INTRODUCTION

At 12.51pm on February 22, 2011, a catastrophic earthquake measuring 6.3 on the Richter scale – with the greatest vertical acceleration recorded globally to that date and an epicentre 5km from the central business district (CBD) – devastated much of Christchurch and its surrounds. This catastrophic earthquake caused significant loss of life, with 185 people dead and 6659 injured (Ardagh et al., 2012, p2109). As this event occurred in the middle of the day, people were largely separated from family, leading to high levels of anxiety, distress and shock. The central city became an exclusion “red” zone which remains to this day, (O’Connor, Johnston & Evans, 2011; Canterbury Earthquake Recovery Authority, 2012). Six months before this event, in September 2010, a larger, although less damaging quake (7.1) had instigated what was to become an ongoing chain of seismic events, now totalling over 11,000 in a two year period (Geonet, 2013). Caught up in the immediate devastation was the School of Nursing and Human Services (SNHS), at Christchurch Polytechnic Institute of Technology (CPIT), a major vocational sector education provider situated on the edge of the Christchurch CBD, with more than 24,000 enrolled students.

The study reported here explored the impact of these ongoing seismic events on the bachelor of nursing (BN) teaching and learning community, a group including 45 full-time and 27 part-time staff members responsible for approximately 604 students. The challenges faced throughout these events will be discussed in this article along with the lessons learned for managing future sudden change in educational delivery following significant disruption. Challenges identified include the management of both intangible and tangible resources; place and space; time; physical assets; and roles and relationships. The actions taken by the SNHS, to restore teaching and learning in the BN programme, formed the core of the study.

1) The red zone restrictions were finally lifted on June 30, 2013.
BACKGROUND

While the September 2010 earthquake affected the SNHS’s work of delivering teaching and learning, the essential elements of buildings, infrastructure and curriculum delivery process remained intact. In contrast, immediately after the February 2011 earthquake, an emergency evacuation of the entire city campus occurred. No opportunity was given for staff or students to return to offices or classrooms to collect personal belongings such as wallets, car keys or mobile phones. Staff and students made their way home to find family and friends as best they could, mostly on foot, as many roads and bridges were either destroyed or impassable. Across the city there was a severely compromised power supply, issues with liquefaction and leaking sewage and ground water; the telephone system was overloaded and damaged and there was little, or no, access to usual communication systems. This situation remained unchanged in places for some months (Meyer, 2011). Situated on the border of the CBD, CPIT’s main campus was cordoned off by Civil Defence under a declaration of a state of national emergency. The campus remained isolated within the prohibited “red zone” for approximately six weeks until a staged return was completed, some four months later. At CPIT, all teaching and learning resources and paper-based material were inaccessible, trapped inside the campus where there was considerable debris, disarray, fallen ceiling panels, cracked and damaged floor surfaces and broken windows. Considerable damage was also sustained by the information and communications technology (ICT) systems and, in varying degrees, by most organisational infrastructure.

Against this backdrop of destruction, shock, panic, fears about safety, and uncertainty about the future, this research project was undertaken to identify and describe the impact of these events on a teaching/learning programme. It was important to capture this information in a timely manner, as, over time, apathy tends to occur as the memory of the event begins to fade (Boyd, 2001). There was also an opportunity for this study to be virtually contemporaneous – collecting data as new earthquakes were occurring – as Canterbury continued to be a seismically active region.

Little was previously known in New Zealand about adapting educational processes under such sudden, large scale disruptions, warranting closer scrutiny of the disaster response in terms of delivering education. A small body of international literature is available on natural disasters more generally, for example Hurricane Katrina (Chaunin, Hilton, DiCarlo, Lopez & Delcarpio, 2006; DiCarlo et al, 2007; Beggan, 2010; Geisz-Everson, Bennett, Dodd-McCue & Biddle, 2012). There is also some work on the H1N1 influenza global epidemic (Locatelli, LaVela, Hogan, Kerr & Weaver, 2012) and the Gippsland fires in Australia (Forbes, Jones & Reupert, 2012). However, there is little literature relating directly to education and even less that is specifically focused on schools of nursing or specifically on earthquakes.

STUDY AIMS

This study was designed to describe the impact of a sudden, traumatic natural event on the capacity – and explore the processes required – to reinstate a teaching/learning programme in an unstable and changing context. It also aimed to identify the most effective ways to minimise disruption to programme delivery and student learning and to offer recommendations for anticipating and actively managing sudden major disruption to programme delivery.

DESIGN

A descriptive/exploratory case study design, underpinned by Asghar, Alahakoon and Churilov’s (2006) model of disaster management, was used. According to Asghar et al (2006), the “process of disaster management” consists of two phases: (1) pre-disaster risk-reduction, and (2) post-disaster recovery. Phase 1 consists of activities of prevention, mitigation and preparedness, while phase 2 includes the stages of response, recovery and rehabilitation (p2). Given that this project explored a disaster that had already occurred, Asghar et al’s post-disaster phase of response and recovery provided the theory and organising structure supporting the study design, the data sources and the collection methods.

A case study was chosen as particularly appropriate, in that it is useful where the phenomenon cannot be studied outside the context in which it occurred (Yin 1994; Dubé & Paré, 2003) and 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). 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. Given the unexpectedness, and the complex interrelated events surrounding the Christchurch earthquakes, a descriptive/exploratory design facilitated the degree of flexibility and versatility required to explore the consequences of the earthquakes in an educational institution.

METHODS

Sampling

Participants were drawn from across CPIT management, corporate services and operational staff, as well as academic and operational staff from the SNHS.

The following framework was used:

Selected participants were invited from the SNHS, namely those with key decision-making and/or operational roles, and staff from the wider organisation, whose roles in the disaster response affected the SNHS. All 11 agreed to participate in an interview.

Selected academic staff from the SNHS were invited to take part in a survey to elicit their perspective. Inclusion criteria were full-time employment at the time of the February 2011 earthquake and a substantive teaching role in the BN programme. Of the 45 full-time staff employed in the school, 25 were eligible to participate.

Information termed “artefact” in this study was drawn from relevant paper documents; electronic communications such as email, web postings, mobile texts where available (officially disseminated SNHS texts); and social media (eg organisational and SNHS Facebook sites).

Data collection

Initially it was intended that this study would be completed within a 12-month period, but further major seismic events (the 6.3 earthquake in June 2011) led to the research team deciding to continue collecting data over a longer period. Within the case study design, three data collection methods were used. Group 1 – staff with strategic management roles – took part in semi-structured, audiotaped, face-to-face individual interviews, to gather in-depth information about roles and responsibilities, decisions made and actions taken.
Group 2 – academic staff – took part in an online survey (via Zoonerang™), with 24 open and seven closed questions which gathered wider information about their understandings and perceptions of the response and recovery processes, from their professional – rather than personal – perspective. The survey was used with this group as they had less of a strategic responsibility for response and recovery and were predominately informed by, and put into operation, the directives of those in Group 1. Artefact information was drawn from documents, and electronic and media sources to augment the other data collected. Very few artefacts were associated with the September 2010 earthquake, as CPIT was undamaged and physically accessible after a short time. However, the enormity and impact of the February 22 earthquake meant that, over time, electronic artefacts provided a narrative of an educational organisation responding to, and recovering from, an unprecedented event. Evidence from the artefact was gathered to help explore the preceding two phases – the interviews and the survey. Examining the on-flow of decision-making, planning, and action increased the rigour of the findings.

DATA ANALYSIS

Interviews were transcribed intelligent verbatim. An iterative inductive analysis process (Patton, 2002) was used to uncover themes from the interview data. Frequencies were reported for the “closed” and “demographic” data collected in the online survey. Open-ended survey question responses were analysed thematically. Content analysis of the artefact data was undertaken and considered in relation to the themes emerging from the other data sources.

ETHICAL CONSIDERATIONS

In a research project related to sudden and traumatic events, the well-being of research participants was a primary 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. Not only is the city well known, so too is the research site. However, the benefits of undertaking the research and the risk mitigation processes employed were balanced against the ethical risks involved. Particular consideration was given to participant welfare. Potential ethical concerns included risks for individual participants, namely anxiety and distress related to “reliving” the original event; risk of triggering self-recrimination, ie 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 to counter these risks included ensuring this was a “no-blame” project, entered into with the aim of learning from the events to benefit both individuals and educational organisations, and not to hold individuals accountable for actions taken during the crisis. Informed consent processes ensured potential participants were aware of the possible impacts, and support strategies were in place, before anyone consented to participate. Support was offered to all participants throughout data collection. Should unintended distress have occurred, psychological and counselling services were available, as was support in withdrawing from the project if this occurred. Interviews and the survey. Examining the on-flow of decision-making, planning, and action increased the rigour of the findings.

FINDINGS

There were 11 respondents in the interview phase (91.6 percent response rate) and 17 respondents in the survey (65.3 percent response rate). Both groups’ responses and the artefacts were integrated and reported along the continuum of earthquake events as a collective account.

The disruption to “normality” served to highlight some important factors related to what constitutes a teaching and learning community that were not, perhaps, so explicit before this disaster. The findings overall revealed the importance of the wider organisational community, and the essential nature of support services in teaching/learning activities that are less obvious when it is “business as usual”. These include: ICT, facilities management, human resources (communication officers) and the health and safety office. Generally, within a teaching organisation, the work of educational staff is most obvious, but this situation revealed the significant contribution of support services as the foundation on which teaching/learning is based.

Key themes of context, communication, leadership and followership, decision-making, balancing shifting priorities of professional responsibilities and personal imperatives, and taking action were identified from all three phases of the study. The relationships between these themes were developed into the model on p15 (see Figure 1). While the model appears static, interaction between these themes was very evident.

CONTEXT: DISRUPTION AND CONTINUING UNCERTAINTY

The size, scope and continuing nature of this disaster-created context made a difference – in this instance, events affected an entire city. Commonly, challenges faced in teaching and learning arise, and are responded to, against a background of a more stable context. Loss of infrastructure, resources, and the challenging context of everyday life, meant everyone had to pull together, using whatever was at hand. This was a new experience for most people.

“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]

Suddenness was an aspect emphasised by most participants. An earthquake cannot be anticipated or foreseen, unlike a hurricane or
a rising flood. Although equally frightening, 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.

“... And my biggest fear again is another earthquake happening: be-
fore 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]

This uncertain situation remained for a long time. A persistent
and enduring question was: what were we to expect – is this getting
better or worse? As time passed, the environment did become more
resilient, there was less variability in terms of changes to context, and
fewer buildings to fall over or collapse, therefore what infrastructure
remained became more secure.

COMMUNICATION

Sound platforms for communication were seen as critical by all
involved.

“... 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]

People wanted, especially close to the event, clear and consist-
ent information to inform their response and actions. The immediate
needs during and after each earthquake were unfailingly related to
physical safety – evacuation to safe areas – and information that en-
sured continued safety and security needed to get to the right people
at the right time.

“We knew we had to communicate with staff and with students.” [i7]

A constant requirement in the short, medium and long term was
clear messages about “what was going on” and “the direction to take”
and “where to get what...” that was often described as a need for
clarity, consistency and inclusiveness.

“I think the best thing that comes out of these disasters, any kind of
disaster really, is forcing people to communicate.” [i11]

LEADERSHIP-FOLLOWERSHIP AND
DECISION MAKING

Safety was paramount and leadership was perceived as critical in
ensuring this. However, there was some questioning about how this
was achieved, in terms of “who does what and what is to be done”.
It was found that leadership was not always a role; leaders emerged
in different places for different reasons and to meet different needs.

“... 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]

“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.” [i1] “... think around the institution
there were certain people who I guess put their hands up and invigor-
atated others and sort of made things happen, drove things along a
bit.” [i8].

While the disaster suspends core business, there are still expecta-
tions of ensuring the safety and welfare of staff and students. While
most educational organisations have some mechanisms for welfare
in their everyday business, managing this on a massive scale was
not what the institution was expert in. Those who made decisions and
communicated them to others tended to self-select. 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.

However, followership was equally important in the disaster situa-
tion.

“Like anything though, it’s the quality of the people and their rela-
tionships that actualise it, that actually makes a difference.” [i3]

“The idea of the more distributed leadership was quite evident from
that point of view and fundamentally if the communications were fine
you were okay.” [i6]

“I think our staff handled it incredibly well actually and I think in
their own way they were all leaders of whatever area they were
responsible for. There were different people kicked into doing things
at different times.” [i2]

BALANCING SHIFTING PRIORITIES –
PERSONAL IMPERATIVES AND
PROFESSIONAL RESPONSIBILITY

This theme is characterised by prioritising. However, in the ongoing
disaster context, these priorities shifted and changed. Unlike usual
business where priorities are more constant, in this situation the
demands of personal imperatives and professional responsibilities
were more fluid.

“... 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, partici-
pants became aware of a sense of professional responsibility. This
response, through all stages of the disaster, was repeated with each
subsequent seismic event. Personal circumstances were of prime
importance for all participants, most especially in the period immedi-
ately following an earthquake.

“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 ... I think on
the day, particularly February, everyone was concerned about their
personal self and their family.” [i5]

Another feature occurring soon after the event, once people felt
safe, was the need to do something to help – described by certain
participants as “nurses needing to nurse”. Many of the SNHS staff
participants volunteered in their community, alongside colleagues
from the sector or a local health facility, as did nursing students.
This teaching-learning community was a school of nursing – staff, as
registered nurses holding a current practising certificate, are trained
to cope in and be familiar with a crisis. Considerable discussion was
heard about drawing on the skills previously acquired as a nurse
during earthquakes.

“I think you have to go with what comes up and maybe that’s hav-
ing 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]

**ACTION PLANS AND TAKING ACTION**

The theme “action and reaction” is multidimensional. An essential and guiding principle in emergency and disaster, both for preparedness and response, is that of using a plan. Robust plans for site safety existed, which included evacuation of people. 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. But the organisation also learned 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]

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, 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]

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 in 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. I think a general broad plan is ideal, but I don’t know if a detailed plan is much more help than just a general plan on what to do.” [i9]

**PREPAREDNESS AND THINKING AHEAD**

We were not prepared for the February event – but most participants questioned whether it was ever possible to be prepared for such an event.

“I mean... 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]

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

“... 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]

In regard to teaching and learning, preparedness is a state of mind – not a rigid plan at teaching level. A disaster is chaotic, uncertainty prevails, and any control is a bonus.

“... being able to cope with the unexpected is the key thing, because we’ve 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 for people to feel safe and secure on some level at least, as is a sense of certainty about what the response will be if/when another earthquake occurs.
DISCUSSION AND RECOMMENDATIONS

These findings can inform the tertiary sector’s education community about appropriate and optimal roles for education providers when/if there is future sudden disruption. They also underpin recommendations for the future, aligning with Asghar et al’s (2006) pre-disaster risk reduction processes of prevention, mitigation and preparedness.

Recommendations emerging from this experience must, however, be qualified, as they relate directly to this particular context, this specific disaster-related locale, and these participants’ responses. What is, perhaps, most important to take from this 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. No prescription, nor template, can be dictated to form the basis of preparedness. However, while we have focussed on the BN community at CPIT, there are implications for all types of educational providers. The detailed discussion of the recommendations from this study can be found in the executive summary available online (www.akoaotearoa.ac.nz/ako-hub/ako-aotearoa-southern-hub/resources/pages/preparedness-sudden-change).

Emphasising safety as the first priority, encouraging personal risk mitigation, ongoing support and flexibility for all staff and students, clear decisions about resuming programme delivery, and other recommendations all relate to ensuring the context of teaching and learning is safe, secure and protected. Only after this can alternative strategies for teaching and learning be addressed and implemented. The provision of education is a second-level activity in the immediate aftermath of a disaster. Nevertheless, preparing to resume teaching and learning, when community members are safe and secure, is of obvious importance. The timely resumption of education meant that both staff and students were able to resume some degree of life “as normal”, which has been proven to have positive impacts in the aftermath of a disaster.

CONCLUSION

Unlike other studies of educational provision in and following a disaster, which have focused only on the immediate response phase, this study investigated an earthquake sequence that occurred over a nearly two-year period, moving through multiple cycles of continued instability and disarray. A learning community has many “layers and players”, some obvious, others not so evident, at any given time. This study revealed the complex nature of the ways in which a wide community supported teaching/learning activities following sudden disruption. There were challenges to managing both tangible and intangible resources such as place and space, time, physical assets, and roles and relationships, necessitating reconfiguration.

However, lessons can be, and have been, learnt from this experience. These lessons can be used by others in the context of their own educational organisations, to inform their preparedness for sudden events.

REFERENCES


