campus with staff and students scattered in different outdoor spaces, often in small isolated groups, as can occur following evacuation, a means for mass communication is required. If the continuous power supply is disrupted or non-existent all electrical and electronic equipment are useless. A Tannoy or loudhailer must be available to facilitate the transfer of vital and often lifesaving information about the evolving response and action.

Simplify channels of communication: it is optimal for reliable information to be offered by one designated person, with legitimate authority , who has a direct line of communication to/from/with senior management and who is also informed by external authorities (if this is possible). The designated communicator and any deputies then require a means/medium to communicate information to others on evacuation strategy, to counteract misinformation (which is inevitably associated with anxiety and panic in staff, students and personnel) and to direct people to leave the area or remain on-site.

5. Guarantee there is a well-known post-evacuation strategy

There was much confusion at CPIT after rapid evacuation of the buildings. People were unsure as to their next step – did they return to work, did they stay and help others or did they leave and go home? This caused confusion, distress and delay for many eager to head out and find family members elsewhere in the city. A clear plan of action, already known to staff, easily accessible, and in place well ahead of time regarding what to do after evacuation would have eased anxiety. It may be advantageous, if possible, to have notice boards outside the campus to state if it is open or shut, to alleviate confusion in the early stages.

Have established protocols, known to everyone. For example, following a 5.5 earthquake, buildings must be evacuated and not re-entered until an engineering check has been conducted. Staff and students who are off-site during an event will invariably check an electronic register such as 'GeoNet' to determine the seriousness of an event, relying on established protocols to guide them as to when to return to work.

The **risk** of people re-entering the building, for any reason, must be avoided. Staff and students should be encouraged to consider carrying a small bag holding vital personal equipment, such as, car and house keys, mobile phones and wallets, even when using the bathrooms. These bags became a regular sight at CPIT and staff always chided those who left them in an office whilst visiting another floor. They are seen frequently today, nearly two years on.

The use of external hard drives and USB's to duplicate and backup electronic material is now a common practice at CPIT. People quickly realised that in their panic to leave the building they had left behind personal possessions, such as hand-bags, backpacks, and cell phones. Once they knew that they would be unable to re-enter, this led to distress and compounded the many challenges faced.

AIM 3: DISCOVER THE MOST EFFECTIVE WAYS TO MINIMISE CONTINUED DISRUPTION TO THE LEARNING COMMUNITY

In the first instance, it needs to be accepted that there will be a muddle. Making sense of that muddle takes time. Order eventually emerges and when the rescue phase of a disaster is in place, and bodies are still being removed from buildings, it is not the time to be worrying about teaching and learning. Other life supporting priorities must be met first.

1. **Plans are not preparedness, but are part of it**

   A number of different plans are necessary for different purposes. Plans required for an institution, such as for a building evacuation, will differ from a business continuity plan, as will specific school plans for the resumption of temporary teaching and learning. All are important, and interrelated. People need to know what plans exist, and where. Having multiple plans which are difficult to access is not helpful, as individuals are unlikely to seek these out independently; there is some level of institutional and/or managerial responsibility to ensure plans have relevancy, are well known, and discussed at regular intervals. Knowledge of a plan, its intent and whereabouts may be as helpful, if not more so, than the plan itself in an actual disaster. Assumptions, often arising without knowledge of a relevant plan, such as believing buildings can be re-entered, closure is temporary or that wider IT infrastructure will continue to exist (and function), can be dangerous, and need to be questioned.

2. **Initiate and maintain consistent communication**

   Head of School and senior staff became responsible for initiating and maintaining a regular information flow. In the first instance staff were advised that they were to stay at home and attend to their personal /family requirements, thus legitimising personal concerns and difficulties. Maintaining communication is essential and current up-to-date staff contact lists easily accessible both on and off site, are crucial. Staff lists which included cell phone, landline numbers and physical addresses, enabled managers to identify locations detrimentally affected by the disaster, thus predicingt the impact on staff and their availability. The Head of School communicated frequently by text, firstly to enquire as to staff well-being, then to ascertain availability to arrange meetings and communicate information.

   Who will be in charge needs to be established quickly, as does the identification of the key roles being taken during each phase of the disaster. Designating staff with assigned roles enables people to identify who to contact, how and when to do what, and avoids duplication of actions.

As some staff were unable to contribute to professional roles because of personal circumstances, it was important to determine who would replace them, and let others know of substitutions, so all working groups would remain functional - the 'chain of command' must be clear and simple. Many staff had their own network of colleagues and could contact the people that they work most closely with and relay messages. Staff were assigned to different teams and tasks; one focussed on alternate campus venues, another team worked on clinical placements, and another worked on timetables. Much or all of this work took place in individuals' homes and in public venues such as still-functioning coffee shops and against a background of domestic demands and chaos. Corporate level engagement with staff is beneficial in providing differing levels and layers of information and involvement, but this is not essential for the functioning of individual schools.

A School Facebook site, set up to maintain contact with students scattered across the city and beyond, once evacuation had occurred in damaged suburbs, provided a key communication resource. Given that there were some 600 students involved in this instance, there were too many to communicate with individually. It was also not known if contact details were up to date as not all new student details had been entered into records systems (it was only the second week of the semester). There was the added complication of lost or inactive mobile phones. The Facebook site was well used by students, particularly in the interim period of time when the institutional website was unavailable. It was used less by staff, most likely due to them having other methods of communication. In the longer term, it became possible to send group emails with specific messages but this required offsite IT access and continuous electricity supply and was not achieved for some considerable time.

3. Make decisions relating to resumption of programme delivery as soon as possible and ensure all staff know about this

Civil Defence Authorities closed the institution for a period of time, which was beneficial in allowing time for both staff and students to regain personal balance and organise their individual situations. This is extremely important. They can really only achieve that if they know that the workplace is closed and they need not attend the workplace or even think about it for a period of time. Bearing that in mind, there needs to be a date set at which 'business' recommences and it is important that this is decided upon and communicated widely. The static (but updated) information displayed on the CPIT website gave staff and students a timeline to work towards. The value of this cannot be underestimated. It sanctioned the time spent away from education

and the organisation, more usefully spent after a disaster by helping in the community, especially for nurses, a role for which there was high demand .

An adapted timetable was crucial, not in terms of content but rather in aspects associated with altered geographical teaching location and mode of delivery. Senior managers attended to this quickly enabling teaching staff to plan appropriately. In one way the date of this disaster was a more favourable for the School of Nursing as at this stage none of the undergraduate students had entered clinical placements for the year. Reconfiguring the clinical placement timetable was challenging, but thankfully those currently in placements (Enrolled Nurses and a RN competency assessment program) were only two smaller groups of students in parallel streams to the undergraduate Bachelors' programme. The biggest problem was that student placements were always arranged through external providers, in some instances with only one student attending, so it was challenging to contact all host organisations and cancel and rearrange attendance. In addition, some of those placements were in community services which were now closed for the foreseeable future. Knowledge of clinical placement needs was achieved entirely by drawing on the memory of individual staff. This experience led to the future storage of clinical placement records and contact details for individual organisations being placed on a USB. This in turn was duplicated and carried with individuals, rather than continuing to rely on a central repository system within the CPIT building as in the past.

4. Consider teaching delivery alternatives

Staff found they needed alternatives to face-to-face teaching to act as a medium for communication, both announcements and teaching itself, rather than the subject material or content itself, as a primary resource. The teachers were more concerned with finding a medium/site to teach from/out of rather than for sourcing content. Nursing teachers had an embedded repository of knowledge to work with (it was in the heads of the teachers who were all registered nurses). For this reason there was less reliance on external resources such as textbooks or reading material. There was a lack of access to documents and other teaching resources beyond that which staff already had available on personal home-based systems; namely, external hard drives and USBs [data storage device] for off-site access to resources.

The BN programme was taught directly as it related to the Learning Objectives of a given subject, as they met the absolute necessities for curriculum provision. The BN School developed a 'streamlined' curriculum, and staff were directed to teach to curriculum essentials. The Nursing Council of New Zealand was supportive of this action, particularly in respect of students due to

undertake State examinations within a few months. The programme was also streamlined, in that class attendance was managed by cohort and year. That is, year one, two and three students attended en-block and used the alternate campus exclusively for several days for each year of the programme. Only any one group of teaching staff and any one group of students were on campus and using constrained facilities at any one time and this ensured optimal usage of the limited space, services and resources.

Transport to a campus at least thirty minutes' driving time away from the usual site created its own set of problems . Special arrangements were made with the local bus company to ensure that services could cope with the additional numbers. It was also arranged that this was a free service for students, who needed only to show their student identification to use the service. Likewise classes needed to be scheduled around the bus timetables so students could arrive and leave when transport was available.

In the first instance there was an increased use of electronic delivery modes for teaching already available in the form of Moodle, a free source e-learning software platform, also known as a Course Management System, Learning Management System, or Virtual Learning Environment (VLE) instead of face-to-face traditional forums. Student uptake of the online mode was significant once IT services were restored. Moodle had been in place within the School prior to the disaster, but was previously used only in a limited way for small groups of students, as an elective option. Its broader adoption was dependant on recovery of IT access and the delivery of a continuous electrical supply, which took two weeks. Some staff used this as a teaching medium and others as a repository for course-related information.

A temporary campus was considered important as it was impossible to predict when the CPIT city campus would be useable again. Once the temporary campus was established, a 'help desk' was staffed every day for students to be able to ask programme-related questions. Library services and Learning Services were also placed inside the temporary campus.

Retrospectively, students were aware of the challenges involved in delivering the curriculum with very little interruption, which enabled them to continue their studies to their completion timeline despite the disaster. Moreover they understood the disruption to studies at times, and the need for compromise under the circumstances.

Final Words

Whilst this project began with the goal of looking principally at the teaching/learning community as one with scholastic activity as a primary focus, it soon became clear that in the short term in a disaster, people are not thinking at all of teaching/learning, an appropriate response. Teaching and learning as a primarily scholastic activity is one that can only take place in a stable and safe context. For this reason many of the recommendations made relate more to ensuring that the context in which teaching and learning occur, must necessarily be safe, secure and sheltered, in both a physical and emotional sense.

Many of the stories told, and the recommendations made, focus on the physical and social experience and impact that a major disaster has on people's lives as a whole. Education - teaching and learning - is only one part of that. The ability to manage and cope in a disaster depends on the capacity of any given community, at a point in time, and this is more complex than following any document-based disaster plan. This project has provided practical advice. It also became evident that community can be seen as both local and, in this case, perhaps even global. One of the most significant features of a major disaster is that it is beyond the capacity of the local community to cope alone.

It must be also be clearly understood that the findings of this project constitute only one perspective of what has and can be learnt from the Canterbury earthquakes. This report does not seek to detail definitive or 'stand-alone' findings, there was no aim or goal to answer all questions or provide an absolute framework for how to respond in a large scale disaster. This project was one of a suite of similar projects that have been funded within Canterbury to explore human responses to the Christchurch disaster and increase our understanding of the social and educational response.

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