Managing Operational Continuity in Disaster Recovery: A Case in Academic Delivery

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Abstract

This paper elaborates on the experience related to planning approaches that were undertaken to continue delivery of Information and Communication Technologies qualifications at Christchurch Polytechnic Institute of Technology (CPIT) after the 22 February earthquake. It reflects on challenges, phases of planning for commencing delivery and key success factors.

Keywords

Academic Delivery, Operational Continuity, Disaster Management

Introduction

On February 22nd 2011 an earthquake of magnitude 6.4, in Christchurch New Zealand caused major disruption to availability of space, access to resources and service delivery of all academic programmes at Christchurch Polytechnic Institute of Technology (CPIT). We faced a major challenge in planning for and re-starting the delivery of courses and programs. The resources that we required for delivery of ICT programs were not limited to classroom space, qualified teaching staff and adequate teaching material (resources). Access to specialist laboratories and ICT services plays a critical role in being able to deliver technical courses and learning solutions. Over a period of five weeks considerable effort was directed towards not only securing space but also ensuring that supporting ICT solutions are available so as to restart the delivery of programs in early April and still complete a full semester of teaching and learning.

Phases of Business Continuity and Disaster Recovery Planning: Theory vs Practice

From the literature it can be seen that academics, researchers and consultants propose a variety of frameworks (models) for business continuity planning, risk management and disaster recovery. There is considerable advantage (value) in being aware of these frameworks that have been proposed. However, in reality when disaster strikes, practitioners are more likely to follow a combination of knowledge of theory of planning and own experience from

real life. In this particular case, phases of planning for re-opening the delivery of programs were as follows:

- Managing transition from chaos to managed chaos by establishing initial communication with staff and some students.

- Establishing a system for communication with staff.

- Making sure to have the bigger picture in sight by being part of the bigger CPIT community and closely work with the team at the Faculty of Commerce.

- Determining the required resources and assessing what resources could be made available.

- Communicating resource needs to management on an ongoing basis.

- Keeping in contact with both industry partners and students community and communicate developments and progress.

- Finalizing negotiations for access to space and technical resources.

- Planning for the use of resources (including timetabling and planning for specialist labs).

- Operational planning for implementation of all details so as to start teaching on 4th April.

- Monitoring progress and fine tuning operational issues as needed – after 4th April.

The methodology adopted in this paper is Case Study Research (Yin, 2009, Experiment-Resources.com, 2011).

Initial response

During the first few days after the earthquake the primary goal was to ensure all staff and their families were safe. Most lost possessions while others had lost their complete homes. Cell phone towers were down and blocked and power was out to most of the city. All telephone and address lists were left in the office or on the servers which we couldn't access. We initially set up communication using texting on cell phones in the hope that staff had access to charge their phones, in some cases staff didn't have cellphones so used family and friends numbers. These texts lists were added to each day as we found more people and their numbers. The other form of communication was Facebook. This of course worked for those who had power or power restored in the first few days. When we didn't have any communication then one of the authors drove to people's houses to check. It took nearly the whole of the first week to establish communication with all staff. Civil Defense and the Police had cordoned off the CBD which included the CPIT main campus on Madras Street which is where the School of Computing was located.

Although CPIT had power and the servers were running initially, Civil Defense turned off power within the cordon on the 24th February and the CPIT servers went down. This meant that all email communication now had to be to private addresses so we had to recreate our lists.

After the first week when it was established everyone was physically unhurt and had somewhere to live in the interim we were able to initiate our first full staff meeting at an offsite location. The school management team met first to discuss how and when we could start teaching again and more importantly where.

When the earthquake struck staff took cover as instructed then when the shaking stopped we were required to leave the buildings quickly. Normally in an earthquake you are instructed to stay inside and in a fire to get out of the building. During this earthquake the fire alarms at CPIT were set off so staff and students were not only in shock, but receiving mixed messages from the sirens. Everyone responded as they should and left their offices and classrooms as quickly as possible when the shaking stopped but it meant that many left their phones, car keys, wallets, personal items and laptops in the buildings. It would be three weeks before we were able to get back in to retrieve personal items and a further week before staff could access offices to retrieve teaching material from laptops and hard drives on desktops as well as paper based material and textbooks.

Options for sites

The earthquake struck at 12.51pm on the second day of teaching in semester 1, 2011. Most schools were planning on starting teaching again by the 28th March, four weeks after the 22nd February disaster. The School of Computing had not had the opportunity to contact students so we decided that rather than start teaching immediately, we would work backwards from the last day possible to get results in, and then determine if we could still teach a full semester. We also had to consider the restrictions of specialist hardware and software. This meant that the very latest we could start teaching would be April 4th 2011 provided we had suitable accommodation. Although this was a week later than other schools at CPIT it proved to be the right decision for our school.

Hornby Campus Connect
CPIT has a number of off campus sites in various suburbs called "Campus Connect" that were established for community and free computing courses. One of these is located at Hornby which is a suburb on the outskirts of Christchurch to the south approximately 35 minutes away from the main campus. The Hornby site had a large meeting room which we eventually were able to secure for our school.

The room could hold 50 desks so we set these up with 20 tablet computers from our own school which were previously used for teaching and research, 10 laptop computers from the CPIT library and were hopeful that 20 student would bring their own laptops. It was crowded, cables were plugged into the ceiling, internet access was only available for the tutor and there was no air conditioning but we had a room setup that could accommodate 50 students. We also had to install software on the tablets as they hadn't previously been used for general teaching. See fig 1.

Figure 1: Hornby meeting room set up as a computer lab

Lincoln University

Lincoln University is a 35 minutes drive from the CBD and they were generous enough to offer CPIT a number of rooms and a lecture theatre. These were shared with computing, business, health, science and nursing. The School of Computing were able to set up one dedicated computer lab with computers borrowed from the main campus and share the classroom and lecture theatre accommodation. The city provided free bus transport to and from Lincoln University.

Madras Street

While these solutions dealt with the majority of the courses we still had to accommodate the hardware and networking courses which have their own computer laboratories and servers. Many options were considered including removing the servers and setting them up at another location. This proved difficult as we still didn't have access to the buildings and rooms and were unsure if the servers had suffered any damage in the earthquake. We got special permission to enter the building and assess the servers for damage. They had suffered minor damage which we were able to get fixed off site and decided to be innovative and teach our networking courses in another building on the main campus in the hope Civil defense would lift the cordon by 4th April.

Once the accommodation was confirmed timetabling was able to begin. At the beginning of the semester we had multiple occurrences of courses and now we had to determine how many occurrences we would need. We heard anecdotally that students were leaving Christchurch for other institutions, deferring study until semester 2 or in the case of international students going back to their country of origin. This made it very difficult to plan how many students we thought would come back to study in semester 1, especially at remote off campus sites.

The advice was to plan for a 30% – 50% drop in student numbers which is what we did.

Contact with Students

We were advised that contact with students would be made centrally. This proved to be the most frustrating experience as we didn't have access to student lists, addresses or phone numbers and were anxious to make contact with our students not only to enquire if they intended to return to study but also to ensure they and their families were safe. While the staff were eager to help and phone students it was four weeks before we had the lists to distribute and phone students. This was after we had secured the rooms and completed the timetable based on our best guess of student numbers.

The indication after staff had phoned the students on their lists was that we had greatly underestimated the number of students that would return to study. Rooms where we thought we might have 30 students were now looking like 50 students.

Courses

One of the other major issues that school had to deal with was that we were introducing a new certificate and diploma program and phasing out the current diploma. This meant

we had a number of small classes that we felt obliged to offer to ensure that students in the current diploma were able to complete and graduate.

Course Outlines
As part of the quality assurance criteria at CPIT each course has a course outline which includes:

- Staff members
- Class hours and times
- Assessment
- Resit procedures
- Website
- Resources
- Course Descriptor
- Course Diary

The semester is normally 17 weeks consisting of 14 teaching weeks (usually including a revision week), one study week and two exam weeks. For this new semester we decided on 12 weeks teaching and one week exams, removing the revision and study and compressing the exam weeks and reducing the breaks to the three days after Easter.

An important aspect was to complete the whole course in the 12 weeks so that students did not miss content material or teaching and all the learning outcomes were still covered. Importance was placed on the graduate profile and learning outcomes to ensure they were not compromised in the reduced weeks of the semester. All courses still had four hours contact per week. The teaching day was also extended to 8.30pm each evening and all day Saturday.

The academic staff were then required to update their course outlines to reflect this new criteria and meet our quality assurance requirements. The number of assessments could be reduced and modified providing the learning outcomes were met. This was to cause problems later in the semester as the assessment had been loaded into the Student Management System (SMS) and linked to the course which meant that if the staff member had changed the type or number of assessments they were unable to enter the individual results into the SMs only a final grade.

Some staff chose to teach for four hours in block courses especially those that included students from other schools located on different campuses and those that were eventually taught on the main campus all semester.

Up and Running
Orientation
An orientation day was held at Hornby and Lincoln campuses on Friday 25th March. Planning was organized but we hadn't expected the numbers that returned. At Lincoln we decided to use the lecture theatre which holds 250 students for the initial meeting of business and computing students. What eventuated was that we had to have two sittings of the meeting as over 400 students turned up to orientation.

At Hornby the student numbers again exceeded the numbers we had planned on. This was very pleasing as it was nice to see our students again but meant "on the fly" problem solving in terms of numbers of occurrences and class sizes especially when we are limited by the number of computers in the rooms. We also might just make our EFTS's targets for the year!

Start of teaching

April 4th saw the first classes commence five weeks since the 22nd February. Some students had completed one class while others hadn't had their first class of the semester so we decided to start again. It was a very smooth transition to resuming teaching hopefully due to the extensive planning and preparation that had taken place. The rooms were overcrowded, and the travelling time to and from the new sites was excessive, but the atmosphere and willingness of the students and staff to cope under trying conditions meant that the teaching and learning could take place.

It has been a stressful semester quite apart from the earthquake as reduced weeks, while still maintaining the learning outcomes has placed pressure on students and staff. The travelling times to the new sites also extends the day by as much as four hours for some staff and students. With only the Easter break in the mid semester to catch up, mark assignments and recharge meant tiredness was apparent. With only two weeks in the break between semesters, semester 2 2011 will be a challenge as well.

Lessons Learned

Lists and more lists kept offsite

The most important lesson learned is that people know what to do in a disaster, the health and safety briefings that have been held are a step towards ensuring all staff and students know what to do if another earthquake happens. Keeping safe and caring for each other is paramount.

In practical terms having access to address, phone and email address lists is essential, especially keeping hard copies of these off the main site. This will enable much faster communication to ensure everyone is safe.

Problem Solving, flexibility and willingness

Problem solving, flexibility and a willingness to make things work was the major lesson for everyone involved. If staff hadn't been willing to work under not so ideal situations, students hadn't been willing to travel up to two hours each way and to different venues and put up with crowded rooms,, it would have made the task to get the semester underway impossible. The management of CPIT were totally supportive and understanding in helping to achieve the recommencement of classes. The CPIT IT division has also been totally supportive and helpful in restoring the servers and setting up networks of computers at remote sites, something which meant that the School of Computing could do what we do best, start teaching again

Conclusion

Many models are proposed for managing disaster recovery and business continuity. In practice, as evident from this particular case study, practitioners use a combination of proposed frameworks, past experience and just in time problem solving to drive the planning process. Overall, it was made possible for all programs to be delivered with minimum impact on delivery of learning outcomes. Success factors include (but not limited to): quick response, support from the team, support from management, support from industry partners, efficiency in operational planning (such as timetable) and the ability to problem solve and be creative in thinking of solutions in critical situations.

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