

**Teachers' perceptions and perspectives of
school disaster management over the
medium term following the 2008 earthquake
in Sichuan province china**

Bing Yin Lei

Thesis submitted for the award of Doctor of Philosophy

University of Leicester

School of Education

September 2014

Abstract

This study aims to identify teachers' perspectives regarding their experiences of the school disaster response and management in the aftermath of the 2008 Sichuan earthquake. Since this event, the Chinese government has been working to develop a response and recovery structure in educational institutions. School leadership has been challenged to balance the need for standard operating procedures against an ability to bring flexibility to existing organisational structures in response to specific problems brought on by disasters. Teachers are expected by school leadership to take a more active role in providing essential services for students whilst also dealing with their own stress in post-disaster situations. For this reason, teachers' well-being after disasters comes out as a central issue that is being explored in present research. This research began with a pilot survey ($n = 100$) in November 2011. Through this process, a rigorous research instrument was developed and validated for the data collection of the current study. The scale reliability was calculated using Cronbach's alpha; the data were found to be reliable (> 0.8). The findings of this study report a particular situation of being stressed, it is held to be responsible for the success or otherwise of a massive, state-regulated school reconstruction process. In this context, it is not so much concerned with the nature of teachers' stress as an indication of individual physical or mental health and well-being. I draw on the experiences, challenges and stress that the teachers reported. In addition, the results also suggest that teacher 'personal experiences and professional environment such as students' behavioural changes in response to disasters have important impacts on teachers' resilience and well-being levels.

Acknowledgements

I would like to thank and acknowledge the following people:

Dr. Hugh Busher and Dr. Paul Warwick, the great special thanks to my two supervisors, whose input, encouragement, patience and effort was highly appreciated, and their comments and guidance were extremely beneficial, which made my study much easier to be achieved.

Dr. Chris Comber, my MA supervisor, whose great enthusiasm and interesting encouraged me to research on this project; Dr. Palitha Edirisingha and Mr. Chris Morgan, who constantly gave me critical feedback on this research; Dr. Quan Yu, one of my family members, who always gave me support and encouragement.

Lastly, but most importantly to my dear parents, whose love and support was enough to trust that this challenge and my passion for knowledge was worth the journey.

My eternal gratitude to all of you

Bing Yin Lei

Contents

Chapter One: Introduction

1.1 Background.....	01
1.2 Personal rationale of the research.....	03
1.3 Research problems statement.....	05
1.4 Purpose of the research.....	08
1.5 Research questions.....	11
1.6 Significance of the research.....	12
1.7 Organisation of the thesis.....	16

Chapter Two: Literature Review

2.1 Introduction.....	18
2.2 Impact of natural disasters on school organisations.....	21
2.2.1 Changes and impacts of school traditional system.....	22
2.2.2 Changes and impacts of school culture.....	23
2.2.3 Changes in school stakeholders.....	25
2.3 Challenges facing school teachers in PDSs.....	29
2.3.1 Teachers' personal experiences.....	29
2.3.2 Teachers' professional demands in PDSs.....	31
2.4 Disaster management in a broader context.....	34
2.5 Disaster management within the Chinese context.....	38
2.5.1 Human and material resource.....	40
2.5.2 Psychological service and training.....	42
2.5.3 Copying strategies in Chinese PDSs.....	45
2.6 Theoretical framework.....	47
2.6.1 Macro perspectives of school organisation.....	50

2.6.2 Meso perspectives of school PD process.....	57
2.6.3 Micro perspectives of school stakeholders.....	62
2.7 Chapter Summary.....	80

Chapter Three: Research Method

3.1 Research questions.....	81
3.2 Philosophical assumption.....	82
3.3 Research design.....	85
3.4 Design of the research project.....	88
3.4.1 Stage one: Focus group interview.....	89
3.4.2 Stage two: Piloting the questionnaire	90
3.4.3 Stage three: Quantitative survey of teachers.....	90
3.4.4 Stage four: Piloting semi-structured interviews.....	91
3.4.5 Stage five: Semi-structured interviews.....	91
3.5 Trustworthiness.....	92
3.5.1 Reliability and validity.....	92
3.5.2 Sampling.....	96
3.5.3 Ethical considerations.....	98
3.6 Data collection.....	99
3.6.1 Administration of the questionnaire.....	99
3.6.2 Administration of the interview schedule.....	101
3.7 Data analysis.....	103
3.7.1 Quantitative data analysis.....	103
3.7.2 Qualitative data analysis.....	106

Chapter Four: Analysis of Findings

4.1 Introduction.....	109
4.1.1 Characteristics of the five schools.....	110
4.1.2 Demographic information of the questionnaires.....	110
4.1.3 Characteristics of the interviews.....	113

4.2 Analysing quantitative findings.....	114
4.2.1 Scale reliability and Factor analysis.....	114
Sub-scale 1: Teachers' stressful experience.....	116
Sub-scale 2: School organisational change.....	118
Sub-scale 3: Supports from school organisation.....	119
Sub-scale 4: Teachers' copy capability in PDS.....	119
Sub-scale 5: General factors and supports.....	120
Sub-scale 6: Students' issues in PDS.....	121
Sub-scale 7: Coping with students' issues.....	121
Sub-scale 8: Teachers' personal traumatic experience.....	122
Sub-scale 9: Teachers' psychological response to PDS.....	123
4.2.2 Comparison between primary and secondary schools.....	125
4.2.3 Comparison of responses from the five individual schools.....	129
4.3 Analysing qualitative data.....	133
4.3.1 The interview results of the head teacher.....	133
Theme 1: Aspects of school issues during PDSs.....	133
Theme 2: Aspects of teachers' needs and responses.....	138
Theme 3: Aspects of students' issues.....	140
Theme 4: Aspects of parental absence.....	142
Theme 5: Vision of SBDM.....	144
4.3.2 The interview results of the teacher.....	145
Theme 1: School post-disaster response.....	146
Theme 2: Teachers' stressful experience.....	149
Theme 3: Teachers' views of pupils' response.....	152
Theme 4: Teachers' perceptions of parental absence.....	154
Theme 5: Teachers' sense of resilience.....	156
4.4 Synthesis of the quantitative and qualitative findings.....	158
RQ1: School organisational changes contributed to teachers' stress.....	159
RQ2: Teachers' personal experience contributed to their stress.....	160
RQ3: Pupils' PDS issues contributed to teachers' stress.....	162
RQ4: Parental absence contributed to teachers' stress.....	164
RQ5: Implementing methods in support of teaching in PDSs.....	165

Chapter Five: Discussion

5.1 Introduction.....	168
5.2 Impact of the earthquake on school organisations.....	170

5.2.1 Geographic transformation in PDSs.....	170
5.2.2 Cultural adjustment.....	171
5.2.3 Managerial issues.....	174
5.3 Teacher personal experience in PDSs	177
5.4 Teachers professional challenges in PDSs.....	179
5.4.1 School new system challenging teachers.....	179
5.4.2 The changing behaviour of students.....	181
5.5 Parental absence challenging teachers.....	184
5.6 Perceived coping strategies in school PDSs.....	186
5.6.1 Coping with school changes in PDSs.....	187
5.6.2 Disaster planning and preparation in schools.....	189
5.6.3 Teacher resilience-building in PDSs.....	192
5.6.4 Coping strategies for parental absence.....	202
5.6.5 Integrated framework within school PDSs.....	204
5.7 Chapter summary.....	206

Chapter Six: Conclusion

6.1 Purpose and outline of this study.....	207
6.2 Overview of the key elements.....	208
6.2.1 Impact of the Sichuan-earthquake on school organisation.....	208
6.2.2 Expectations for SBDM model.....	210
6.3 Contribution of the study.....	211
6.4 Limits of the study.....	216
6.5 Recommendations for policy and practice within school PDM.....	218
6.6 Recommendations for future research.....	221
6.7 Reflections.....	223

Appendices.....	225
------------------------	------------

References.....	259
------------------------	------------

List of Tables

Table 2.1: Summary of traumatic experiences of children.....	28
Table 2.2: Description of the four phases of school disaster management.....	35
Table 2.3: Features of SBDM approach.....	51
Table 2.4: Key attributes for disaster leadership.....	59
Table 3.1: Research Chronology.....	89
Table 3.2: Internal reliability analysis of the pilot study.....	95
Table 3.3: Cross-checking Research questions and Questionnaire.....	99
Table 3.4: Cross-checking Research questions and Interview schedules.....	102
Table 4.1: The questionnaire and the interview response rates.....	109
Table 4.2: Characteristics of the five sample schools.....	110
Table 4.3: Demographic information of the survey participants.....	112
Table 4.4: Characteristics of the interviewees.....	114
Table 4.5: Results of internal reliability analysis.....	115
Table 4.6: The number and percentage of Sub-scale 1.....	117
Table 4.7: Mean, Median and SD for Sub-scale 1.....	117
Table 4.8: Mean, Median and SD for Sub-scale 2.....	118
Table 4.9: Mean, Median and SD for Sub-scale 3.....	119
Table 4.10: Mean, Median and SD for Sub-scale 4.....	120
Table 4.11: Mean and SD for sub-scale 5.....	120
Table 4.12: Mean and SD for sub-scale 6.....	121
Table 4.13: Mean and SD for sub-scale 7.....	122
Table 4.14: The number of percentage of sub-scale 8.....	123
Table 4.15: Mean and SD for sub-scale 9.....	124
Table 4.16: Comparison the stress variables from two types of schools.....	125
Table 4.17: Description of the response regarding ‘SMC’.....	126
Table 4.18: Comparison of Resilience, LJS, PEs and NEs.....	127
Table 4.19: Description of the response regarding ‘LJS’.....	127
Table 4.20: Difference between the six sub-scales from two school types.....	129
Table 4.21: Comparison of the variables for each school.....	130
Table 4.22: A summary of Kruskal Wallis-p values.....	131
Table 4.23: Demographic information analysis.....	132
Table 4.24: A summary of the main school issues during PDSs.....	137
Table 4.25: Head teachers’ views of teachers’ needs and response in PDs.....	140
Table 4.26: Head teachers’ views of students’ issues in PDSs.....	142
Table 4.27: Head teachers’ views of parental absence in PDSs.....	144
Table 4.28: Head teachers’ general suggestions of SDM.....	145
Table 4.29: Teachers’ perceptions of school post-disaster response.....	149
Table 4.30: Teachers’ stressful experiences in PDSs.....	152
Table 4.31: Teachers’ views of students’ issues in PDSs.....	152
Table 4.32: Teachers’ views of parental absence in PDSs.....	156

List of Figures

Figure 2.1: Conceptual framework of the research.....	19
Figure 2.2: School-based disaster plan highlights.....	61
Figure 2.3: Conceptual model for school post-disaster context.....	79
Figure 5.1: Conceptual model of school post-disaster context.....	168
Figure 5.2: Impacts of the Sichuan-earthquake on school organisation.....	176
Figure 5.3: Impacts of the Sichuan-earthquake on school stakeholders.....	186
Figure 5.4: Integrated factors in a school PDS.....	187
Figure 5.5: An integrated process of SBDM model.....	205

List of Pictures

Picture 1.1: Regions affected by the 2008 Sichuan-earthquake.....	01
Picture 1.2: An example of a school damaged in the earthquake.....	02
Picture 1.3: Abandoned old Beichuan and rebuilt new Beichuan County.....	04
Picture 4.1: Teachers' accommodation at school.....	139

List of Appendices

Appendix 1: Group interview analysis (Extract).....	225
Appendix 2: Teacher Questionnaire for Pilot Study.....	227
Appendix 3: Revised Questionnaire for Main Study.....	230
Appendix 4: Original Interview Schedule for Pilot Study.....	234
Appendix 5: Semi-Structured Head teachers Interview Schedule.....	236
Appendix 6: Semi-Structured Teacher Interview Schedule.....	238
Appendix 7: Pilot study analysis (Extract).....	239
Appendix 8: Factor analysis.....	244
Appendix 9: Computer Coding for Statistical Analysis.....	246
Appendix 10: Post Hoc Analysis.....	250

List of Abbreviations

CPD	Continuous Professional Development
HT	Head teacher Theme
PS	Primary School
PDS	Post-Disaster Situation
PDM	Post-Disaster Management
PSH	Primary school Head teacher
PST	Primary School Teacher
PTSD	Post Traumatic Stress Disorder
RQ	Research Question
SS	Secondary School
SSH	Secondary School Head teacher
SST	Secondary School Teacher
SBDM	School-Based Disaster Management
TT	Teacher Theme
NGO	Non-Government Organisation

Chapter One Introduction

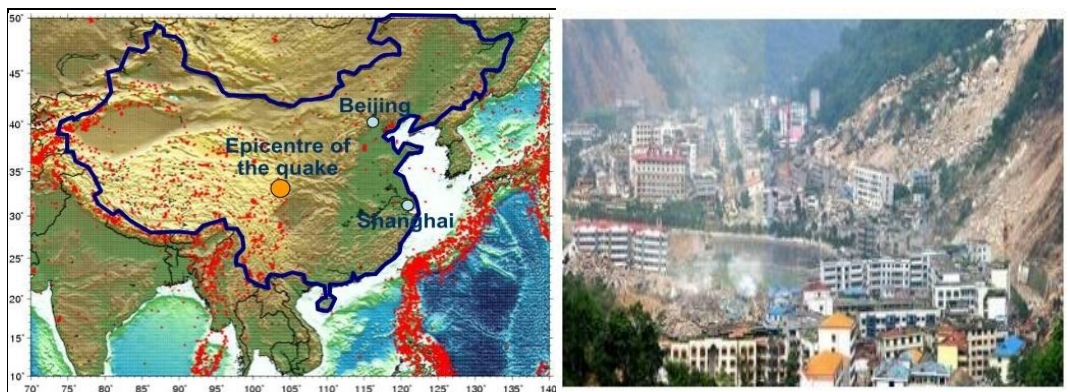
Here I would like to express my condolences to the victims of the Sichuan earthquake, especially to the great teachers who died saving children's lives.

I pray for the recovery of the affected areas.

1.1 Background information

The nation of China is in an area of geological instability, resulting in repeated and severe natural disasters. An alarming increase in the occurrences of natural disasters has been detected over the past ten years with about fourteen major incidents reported in the year 2008-2013 (Asian Disaster Reduction Center, 2013). The Sichuan-earthquake occurred at 2.28pm, May 12th, 2008, and measured 8.0 on the Richter scale. It was a devastating and deadly natural disaster without comparison during the past three decades in China. It had a destructive impact on a range of areas and resulted in great economic losses and heavy casualties. 69,227 people were confirmed dead by September 2008, 374,643 injured and 17,923 missing (Chinese news, 2008 cited in Yang, 2010; Asian Development Bank (ADB) 2009: 24; Sun et al., 2010).

Picture 1.1: Regions affected by the 2008 Sichuan-earthquake



Source from China news (2008) Beichuan County of Sichuan Province of China)

There are few institutions that fared worse than schools. A total of 17,951 educational institutions were fully or partially damaged, including 12,253 in Sichuan Province, 5,455 in Shaanxi Province, and 243 in Gansu Province. The counties with the most fully destroyed basic schools (primary and secondary schools) are Mao (153), Pingwu (137), Wenchuan (129), and Beichuan (83). Losses to the education sector are estimated at CNY4, 676 million (ADB, 2009: 24:4).

The collapse of school buildings killed more than 9,000 school children and teachers. This accounted for 12% of the total number of victims of the Sichuan-earthquake (Fu et al., 2010). The quake struck in the early afternoon when most students were in their classrooms, and young students were taking a nap. More than 1,000 students were killed at the Beichuan Middle School (see Picture 1.2 below), which was one of the most severely affected schools during the earthquake. A great number of survivors suffered traumatic losses on multiple levels: personal and professional, physical and psychological (Zeng et al., 2011:500). This generated a great deal of attention and led to heavy input into the reconstruction process of the educational system.

Picture 1.2: An example of a school damaged in the earthquake



Source from Zhao et al. (2010) Beichuan Middle School, before and after the earthquake

1.2 Personal rationale of the research

I first encountered this devastating natural disaster as a volunteer three months after the Sichuan earthquake. The experience of volunteering led me to dedicate myself to a ten-year project to support victims' recovery after natural disasters with the Chinese Psychology Society in Beijing. My experience of the Sichuan-earthquake has encouraged me to learn and recognise as much as I can about the study of a post-disaster situation (PDS) in educational sectors, and the importance of improving resilience of school teachers in the area of PDS. In this study, I explore the study of stress in school teachers, the need for teachers' training, the need for more interventions that school teachers can make use of following a major disaster, and the need for school teachers' self-care while working with traumatised student and colleagues.

The Sichuan-earthquake was a terrifying picture, unlike anything I have ever seen in my life, this was the first time I had ever had to face such a huge relief effort. Most of us did not know how to deal with the affected children and chaos was everywhere. There was a great deal of initial support from national and international organisations in terms of basic humanitarian aid specialist expertise and resources. My research endeavours to look at the long term picture two years on, through this doctoral study, I want to track the lives of those teachers and children. I want to study whether the affected population has physically and psychologically recovered. Also, I wish to ascertain whether they have a sense of normality, structure and hope for the future.

With this broad area of interest, I have carried out a wide scoping field investigation into the earthquake areas in Beichuan County of Sichuan Province during November 2010. Beichuan is one of the most devastated regions, and it is a Qiang Minority Autonomous Country- one of the Chinese Minority heritage. It is only situated 85 miles from the epicentre and 4 hours north of Chengdu, the Provincial capital of Sichuan. Beichuan was a quiet, peaceful and beautiful County, but after the earthquake, half of its population

became casualties, and the town was described as “a city of ghosts” and “a vision of hell” (Coonan, 2008). In order to prevent the possibility of a pandemic, the disaster rescue workers were required to dump all victims’ corpses into a gigantic construction site and the whole of the original Beichuan region has been deserted completely (see Picture 1.3 below).

Picture 1.3: Abandoned former Beichuan and rebuilt new Beichuan County



Source from the researcher's field work (2010-2011) Relocated new Beichuan is situated about 100 miles away from the old Beichuan region.

During the fieldwork conducted for this project, I had the chance to talk with some of the teachers at Beichuan secondary school and I came to realise that the overwhelming offers of support and help from the governments, non-government-organisations (NGOs) and humanitarian organisations had gradually tapered off over a period of time. This had often to be left needing the on-going interventions into the lives of the affected pupils to school teachers.

A number of teachers I interviewed stated that they were under serious stress in teaching and mediating their classrooms after the disaster, which had brought unexpected challenges to their life and career (Alvarez, 2010; Lei, 2010; Sun et al., 2010; Zhang et al., 2009). Most teachers complained that they not only had to cope with their own personal stresses, but also had to manage unstable working environmental conditions, pupils’ behavioural changes and school management changes after the disaster (Lei, 2010).

However, the consideration of the needs and issues of teachers did not seem to have been put in place before entrusting them to play this critical role. There also seemed to be no proper strategies in place regarding how to direct those teachers to provide effective contributions to the recovery process (Xin et al., 2009; Zhang et al., 2009). Therefore, this complex situation challenged teachers' physical, cognitive, social and emotional functioning. Some teachers were suffering from "secondary traumatic stress" disorder themselves due to dealing with affected pupils and working in such an environment (Dean et al., 2008 N.B. the meaning of 'secondary traumatic stress', will be explained in detail in Chapter 2, p: 30). The study framework and subsequent research objectives and questions have been inspired by the scope of these findings.

1.3 Research problems statement

In reconstruction after a major natural disaster, the key role of school organisation is to promote the well-being of those most affected school stakeholders. This requires essential support and a response to their needs to allow them to effectively recover from the traumatic event (Phillips, 2009; Paine, 2009; Porter, 2010; Reeves et al., 2008; Smith and Riley, 2012). Following the Wenchuan earthquake, an enormous reconstruction effort has been launched by Chinese authorities, one of the challenges is to put the well-being of the worst affected people first in the process of post-earthquake reconstruction (Xu and Feng, 2012).

Children have been considered primarily as vulnerable victims of disaster (Cohen and Mannarino, 2011; Cederblad, 2009; Kliman et al., 2008). Şahin et al. (2009:3) recognise that "one of the most efficient ways of improving the care standards in PDSs is to support the service providers who work directly with children". Wachtendorf et al. (2008:457) identify that children's trauma after a natural disaster has been studied extensively (see detailed discussion about children's trauma in Chapter 2, pp. 27-28), but

considerably less attention has been paid to other groups who are valuable to making children particularly resilient to disasters.

In the context of this study, the proposition is that school teachers are one of the most valuable people for children's effective recovery even though they are victims of a disaster too, and they require special attention if they are expected to be the front-line troops' to assist the recovery of traumatised students and the school community. Similarly, this proposition has been recognised by Cohen and Mannarino (2011), they indicate that school teachers are viewed as being in a position to support students' emotional and behavioural needs during traumatic events. However, little attention has been paid to identifying and addressing school teachers' challenges and experiences, and whether they are capable of coping with PDSs', and how those challenges affect their resilience and well-being (Zhang et al., 2009).

School-based psychological services have been proposed as one possible way to provide sustainable care for children (Dean et al., 2008). It is accepted that students spend a large proportion of their time at school with teachers who actually influence their daily life in many circumstances (Alisic et al., 2012). Consequently, it must be seen as important to consider school teachers' well-being, and their concerns about how they can play a significant role in coping with affected students and their communities in a post-disaster recovery process.

Some literature defines well-being as a state of happiness, health, personal growth and life satisfaction (Deci and Ryan, 2008). However, well-being in a disaster research context has tended to refer to making sure that survivors have the ability to recover effectively from negative impacts, such as stress, grief and depression (Rumsby, 2009). It emphasises the importance of the intrinsic motivation for self-determination, resilience, mental health and a forward-looking perspective related to positive attitudes on the part of survivors (Sun et al., 2010). Positive attitude and psychological process are emphasised as vital to developing individual capabilities and coping strategies for

recovering from any catastrophes (Bemak and Chung, 2011; Fowler et al., 2007).

In reviewing the literature concerned with the post-disaster reconstruction of educational sectors, it becomes clear that most post-disaster studies are focused on the assessment of short-term psychological intervention or debriefing (Sun et al., 2010). However, there is a growing body of evidence suggesting that the effects of natural disasters on the affected population can produce long-term and incapacitating mental problems directly related to the well-being of both children and adults (teachers) (Alvarez, 2010; Buchanan et al., 2010; Brixi, 2009; Bonanno and Galea, 2007). For example, a study from Buchanan et al. (2010:117) claimed that two and a half years after an earthquake, survivors are still trying to rebuild their lives. Physical health may have improved in the most part, but their psychological suffering is “far from over”.

To fully comprehend a school organisation’s capability of responding to a PDS, any meaningful study of school disasters or crises should be explored in a systematic, multidisciplinary perspective through relevant research and theory (Pepper et al., 2010:1). Unfortunately, there is limited research on post-disaster management and leadership in the field of education, and virtually all of it is limited to school violence, fighting, substance abuse and accidents (Alba and Gable, 2011; Adamson and Peacock, 2007; Cacciatore et al., 2011; Cederblad, 2009; Gainey, 2009; Paine, 2009; Sandoval, 2009).

The current research will highlight that effective school recovery resulting from a natural disaster must consider in advance issues including pre-disaster recovery preparation programs, social support networks, sufficient physical and material resource and appropriate school staff training, practice and involvement activities (Chen et al., 2008; Janssen et al., 2010; Porter, 2010; Paton et al., 2011). The development of school PD better-suited sustainable strategies is to help teachers and pupils’ lives to normalise. These strategies are required not only for improving teachers’ management of PDSs, but also for enhancing teachers’ well-being and for motivating students’ positive learning attitudes, resilience against and preparation for future uncertainties. Nevertheless, recent

studies show a distinct lack of appreciation for this aspect in the recovery process (Dyregrov and Yule, 2008).

1.4 Purpose of this research

This study intends to address the gaps and problems outlined above through teachers' perspectives to explore the impact of the Sichuan-earthquake on both school organisation and individuals by looking at school teachers' stress and resilience within the medium-term timeframe - (a period of two to four years after the earthquake in China). There has been very little discussion about teachers' stress and resilience within PDSs or how it might relate to practice. This study is aimed to bring these two concepts into PD scenarios and show its potential to enhance teachers' well-being in support of the school reconstruction process following a natural disaster.

Teachers' well-being plays a key role in shaping both the trajectory of school development and the pupils' health-and learning-related issues (Bizumic et al., 2009; Brix, 2009; Sun et al., 2010). Wolmer et al. (2005; 2011) assert that it is vital to provide evidence of coping methods used by school teachers to improve their resilience and well-being if they are expected to be the core mediator in protecting children from the long-term risk of trauma. This statement is recognised by other researchers (Alvarez, 2010; Bridges and Searle, 2011; Brown, 2008; Dyregrov and Yule, 2008). They agree that the effective recovery of teachers not only benefits the schools' development and the quality of teaching, but also the well-being of students, the quality of learning, and academic achievement over the long term.

Ho et al.'s (2012) studies recognise that school teachers' well-being is potentially challenged by environment, social and school organisational changes (external factors) and the development of capabilities (internal factors), as part of an increasing social

concern for long-term quality of education. With a view to arguing that without attending to improve teachers' resilience and cope with their stress in the school reconstruction process after a natural disaster then a school is unlikely to achieve optimal outcomes during a specific circumstance (Alvarez, 2010; Bridges and Searle, 2011).

I explore the concepts of stress and resilience not as a pathological psychology concern (Kumar et al., 2010), or a psycho-biological (Ryff and Singer, 2008) concern or an industrial relations concern. Rather, I intend to use a framework that draws on Bronfenbrenner's (1989) socio-ecological system to suggest that resilience improvement and stress management in PDSs emerge as a form of social structure. That is, school teachers' stressful experience is largely conceptualised by school post-disaster responses and management capability, school's effective recovery and resilience is a key element that encapsulates school teachers' resilience levels (Cletenberg et al., 2011; Shervington and Richardson 2007; Schoon, 2006).

School organisational response to a PDS is an essential consideration of this study because a school as an organisation encounters "such critical circumstances which not only undermine teachers' well-being, but [also] threaten to derail a school's core function of teaching and learning" (Pepper et al., 2010:1). A school organisation is responsible to offers an appropriate post-disaster response in the provision of short- and long-term support to their communities and staff following the disaster, whether or not school leadership has a clearer picture of what responsibilities they are obliged to take. Having this series of considerations in mind, a substantive aim of this study is to identify the effective strategies for promoting teachers' resilience and managing their stress, and the provision of sustainable natural disaster response models.

Three major areas of investigation come to the fore with regard to detecting the challenges and changes facing school organisation and school stakeholders in PDSs:

- Conduct a review of how school organisational changes and response to a PDS.

- Identify school teachers' personal experience, life satisfaction, positive and negative emotions in PDSs.
- Compare and contrast school teachers' professional experience of interacting with traumatised students and parents.

The development of resilience in PDSs will be discussed as a way of helping teachers overcome these challenges, in order to reduce their stress and students' disengagement from teaching and learning, and as a response to related problems such as low-motivation, lack of commitment within the classroom, negative attitudes to life, antisocial behaviours and emotional problems in both teachers and students (Chen, 2010; Geving, 2007; Gu and Day, 2007; Liu and Zhang, 2008). Though school teachers' traumatic experiences have been overlooked in the field of school disaster reduction, teachers' well-being and resilience can be an essential indicator and influence the effective recovery of the whole school organisation.

It is hoped that this study will provide a constructive strategy for promoting schools' effective recovery and for minimising teachers' traumatic experiences in PDSs. The investigation will focus on primary and secondary school teachers from the 2008 Sichuan earthquake in China over a period of two to four years after the earthquake. The challenges faced by school organisation and school stakeholders will be explored in order to suggest possible, effective strategies that might assist them in coping with PDSs. In connection with these proposals, this study intends to explore a systematic school-based disaster management strategy in educational the sector.

1.5 Research questions:

The central question of the current study is:

What processes influence the resilience and well-being of the school teachers in terms of the consequences of school post disaster responses following the Sichuan-earthquake within the medium-term (2-4 years)?

In order to address this main research question of the study and especially the data-gathering process, the following key specific research questions are posed:

1. What have been the school organisational changes since the earthquake in 2008 and how have these contributed to the stress of school teachers?
2. How have teachers' personal experiences of the earthquake contributed to their stress?
3. What are pupils' PDS issues and how do these contribute to the stress of school teachers?
4. What are the perceived effects of parental absence on pupils' recovery processes, and on teachers' stress?
5. What do teachers think needs to be done to increase their resilience and decrease their levels of stress, in order to help them teach effectively within a PDS context?

A survey questionnaire on sources of teachers' stress was piloted on factors relating to school organisational changes after the earthquake (school post-disaster situation, response and management, teaching methods and work conditions). Other factors such as teachers' expectations from society, government, and parents, in connection with the

implementation of the survey, were explored in a series of semi-structured interviews. A schedule was drawn up in which five school head teachers and twenty school teachers were interviewed with regard to their perceptions of school post-disaster preparation, planning, training, operation and development.

1.6 Significance of this study

This study hopes to shed light on some of the complex interactions between post-disaster experiences of teachers and their life trajectory. It is also hoped that a contribution can be made to filling in the gaps in research into how school organisational changes affect and influence teachers' recovery. A number of studies have been conducted into school disaster situations in China (Sun et al., 2010; Watts, 2008; Zhang, Y. et al., 2010; Zhang, C. et al., 2009), but none of the existing literature in the Chinese contexts explores school teachers' stress and resilience relating to school disaster response and management. This study is a ground breaking one as it lays a foundation for future research into school post-disaster leadership and management. Generally, this study has the potential to improve school teachers' professional practice and development by promoting them in taking a constructive role in PDSs. Their effectiveness will, in turn, translate into an increase in school effectiveness and students learning.

There has been a limited amount of research on how key school stakeholders receive and perceive the outcomes of effective school leadership in a PDS (Clarke and Wildy, 2010). School teachers are considered to be one of the key school stakeholders in the field of education. In understanding their perceptions of effective school post-disaster leadership and gaining insight into how school leaders react in a PDS, it may be able to draw links between how the two are closely related and what implications this may have for a schools' effective recovery.

The issues revealed from the study appear to highlight the importance of school organisational leadership has when handling as a PDS. Research needs to consider how a PDS may impact the school communities and individuals, and what strategies may be adopted to handle a PDS. Although the literature on school organisational changes and management is extensive (Bridges and Searle, 2011; Beatty, 2007; Busher, 2006; Hallinger and Heck, 2010; Kurland et al., 2010; Leithwood et al., 2008; Pedder and MacBeath, 2008), the amount of literature that focuses on school organisational changes for post-disaster response and management, measured by exploring teachers' stress and resilience is relatively small.

The types of interventional programs are well known but what appears to be missing in current knowledge is *how* those interventional programs can be applied and *who* contributes to effective school post-disaster management. Most studies have aimed to identify the role of an effective school psychologist (Adamson and Peacock, 2007; Bemak and Chung, 2011; Hornby and Witte, 2010; Margolin et al., 2010), literally, what school psychologists do. There has been very little research seeking to understand how and in what ways the teachers as a key school stakeholder perceives effective school post-disaster management techniques, and how their competence and abilities can aid a school's recovery following a disaster.

It adds to the national discussion on ways to build more resilient school communities through the engagement of school teachers at all levels in disaster response and recovery in conjunction with a school-based post-disaster management team. As a result of identifying possible strategies for school leadership to impact school stakeholders' recovery during the reconstruction operations, future research efforts can be focused on creating school cultures where such leadership techniques are encouraged, indeed expected, thereby facilitating the creation of resilient school communities and individuals.

In comparison with existing studies, which have largely ignored the implications of stress and resilience on teachers following a natural disaster or crisis, this one takes that issue as a central element of its investigation. Although several studies have examined the well-being of teachers with regard to their job stress and resilience in terms of continuing professional development (CPD) (Malcom and Combes, 2007; Day and Gu, 2007; Rumsby, 2009; Skakon et al., 2010), a systematic understanding of how to reduce teachers' stress and develop their well-being and resilience levels specifically related to traumatic experiences following a natural disaster is still missing.

This study based on a socio-ecological theory, which is discussed in the literature review (Chapter 2, pp.47-51), proposes to understand the interrelationships between school organisational post-disaster response and individual's well-being regarding the two indicators (stress and resilience). The socio-ecological structure shows similarities with, but also differs from other approaches to the PDS (Shervington and Richardson, 2007; Schoon, 2006). It focuses on the external environment and social structure of how school teachers develop their resilience, resistance and commitment to teaching, by the various contexts and interactions with others who are part of their personal and professional lives (Gu and Day, 2007).

It is not so much focused on the role of well-being itself for the individual teacher, but on the positive-affective processes of well-being in their interactions with others, or how the context shapes well-being of teachers in relation to teaching (Bixi, 2009). This can then be combined with previous disaster research to structure effective coping strategies for future disaster management in relation to school work environment and teachers' recovery. It has an important social role in highlighting the longer-term effects of natural disasters, which past studies of the post-disaster recovery process have tended not to achieve.

A clear understanding of the level of stress, preferred coping strategies and the degree of resilience facing school teachers during PDSs is not only crucial for research, but also

findings could provide evidence to aid the effective school post-disaster management and support for the school leaders and policy-makers. It is important to note that over the past ten years or so, there have never been so many demands made on school teachers by stakeholders. Since there is no research related to stress, resilience and coping strategies among school teachers during a post-disaster scenario, a study is warranted so as to fill this gap in knowledge against the backdrop of school based post-disaster management.

This research project is also significant for using a mixed-methods approach and providing qualitative and quantitative information that could benefit educational policy-makers, administrators, researchers and social workers in disaster-readiness and disaster management of educational sectors. Findings could offer useful information to parents and teachers of students with special needs in a PDS. It could help with CPD of teachers working in a disaster context, and help tailor specific training, practice and skills for teachers in future uncertainties. It could also help school leadership to understand the importance of parental involvement in children's recovery after a natural disaster (Reid and Reczek, 2011).

This research highlights the importance of not only a strong school organisation capacity, but also of a cohesive system of public, social, government and individual groups interaction and integration into the school community. This research explores a range of issues in the context of recent recovery efforts in China. The research has highlighted that effective recovery planning must consider in advance issues around psychosocial support and school stakeholders' involvement in the recovery process, and the needs of a policy and economic support system. The Sichuan-earthquake provides a platform opportunity to improve and enhance existing knowledge of the school recovery process.

1.7 Organisation of the thesis

The thesis is distributed into six chapters. This first is the introductory chapter that provides an overview of the background and rationales for this research project. It highlights the personal motivation for me in conducting this study, followed by the research problem statement, purpose, research questions and significance of the study. It also presented a general view of the context of the school situation in Beichuan after the earthquake and the disaster reduction process that was implemented.

Chapter Two provides a review of existing literature in relation to the research questions outlined above. As there is virtually a little literature in the field of education, I will draw upon a review of pertinent articles that discuss disaster response and management within organisations and communities. The purpose of reviewing the literature and research is to build up understanding of the impact of a natural disaster on school community and individuals for the current study. In the first section, concepts of school organisational changes, challenges and response following a disaster are introduced along with a review of the literature related to the role of school teachers and issues of students. In the second section, teachers' personal and professional experiences are reviewed in order to understand the challenges and stress faced by school teachers during a PDS.

In the third section, a review of literature on multiple types of disaster management and response is discussed. This includes a comparison with school disaster scenario of China with other parts of the world in a disaster context, and a discussion about the importance of disaster preparation/planning, teachers' resilience and parents' involvement in a school's renewal process following a natural disaster. The final section of this chapter proposes a systematic theoretical framework of this study, emphasising the interrelationship between school disaster response mechanisms and teachers' stress, coping skills and resilience in the PDSs. This is followed by a conceptual model for presenting a school-based disaster response structure in school sectors.

Chapter Three outlines the research methodology that will be used in this research. It explores the philosophical assumptions underlying this research, the research design that identifies the boundaries of the study, trustworthiness, both theoretical and practical issues of data collection and analysis procedures and the strengths and shortcomings of the tools. The ethical guidelines that were used in this research are also clarified.

In chapter Four, the findings of both quantitative and qualitative methods are presented. The chapter starts with a description of the distribution of five sampling schools, demographic information of the questionnaires and characteristics of interviews. Then, quantitative findings are analysed including statistical descriptions, factor analysis, internal reliability analysis and significance analysis, followed by qualitative data analysis there will be some direct interviews' quotations presented to allow participants to reveal their real situations and interests in detail in PDSs. The chapter ends with a synthesis of both quantitative and qualitative findings highlighting emerging scales and themes where I propose a school-based disaster management and response structure.

In chapter five, there will be a comprehensive discussion of findings alongside the literature. The findings will be synthesised by comparing the major patterns and themes in the data that are common across both qualitative and quantitative findings, identifying similarities and differences and comparing them to the literature.

In the last chapter, a summary of the purpose and outline of the work is presented. It provides an account to the contributions and limitations. It also indicates implications and recommendations of the study on research, policy, policymakers and practice and discusses my reflections on the entire research project.

Chapter Two Review of the literature

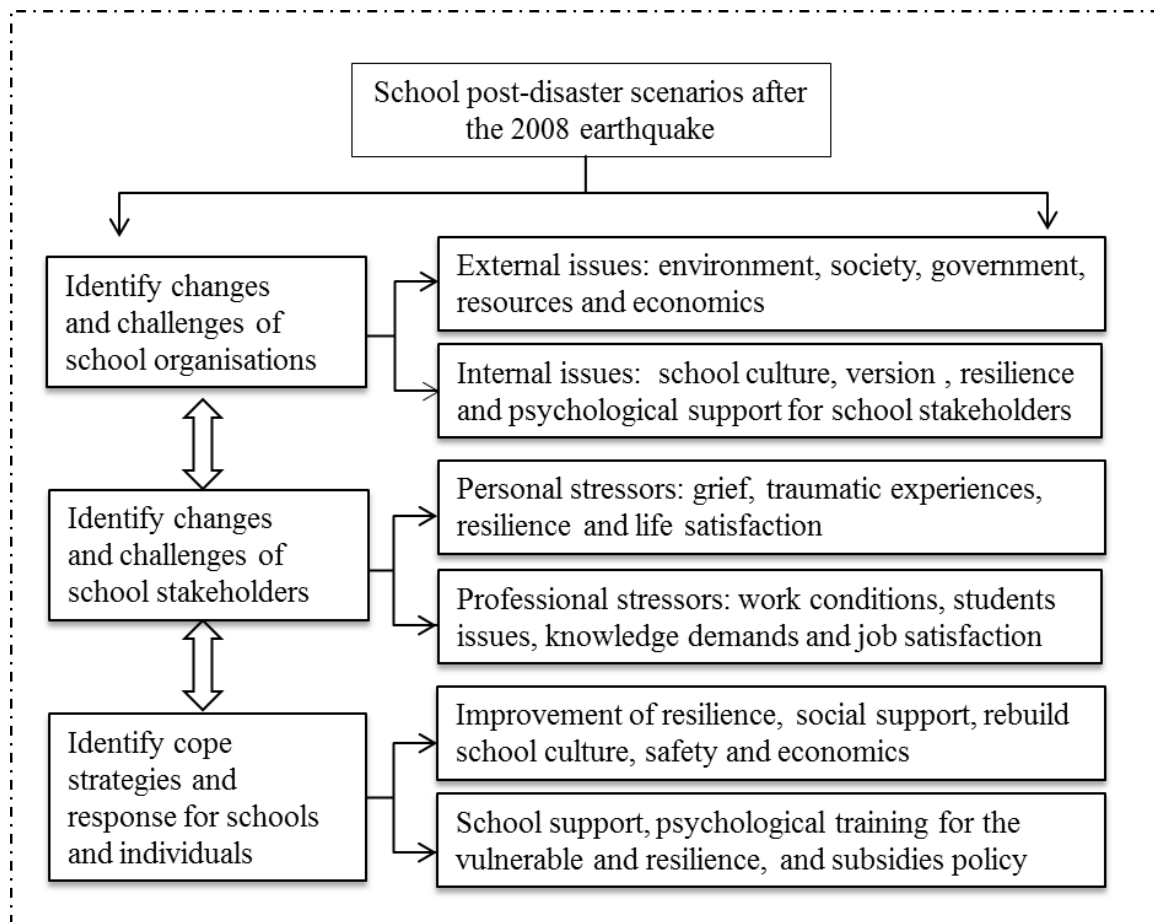
2.1 Introduction

The purpose of this chapter is to explore the literature related to the impact of natural disasters and crises on school organisations, specifically, from teachers' perspectives to understand how school post-disaster management influences school teachers' well-being. In order to achieve this, the literature will be organised throughout the two key domains as follows:

- Impact of natural disasters on school organisations and individuals
- Response, management and coping strategies of school organisations and individuals.

These domains provide a conceptual analysis of *how* and *why* issues of school leadership and management after a natural disaster strongly influence teachers' well-being and school effectiveness - with a particular emphasis on the dynamics of teachers' stress and resilience during the PDSs. Figure 2.1 below graphically represents a conceptual framework of this literature review.

Figure 2.1: Conceptual framework of the literature review



This figure shows the foundations and development of this study through its three major parts. The first part of this project looks into a synthesis of international literature related to school organizational changes, challenges and responses to natural disasters. The second part examines current literature regarding what key issues arise from teachers' personal and professional experiences (e.g. dealing with school changes and individual issues such as pupils, parents and themselves) after a major disaster. The third part identifies the significant disaster cope and response strategies and how these strategies contribute to school stakeholders' resilience and strengthen school restructuring in post-disaster recovery scenarios.

This chapter will cover six domains to achieve the purpose of the literature review. Section 2.1 (above) has opened with an overview of the introduction to this study. Section 2.2 explores the impact of natural disasters on organisations, schools and

individuals. A school as an organisation most likely experiences a number of changes and reconstruction after natural disasters (Alvarez, 2010; Jaques, 2010). This section examines the phenomenon of school climate and cultural changes, the changing role of school leadership, teachers and the changing behaviour of students during a PDS to uncover the challenges and issues faced by school organisations after a natural disaster.

Section 2.3 discusses the challenges and stress faced by school teachers during the PDSs. Teachers are one of the key stakeholders and have an integral role during the school renewal process, so this section aims to explore what challenges they face and how those challenges influence their personal and professional life.

Section 2.4 examines the previous research projects on disaster management with a view to drawing the picture of a school-based disaster management (SBDM) structure, stating how the prior research projects give rise to issues which the current study investigates. The importance of developing a SBDM plan, resilience, coping strategies from both school leadership and teachers are discussed in detail in order to propose recommendations for improving the effectiveness of school recovery during a PDS.

Section 2.5 constructs a theoretical framework that guides this exploratory journey of how the school-based disaster management could potentially be operationalised in order to facilitate a better understanding of the school PDSs in future disasters. Section 2.6 provides a summary of the literature review.

2.2 Impact of natural disasters on school organisations

- Changes and challenges in PDSs

Disaster brings chaos to the normal functioning of organisations which undermines or changes the stability and safety of the entire organisation system (Openshaw, 2011). Lewis (2011: 25; 37) defines change as referring to any alteration or modification of organisational structures or processes. However, change resulting from a natural disaster signifies “an alteration in the state or direction of social, economic, political, and environmental conditions that deviates from pre-disaster conditions, from an extrapolation of existing trends and which is substantial in terms of the impact on people’s lives... often lead to positive or negative impact in socio-ecological systems [of an organisation]”, as Birkmann et al. (2008:1-3) identified.

Organisational change involves “people, culture and process” in general (Birkmann et al., 2008; Cameron and Green, 2009). Busher (2006:148) discusses this change in schools in relation to “people, power and culture”. For the purposes of this research, “organisational change” means a school’s renewal process as a response following a natural disaster. I use the concept of organisational change to understand the affected schools in the Sichuan-earthquake 2008 where significant changes have been made in the Chinese educational sector, such as school geographic locations to administrative policies and syllabus guidelines (Watts, 2008; Yang and Chai, 2010; Ho et al., 2012). Those changes aimed to meet the health and safety needs of the affected populations in their school communities (Zhang et al., 2010; Zhao et al., 2010). To make sense of how the school organisational change is driven by a natural disaster, I assume a similar process may occur with several changes and impacts highlighted below:

- System - geographical distribution (e.g. location, buildings), merger, reorganisation, recruitment of workforce, change of the traditional work routine and chain of responsibility.

- Culture - values, perceptions, beliefs, assumptions, vision, leadership and school climate.
- People - demographics, educational background, and dispositional factors such as motivation, expectation, personality and performance.

2.2.1 Changes and impacts of the traditional school system

Kovoor-Misra (2009:497) notes cautions that school organisational changes could be planned, such as a merger, reorganisation or a downsizing, or could be unplanned, such as a sudden natural disaster. Alvarez (2010) and Jaques (2010) make a similar statement that a school as an organisation is usually composed of many dimensions which reorganise, expand and relocate after a disaster. They are certainly confronted with buildings that are damaged or destroyed, serious injuries or fatalities of school stakeholders and others associated with the school community. When a natural disaster occurs, it is a primary driver of schools organisational change, school administrators and educators have little control over the nature of organisational reform (Buchanan et al., 2010). The school system is completely destroyed by a natural disaster which causes the entire system of school organisation to collapse (Beatty, 2007; Izadkhah and Hosseini, 2006; Tarrant, 2011; Wachtendorf et al., 2008).

The general impact of a natural disaster makes it one of the most challenging crises to be addressed by school leadership teams (Alba and Gable, 2011). In most instances, entire communities are devastated by natural disasters. Such physical effects as ruined buildings, inaccessible roads, and lack of resources drastically affect people's daily lives (Jaques, 2010; Kurland et al., 2010). Ma et al. (2009) and Sun et al. (2010) reported that schools faced the same extensive reforms in Beichuan during the PDSs, and these were carried out with inadequate preparation lacking resources, guidelines and strategies to support school organisation and stakeholders' recovery (Brown et al., 2011; Coonan, 2008; Ho et al., 2012; Lei, 2013; Watts, 2008; Zeng et al., 2011).

Effectively managing and leading PDSs can be a new challenge to school organisations. Especially when a school organisation becomes larger and more complex the school management team face challenges on a number of other fronts at the micro level of the teaching and learning as syllabus guidelines change, at the macro level of the school political structures, socioeconomic and environmental changes (Izadkhah and Hosseini, 2006; Hipp et al., 2008; Jaques, 2010; Lewis, 2011).

2.2.2 Changes and impacts of school culture

The aftermath of a natural disaster often threatens the core foundation of a school's culture, not just marginal features of the school's operation (Nastasi et al., 2010). Pepper et al. (2010) notes that school leadership teams often face the challenge of losing their vision and direction after encountering a major disaster or crisis. The designed roles, policies, standardised forms of communication seem to fail in responding to school regulation during the PDSs. Canada et al. (2007) identify that restoring or developing cultures in schools after a disaster are the key to assisting school stakeholders to build up positive interpersonal relationships with their school organisation. The restoring and development of the school culture binds and aids school stakeholders in transitioning after a PDS.

Rumsby (2009:62) assumes that every organisation has some reciprocal capacity for outward influence. If school members are unfamiliar with school organisation, culture, procedures and the schools vision for the future, it is likely to face school leadership and management difficulties. School members may question the school leaders "cultural beliefs and call for cultural transformation" (Wang, 2008:429). Therefore, Pepper et al. (2010:7) suggest that redeveloping a school's culture is the key during a school crisis because culture is the "foundational practices" of an organisation, the "professional practice" of a school's stakeholders and "the daily guideline and behavioural manifestations of a school's core values".

A school is a complicated human organisation with interrelates between multiple stakeholders including head teachers, subject teachers, support staff, students, parents, social workers and other relevant parties in society (Astor et al., 2010:70). Each stakeholder may react differently regarding the school organisational changes during a PDS, however, the differences and similarities among these various reactions may add valuable insights about the efficiency of the school reconstruction process (Brown and Yasukawa, 2010; Brown, 2008).

A school management team may need to understand how culture flows in school organisations and how it is possible for school teachers to take charge, as Busher (2006:85) identified. He further clarifies that “the culture of a school offers a framework of norms enshrined in rules, language, ceremonies and rituals that help [school] members to sustain their existing identity by expecting its members to act in certain ways in particular situations”. However, it would be fair to say that each school’s culture is unique, which is most likely based on the geographical distribution, and the society and individual values associated with the school (Xu, 2011).

Hipp et al. (2008) make a similar statement restarting an appropriate culture within schools can lead to an effective recovery process. A successful post-disaster school is one that embraces change through organisational leadership, culture and school vision (Higgins et al., 2010). But Beatty (2007) argues that:

“ School re-culturing is never finished or complete, but rather consists of the myriad of social interactions and evolving relationships that must measure up to new tests every day. Putting structures in place that provide opportunities for meaningful collaborations is a place to begin but it is the personal, social, cultural and political processes that are shaped and reflected in emotional experiences...” (p.338)

These combinational changes of external and internal aspects could impact school organisational identity, system, culture and geographical domains (Birkmann et al., 2008; Busher, 2006). Therefore, in the aftermath of a natural disaster a school management

team is required to take the initial actions and to precisely plan and control the internal changes and rebuild the school culture as well as respond effectively to meet the demands from the external environment (Kurland et al., 2010; Kovoov-Misra, 2009).

2.2.3 Changes in school stakeholders

Some recent studies about the impact of the Sichuan earthquake on survivors' mental health disclose that the prevalence of post-traumatic stress disorder (PTSD) symptoms ranged from 9.4% to 45.5% (Brix, 2009; Higgins et al., 2010; Lei, 2013; Wang, et al., 2009; Zheng et al., 2009). Clearly, one impact of a major disaster is the destruction and devastation of once peaceful and familiar surroundings for both staff and students in educational districts. Because of a transformed environment, teachers and students have to adapt quickly to new circumstances, and this requires people engaging their ability to regulate, identify, and express emotions (Wood and Olivier, 2008).

The changing role of school teachers

Immediately after a disaster, school children's safety would be the first thing that needs to be safeguarded in school districts, while this in turn puts school teachers under increased challenge and stress, thus greatly increasing the chances of role conflict, grief and depression (Wood and Olivier, 2008; Alvarez, 2010; Brown, 2008; Clettenberg et al., 2011). A PDS requires teachers to make specific changes in disciplinary content and instructional practice (Alvarez, 2010). They are no longer only focused on the textbook they must also provide significant information to the school-based disaster response team about the traumatised students in their charge and facilitate them by assisting in the recovery of those students (Widyatmoko et al., 2011; Openshaw, 2011).

Several case studies reported that a few teachers showed initial reactions of intense fear, helplessness, and horror in relation to the disaster (Brown, 2008; Damiani, 2011; Henderson and Hildreth, 2011; Lei, 2013). The stress caused by the changing nature of environment in the school disaster recovery situation may hamper the quality of teaching and learning directly which will, in turn, impact negatively on students' performance and a school's development (Wood and Olivier, 2008; Williams et al., 2007; Zhang et al., 2009).

Teachers play an important role in the short-and medium-term rather than immediately after the disaster as Adamson and Peacock (2007) identified. This is due to the fact that teachers are not professional psychologists and they should not be expected to give treatment for an acute or severe PTSD symptom of their students in the immediate aftermath of a disaster, but they are expected to be able to identify and refer such symptoms to school psychologists (Margolin et al., 2010). Nastasi et al. (2011) state that teachers were required to take the facilitator role in an intervention program for dealing with students' traumatic issues, and they were expected to create awareness and understanding of their students' conditions, mental illness, specific stressors and experiences. During the process of the intervention program, teachers usually need to complete a session log form, facilitator checklist, group process evaluation, and reflection form as well as encouraging student participation in small group activities, clarifying roles and responsibilities of group members.

Indeed, teachers are required to provide their reflection and feedback to intervention program team members, in doing so, the team leader could identify the need for modifications to the program if the activity didn't meet the needs of students as Kliman et al. (2008) and Lopez et al.'s (2009) studies described. The designated program has to be implemented out of schooling time which means teachers need to double their workload during this specific period of time (Mohay and Forbes, 2009). There is growing evidence to support the argument that school teachers' role and workload have increased during the PDSs (Bridges and Searle, 2011; Connell et al., 2007).

The changing behaviour of students

Clettenberg et al.'s (2011:559) research looks at children's reaction to Hurricane Katrina and how subsequent behaviours varied according to age. They assume most teachers prepared for younger children's internalising behaviour such as fear, behaviour regression, or apathy. Older children (secondary and high school-aged children), they tended to exhibit internalising behaviour such as aggression, anger and anti-social behaviour, which teachers struggle to deal with alone.

From Margoline et al.'s (2010:3) studies we assert that younger children may have difficulties to verbally describe their internal feelings. To identify their trauma, teachers or a caregiver must observe carefully from interaction with them in their play and speech. For elder children, they may have difficulties falling asleep and show aggressive behaviour. For adolescents, they tend to exhibit responses that are more serious but easy to identify. The responses could be intrusive recollections, numbing and withdrawal, substance abuse, antisocial behaviour and risk-taking behaviours which can lead to physical symptoms and academic problems.

A similar review Lowe's (2011) neuropsychological studies showed that many students lag behind academically because the traumatic experiences disrupt children's brain developmental trajectories. These disruptions affect the ability of children to concentrate, learn and behave appropriately (p: 85) which in turn lead to academic failure and them dropping out of school. Children's responses to a disaster typically vary according to their developmental maturity, and the character and severity of the crisis, and the course of the response to the trauma (Hobfoll et al., 2007). Table 2.1, below, categorises a variety of trauma and reactions of students.

Table 2.1: Summary of traumatic experiences of children

Authors/years	Focus and content/traumatic experience
Cederblad (2009)	Suicidal thoughts, bullying, inattentive, impulsive, overactive and disruptive emotional, communication problems, sleep disturbances, nightmares, anger, separation anxiety, memory and distraction, guilt and changes in perception of the world as a 'safe and predictable' place
Ghodse and Galea (2006:29)	Lack of control of excretory functions, withdrawal and avoidance of communication, nightmares, aggression, inability to concentrate
Margolin et al. (2010)	Loss of developmental skills, numbing disturbances in sleeping and eating physical symptoms and academic problems, oppositional acting-out behaviours obsession with trauma details, difficulty concentrating, academic failure, dropping out of school, lack of future focus, anxiety, and self-blame, antisocial behaviour, risk-taking behaviours.
Şahin et al. (2009)	Anxiety, negative self-concept, anger/aggression, depression, trouble sleeping, a loss of interest in pleasurable activities, concentrating obsessions, nightmares and flashbacks, phobias, excessive restlessness, irritability and distress
Vijayakumar et al. (2006)	Somatic symptoms and difficulty in attending school sleep disturbances, helplessness and passivity separation anxiety, generalized fear, heightened arousal and confusion, difficulty in talking about events, cognitive confusion, lack of usual responsiveness, nightmares
Zheng et al. (2010)	Depression, separation anxiety, panic attacks borderline personality disorder generalized anxiety disorder

Cohen and Mannarino (2011) argue that no specific phase can be seen from the studies in Table 2.1 when implementing a range of traumatic intervention programs for children. These could potentially affect the effectiveness of children's recovery because children's emotions, behaviours and mental conditions are likely to be affected over the different periods of time (Cohen et al., 2009; Overstreet et al., 2010; Widyatmoko et al., 2011).

The different phases such as acute traumatic symptoms can become apparent immediately, within the days and weeks following a disaster. In this phase, pathological therapy is expected to deal with those affected children (Watts, 2008; Kong et al., 2010; Mohay and Forbes, 2009; Vijayakumar et al., 2006). Children can suffer from physical injury, psychological disorder, and serious mental reactions in the months and years following the initial crisis, this too may affect children's emotional, behavioural and mental development (Willians, 2008; Cohen and Mannarino, 2011; La Greca et al., 2008; Putnam and Amaya-Jackson, 2008). Although there are some limitations to the findings disclosed, the combination of research methods that underpins the study reports referenced here has provided a picture of how children respond to a PDS.

2.3 Challenges facing school teachers in PDSs

As mentioned earlier in Chapter one, school teachers' experiences and responses during the school renewal situations caused by natural disasters are one of the focuses of this study. Teachers' interpersonal relations suffer and generally they do not perform well when they are under stress (Shen, 2009; Şahin et al., 2009). It is therefore important that teachers be proactive in detecting and coping with stress and challenges (Sun et al., 2010). The key factors of teachers stress, challenges, responses and coping mechanisms will be discussed in following sections.

2.3.1 Teachers' personal experience in PDSs

This section draws from teachers' personal experiences, response and expectations to understand the challenges faced by them in PDSs. Many studies report that PDSs brought unexpected challenges to the classroom which would lower teachers' psychological well-being and academic performance (Alvarez, 2010; Bridges and Searle, 2011; Damiani, 2011; Shen, 2009; Şahin et al., 2009; Sun et al., 2010; Wood and Olivier, 2008; Zheng et al., 2009). Higgins et al (2010) elucidate that many teachers themselves suffer from loss after a major disaster such as lost loved ones, homes, finance, medicines and nutrition, and emotional disturbances. They may lose all their usual social networks and friends, and they often feel the world in some way is punishing them which increase their sense of helplessness (Shen, 2009; Xu and Feng, 2012).

On the other hand, school teachers have an integral role in school post-disaster practice because they are in charge of classrooms full of students when a natural disaster occurs, and they are responsible for students' rescue and recovery during a PDS (Alisic et al., 2012; Şahin et al., 2009). These complex stresses were long-standing, and negatively influenced their relationships with families and friends, and were particularly challenging

for teachers, who are not generally equipped to deal with such chaos, reactions, or the resultant needs of their students (Alisic et al., 2012; Geving, 2007; Kyriacou, 2007; Yang and Chai, 2010).

Teachers may have to combat the grief associated with the loss of family or friends, relatives, treasured properties or their family homes, as well as manage the fear aroused by the disaster itself (Alvarez, 2010; Damiani, 2011; Ho et al., 2012; Sun et al., 2010). Such experiences are highly emotionally challenging, and the feelings of helplessness, anxiety, sadness and despair they evoke can seriously affect normal social and cognitive functioning (Mohay and Forbes, 2009). In Yang and Chai's (2010) understanding of this, teachers have to have the capability to influence their students in any circumstances in which to teach their students in a semblance of normality.

However, Openshaw (2011) argues that when teachers face the damage to their environment and the death of family members, students and colleagues this expectation from them would be too much to ask for. PDSs can have a high impact on teachers as well, the death of students and colleagues were shown to be particularly stressful, with 87% of teachers ranked as suffering from the experience of such loss as reported by Yang and Chai (2010). The transmission of trauma from students to teacher occurs due to the teachers' identification with the students' suffering (Alvarez, 2010; Damiani, 2011; Geving, 2007; Kliman et al., 2008). If teachers cannot receive support in time then they are likely to be less effective in dealing with students' needs and are likely to be suffering "secondary posttraumatic stress" (Dean et al., 2008). These stresses are exacerbated by the experience of being unable to find a release for the emotional impact of this collective trauma, or any sense of satisfaction gained from supporting their students (ibid).

Teachers often feel helplessness and hopelessness at their inability to cope with and overcome what they perceive as overwhelming problems which contribute to low levels of commitment to their work, low motivation, lack of life expectation and lack of self-confidence (Kyriacou, 2007; Ma et al., 2009; Sun et al., 2010). As a result, teachers

struggle to adapt to changes and cope with the challenges they face. Consequently teacher's negative reactions affect the student's model and this will impact badly on the student's interests for learning, ultimately, on his or her entire attitude towards working and life in general (Czubaj, 1996:372 cited in Wood and Olivier, 2008).

For that reason, any school renewal process needs to take teachers' well-being into consideration before putting them into a unique position of being a first reference point for traumatised pupils. However, there are many studies (Alisic et al., 2011-2012; Lei, 2013; Ho et al, 2012) which reveal that very few teachers have received counselling in times of school disaster, whilst they respond to students' post-disaster reactions, and this is simultaneously associated with a major source of emotional trauma for teachers and with functional injury.

2.3.2 Teachers' professional demands in PDSs

This section refers to teachers' professional experiences, response, expectations, and difficulties of interactions with students' issues and work demands to demonstrate the challenges faced by them in PDSs. The majority of teachers experienced challenges in relation to coping with their respective students and work-related issues in PDSs (Lei, 2013; Şahin et al., 2009; Henderson and Hildreth, 2011). Widyatmoko et al.'s (2011) research confirms that teachers professional demands and accountability are increased from both internal and external aspects within the introduction of pedagogical transformations. Internal aspects refer to managing students, cooperating with school leaders and colleagues and the work-life balance (Geving, 2007; Liu and Zhang, 2008; Ma et al., 2009; Ndiku et al., 2011). External sources include the parents, school management committee/board and school sponsoring organisations (Kyriacou, 2007; Malcom and Combes, 2007).

School teachers are expected to carry out education and regulation reforms, to improve their knowledge and competence in supporting depressed students and increase public examination scores (Brown, 2008), to be responsible for security and the discipline in their classrooms (Alvarez, 2010), to be in charge of students' physical and psychological issues (Bridges and Searle, 2011), to conduct school self-evaluations and to attend CPD. Nevertheless, despite the obviously high expectations placed on the school organisation, there has been no evidence showing whether the school teachers are prepared and equipped to deal with such demands in PDSs (Nastasi et al., 2011).

Besides, teacher professional development programs seem not to address school crises such as PDSs (Alvarez, 2010; Lei, 2013). Teachers' professional development refers to a teacher's ability of managing his/her responsibilities that are framed by a duty of care to promote school's performance and effectiveness (Brown, 2008; Chaplain, 2008; Day and Gu, 2007). Teacher preparation has not kept up with national efforts to address such issues; there is obligatory training for school teachers who deal with vulnerable children (Paton et al., 2011).

Some scholars (Alisic et al., 2012; Bridges and Searle, 2011; Ho et al., 2012; Ndiku et al., 2011) argue that teachers' expectation is to nurture students' academic success, and they should not be expected to deal with the intense emotional pain suffered by traumatised students after disasters. Teachers can be particularly vulnerable when confronted with students who are affected by disasters because there is a desire to try to help their students by spending intensive time working with them in school (Alvarez, 2010; Boksztanin, 2011). Sun et al.'s (2010) study reported that two years after the Sichuan-earthquake, the majority of children (56%) continued to exhibit misbehaviour, obsessive compulsive disorder, and a lack of motivation for learning. In such cases, teachers and other school staff are expected to be able to cope with pupils in their care.

Teachers need the knowledge and skills to identify, understand and respond to the complex reaction of their pupils (Ho et al., 2012; Widyatmoko et al., 2011). If children

encounter the death of their parents or siblings, the grief and trauma responses would both be presented, and the process of traumatic experience and surrounding issues may be more difficult to understand (Jaycox et al., 2007). The complex responses of children after a natural disaster can affect their relationships with peers, family and teachers, and will unavoidably challenge teachers whose capability or professional training does not equip them to deal with such issues or responses in general (Alvarez, 2010; Damiani, 2011).

Day and Gu (2007:186) make a similar statement that teachers are often dispirited a school changes in a working environment increasing the workload and further undermining teachers' decision-making powers, resulting in the display of negative attitudes towards students. "In the face of such risks, schools need to manage emergency events to prevent, or minimize, physical and psychological trauma to their students and staff, as well as the surrounding communities" (Kano and Ramirez, 2007: 400).

After all the challenges discussed above, as a result, school leadership puts high demands on teachers who are expected to be the first choice not only in assisting children's recovery but also promoting the school's future development. Teachers themselves are likely to be challenged, depressed and struggling to cope with the high demands (Alvarez, 2010; Bridges and Searle, 2011). Lowe (2011:96) implies that the way schools respond to and support teachers has a major impact on how well and quickly teachers are able to adjust to the traumatic experiences, return to their studies and, more generally, return to positive functioning. It becomes vital for a school disaster management team to recognise and mitigate factors that could lead to placing significant stress on school teachers (Brown, 2008; Henderson and Hildreth, 2011; Sun et al., 2010).

In summary, an effective recovery at both the school organisation and individual level requires teachers' own post-disaster stress and needs to be addressed. If teachers do not receive appropriate support in times of school disaster, they are likely to be less effective in coping with students' issues and enhancing school's recovery (Şahin et al., 2009;

Wood and Olivier, 2008). I now turn to discuss the disaster management, response models and coping strategies in relation to school districts.

2.4 Disaster management model in a broader context

The field of disaster management has developed an all-embracing literature focused on the mitigation of, preparation for, response to, and recovery from, multiple types of disasters and its management within organisations (Pepper et al., 2010; Salazar et al., 2011; Tarrant, 2011; Zhao et al., 2010; Wachtendor et al., 2008). The aim of this section is to adapt the organisational lessons drawn from the comprehensive disaster management literature, applying them to the context of school-based disaster management in educational settings. Its secondary purpose is to establish the theoretical framework facilitating a safer teaching and learning environment for school teachers and pupils during a PDS.

The trends of effective disaster management and responses have been investigated and analysed through multiple - dimensions and disciplinary approaches. The phases of disaster management include preparation (planning or prevention), response/intervention, recovery and evaluation (see Table 2.2 below), which have been highlighted in many disaster management studies (Adamson and Peacock, 2007; Coppola and Maloney, 2009; Cederblad, 2009; Coppola, 2007; Kataoka et al., 2009; MacNeil and Topping 2007; Nastasi et al., 2011; Porter, 2010; Reeves, 2008).

Table 2.2: Description of the four phases of school disaster management

Phase of Disaster	Description
Preparedness (Before)	- Process of education, involves warning the affected people, development of operational plan, training of personnel of rescue and relief techniques and stock piling of supplies.
Response (Immediate term)	- Involving efforts for survival and rescue. The basic needs are being attended to and a willingness to help others emerges.
Recovery (Short- and medium-term)	- The reality of the destruction and loss settles in, along with grief and depression, and requires considerable work to stabilize structures - Travelling from despair towards empowerment and renewal (though in some cases, an emergence of more chronic health and mental health problems)
Evaluation (Long-term)	- Evaluation is a process of appraisal and assessment. - It is to reduce the destructive and disruptive effects of the disaster. - It can take place before a disaster, during the emergency or after the disaster, during recovery or reconstruction.

Source from: Coppola and Maloney (2009); Mohapatra, (2009:13)

The first phase, (disaster management) should emphasise the development of disaster preparation and advance planning. School as an organisation is often considered to be a resource for the public services following a major disaster (Paine, 2009; Phillips, 2009; Reeves et al., 2008). However, the potential problems should be considered when working with public groups. The problems such as unfamiliarity with school organisation, culture and procedures can potentially limit the effectiveness of external service teams (Higgins et al., 2010). It is possible that schools should have an advanced planning and strategic paradigm that includes the cooperation with local community, public service team (e.g. NGOs), and government bodies as well as their own personnel (Doherty, 2010; Izadkhah and Hosseini, 2006; Wei, 2008).

Inclusive planning can promote new ideas and innovative methods into the school through collaboration with another organisation (Baxter and Bethke, 2009). Similarly, Masten and Obradovic (2008) suggest that a disaster preparation instruction should not focus too much on an organisation's internal demands which may be against the coordination system for a dynamic PDS. Janssen et al. (2010) elucidate that a coordination system needs to be flexible and practical for improvised disaster response bodies, and the coordination mechanisms should ensure information and resources are shared among the participating bodies and individuals. This system ensures that all

stakeholders are aware of each other's position and responsibility when a disaster occurs (Chen et al., 2008).

Janssen et al. (2010:3) offer criticism that too much attention has been paid to the intervention phase in past research, and that other phases are equally important; effective preparation can reduce the damage during a disaster dramatically. Nastasi et al. (2011:513) agree and they assert that a post-disaster response is focused too much on immediate crisis intervention and stabilization, often with minimal focus on the long-term psychological risks. Research and development projects are needed to investigate and address the psychological needs of people from a long-term recovery perspective (ibid).

The second phase, response/intervention often happens in the immediate aftermath of a disaster. It involves the efforts for survival, rescue and the basic needs of victims (e.g. food, water, medicine, shelter). There are many threat attributes which tend to be negative, and have a high potential for harm in the long-term if threats are ignored (Buchanan et al., 2010; Clettenberg et al., 2011; Chen et al., 2008; Devitt and Borodzicz, 2008; McEntire, 2007; Ritchie and MacDonald, 2010). Quick action must be taken immediately after the disaster which involves dealing with death or injury, safe shelter and physical needs (Reeves et al., 2008; Jaycox et al., 2007; Gunderson, 2010).

Clettenberg et al. (2011) believe that the practical challenges during the response stage maybe due to many support staff lacking training in disaster intervention programs or in how to recognise and make effective decisions under stressful post-disaster conditions, and in the absence of sufficient information, knowledge, time and resources (Beatty, 2007; Cohen and Mannarino, 2011; Cacciato et al. 2011). But Azadehdel et al. (2012) have a different opinion regarding disaster intervention; that within school districts there has been little attention to prevention activities. The key to effective disaster management is to identify the practical experience during such conditions.

The trauma-related intervention mechanisms such as Support for Students Exposed to Trauma (SSET), based on the Cognitive-Behavioural Intervention for Trauma in Schools (CBITS) format have been revealed to be effective on children's recovery process (Openshaw, 2011:166). However, these practices seem largely to be based on clinical judgement towards what might work or might not, as Overstreet et al (2011) pointed out. They recognise that the clinical judgement of those with significant experience in disaster management should not be under-estimated, but that it should not be the sole answer (Pepper et al, 2010; Paine, 2009).

The recovery phase is the post-disaster phase where organisations undergo reintegration and reconstruction (Brown, 2008). The reconstruction phase is to rebuild damaged buildings, regenerate educational systems and recruit members of an organisation to their full-pre-disaster work conditions or even exceed those conditions (McEntire, 2007; Brown and Yasukawa, 2010). The notions of disaster recovery have been analysed as a 'process' as well as an 'outcome' during a post-disaster period of time (Masten and Obradovic, 2008; Doherty, 2010; Phillips, 2009). This phase involves change, transformation, adaption and resilience (Brown and Yasukawa, 2010:65; Ritchie and MacDonald, 2010; Riether and de Gaalon, 2008).

The final phase, evaluation, refers to mitigation, which can be taken to reduce the destructive and disruptive impacts of the aftermath of a disaster, which can be taken throughout all four phases (Mohapatra, 2009:13). Although there are a few intervention programs providing the evaluation, they are only based on the process of the program itself, not on the outcomes over time at a range of systemic and operational levels from the individual through to the broader school community (Brown, 2008; MacNeil and Topping, 2007; Reeves, 2008; Nastasi et al., 2011; Paine, 2009; Hatzichristiou et al., 2011).

Likewise, as Overstreet et al. (2010) and Jaycox et al. (2007) recognise that some organisations have focused largely in addressing the immediate mental health and the

basic needs of the victims, the development of sustainable and effective strategies to address the longer term impact of a disaster is still a bigger challenge. If there is a lack of longer term intervention and strategy, then the evaluation process can be a thorny problem in the field of disaster management because “...evaluation is interwoven with the organisational context of disaster management... [and] is viewed as an external judgment treated in isolation of the crises management, a view that has been criticised in terms of internal validity...”, as Janssen et al. (2010:5) identified.

It can be noted that the above studies engaged in the analysis of disaster management and modeling, but the school post-disaster management strategies analysed and adapted in the above research projects were varied. Kataoka et al, (2009:118) recognise that post-disaster management strategies should be tailored, and based on “a real disaster situation, economic, social, cultural, institutional, technological technical, environmental and legal/regulatory circumstances of the existing state”.

2.5 Disaster management model within the Chinese context

In a developing country such as China which suffers different kinds of natural disasters every year, little attention was paid to the field of developing a systematic disaster response strategy for an organisation or a school before the Sichuan-earthquake, 2008 (Sun et al., 2010; Ho et al., 2012; Zeng et al., 2011). Although Chinese Disaster Emergency Management Office of the State Council was established in 2006, this office is only in charge of the rescue work in the immediate phase. An effective disaster management may need to consider different aspects of disaster response, such as disaster monitoring, risk evaluation, predicting and recovery (Yi et al., 2012). If these aspects can be implemented in an integrated system, it would avoid the result of delaying transmission of disaster information and difficulties to coordinate the timely response practice as suggested by Yi and his colleagues (2012).

Sichuan-earthquake is believed to be the turning point for China to move toward being a more disaster prepared and tolerant nation. This target could be largely achieved by enhancing social disaster prevention awareness and strengthening governmental disaster management systems. It is essential that the public understands the basics of earthquake hazards and have the knowledge to protect themselves in emergency situations as Xu and Lu (2012:220) recognise. Unfortunately, the disaster prevention system in China is inadequate in providing the required information, data, social and governmental support and public awareness. Therefore, it needs to reform and design a model which contains responsible institutions and departments, an example being demonstrated in the flow chart of their function during and after an earthquake (Yi et al., 2012).

In China, the type and timing of funding, policies, and technical assistance provided by the disaster recovery assistance network often come with bureaucracy attached and disaster victims may have to wait passively in long queues for basic supplies and other resources (Higgins et al., 2010; Lei, 2013; Wei, 2008; Zhao et al., 2010). This may engender long-term dependence on national programs that are often ill-equipped to address basic problems faced by disaster-hit areas (Brown et al., 2011; Coonan, 2008; Ying, 2013).

The disaster management skills, capabilities, information resource and evaluation activities are far behind proficiency (Yang and Chai, 2010; Ritchie and MacDonald, 2010). The capability of the Chinese school disaster leadership may have strengthened after the Sichuan major earthquake in 2008, but there are still a lot of concerns remaining, such as how to handle the allocation of human and material resource, the investment of psychological service and training, the development and coping strategies of school-based disaster teams (Brown et al., 2011; Zeng et al., 2011; Ho et al., 2012; Coonan, 2008).

2.5.1 Human and material resource

Wang (2010) suggests that it is necessary to prepare human resource practitioners within an organisation to deliver disaster knowledge and intervention skills for school members. His research highlights the conceptual model of organisational learning in disaster management and demonstrates how organisational learning can be incorporated into post-disaster management processes to bring about positive organisational change (p.427). In the past, China's post-disaster support was provided by external psychological experts or NGOs that were given the task of managing the disaster situation, taking over the whole responsibilities of the school members (Wang, 2008). The issues with this approach were quickly identified and current approaches involve the cooperation of both external support and school senior staff and the management team who can sustain the overall responsibility for responding, coping and recovering from the disasters or crises regarding a long-term strategy (Watts, 2008; Zhao et al., 2010).

In general, external support cannot serve as a long-term strategy because when those psychologists provide services to a PDS, they are unlikely to be familiar with the local culture, school environment, staff, students compared to the school senior staff (Burden and Albrecht, 2010). It is also very expensive to keep an external psychologist based in a single school in China.

Culture adaptation is emphasised by Chinese disaster authorities and policy-makers (Weems and Overstreet, 2009; Watts, 2008). The external disaster psychologists usually come from cities in China; they may need time to adapt and familiarise themselves with the local culture where they need to serve but the situation cannot wait until the cultural conflicts disappear. Some external experts may find it difficult to serve in that situation or some of them may use the one model strategies for all conditions (Şahin et al., 2009). Therefore, the key principle of the new approach is that the affected schools remain responsible for identifying and organising the PDSs and identifying where and what additional external supports or resources may be necessary. In doing so, not only are

unnecessary costs reduced but school-based disaster management practice is improved (Yang and Chai, 2010; Zeng et al., 2011).

Human resource preparation has been identified to be necessary in school post-disaster management strategies by Brici (2009) as well. However, it seems that the perceptions about the shortage of qualified teachers after the Sichuan-earthquake are quite negative (Zhang et al., 2009; Shen, 2009; Sun et al., 2010). The death, injury, lack of capacity, resilience and sufficient support caused a great number of teachers to leave their professions from 2008-2011 (Ho et al., 2012; Lei, 2013).

As mentioned earlier (Chapter one, p:2), about 12% of the total number of casualties from were from the educational sectors during the Sichuan-earthquake (FD, 2010). Although there was no report of a serious shortage of teachers during 2008 to 2011, because of China's new policies after the Sichuan-earthquake, new graduates/teachers students are required to work in the earthquake hit areas before undertaking further training opportunities or professional development (Brix, 2009; Lei, 2013). This then raises serious concerns about the capacity, experience, knowledge and skills of the new comers to provide sufficient and practical assistance to the school renewal process following an earthquake.

The lack of trained and qualified school personnel/human resource is then an issue which needs to be addressed in China, as Higgins et al (2010) recognise. Newly qualified teachers lack teaching experience and basic psychological training, some of them even have difficulties dealing with normal teaching tasks, this would make the PDS more difficult for them to cope with (Lei, 2010). There is an urgent need to hire qualified educators from other provinces to work in the earthquake hit regions and supervise the in-service teachers for the short- and medium - term (Yang and Chai, 2010; Zeng et al., 2011; Zhao et al, 2010; Zheng et al., 2010). Concerning the extreme hardship and isolation of the earthquake areas, the Chinese local Government should consider a reasonable bonus or allowance or welfare package to attract qualified educators so they

are willing to work in such positions (Ho et al., 2012).

This interconnected post-disaster practice has been perceived as a success in PDSs records a report disclosed by China Daily (April 14th, 2013). There was a quote by a government official that "...we have learned lessons from the Sichuan-earthquake...". These lessons were to collaborate with both external supports and internal senior teachers during the school renewal process. School teachers are required to give assistance to the external groups such as interpreting local language and culture, and organising activities and collecting feedback. At the same time, teachers can learn skills and expertise from the process which could help them to build the confidence to cope with PDS issues alone in the future (Lei, 2013). This new collaborative disaster response strategy was also utilised effectively to respond during/after the Ya'an earthquake in Sichuan Province, China in 2013.

However, Ying (2013) argues that a school-based disaster management strategy is still under - developed in Chinese educational settings. He suggests that a qualified disaster management team requires a range of well-trained skills, resources, information, knowledge and capacity to help school members' recovery. The importance of the integration of a strong local government support system, a capable school leadership and a cohesive system of public service groups (e.g. NGO) during school renewal process as Paton et al. (2011) emphasise.

2.5.2 Psychological service and training

In the times of PDSs, a school leadership team not only needs to seek external support networks for the school community, but also needs to deal with the physical and psychological consequences of the school members (Smith and Riley, 2012:1). Ho et al. (2008) caution that during a school recovery process, school members' psychological and physical difficulties as well as building and promoting social and psychological

well-being should be involved and addressed in the recovery system.

The psychological and traumatic impact after a disaster has been broadly researched in international literature but the concept of disaster psychology has just been recognised in China after the Sichuan-earthquake (Zeng, et al., 2011). Psychological intervention is still a novelty for the majority of Chinese people, the attention is often paid to physical care and community reconstruction, a majority of the public was unaware of the existence of trauma and psychological issues (Higgins et al., 2010). Their research indicated the importance of developing a psychological intervention plan in communities. They mentioned two major natural disasters: Hurricane Katrina in the USA, 2005, and the Asian Tsunami of 2004.

By comparison, in developed countries such as USA, where there has been more attention paid to psychological intervention for affected people above and beyond the basic needs such as food, clean water, medicine and shelter after a disaster. But in developing countries such as India and Pakistan, psychological and mental health treatment has not been recognised yet. During/after the Tsunami of 26, December 2004, the victims had to survive while they were in pain, suffering from hunger and in danger of death for years (Mohapatra, 2009). There was no sense of providing psychological care in such areas.

In order to examine teachers' feelings of readiness, an overarching concept of coping strategies may need to be considered. After the 2008 earthquake, it is essential that teachers should be properly trained and confident in their ability to act should the need arise in the earthquake areas in China (Sun et al., 2010; Zeng et al., 2011). This proposition highlights the need for a school post-disaster leadership team and school teachers to be prepared to act in PDS in school sectors.

There is a debate about *how* and *who* should deliver school-based psychological intervention programs to children in order to promote a more effective recovery from a

major disaster? Even though, there is minimal literature regarding teachers' coping abilities to deal with a PDS, Chinese educational authorities have still wanted to train school senior staff to provide psychological support for students (Xin et al., 2009; Xu and Feng, 2012). Because some researchers (Damiani, 2011; Ho et al., 2012; Henderson and Hildreth, 2011; Sun et al., 2010; Widyatmoko et al., 2011) argue that school teachers would be an ideal group of people in managing students' traumatic issues as long as they receive appropriate training. They believe teachers are able to identify children's traumatic symptoms and some of the possible reactions in a timely manner. This will then enable teachers to put various coping strategies in place to reduce the long-term risk of behavioural and emotional issues (Henderson and Hildreth, 2011).

Widyatmoko et al. (2011:485)'s research surveyed over hundreds school teachers about the 3,115 students' post-traumatic stress disorder (PTSD) symptoms after the Central Java-earthquake in Indonesia, 2006. The findings suggest that teachers are an effective human resource for assessing traumatised students, and they believe that teachers have the capability to identify students' specific distress if they are provided with basic information about PTSD symptoms.

A lack of professional training and preparation led to most schools in Beichuan not having a school-based psychological team to develop and deliver a trauma intervention program (Higgins et al, 2010; Yang and Chai, 2010). Brix (2009:24) suggests that teachers' professional training should encompass the future educational needs of children in a traumatic situation in terms of the textbook, content, teaching material and teaching approaches, then teachers would be more knowledgeable when it comes to monitoring children's trauma and recovery after a disaster or crisis in schools. Although his research focused on developing social workers' skills for helping school children' recovery after a crisis, I argue that if a professional training program is implemented appropriately for school teachers who are willing to take a caregivers' role, and monitor children's recovery process, it would make children's recovery more efficient.

Similarly, Townsend (2011) recommends that teachers should be able to deliver intervention programs, but they may be required to start in teachers' training course. If teachers are equipped with sufficient knowledge and coping skills then they will be more confident and willing to take the task and role when they are needed. An outcome of this strategy may be that teachers are encouraged to make decisions and show their leadership (ibid).

2.5.3 Coping strategies in Chinese PDSs

Natural disasters occur everywhere but different contexts, social and economic statuses, cultural and geographic conditions are often very different between each event and it cannot be assumed that models and strategies apply everywhere (Canada et al., 2007). Kaklauskas et al (2009) and Odhiambo and Hii (2012) take the same view. Their studies of community post-disaster leadership and management in Sri Lanka asserts that if school/community leaders want to establish a systematic disaster recovery strategy, they need to consider school/community context, school size, rural or urban, multicultural or not, higher or lower socioeconomic state. The need is to focus more on leading those within the various types of schools' PDS than to standardise educational leadership to a single picture of responding to government requirements (Smith and Riley, 2012; Kano et al., 2007).

Vijayakumar et al. (2006:515) concluded that "each disaster is a unique event...although helpful experience can be gained from analysing an earlier disaster, superimposing one disaster solution on another as far as recovery experience are concerned...". Pepper et al. (2010:1) make a similar statement that "...every school's situation is unique, schools' in crisis share certain commonalities from which lessons can be drawn...". Nevertheless, PDS is a highly demanding situation, besides, there is no precise disaster preparation and recovery programs put in place in Chinese educational districts (Ho et al., 2012; Higgins et al., 2010; Watts, 2008; Wei, 2008; Ying, 2013), and no school-based

psychological service and management team before the Sichuan-earthquake (Brix, 2009; Zhang et al., 2009).

Schools have been the focus of the Chinese education effort, “School Post-Earthquake Rehabilitation and Reconstruction in Sichuan” was the first Chinese specific legislation and policy for a school PDS, laying the cornerstone for a legitimate post-disaster recovery plan (The State Council, 2008). The legislation and policy define the clear guidelines and regulations for a school PDS, including transitional settlements, disaster assessment, financing and policy support (Xu and Lu, 2012:214). The government and public believe that the appropriate application of an aid policy can reduce the disaster risk and improve the regional social and economic development.

Schools have become increasingly vulnerable to numerous threats to safety from a natural disaster. A school based disaster leadership team has become a priority in educational policy agendas internationally (Brown, 2008; Smith and Riley, 2012). It continues to play a prominent role on the stage of school recovery and development following a natural disaster (Bridges and Searle, 2011; Hallinger and Heck, 2010; Odhiambo and Hii, 2012). As China seeks to adapt its educational system to the needs of contemporary society, school leadership expectations are changing (Ho et al., 2012). In line with these changes, the roles and responsibilities of school leaders have expanded and intensified (Wei, 2008; Yang and Chai, 2010). Given the increased autonomy and accountability of schools, an effective leadership team in a PDS at the school level is more important than ever (Zhao et al., 2010).

The Chinese Government recognises that disaster is a fundamental threat to development at both the organisational and individual levels. A long-term national disaster risk-reduction program therefore has been launched in 2009 which includes mapping and recording programs, insurance programs, prevention and mitigation system programs, to improve natural disaster recovery (Xu and Lu, 2012:220). At the same time, the Government has demanded reconstruction in public education in Sichuan province.

School leaders and teachers are more accountable than ever for providing every child with a quality education and moral support (Kong et al., 2010; Wei, 2008). Some have questioned whether a quality education can be provided in an environment where there are many natural disasters and the safety of students and teachers is at risk (Brix, 2009; Ho et al., 2012; Higgins et al., 2010). This was difficult to explore at the moment due to the lack of research that focuses on school leaders and teachers' coping capability in a school renewal process after a disaster in China.

2.6 Theoretical framework

This research is connected to several theories in the field of school based disaster recovery scenarios. Yet, disaster theorising is in its early stages of development, with concepts borrowed from a variety of disciplines (Coady, 2001; Norris et al., 2008). Natural disasters have an overwhelming impact on society with long-term physical, economic and psychological dysfunction (Boksztzanin, 2011; Buchanan et al., 2010; Young, 2009; Lowe, 2011). Assessing disaster recovery is a very complicated process because of the dynamic interactions of ecological, economic, physical and psychosocial distress to organisations and individuals. In this research, I apply some of the more commonly used theories in this field and analyse them to help us understand how the school organisational response to a PDS influences teachers' well-being.

One potentially useful framework for integrating individual development, stress, resilience and school reorganisation research is socio-ecological modelling (Bronfenbrenner, 1989). This system is a 'metaphor theory' that provides a useful map and ideas about desirable destinations of a research project, it is particularly useful for helping workers/researchers to see the 'big picture' in terms of the reciprocal influence of the individual and the various systems (e.g. family, work, and community) with which they interact" (Coady, 2001:28-30). Meyer (1995:19) explains "Ecology is the science

that is concerned with the adaptive fit of organisms and their environments...ecological ideas donate the transactional processes that exist in nature and thus serve as a metaphor for human relatedness through mutual adaption”.

Bronfenbrenner’s earlier socioecological model (1977-1979) includes the concepts of microsystem, mesosystem, exosystem and macrosystem. The microsystem is at the center of his model, the individual being influenced by personal, dispositional, and genetic factors (Boxer et al., 2013:164). The mesosystem encompasses the linkage between microsystem and another layer which doesn’t involve directly the individual, but has influences for the individual (e.g. teachers’ workplace). The exosystem incorporates “...one or more settings that do not involve the developing person as an active participant, but in which events occur that affect, or are affected by, what happens in the setting containing the developing person...” (Bronfenbrenner, 2005:25). The macrosystem includes factors present in the larger culture, society, beliefs and ideologies (Boxer et al., 2013:164).

The later/mature form of Bronfenbrenner’s model (2005) refers to the Process - Person - Context - Time model (PPCT for short) that has become the essence of his theory (Tudge et al., 2009:199). The process component involves the fused and dynamic relation of the individual and the development (Bronfenbrenner, 2005:76). The second component is the person (i.e. the teachers), who have their own cognitive, emotional, and behavioural characteristics. The context component comprises a set of nested systems - the microsystem, the mesosystem, the exosystem, and the macrosystem (the earlier context model). Time is the last component which contains “the chronosystem that moderates change cross the life course” (Hickey et al., 2011:4).

Buchanan et al. (2010) believe that appropriate responses following natural disasters are rooted in Bronfenbrenner’s ecological framework. They used an ecological-developmental framework to construct three propositions (developmental context, context interact and positive development) for understanding young people’s

support networks (teachers, parents and peers) and communal response to a PDS. The framework proposed in the current study is to ascertain school teachers' ecological-developmental structure in coping with both personal and professional relevant stressors in a PDS. Clettenberg et al. (2011) state that natural disasters could influence an entire ecological system (e.g. individual, family, school, community, society and globe), the forces of harm to human beings are "a complex interplay of the interrelationship and interdependence of ecological factors" (e.g. the individual/peer/work/family context, the school/community structural context and societal structural context) (Shervington and Richardson 2007:2). Therefore, the ecological model suggests the need for a holistic, multilevel assessment when it comes to evaluating the destruction of a PDS (Mohapatra, 2009). The term holistic refers to the entire range of factors, from macro to micro that could be affecting an individual (McEntire, 2007).

Given the nature of the current study, the partial version of Bronfenbrenner' ecological model is adopted. From this model, school organisation can be characterised at different levels in terms of their hierarchical ordering - moving to the school leadership itself (organisational level), to teachers working at the first-line (teaching level) on a daily basis, then to the larger societies in which school districts are located (social level). Within each of these levels, I discuss those principles and practices that affect teachers' experiences during a PDS. At the level of schools embed in larger social systems (*macro level*), I discuss issues such as school development, culture, external resources, and reputation, as well as the linkages of schools with local community and parents. At the level of school organisational level (*meso level*), I focus attention on what school leaders have done during the PDSs, particular school-transition experiences for teachers and the provision of extracurricular activities and training. At the teaching level (*micro level*), I concentrate on the confidence teachers show in dealing with students' motivational and behavioral changes, teacher-student relationships as well as their own issues.

2.6.1 Macro perspectives of school organisation

As noted, macro perspectives include school cultural values as well as regional and organisational norms. The current study suggests that to evaluate the destruction of a disaster, and restore school function, well-being of school members, school-based disaster management (SBDM) can adopt a macro-ecological system. This system entails working within and together with related social, organisational, professional and personal connections (Gunderson, 2010). This means the SBDM model should be a central focus of the school renewal process because this is where the complex social dynamics of school organisational changes and individual's emotional and behavioral changes occur (Dean et al., 2008; Jaycox et al., 2007; Kataoka et al., 2009; Nastasi et al., 2011; Tarrant, 2011). The concepts of school organisational changes, school disaster management and recovery, school stakeholders' traumatic experiences, stress and resilience are interrelated and have wide application to SBDM.

An outline of the features that constitute SBDM was drawn from Mohapatra's (2008:16) community-based disaster management model (Table 2.3 below). Her disaster management model includes resources, coping and adaptive strategies of community stakeholders. She believes the International Red Cross and Save the Children and UNICEF agencies have adopted these techniques of disaster management planning as a mainstream for risk reduction, development and education (p.16). Though, there is a little evidence to support existing comprehensive disaster plans in schools (Kano et al., 2007).

Table 2.3: Features of SBDM approach

Features that constitute school based disaster management	
Resource	<input type="checkbox"/> School personnel are the key actors and the primary beneficiary of various initiatives
	<input type="checkbox"/> School leadership teams in the whole process of disaster risk management, form situational analysis to planning, implementation and evaluation
	<input type="checkbox"/> A multitude of school stakeholders are brought together to maximize the school resource base
	<input type="checkbox"/> Local organisation is linked vertically with national and international level organisations to address the complexity of traumatic issues
Coping	<input type="checkbox"/> Activities revolve around reducing vulnerable conditions in schools <input type="checkbox"/> The focus is to increase school's capacity and its resource and coping strategies when disasters occur
Adaptive strategies	<input type="checkbox"/> Disasters are viewed as unmanaged and unresolved problems of the development process, but PDSs should be considered as manageable and resolvable problems. <input type="checkbox"/> The framework is dynamic. Lessons learned from practice continuously feed into school future development.

(Source from: Allen, 2006 cited in Mohapatra, 2009)

In the context of this study, I argue that the SBDM plan should include the consideration of the internal and external alternatives, informational and material resources, social support, the roles and responsibilities of administrators, teachers, students and their parents, training, coping and resilience enhancement for school organisations and their people.

Internal and external structure of the SBDM plan

Effective school-based disaster management does not start with the effective response (Reeves et al., 2008), but it does involve a sophisticated preparation/advance planning (Masten and Obradovic, 2008). Natural disasters and crises occasionally affect schools, advance preparation is critical prior to any disaster (Brown, 2008; Coppola and Maloney, 2009; Coppola, 2007; Jaques, 2010). MacNeil and Topping (2007) have reviewed comprehensive research on school crisis management plans/preparation. They critiqued the elements of some crisis plans suggesting they lacked credibility as they had not been tested/assessed and evaluated in a real school crisis situation. They proposed that:

“... the effectiveness of crisis plans could operate at a number of levels and need not be constrained by the need to wait for a crisis to occur...drills may be a way to allow some insights...simulations and drills might also be evaluated in terms of whether they produce not only a better state of preparedness but better outcomes when a crisis presents” (p.86).

Drawing from the previous school disaster preparation strategies such as Jaques (2010) and Cederblad's (2009) studies described how preparation should be based on adequate practice, clinical judgement and personal preference rather than a fixed written paper enclosing the routine policies about what should/not do. Similarly, a content analysis of a sample of comprehensive disaster plans from the educational sector showed that the political structure, regulations and preparations were lacking (Alba and Gable. 2011).

Zhu et al (2011) refer to school leadership as a very important dimension of restoring or reconstructing school culture in order to ensure in an efficient way that it is supportive and motivating for school recovery after natural disasters. School leadership teams often assume as long as they have a written plan in place they are prepared and ready for the challenges (Coppola and Maloney, 2009). Kano et al. (2007) and Salazar (2011) make a similar statement that a sophisticated disaster plan is a critical first step in the school preparation phase, but this plan should not just be a procedural document it has to be accompanied by adequate training, practices, drills, physical resources, psychological service and integrated cooperation.

From theoretical perspectives, school disaster management should include an analysis of the pre-disaster social climate of the school and a consideration of the current social situation before preparing the recovery programs as MacNeil and Topping (2007:79) suggested. Marcus et al. (2007) elucidate that disasters cause social disruption, if we want to determine the degree of social disruption brought on by a disaster situation, it is necessary to know something about the pre-disaster situation of the school organisation. Disaster preparation and plans are undoubtedly advantages in managing a PDS (Alba and Gable, 2011). When a disaster happens, the school leadership team should have a

developed response strategy in place which means developing a disaster or crisis plan and training programs before a disaster is experienced (Adamson, 2007:750).

Many school leaders may recognise that developing a school-based disaster management plan is necessary in such a turbulent environment (Buchanan et al., 2010; Hallinger and Heck, 2010). However, an effective disaster plan is difficult to set up when there is such a lack of coherent internal and external support system (Baxter and Bethke, 2009; Goldstein, 2009; Izadkhah and Hosseini, 2006; Mohapatra, 2009; Wei, 2008). It involves multiple support systems from both the educational district level and school individuals' level and familiarity with school procedures (MacNeil and Topping, 2007).

It requires school leaders to identify how their school's conditions (resources, staff, culture, and region) could possibly implement the disaster preparation program efficiently (Adamson and Peacock, 2007; Cederblad, 2009; Kataoka et al, 2009). For example, Adamson and Peacock's (2007:750) investigation was through the perceptions of over three hundred school psychologists. The findings indicated the importance of developing school-based crisis teams/plans. These plans considered several levels including regional, community, district, specific crisis team member roles and the school staff who will fit those roles. Regarding intervention programs, the findings suggest psychological debriefing (e.g. Critical Incident Stress Debriefing [CISD]) was frequently conducted on school students and staff as well as a few meetings with parents and community members by school psychologists.

However, the process of debriefing was not sufficiently described, and the findings were based on psychologists' perceptions. It would have been useful if the recipients' (e.g. school teachers and students) opinions about the psychological debriefing had been gathered. Nevertheless, the consideration of the different levels of involvement in school crisis plans and preparation should aid the development of school-based disaster plans. Jaques (2010:12) highlights the importance of pre-disaster preparation and prevention. In his crisis model, preparation includes a coordination system within an organisation,

documentation and traditional exercises and simulations. He emphasises the importance of coordination flowing in an organisation, as he clarifies:

“...disaster management is underpinned by reciprocity, mutual trust and willingness to share information among organizations. These types of interactions should occur not only at the top of the organizations making decisions jointly, but also at lower levels.”

An organisation should be autonomous in its functioning, known as school based organisations. School organisations can in a way arrange their own needs and articulate strategies for recovery as well as reconstruction as Alba and Gable (2011) believe. But Leithwood et al. (2008) argue that the development of a school-based disaster management team involves multi-level governments with local communities in light of their local situation, culture and geographic conditions. This cannot be achieved by only the formation of school internal leadership teams.

Reeves et al. (2008) indicate that school disaster plan and preparation must involve a local community emergency response plan to include school safety, rescue efforts, local health, psychological, information centre services as well as a clearly structured disaster leadership team either from educational sectors or local communities. Subsequently, a disaster plan should consistently follow the socio-ecological structure in order to be comprehensive which should encompass different social structures (school, community, policy, social, economic, environment and people) (Alba and Gable, 2011; Salazar, 2011).

Parents' involvement in PDSs

Parental support can be incredibly helpful in aiding the recovery of children from trauma, however, parents need appropriate guidance from, and cooperation with school teachers if they are expected to be involved in children's recovery (Henderson and Hildreth, 2011)

thereby reducing teachers' workload and improve parent-teacher relationships and school climate (Hornby and Witte, 2010:469). Several studies indicate that parents' involvement not only improves children's traumatic issues but also benefits the effective recovery of schools and teachers during/after a disaster (Putnam and Amaya-Jackson, 2008; Widyatmoko et al., 2011; Reid and Reczek, 2011).

Cederblad's (2009) study was about what a school disaster response/intervention team should do when children are traumatised after an earthquake. His proposition emphasises that parents should be the first line and resource for helping children before considering other intervention resources. In Koutrouba et al. (2009) study reported that parents' involvement is very important in providing information for in-service training to teachers. It helps teachers discover ways of involving children in learning and behaviour management and schools develop methods of communicating with families. Hornby and Witte (2010) indicate that promoting parental involvement can be done through providing information for parents about how schools respond and function to aid children's recovery and development; what schools expect parents to do to help their children at home and what schools and community resources are available for parents.

Some other studies have an opposite view however; which suggests that distressed and traumatised parents are less helpful in responding to their children's issues (Tartakovsky, 2009; Hornby and Witte, 2010; Pomerantz et al., 2007; Clettenberg et al., 2011). In some cases, disaster created parental absence through economic and social issues (Kataoka et al., 2009; Wachtendorf et al., 2008). Imberman et al. (2009) reported that natural disasters often destroy parents' regular lives and many parents have to go out looking for work, never certain where they should stay. Consequently, some parents suffer physiological and emotional responses to overwhelming disasters.

In this state, Tartakovsky (2009) and Vasterling (2008:536) believe that traumatised parents often weaken children's resilience or some parents' over-protective behaviour could have a negative impact on children's recovery and development (Henderson and

Hildreth, 2011). Parents suffering from stress and emotional problems which can spill over into their parenting, which could exacerbate children's distress if it involves them, in this situation, parents can only be supportive and available to their children's material needs (Bokszczanin, 2011; La Greca et al., 2008; Watts, 2008).

On the other hand, Margolin et al. (2010) clarify that some parents perhaps feel less confident to be involved in the school recovery process because the intervention materials are too challenging for them. In such cases, schools have to make the decision whether or not to involve those parents. Parental involvement is a very complicated process, many school leadership teams lack active schemes to engage parents' involvement after a school disaster (Bridges and Searle, 2011; Leithwood et al., 2008; Odhiambo and Hii, 2012; Townsend, 2011). Thus, a school-based disaster plan requires a persistent, compassionate and attentive engagement process for both families and children. School teachers should be included in school-based service groups which is an important component for further recovery of the children and families (Clettenberg et al., 2011:563).

Research on parents' involvement in the school post-disaster context in China has so far not been published. International literature related to Chinese parents' involvement has been summarised by a major report commissioned by the Chinese Ministry of education (Chen, 2008; Yang and Chai, 2010). This influential report often recommends schools to use new technology such as school websites and emails to communicate with parents (Kong et al., 2010; Ma et al., 2009; Watts, 2008). The most noticeable gap is the absence of written school policies on parental involvement, the parents' committee organised by schools, the lack of specific strategies to involve traumatised parents with limited education backgrounds and the inadequate training for teachers to cooperate with parents in PDSs (Chen, 2008; Wei, 2008; Ying, 2013; Higgins et al., 2010). Positive outcomes for children cannot be achieved without effective partnerships between parents and schools (Hornby and Witte, 2010; Lombardo et al., 2008; Pomerantz et al., 2007).

2.6.2 Meso perspectives of school PD process

The meso-perspective represents linkages between proximal (microsystem) ecologies (e.g., community and home, teacher and parents in the school). According to this theory, psychosocial functioning, or psychological well-being, of teachers is determined by interactions between the individual and the school post-disaster environment across time and context. The relevant ecological contexts include family, school, peer group, community, and society as Nastasi et al. (2011:514) discussed. The development of a teachers' psychosocial functioning is influenced by mutual interactions within and between these contexts, which in turn influence the teachers' affective, cognitive, and behavioural domains of functioning in the same and different context (ibid). Thus, how a school organisation reacts and changes during a PDS is considered to be a key agent for the teachers/individuals' psychological recovery, and thus we need to consider both the individual and school organisation functioning to facilitate optimal renewal (Williams et al., 2008).

Keeping the school members involved in the changing regulations is more important than even before in school leadership (Hallinger and Heck, 2010). Sustained success of the school recovery is only possible when the school stakeholders are included in the strategic planning (Hornby and Witte, 2010). UNICEF's Unit (2006) for Educational Reconstruction states that rehabilitation is a 'more or less protracted process' with short-, medium-and long-term aspects. Teacher emergency packages (TEPs) produced by UNICEF (ST 6) need to be concerned with and plan for basic requirements, and need to get education systems working again. However, the limitation of this package was such that it only contained basic materials to aid the teaching of literacy and numeracy for the first six months after a disaster or crisis. Thus the concept emerged out of long-term trauma coping strategies for teachers (Longstaff and Yang, 2008).

Planning, training and coping for school teachers

During the long term rebuilding phase, which can take years, it is ideal to set up a systematic school-based services scheme to lead school members as Paton et al. (2011) assert. School-based staff are ideally suited to coordinate this kind of scheme and to provide intervention services to students at the time of or afterwards a disaster, so the school organisation centred disaster response should move to a micro layer and target the school primary duty the needs of school stakeholders.

The question of how to get school staff fully involved and motivated with the goals of the school appears to remain a central concern in the school post-disaster recovery process (Bemak and Chung, 2011; Clettenberg et al., 2011; Higgins et al., 2010). The difficulty might be in the continuing adjustment necessary in a dynamic school environment (Henderson and Hildreth, 2011; Ho et al., 2012). Therefore, these school-based services still suffer from a major gap in understanding the complex priorities of school management and personnel needs (Kliman et al., 2008; Smith and Riley, 2010; Townsend, 2011; Tarrant, 2011). Several studies (Brown and Yasukawa, 2010; Brown, 2008; Buchanan et al, 2010; Hoy and Miskel, 2008; Kurland et al., 2010; Porter, 2010) suggest that Abraham Maslow's hierarchy of human needs can be considered when managing members of affected schools allowing them to remain positive and motivated in a PDS.

Maslow's theory remains valid today for understanding human motivation, management training and personal development in any situation. The responsibility of school leaders to provide a safe school environment to teachers and students is the second basic need in a hierarchy of human motivations (Hoy and Miskel, 2008:137). Putting school teachers into a real practical event that encourages them to recognise their own potential self-actualisation is the third level of human motivation in a post-disaster condition is more relevant than ever (Alisic et al., 2012; Openshaw, 2011).

Even so, Smith and Riley (2012:68) have identified nine key attributes for effective school leadership and management during/after a crisis (see Table 2.4 below). The researchers identify several common features and characteristics of these attributes to school crisis management that can serve as keys to develop management strategies in a school PDS (Adamson and Peacock, 2007; Bemak and Chung, 2011 and Brown et al., 2011).

Table 2.4: Key attributes for disaster leadership

Key attributes for disaster leadership	
Decisive decision-making	Capacity in the face of limited and unreliable information
Interpersonal communication skills	Powerful two-way communication
Procedural intelligence	Knowledge and skill gained and honed through experience
Synthesising skills	The ability to identify key issues from contradictory sources
Empathy and respect	The feelings of others and to respect their perspectives
Optimism/tenacity	A capacity to remain optimistic in the face of adversity.
Flexibility	The ability to make quick and decisive changes in behaviour and thinking
Intuitive	The strong thinking capacity and the preparedness to use it
Creativity	The ability to develop new ideas/solutions and to turn problems into opportunities

(Source from: Smith and Riley, 2012:68)

Smith and Riley (2012) believe if school leadership teams are not equipped with the necessary capabilities, the whole school recovery process can suffer as a result. Decision-making is one of the key features that not only requires school leaders to have the capability, but also they should understand the importance of decentralising power and empowering school stakeholders to be involved in decision-making (Pedder and MacBeath, 2008). Pepper et al. (2010:4) argue that within the complicated school disaster reconstruction structure, school leaders are required to fully understand the situation from both external and internal demands while they make any decisions.

Some of the key attributes for managing PDSs rely on school leaders and teachers own awareness and knowledge of how to deal with specific tasks after a disaster (Xu and Feng, 2012, Lei, 2013). If a school management team is not well prepared for the post-disaster context, in terms of preparation, management and professional training

being provided for teachers and other staff, the negative impact and resultant stress maybe increased (Beatty, 2007; Devitt and Borodzicz, 2008). SBDM planning may need to emphasise that in times of earthquake and the aftermath, school teachers are in attendance, and they are expected to get assistance and intervention to support their role (Brown, 2008; Cederblad, 2009; Odhiambo and Hii, 2012).

PDSs place severe stress on school members' emotional, physical, cognitive and behavioural capacities, which could lead to a sense of vulnerability (Mohapatra, 2009; Pina et al., 2008; Sun et al., 2010) and a weakened sense of decision-making as recognised by Wang (2008). From the individuals' psychological point of view, if school leaders are limited in their knowledge, information processing capabilities during the preparation process, a major disaster would become a highly uncertain, complex and emotional event to the school organisation and individuals as a whole (Masten and Obradovic, 2008; Malcom and Combes, 2007; Ndiku et al., 2011).

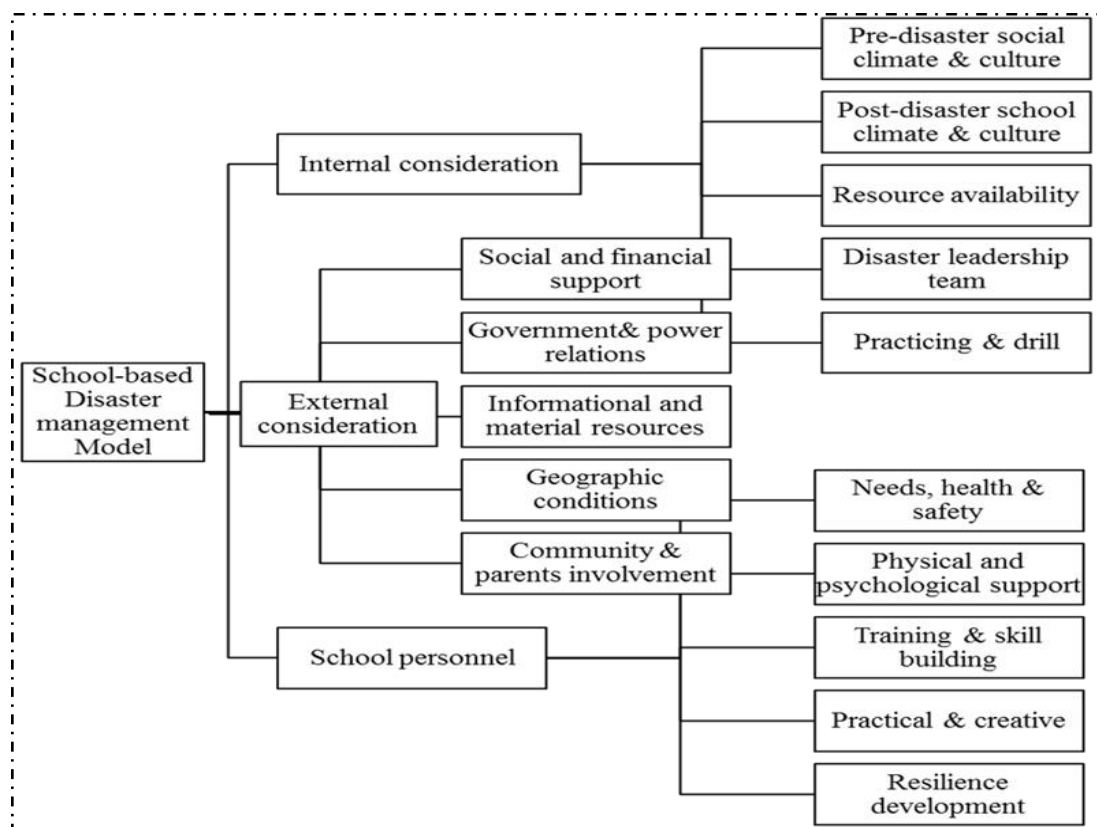
Although there is literally no intervention program discussed in the literature for school teachers' training and coping programs, the school leadership team may need to draw on the intervention programs that have been highlighted for young people, social and rescue workers' experience (Cohen and Mannarino, 2011; Cederblad, 2009; Canada et al., 2007; Overstreet et al., 2010). Those programs provide a range of materials such as books on disasters, activities and games for disaster victims to involve in and provide emotional support and participate for them to communicate with others. Such intervention can be adapted for school teachers' recovery if the intervention material is updated further and modified in order to meet their specific needs (Sun et al., 2010; Widyatmoko et al., 2011).

School-based disaster planning has a significant impact on the effectiveness of school disaster recovery and on school teachers' well-being and academic performance (Tarrant, 2011; Doherty, 2010). Zeng et al. (2011), for example, advocated the inclusion of school staff's well-being in a school's intervention program. Interviews with the school teachers

one year post-disaster in Beichuan China revealed common coping strategies among the affected school teachers related to rebuilding families, re-establishing work-related routines and relationships, sharing resources, support, feelings and experiences. The opinion of school leaders was that their school benefits from the pre-prepared school disaster plan.

There is not a single documented case of a PDS significantly improving in the absence of an effective school disaster preparation/plan program and a school leadership team (Leithwood et al., 2008:29). The reason is that a disaster preparation program serves as a stimulus for the development of skills and potential that already exists in the school organisation (Bridges and Searle, 2011). In a reconstructed school organisation, the specific practices included in the preparation are to create a safe and stable school environment for school stakeholders (Odhiambo and Hii, 2012). The key points of developing a school-based disaster plan are highlighted in Figure 2.2 below.

Figure 2.2: School-based disaster plan highlights



The important factors of developing a school-based disaster plan are discussed and highlighted in section 2.6.1 - 2.6.2 (pp.50-62) and Figure, 2.2 above. Overall, this study argues that an effective school-based disaster plan should consider internal and external information, material resource and availability. In addition, this plan should take school stakeholders' well-being into consideration, such as stress reduction and resilience build through appropriate training and practice for school personnel.

2.6.3 Micro perspectives of school stakeholders

The micro-ecological perspective signifies within the proximal level how the individual develops, including the family/home and school environments and peer relationships. The ecological perspective is a standpoint for conceptualising the changing maturing person in relation to a changing environment-social, physical and psychological (Tudge et al., 1997:72). Thus, from an ecological perspective, stress/stressors refer to “social-cultural factors within the family, peer group, school, community, or society that have the potential to cause psychological distress or negatively affect psychological adjustment” (i.e. create risk or vulnerability for mental health difficulties) (Nastasi et al., 2010:306).

Teacher stress

Many studies demonstrate that the teaching profession is extremely stressful and this recognition has led to much research on: “teacher stress” or “teacher burnout” (Geving, 2007; Friedman, 2000; Alvarez, 2010). Drawing from Kyriacou's (2007:159) definition teacher stress is the situation where a response syndrome of negative affects results from a teachers' job and is mediated by an appraisal of threat to his/her self-esteem or well-being. Geving (2007:625) believes that “teacher stress is neither a stimulus nor a

response, but the situation that arises when negative effects result from the teachers' job".

Nonetheless, one of the purposes of this study is to explore the particular teacher stress which is triggered by school organisational change as a response following a natural disaster. Teacher stress in PDSs is more likely related to traumatic stress (Alba and Gable, 2011). It is broadly described as an outcome a teacher may encounter through traumatic events and also as a result of dealing with his/her students who are traumatised. The transmission of trauma from the students to a teacher occurs due to the teacher's identification with the student suffering has been termed 'secondary post-traumatic stress' (Alisic et al., 2012). These stresses are exacerbated by the experience of being unable to find release from emotional impact or of any sense of satisfaction from supporting their students (ibid).

However, Shen (2009:130) believes "...stress or traumatic life events can be disruptive and negative on people, but it may be positive or rewarding...the positive consequences include positive changes in social relationships, self-assurance and priorities in life...". In the sense, teachers' stressful experiences after a natural disaster may be promoting their personal and professional development, and buffering a school's effective recovery, as Bridges and Searle (2011); Wood and Olivier (2008) recognised. A socio-ecological model was useful to help me understand broader issues, but to identify individuals' psychosocial functioning, or psychological well-being, I need to apply other theories to help me to fully comprehend the underlying issues. "Person-environment fit theory" (P-E) theory is a new dimension which has been added to the concepts of ecological systems for understanding psychology-related stress.

This theory is a conceptual framework for the person-in-environment perspective that recognises an interrelatedness of human problems, life situations, and social conditions (Coady, 2001:65-80). P-E theory originally came from the work by French and Kahn (1962; 1974) though later developments and refinements have been driven by Edwards et al. (1996; 1998; 1999; 2005; 2007; 2008; 2010). The notion of P-E fit theory has been

applied in hundreds of studies on job satisfaction, job stress, vocational choice, recruitment and selection and organisational culture and climate (Coady, 2001; Edwards, 2008:168; Greguras and Diefendorff, 2009; Yu-Li, 2006). Following these studies, P-E theory emerges as a core concept and can be understood and adapted largely though not entirely in terms of two types of factors (demand fit and supply fit) in the current research for exploring personal (psychological, physical and behavioral) and professional (vocation and job) stress of individuals (school teachers) following a natural disaster.

“Demand fit and Supply fit” between the individual and the environment, the demand fit is the consideration of whether the individual’s intrinsic capabilities and perceived skills match the demands and requirements of the mission/task (French et al., 1974 cited in Yu-Li, 2006:27). The supply fit is whether the working environment satisfies the needs of the individual (ibid). If there is an incongruity between the person and the working environment, work-related stress will most likely occur (Edwards et al., 2005; 2008; Greguras and Diefendorff, 2009).

Based on the context of the current research, if the needs and capabilities of the school teachers adapt to the challenges and changes during the post-disaster scenarios, then they meet the positive outcomes of person-environment fit (Edwards, 2008; Greguras and Diefendorff, 2009; French et al, 1974); there is little negative work-related stress and they are able to perform well during any adversities, accordingly, they will experience a high degree of well-being (Brown and Yasukawa, 2010). However, when the needs and the capabilities of the school teachers do not adapt to the difficulties and changes in their job and life situations, the consequence is a poor person-environment fit (Edwards, 2008; French et al, 1974); work-related stress would result and that could eventually lead to physical, psychological and mental issues if left undiscovered (Damiani, 2011).

Ballenger-Browning and Johnson (2010) point out that stress arises not from the person or environment separately, but rather from a misfit between the person and environment (French et al., 1974). However, from what Ballenger-Browning (2010) and Nastasi et al.

(2010) declare P-E fit theory provides an unambiguous and systematic framework for understanding how stress evolves through a combination of person and environmental factors.

Edwards and Cooper cited in Yu-Li (2006:27) an acknowledgement that the conceptual and methodological problems of this theory have still remained (Edwards, 2008; Edwards and Cooper, 1998:39). Theoretically, P-E fit theory has not been empirically proven to be adequate in distinguishing between different versions of fit, particularly environment supplies and personal motives, goals and values and environmental demands and personal skills and abilities. The methodological issues include vague and incomprehensive measurement of P-E dimensions and inappropriate analytical techniques for assessing effects of fit (Yu-Li, 2006:27). Nevertheless, I believe the current study can draw from the theories reviewed as long as the criticisms are appreciated and allowed for.

Understanding resilience

Resilience is defined as “the intrinsic capacity of a system, community or [individual] predisposed to a shock or stress to adapt and survive by changing its non-essential attributes and rebuilding itself” (Blaikie et al., 1994: 5 cited in Mohapatra, 2009). Human or individual resilience refers to the capability to effectively overcome stressors, maintaining individual psychological well-being in the face of adversity (Haglund et al, 2007:889). However, those capabilities are interlinked with the circumstances of a community, small group, network, institution, organisation and region (Longstaff et al., 2010:1). Similarly, Papatraianou and Le Cornu (2014:101) argue resilience as the process through which an individual maintains adaptive functioning after experiencing risk or adversity. Malcom (2007:20) describes resilience as the capacity to successfully adapt in the face of adversity, it can develop social, academic, and professional competence despite exposure to severe stress.

Resilience can be described as an inherent characteristic; some individuals are more resistant than others when encountering a traumatic event which enable them to resist stress and traumatic experiences and helps them recover to normality more quickly (Ballenger-Browning and Johnson, 2010; Goldstein, 2009; Longstaff and Yang, 2008). However, Toland and Carrigan (2011: 96) argue that resilience is not a personality characteristic and it applies at both individual and the systems level. Resilience is the outcome of dynamic processes which do not eliminate risk and stress but allow the individual to deal with them effectively.

Gu and Day (2007: 1305) make a similar assertion “resilience is not a quality that is innate, rather, it is a construct that is relative, developmental and dynamic, confirming the positive adaptation and development of individuals in the presence of challenging circumstances”. It encompasses a personal characteristic of the individual trait, but it develops along with and manifests itself as a result of a dynamic process within a given social construct. Psychologists have paid a great deal of attention to exploring the characteristics of resilience and its role in helping individuals to recover successfully following a disaster or in the face of adversity (Bonanno et al., 2006; Doherty, 2010; Baumwoll, 2008). The term as it is used for the purposes of psychology and psychiatry was defined in the 1940s, and is relatively new to the field of disaster management (Gunderson, 2010).

Resilience theory elucidates three phases of investigation as Malcom (2007) identified. The first phase focuses on identifying survivors resilient qualities such as self-esteem, self-efficacy, and support systems (Malcome, 2007:19). The second phase is to discover the process of developing those qualities which were identified from the first phase. The third phase is usually to identify how a survivor develops their positive characteristics through adversities. Through these phases, Richardson (2002:309) believes that resilience is an inspirational energy within everyone, which impels them to “pursue wisdom, self-actualisation, and altruism and to be in harmony with a spiritual source of strength”.

Some scholars have attempted to analyse the links between human resilience and community resilience systems when they investigate individuals affected by a disaster (Gunderson, 2010; Goldstein, 2009; Haglund et al., 2007; Masten and Obradovic, 2008). They confirm that the two concepts of resilience are not incompatible. Resilience is certainly related to the environmental variability of individuals, as Longstaff and Yang (2008) add that resilience is an intrinsic capacity of a system, but it can be influenced by social stability, physical infrastructure, economic or political changes and institution changes, and all of them influence individuals' resilience capabilities.

Teacher resilience

Concerning teacher resilience, in the VITAE research, Gu and Day (2007) believe resilience can be understood from two perspectives: psychological construct and the multidimensional, socially constructed concept. Which means teacher resilience can be described as determined by personal, professional, emotional, social contexts and settings (e.g. the school). They identified three scenarios that suggest how teachers balanced their personal, professional factors and school situations throughout their teaching career. In a teacher personal scenario the resilient teacher attempted to find balance among these three components; whereas, in the other two situations one or more of these components either became dominant or teachers could not manage any of these scenarios. From Gu and Day's research, it can be understood that a resilient personality is not sufficient to ensure individuals' competence socially and academically, rather, one must draw upon all their personality, environmental and social resources to increase competence (Castro et al., 2010).

Nevertheless, I would argue that whether the characteristics of resilience are connected to personal (internal capabilities) or professional (external) factors or both, it appears essential to understand a multi-faceted and unstable construct of teachers' resilience and how this resilience might be promoting their recovery after a disaster. The idea of

resilience deployed here interacts with the grief, struggle and suffering of the recovery process of PDSs, but focuses more on a positive adaptation within the context of significant adversity than on the vulnerable processes by which the teacher reacts to the risk situation (Gu and Day, 2007; Haglung et al., 2007; Masten and Obradovic, 2008; Malcom and Combes, 2007:19-20; Williams et al., 2008).

It has been found that the majority of traumatised populations following a major disaster seem to be able to overcome their traumatic experience by themselves and the ability and coping process helps the affected population of a disaster recovery (Bonanno and Galea, 2007; Doherty, 2010; Longstaff and Yang, 2008; Masten and Obradovic, 2008; Norris et al., 2009; Toland and Carrigan, 2011). It is a response to the successful encountering of challenges and the overcoming of adversities to move on in their new lives, and involves the capability to sustain psychological stability in the face of stress (Bonanno and Galea, 2007; Kyriacou, 2007; Norris et al., 2009). It is understood here, therefore, that resilience is more likely created by the teachers' responses to threats and the resulting development of successful problem solving (Toland and Carrigan, 2011; Malcom and Comber, 2007).

The nature of school teacher resilience in PDSs is determined by the interaction between the internal qualities of the teacher and the external environment which the teacher faces and experiences (Gunderson, 2010; Goldstein, 2009). School as an organisation and the external/working environment can significantly affect teachers' well-being in positive and negative ways (Sun et al., 2010; Bizumic et al., 2009; Gu and Day, 2007). Perceived negative life and job satisfaction in PDS, for example, can affect teachers' mental health (Chen, 2010; Chaplain, 2008; Sun et al., 2010; Nastasi et al., 2011), and schools' practices have been linked to teachers' stress levels (Shen, 2009; Wood and Olivier, 2008; Şahin et al., 2009).

The aim of the current research is to screen teachers' resilience as a way of understanding their level of well-being in the circumstances of a school reorganisation process after the earthquake. I endeavoured to gain a clear picture of how school teachers develop, as

individuals, the ability to adapt to changes, demands and depression in a schools' renewal process following a disaster, as well as to grasp how school leadership functions and how that influences teachers' resilience.

The importance of teachers' resilience in teaching can be explained by three factors. Firstly, teachers' resilience can influence students to be resilient in delivering a variety of instructional strategies, managing and engaging students in a school renewal process (Alisic et al., 2012; Bonanno and Galea, 2007). It is acknowledged that teachers can be a positive role model for students and that they are a primary source in demonstrating the positive features of recovery and resilience (Alvarez, 2010; Bridges and Searle, 2011; Damiani, 2011; Henderson and Hildreth, 2011; Kliman et al., 2008; Sun et al., 2010; Suldo et al., 2009).

Secondly, working in a PDS is challenging with numerous environmental changes and transformations. Teachers have to be able to adapt to the changes and challenges in order to be resilient and school leadership needs to be aware and understand the mechanisms that teachers use to manage and sustain their motivation and commitment in times of change following a disaster (Alvarez, 2010; Bridges and Searle, 2011; Damiani, 2011).

Finally, teachers' resilience is defined as an intrinsic capability to continue to "bounce back, to recover strengths or spirit quickly and efficiently in the face of adversity, it is closely allied to a strong sense of vocation, self-efficacy and motivation to teach which are fundamental to a concern for promoting achievement in all aspects of a student's life" (Gu and Day, 2007: 1302). Higher teacher resilience could result from adopting desirable coping strategies, which facilitate recovery from the traumatic experiences (Damiani, 2011; Shen, 2009; Widyatmoko et al., 2011; Wood and Olivier, 2008). Lower teacher resilience would predict higher levels of stress and lower levels of personal well-being (Bokszczanin, 2011; Ballenger-Browning and Johnson, 2010; Doherty, 2010; Edwards, 2005; Geving, 2007).

Moreover, higher teacher resilience promotes warm interpersonal relationship with students by creating a supportive learning environment (Gunderson, 2010; Masten and Obradovic, 2008), which in turn positively influences traumatised students and benefits their academic performance (Bizumic et al., 2009; Hallinger and Heck, 2010; Openshaw, 2011; Robinson et al., 2008; Wachtendorf et al., 2008).

The concept of resilience with its emphasis on enhancing socio-ecological factors can be related to the present research on the role of teachers in coping with their own issues and work issues in PDSs (Gunderson, 2010; Goldstein, 2009; Longstaff and Yang, 2008; Masten and Obradovic, 2008). Resilient teachers often have stronger connections to school, students, family and colleagues, and if these social links are functional when facing challenges, teachers are less likely to develop traumatic issues (MacNeil and Topping, 2007). Thus, it is apparent that improving teachers' resilience is significant and can develop their capability to cope with changes and challenges in PDSs. Once teachers' resilience is enhanced, they are likely to influence their students positively and cope with students' issues more successfully (Williams et al., 2008; Malcom and Combes (2007).

The ecological systems model is an appropriate framework for guiding the understanding of the complex structures and interactions that shape individual resilience across time, changes and contexts as Toland and Carrigan (2011:97) believe. In the system, the individual with their own intrinsic capabilities is located within many inter-related micro-systems such as family, school, colleagues and community, and the macro-systems of the wider societal context. It is the interactions between factors in an individual's inherent capacity, their immediate family/community environment, and the societal landscape which drives their recovery from adversity. Ideally an individual with inherent strengths, resource and competence is supported within a community leading to an optimal recovery.

Increasing school's capacity and resilience after a disaster or crisis appears to be a focus of SBDM (Doherty, 2010; Gunderson, 2010). Schools members become part of the

planning process, their capacities for resilience are increased, and reconstruction processes become sustainable (Sun et al., 2010; Mansour, 2011; Pepper et al., 2010; Paine, 2009). An extensive review of published research on school crisis management and intervention explored current theories (Brown, T. and Yasukawa, 2010; Brown et al, 2008 and Brown, L., 2008). Those relating to events widely different in scale from the macro, with profound effects impacting across the world, to the micro, with impacts remaining within very limited boundaries.

In this review, I consider the resilience of the school teachers to their school environmental change but to be embedded in various social systems. The complexity is not simply personal depression. Rather, their experiences are better understood as the consequence of a much larger set of interacting factors: their families' situation, their work environment condition and their relationships to peers and pupils. In the realm of the socio-ecological model seems particularly relevant for explaining the dimensions of a school reconstruction process and an individual's recovery in PDSs.

Gunderson (2010) argue that when we investigate the circumstances of positive coping after individuals are exposed to adversity, ecological understanding of resilience should provide a pluralistic perspective to understand the complexity in mutual person-environment interactions. It is necessary to explain how environments count a great deal more than human thoughts, perhaps even more than individual capabilities (Ballenger-Browning and Johnson, 2010). The complexity of interactions between elements of the ecological systems (interactions between family, school and community systems; Bronfenbrenner, 1989) predicts that successful adaptation is properly operationalised when it reflects positive outcomes. As individuals or environments change, the factors most likely to correlate with positive developmental outcomes also change, which interaction is most likely to be a facilitator for resilience depends in part on which outcomes are chosen as the measures of good functioning under stress (Bixi, 2009; Ryff and Singer, 2008; Xin et al., 2009).

Implications of improving resilience

Lowe (2011:96) implies that the way schools respond to and support teachers has a major impact on how well and quickly teachers are able to adjust to the traumatic experiences, return to their studies and, more generally, return to positive functioning. As Bridges and Searle (2011) caution that teacher's negative attitudes affect the quality of their output, and the "interpersonal relationships between school leaders and teachers shape attitudes and behaviour". Likewise, Hornby and Witte (2010) believe collaboration between school teachers and others has a positive effect on the quality of their work produced. These arguments, therefore, suggest that the negative attitude of the teachers towards their work and failure to cooperate with others might affect the quality of their recovery and output negatively.

Similarly, Beltman et al. (2011:192) find that eliminating negative experiences is not enough to promote the resilience of teachers. Teachers may need to cope with negative experiences as long as they have regular and positive experiences or relationships with their students and colleagues in schools. They reviewed forty papers investigating the supportive factors for promoting teacher resilience. They concluded that well-organised school leadership, strong and open mentor relationships and close peer relationships among teachers could provide valuable support for stimulating teachers' resilience-building.

For example, a well-organised leadership structure could ensure teachers' success in teaching in appropriate classes by not assigning them more difficult ones and also indirectly in shaping teachers' efficacy in teaching (Hirschhorn, 2009). A well-designed mentor program can enhance teachers' self-reflection and problem-solving abilities, higher levels of self-esteem, positive attitude and confidence, and reduce feelings of isolation and disregard which could potentially help to increase teachers' resilience (Beltman et al., 2011:192).

Evidence from Gu and Li's (2013:298) research suggests that a strong sense of self-efficacy is an important component of promoting teacher resilience. To recover and rebound from challenging situations and adversities, teachers need the strength of self-efficacy. Thus, the research on resilience-building among adults suggests that there are multiple positive factors that might help build resilience including person-centred variables (e.g. self-efficacy and believes) and environment-centred factors (e.g. supportive and trusting relations, community resources).

One of the ways to improve teachers' resilience and teaching efficacy is through the mastery of experience, which is defined as teachers' successful experiences of overcoming difficulties and challenges (Skakon et al., 2010; Butkovic et al., 2011; Sun et al., 2010;). In other words, teachers need to be able to master the new changing environment, and to learn about the resilient aspects of the human organism and information about what teachers need to do to stay positive in their jobs and what they need from their educational communities (Bonanno and Galea, 2007; Goldstein, 2009; Masten and Obradovic, 2008).

A positive working environment is a major factor in developing teachers' resilience (Alvarez, 2010; Bridges and Searle, 2011; Beatty, 2007; Doherty, 2010; Jaycox et al., 2007; Kataoka, 2009). Some researchers believe that the challenge of developing resilience is to understand teachers' stress and concerns in PDSs (Suldo et al., 2008; Buchanan et al., 2010; Chaplain, 2008; Geving, 2007; Haglung et al., 2007; Overstreet et al., 2010; Skakon et al., 2010). The relationship between stress and well-being are partly mediated by effective responses and resilience to stressors, which increase the capacity to cope with stress (Alba and Gable, 2011; Chen, 2010; Nastasi et al., 2010).

Teachers' resilience refers to those social, physical, psychological aspects of the work environment (Gunderson, 2010; Goldstein, 2009; Longstaff and Yang, 2008; Masten and Obradovic, 2008). Stressors such as earthquakes deteriorate their financial, material, cognitive, and emotional resources and threaten their basic needs (Bemak and Chung,

2011; Brixi, 2009; Gunderson, 2010). But if teachers' work demands can be reduced then their physiological and psychological costs would be decreased, accordingly, teachers are then capable of achieving work goals and stimulating personal growth, learning and development (Bonanno and Galea, 2007; Haglung et al., 2007; Masten and Obradovic, 2008). Thus, teachers' needs (physical safety, self-worth, control/efficacy and a sense of social relatedness) have to be met before trying to enhance their resilience (Devitt, and Borodzicz, 2008; Malcom and Combes, 2007; Ndiku et al., 2011; Paine, 2009). When teachers' basic needs are covered, they are likely to be more resilient in the face of PDSs (Weems and Owerstreet, 2009:28-29).

Another equally important way to improve teachers' resilience is to acquire adequate knowledge and confidence during trauma-related or psychological training after the disaster so they can transfer the knowledge into actual practice (Bridges and Searle, 2011; Gunderson, 2010; Ho et al., 2012). An effective way in doing so is by putting knowledge into practice through mirroring real situations such as dealing with PDSs. A teacher resilience system is not only necessary to deal with job demands and to "get things done", but it is also important in self-actualisation (Casper, 2011:12). Gu and Day (2007:1314) suggest that "...the interaction between teachers' sense of efficacy, professional/personal identities and their management of the interaction between these and the professional, situated and personal scenarios which they experience in each professional life phase is a sophisticated process which contributes strongly to their resilience which is a necessary condition for their effectiveness".

On the contrary, a lack of resilience may have negative effects on teachers' well-being, that is, increase levels of stress (Bizumic et al., 2009; Sun et al., 2010; Kimiecik, 2010). Natural disasters cause significant psychological and social issues in the affected populations (Buchanan et al., 2010). These may be acute in the short-term, but they can also undermine the long-term social and emotional well-being of teachers (IASC, 2007). The priority is to decrease the level of stress and increase the level of resilience of teachers, and it requires coordinated action among all educational leaders, educators and

staff within educational sectors (Masten and Obradovic, 2008). However, there is a significant gap in the theory that has been developed regarding how to identify effective approaches and to clarify different interventions to mental health and well-being of the teachers.

Toland and Carrigan (2011:96) have analysed some factors which may influence teachers' well-being. They believe through a socio-ecological structure, school and social environment is very important in determining the level of social and emotional well-being of teachers. For instance, a safe and resilient school environment, warm relationships between leaders, colleagues and students actively fosters teachers' social capability and well-being (Malcom and Combes, 2007; McEntire, 2007). However, Tartakovsky (2009) believes that the levels of teachers' well-being are largely based on disaster-related stressful experience, with time, teachers learn to cope with these stressors, and their well-being level recovers accordingly. Some studies (Deci and Ryan, 2008; Kimiecik, 2010; Lucas and Diener, 2008) agree that, with time, people's well-being develops to be stronger showing higher levels than before.

Nevertheless, other studies (Rumsby, 2009; Skakon et al., 2010) believe an appropriate support network provides clarity about boundaries from teachers' work environment is the best means of restoring well-being. Some studies suggest that people who have experienced a traumatic event, have their well-being permanently damaged, and their mental health remains worse than pre-event (Ryff and Singer, 2008; Tartakovsky, 2009). A debate has begun, but an unarguable fact is that focusing on enhancing people's strengths and resiliencies is one of the most effective ways of helping them overcome a traumatic experience (Haslam et.al, 2011).

The last but most important approach emerges from models of improving resilience in social support systems amongst teachers' personal and professional factors (Margolin, 2010: 4; Gu and Day, 2007). Social support is a multidimensional construct in which four distinct types of support have been identified by Suldo et al. (2009:68), including

emotion, instrument, appraisal, and information. These supports can be seen as appropriate for various situations and needs. Knight et al. (2010) suggest that one way of equipping teachers to manage their own work related stress such as workload, poor school climate, lack of professional knowledge and skills and poor relationships with students or colleagues is to educate teachers about resilience. Their study involved 135 pre-service teachers and proposed a three-dimensional framework aligned with the resilience model for educating those teachers to cope with challenging situations during their teaching.

Resilience dimension one described as ‘a state’ which refers to a resilient person possessing emotional competence and social competence (Knight et al., 2010:3). Teachers’ resilient functioning can be embedded in a complex selection of interdependent relationships including the family, friends, colleagues, students and work environment (Gunderson, 2010; Goldstein, 2009; Haglund et al., 2007; Masten and Obradovic, 2008). If these relationships function positively, it can promote teachers’ resilience because there is a connection with fundamental social support systems (Masten and Obradovic 2008).

The social support systems of teachers are constructed through both personal and professional characteristics and beliefs (Gu and Day, 2007), and teachers’ work and lives have an interactive impact on each other and reflect on their commitment to endure the balance of work-life. A collaborative social support framework provides a sense of belonging and shared purpose that has been demonstrated to have a range of positive benefits for promoting teachers’ well-being (Bizumic et al., 2009:172). Those benefits include developing a systematic disaster plan for school communities (Yang, and Chai, 2010); creating a learning community for school teachers (Le Cornu, 2009) and building school members’ research information and organisation skills (Kaklauskas et al., 2009; Wei, 2008).

In dimension two, resilience as ‘a condition’ refers to the risk and protective factors associated with teacher professions. The risk factors discuss the work related stress and

the protective factors mean the ways teachers cope with their stress (Knight et al., 2010:3). A school is expected to be in charge through developing teachers' professional support systems, such as improving their knowledge, cognition, and self-regulation skills, and teachers need these supports to function effectively during their daily work (Hallinger and Heck, 2010; Kurland et al., 2010; Leithwood et al., 2008).

However, it is essential that school has to be resilient itself first and create a safe and stable working environment for school members (Brown and Yasukawa, 2010; Birkmann et al., 2008; Hipp et al., 2008). School's resilience can be indicated from many perspectives such as resumption of school function, development of constructive social support systems for school stakeholders, restoration of school culture and safety, and preparation for future school disaster intervention (Doherty, 2010; Longstaff and Yang, 2008; Norris et al., 2008).

Teachers expect school leaders to play the main role in the aftermath of a disaster (Brown, 2008). Trusting relationships between school leaders and teachers are found to be essential for teachers' resilience-building and a schools' effectiveness. Gu and Li (2013:298) surveyed 568 school teachers in Beijing about their sense of resilience and commitment in the context of persistent reforms in China's educational system and how those teachers cope with the challenging situations. They found that the teachers' resilience-building process is nested in a network of relations and is influenced positively or negatively by the quality of relationships in which their school environment is embedded. In other words, their research endorses the view that an open and well-structured school climate with trusting relationships between school members has an influential impact on promoting teachers' resilience.

The dimension three suggests that resilience can be practiced that teachers can be taught how to be more resilient and strengthened to cope with challenging situations. Similarly, Malcome (2007:30) reviewed six resilience strategy themes including increasing bonding between individuals and pro-social activity; set clear and consistent boundaries; teach life

skills (e.g. cooperation, healthy conflict resolution, resistance and assertiveness skills, communication skills, problem-solving and decision-making skills, and healthy stress management); providing caring support; set and communicate high and realistic expectations and providing opportunities for meaningful participation. She believes if educational systems have practised these strategies then they can provide a bridge for building resilience among school members.

Knight et al.'s (2010) study indicate that educating teachers about resilience had an affect on the teacher's self-efficacy in dealing with stressful situations, but it doesn't give the evidence that teachers engaged with the three dimensions model were more or less resilient as a result. However, this study claimed that teachers who were involved in the three resilience dimensions were able to identify their work related stress and were also able to share positive responses towards challenging situations.

2.7 Chapter summary

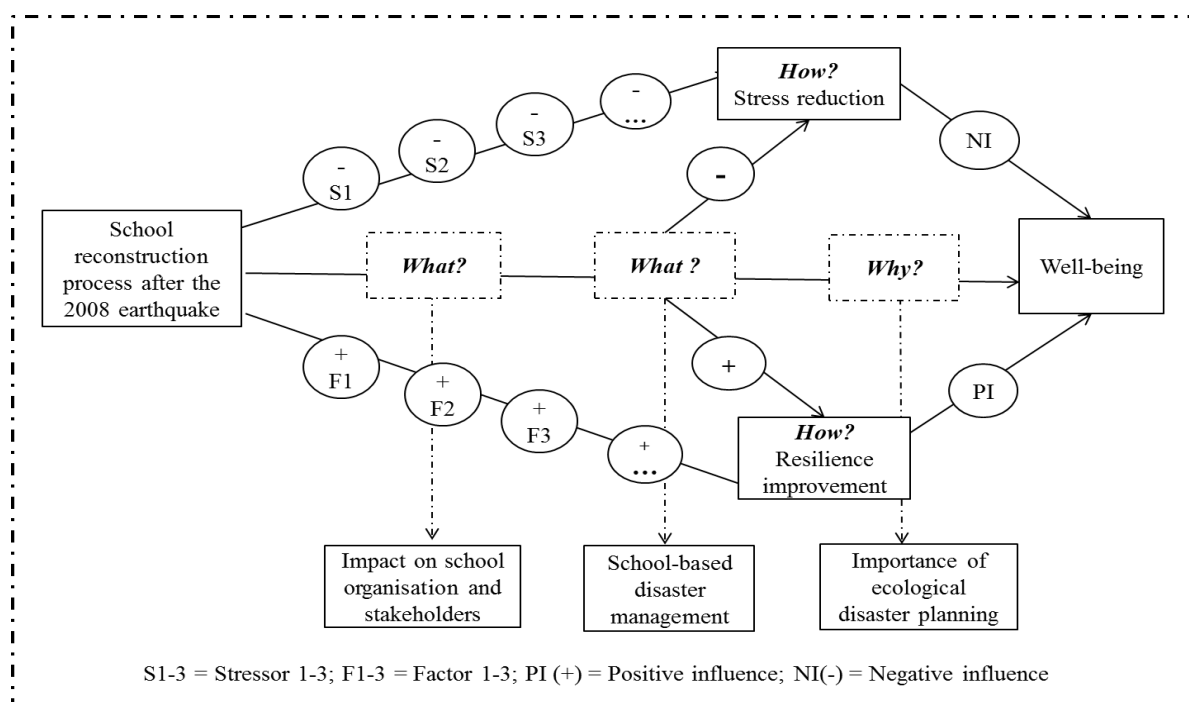
This chapter has interrogated the international disaster literature in an attempt to understand the nature of the school disaster coping strategies when a school is faced by a natural disaster and the capabilities the school teachers will need to possess if they are expected to be an aid for both school and children's recovery following a disaster. The impact of natural disasters on school organisations and their stakeholders can be identified from different perspectives and understood to have different dimensions, but this research only deploys those perspectives to explore the well-being of teachers related to the two prominent indicators (stress and resilience) in a post-disaster context.

The frameworks of this study address the issues of how school as an organisation responds to post-disaster scenarios and how these responses would be perceived by teachers rather than standard educational management practices. School reconstruction

scenarios after a disaster, present a major challenge to educational policy-makers and managers (Porter, 2010). Every disaster is different, and there are no set formulas for an effective response (Pepper et al., 2010). However, it is possible to identify general principles that have been found to reduce the damage following a natural disaster. Some of these strategies are explored in the above sections by examining ways in which they have been, or can be applied, in similar situations.

In light of the analysis of the literature review and the research objectives, a conceptual model was developed for studying a school based disaster reconstruction process (see Figure 2.3). The model suggests that teacher' well-being is the core issue needing to be addressed during a school post-disaster reorganisation process. The literature review emphasises that time and again concepts of planning, resilience and sustainability need to be revisited in order to reduce stress and challenges to the school renewal process after a disaster (*why is it important*). And finally, the connections between schools-based disaster management and development could be established by using socio-ecological frameworks (*how*).

Figure 2.3: Conceptual model for school post-disaster context



The conceptual model is presented through a detailed review of disaster response and management literatures relevant to an educational disaster context. The research attempts to speak for marginalised or disadvantaged stakeholders such as teachers affected by the earthquake, and explore means to involve them in a more effective school disaster recovery process. It is a relatively new model to address the effectiveness of school-based disaster management through the use of a teacher well-being assessment approach. Appraising teachers' well-being focuses on an empirical investigation of teachers' perceptions, challenges and experiences about the school response, coping and management through a post-disaster scenario. I demonstrate that the level of school teachers' well-being should be considered as an essential element in evaluating the effectiveness of a schools recovery and development following a natural disaster.

What has not been addressed in any detail in the literature is what exactly school post-disaster management structure should be in place to offer the best support for school teachers when disasters occur. This has emerged as a major strategic challenge for schools' reorganisational systems, and that requires urgent attention. The existing research can be split into three major themes: school organisational changes as a response within school district, teachers' personal and professional experiences and expectations about their schools' response to a PDS over the medium term.

To sum up the literature reviewed above, it can be understood that the influences upon school teachers' personal and professional experience following a disaster are diverse and complex. Multiple challenges are faced by school organisation and their people in PDSs and have been perceived as contributing to the stress experienced by them. Teacher resilience can be understood as one of the essential capabilities required to reduce their stress and increase their level of well-being in a PDS. The development of an appropriate methodological strategy to make sure that this is achieved will be discussed in the following Chapter (3).

Chapter Three Research Method

3.1 Research questions

This study aims to investigate the experiences of school teachers in a PDS in the Beichuan county of Sichuan province in China and from that develop a range of strategies for school post-disaster recovery processes that facilitate the impact of the earthquake on school key stakeholders (teachers, pupils and parents). More specifically, teachers' stress and resilience were determined are the major focus in order to identify what type of school-based disaster coping strategies assist or hinder school stakeholders' recovery. The analysis of both quantitative and qualitative results allows the following research questions to be answered.

The main research question is:

What processes influence the resilience and well-being of the school teachers in response to the consequences of school post disaster scenario (PDS) following the Sichuan-earthquake within the medium-term (2-4 years)?

In order to address this main research question of the study and especially the data-gathering process, the following key specific research questions are posed:

1. What have been the school organisational changes since the earthquake in 2008 and how have these contributed to the stress of school teachers?
2. How have teachers' personal experiences of the earthquake contributed to their stress?
3. What are pupils' PDS issues and how do these contribute to the stress of school teachers?
4. What are the perceived effects of parental absence on pupils' recovery processes, and on teachers' stress?

5. What do teachers think needs to be done to increase their resilience and decrease their levels of stress, in order to help them teach effectively within a PDS context?

The chapter discusses first the philosophical assumptions underlying this research, followed by the research design, establishing trustworthiness, ethical considerations, and sampling framework development. Finally, data collection and analysis procedures are clarified.

3.2 Philosophical assumption

There are a range of differing paradigms or belief systems in social science research. Generally speaking, the scientific paradigm (Positivism) and the interpretive paradigm (Anti-Positivism) are understood to be the two main paradigms (Cohen et al, 2009). Although a pragmatic approach in social science research has been adopted by a growing number of researchers who believe that a mixture of both qualitative and quantitative research can be effectively combined in the same research project (Neuman, 2006; Onwuegbuzie and Collins, 2007), the debate is still going on whether pragmatism represents another paradigm in social science research (Bryman, 2007).

Crotty (1998) describes each paradigm as being underpinned by different ontological and epistemological assumptions. Ontology is concerned with ‘what is’ the nature of existence, and with the structure of reality as it can be perceived to exist. Epistemology, in contrast, deals with “the nature of knowledge, its possibility, scope and general basis” (Swann and Pratt, 2007:34). It involves knowledge, therefore, and embodies a certain understanding of what is entailed in knowing, that is, “how we know what we know” (Hamlyn, 1995:242 cited in Crotty, 1998:8). For the purposes of this study, I adopted an interpretivist epistemological position attempting to understand subjective meaning and

also expected to consider issues from a constructionist perspective, in line with the epistemological position (Johnson and Onwuegbuzie, 2004).

A positivist paradigm is associated with quantitative studies. The purpose of this kind of study is to explain the nature of the relationship between variables through the analysis of variables in experiments or quasi-experiments (Crotty, 1998). Punch (2005) adds that the variables of findings from positivist research can be predicted because they can be controlled by researchers. In addition, large sample sizes are required in order to generate generalisable findings (Cohen et al., 2009). It allows the testing of hypotheses that are constructed prior to data collection (Dörnyei, 2007).

Denscombe (2007) cautions that researchers must maintain an objective stance in relation to the situation or phenomena, so that their subjective feelings, beliefs, assumptions or values should not influence their involvement with the research design, data collection and analysis. Positivism may fail to take account of a researcher's unique ability to precisely grasp individuals' experiences and feelings in particular situations (Gall and Borg, 2003; Johnson, 1994). Because findings from positivists' studies are likely to be superficial in relation to studies conducted in social settings, it can be difficult to understand the reality constructed and mediated by individuals who are actually engaged in the studies (Kothari, 2005).

The interpretive paradigm views the social world as subjective. It may be understood as a way of trying to grasp the different and subjective experiences of the individuals who create reality (Dörnyei, 2007). Johnson (1994:7) believes that "...human life is experienced and constructed from a subjective point of view, and that social research should seek to elicit the 'meaning' of events and phenomena...". Indeed, it focuses on subjective experiences of individuals in order to generate an understanding of the way in which the individual creates, modifies and interprets reality, as Swann and Pratt (2007) elucidate.

Interpretivists seek to understand and interpret the world in terms of its actors. It allows researchers to gain in-depth information (experiences and perceptions) from research participants (Verma and Mallick, 1999). For example, in this study, school PDS is an existing experience, where multiple realities may be perceived subjectively from each teacher's perspective. Thus, I would acquire active roles in the knowledge construction of this study in order to seek a constructed reality of understanding of school PDSs. In line with the interpretive paradigm, the conceptual questions of teachers' experience and feelings in PDSs can be understood through the eyes of their actors concerned. Therefore, the interpretive position can be useful in an effort to understand how teachers perceived school response, their stress and resilience in all its complexity in particular socio-cultural contexts.

The goal of pragmatism is to advocate for the use of mixed methods in research and focus on real life research problems and priorities (Bryman, 2007). It is "not to replace either quantitative or qualitative approaches but rather to draw from the strengths and minimize the weaknesses of both approaches in single research studies and across studies" (Johnson and Onwuegbuzie, 2004:14). Researchers mix qualitative and quantitative approaches in ways that make the most sense given their research questions, and integrate data analysis procedures and attempt "to open up inquiry to all possibilities while tying that search to practical ends" (Maxcy, 2003:86).

To answer the research questions of this study, I intend to explore a number of different approaches. I appreciate that any one approach may be more conducive in generating the kinds of data that would give genuine representation to teachers' stress and resilience level as they relate to the impact of the earthquake. However, I was more inclined to practise different strategies that would provide varying degrees of success in gaining access to different aspects of teachers' experiences and perceptions during school post-disaster recovery process. I recognise that if findings are supported across different approaches then greater confidence can be held in the singular conclusion; if the findings are not supported then I would get a better understanding and would modify

interpretations and conclusions accordingly. Onwuegbuzie and Leech (2004b) recommend that the intention of using different research methods is not only to aid in corroboration, but also to enlarge the researchers' understanding.

In this connection, a purely quantitative approach may not be feasible to lead to an understanding of in-depth information about teachers' feelings and experiences, and also it is difficult to predict the interaction between schools recovery and teachers' stress and resilience levels. Meanwhile exclusively qualitative research may be too time-consuming for appreciating such a complicated phenomenon. From both the practical and pragmatic points of view, mixed mode research stands out as an appropriate option. I elaborate in a discussion about research design in the next section.

3.3 Research design

Case studies are usually a good choice for the investigation of events that are based on real-life settings (Sharp, 2009), because they involve a systematic gathering of evidence in order to describe a specific situation, which may allow for a general principle to be discovered (Yin, 2009). It also provides the opportunity for the research to be studied in depth over a specified timescale (Cohen et al., 2009). In line with the aims of this study, exploring a real PDS within educational settings in Sichuan province of China allowed me to have a close engagement with victims who experienced the earthquake. I decided the appropriate approach for this study was to explore the perspective of multiple cases, and collect data from mixed sources for analysis, as described by Yin (2009).

A multiple cases-oriented approach is an intensive, inductively driven, study of teachers' experiences and perspectives with an eye toward configurations of similarities and differences (Creswell, 2007; Crotty, 1998; Swann and Pratt, 2007). Using multiple measurements over time, using a simultaneous, complementary, deductively driven,

variable-oriented component looks for broad patterns across a large number of teachers from five sample schools (Dörnyei, 2007) and enables the drawing of inferences based on these broad patterns (Cohen et al., 2009; Johnson and Onwuegbuzie, 2004; Kothari, 2005).

Case studies allow researchers to deal with a wide variety of evidence and to closely observe the events being studied (Stake, 1995; Yin, 2009). In this study, five cases with multiple samples have been chosen. Five (2 secondary and 3 primary schools) out of 83 schools represented the educational sectors in Beichuan region of China, which experienced most disaster damage per capita than anywhere during the Sichuan-earthquake (Chinese news, 2008 cited in Yang, 2010; Asian Development Bank (ADB) 2009: 24:4; Sun et al., 2010).

Denscombe (2007) argues that it is very difficult to generalise a phenomenon on the basis of a few cases involved that are drawn from a representative phenomenon. However, the research carried out here was not intended to produce findings that can be generated to the whole population of the province in question. However, “analytic generalisations” (Yin, 2009:38) might be possible.

“Analytic generalisation, in which a previous theory developed is used as a template with which to compare the empirical results of the case study...to support the same theory, replication may be claimed...”

The mixed-methods design for this research uses questionnaires and interviews as part of case study methodology. This gives the study a unique strength because it helps me gain an in-depth understanding of victim’s experiences and feelings. Two semi-structured interview schedules with some purposefully selected head teachers and teachers will explore those results in more depth through qualitative analysis. Before I conducted the interviews I used a survey of randomly selected participants from the five most severely affected schools in Beichuan County. This was essential as it provided a wide picture for me to shape my thinking about what was really going on after the Sichuan-earthquake.

The rationale for using this strategy was that the data sets “two different pictures that provide an overall composite assessment of the problem” (Creswell, 2007:214).

The participants’ views needed to be understood and the methodology accounted for “what”, “why” or “how” the PDSs continue affecting the well-being of teachers. This complicated situation requires multidimensional evidence in order to allow for a full understanding of teachers’ subjective and objective attitudes towards their experiences of the PDS. At the outset, I proposed forming several assumptions in order to identify whether there is a significant difference between teachers’ stressful experiences and resilience and whether different school conditions take account of their school disaster response as one particular dimension in their recovery. If there is, it would be possible to go further in creating a common theoretical framework that school teachers faced different post-disaster experiences in relation to how schools respond in a PDS.

Nevertheless, I was open to the possibility that different participants in differing circumstances perceived the impact of disasters in different ways. In doing so, I hoped to comprehend what Stake (1995:85) stated in referring to two kinds of generalisations; “naturalistic generalisations” (made privately by readers) and “propositional generalisations” (made publicly by researchers). He distinguishes that those researchers, by developing and combining different kinds of data and by careful documentation of case distinctiveness, would be amenable to generalisation. Not in the sense of “statistical generalisation”, but in constructing knowledge that may be transferable to or cast light on other situations which have not been studied formally. Meanwhile, readers can appraise the process of forming the “propositional” generalisations of the researchers alongside their own knowledge to make his/her own “naturalistic” generalisations. Baxter and Jack (2008) have a similar statement that the results of case study are generalisable to theoretical propositions, not to statistical populations and the researchers’ objective is to expand theories and not to undertake statistical generalisation.

Some researchers may argue that the case study approach is biased towards the credibility of findings because the single researcher is often choosing information by interviewing and observing (Creswell, 2005; Dörnyei, 2007; Punch, 2005). However, I argue that triangulation of different kinds of data sets strengthens the trustworthiness of the study (Cohen et al., 2009; Denzin and Lincoln, 2011). Detailed discussion about combining different data sets and triangulation will be discussed in section 3.5 (p: 89).

3.4 Design of the research project

The decision to make combined use of different kinds of approaches that included surveys and semi-structured interviews were of crucial importance. The research design consisted of five phases (see Table 3.1 below). The first phase was focus-group interviews, which were conducted in order to strengthen the validity of claims from the instrument (Punch, 2005) for phase two (Teacher Survey). The second phase was a survey piloted in one sample school with 101 school teachers. The purpose of piloting was to evaluate the internal reliability of the instrument before the actual study took place. The third phase involved the identification of areas where data collection would occur, followed by a piloting of two semi-structured interview schedules with teachers and head teachers. In the last phase, the finalised version of semi-structured interviews was carried out with the teachers and head teachers. The survey aimed to elicit levels of teacher stress and resilience; this phase explored ‘what’ and ‘why’ questions in relation to some of the complex patterns emerging from the quantitative survey.

Table 3.1: Research Chronology

Five phases	Date	Participants	Purpose of use
Focus group interviews	Jan.-April 2011	Head teachers, Teachers Educational leaders	Mapping the direction of this research
Pilot survey	Dec. 2011	Teachers	Testing instrument
Quantitative data collection	Dec.- Feb. 2012	Teachers	Gaining data to answer “what” questions
Pilot interviews	March. 2012	Head teachers Teachers	Testing instrument
Qualitative data collection	April. 2012 April-May 2013	Head teachers Teachers	Gaining data to answer “how” questions

According to the five phases, a detailed discussion of constructing the different instruments is demonstrated in following sections. How data was collected and analysed is discussed in a later section of this chapter.

3.4.1 Stage one: focus group interview

Concerning the baseline data across the spectrum of the impact of the earthquake on educational sectors, it is necessary that key subjects of, and participants in, the study have an input into instrument construction to authenticate the direction and content of the survey. I carried out focus group interviews with two local education leaders, one head teacher and four teachers/parents (some teachers provided information from the aspect of being parents) between January and April 2011 in Beichuan County of Sichuan Province. The focus group interviews were held in order to elicit “insider” perspectives and experiences of key issues consistent with the aims and objectives of the current study. Information gained from the focus group interviews alongside a substantial number of findings from international research helped refine the major variables and items of the teachers’ survey. A copy of the group interview memo (extract) can be found in Appendix 1 (p. 225).

3.4.2 Stage two: piloting the questionnaire

Responses gained from the group-focused interviews from the first-phase - scoping investigation helped formulate the major variables and items for a self-constructed teacher questionnaire for leading this pilot study. It is necessary to pilot the questionnaire to ensure that participants can understand each question in order to avoid receiving incomplete or wholly unanswered questionnaires (Denscomber, 2007). The most important object of leading this pilot study was for testing the internal reliability of the questionnaire. After this pilot practice, I decided the study would focus only on teachers' perceptions and experiences. Due to the time and resource restriction associated with doctoral studies and the accessibility failure to reach other key stakeholders (students and parents), it was pragmatic to choose teachers as the main participants of this study. A copy of the pilot questionnaire can be found in Appendix 2 (p.227).

3.4.3 Stage three: quantitative survey of teachers

In the third stage, I focused attention on the information obtained by questionnaire, with the purpose of analysing the findings to gain statistical evidence to support the theories put forward in this research project. The survey collected a range of descriptive data including participants' age, gender, teaching experiences, education level along with a great number of indicators related to school post-disaster responses, changes, teachers' stress, experiences and recovery after the earthquake. It was expected that those independent variables could have an impact on teachers' stress and resilience. On the other hand, analysis of dependent variables (measures of stress and resilience) could indicate key similarities and differences between teachers' experiences and perceptions within different schools (see Appendix 3, p.230).

3.4.4 Stage four: piloting semi-structured interviews

Before piloting the interview schedule, I gave it to two independent colleagues to examine and comment on it. Their comments were useful in modifying some of the questions before the pilot practice as well as the actual field-work took place. On my field trip in Beichuan Country on March 2012, I spent one week in the same school where the survey was piloted to pilot the interview schedule. The choice of this school was influenced by similar factors to those indicated in the section on questionnaire piloting.

The interview schedule was piloted with two head teachers (two males) and three teachers (two males and one female). These participants had all responded to the initial pilot questionnaires so they had a better understanding about the research. From the survey analysis, the three teacher interviewees represented the high, average and low level of stress and resilience in coping with PDSs. The pilot exercise was intended to check the clarity of the questions; the length of time taken to respond to the schedule; the extent to which the information provided could be kept confidential; and the measures taken to maintain their anonymity during the study (Yin, 2009). A number of minor changes were made in the schedule after the pilot exercise. A copy of the original interview schedules were obtained in detail in Appendix 4 (p.234).

3.4.5 Stage five: semi-structured interviews

This stage aimed to probe more fully some of the complexities of responses elicited from the quantitative survey, in particular, whether the survey elicited the perceived factors of school PDSs on teachers' recovery. Then stage five was designed to answer 'why' and 'how' questions regarding the factors affecting teachers' stress and resilience. For example, why some factors influenced teachers' stress level rather than others, and

whether there is a correlation between teachers' work-overload and their capabilities to cope.

Teachers' experiences and perspectives were focused in PDSs, it encountered complex situations that require multi-dimensional evidence in order to allow for an in-depth understanding of the subject's experiences. It also broadly explored personal experiences via a focus on the impact of school organisational changes on the recovery of teachers. If I attempt to understand how school organisation reacted and why which variations influence teachers' real-life after a disaster, it was important to understand the relative conditions of that lifecycle. The refined interview schedules are outlined in detail in Appendix 5 & 6 (pp. 236-238)

3.5 Trustworthiness

3.5.1 Reliability and validity

The basic types described in the literature are "internal and external validity", where internal validity is concerned with the accuracy of the information and how it matches reality (Bryman, 2007). In order to insure the internal validity of this study, I needed to carefully create research instruments. Leading questions that risk skewing responses are to be avoided and the statements worded in as definite and clear way as possible (Stake, 1995). Triangulation is considered to be a powerful way to ensure internal validity (Cohen et al., 2009).

A mixture of qualitative and quantitative approaches in the form of questionnaires and semi-structured interviews in this research should in theory allow for triangulation (Denzin and Lincoln, 2011). Cohen et al. (2009) state that this requires cross-checking, so as to test the validity of the findings from more than one perspective. The questions

within the questionnaire and the interview questions are designed to guide the participants through the key issues to allow “respondent triangulation”, whereby the same questions are asked of a number of different participants in order to allow cross-checking of information to establish a validity argument (Cohen et al., 2008).

However, Wagner (2012) argues the lack of any explicit philosophical stance about how those different methods might complement each other leads to the privileging of one over the other. It is not surprising that inconsistencies in data collection may appear. The use of mixed methods is aimed at granting access to different aspects or levels of teachers’ stress and resilience. If the different kinds of data collected here revealed perfect consistency in the light of some teachers facing more challenges than others in PDSs, that would contradict the purpose of using mixed methods (Creswell, 2005; Punch, 2005).

Therefore, what teachers indicated when they were asked to give a general opinion about the impact of the earthquake, and the influence of the school response cannot always match what they say from their subjective perspectives through face-to-face interviews (Denzin and Lincoln, 2011; Wagner, 2012). Consequently, triangulation cannot be used as a way of privileging one set of data over another (Punch, 2005), but it may be used as a way of reducing the ambiguity of interpretations and the confirmation of the collected data (Simmons, 2008).

External validity is concerned to “generalizability of the research findings to the wider population, cases or situations” (Cohen et al., 2009: 135-137). As discussed in Research Design section 3.3 (p. 85) of this chapter, I had no intention of arriving at a broad generalisation of phenomena in the widest sense in this mixed-methods study. I hoped the results of this study would be comparable and transferable to another situation under the same research context. Cohen et al. (2009:137) claims that the transferability of findings cannot be indicated by the researchers, but he suggests that in the interpretivist paradigm, the transferability of a study normally depends on the degree of similarity between one

situation and another, new, situation. This research concerned the impact of a natural disaster in educational sectors in Sichuan province of China. It was a common social phenomenon so it was hoped that with intelligent use of the multiple case study approach and provision of sufficient and in-depth descriptions readers can decide the extent to which findings are transferrable to other PDSs following a natural disaster.

Pilot studies are highly recommended for testing research instruments to see whether there will be any possibility that meaningful results appear (Cohen et al., 2009; Burton et al., 2008). It is good practice to pre-test the questionnaires and interview schedules with a small number of people in order to ensure that participants will be able to understand the questions, to determine the average time for completion, and to provide some initial information upon which preparation for data recording and analysis can be made (Attride-Stirling, 2001; Flick, 2009). What's more, a piloting study will facilitate identification of elements of the questionnaire that should be removed, and of others to be added (Anderson and Arsenault, 1998; Gall and Borg, 2003). This process helps to refine the final version of the questionnaire and the interview schedule for later investigation.

In light of these requirements, I carried out a pilot study with 101 teachers and 5 interviewees. Questionnaire analysis of this pilot study was calculated by using SPSS v.18. Semi-structured interviews of the pilot study were discussed in Section 3.4 (stage four: piloting semi-structured interviews) and the analysis of the piloting data was attached in Appendix 7 (p. 260). The scale reliability used Cronbach's alpha which is a common accepted measure of internal reliability in social science research (Brown, 2001). The average of possible coefficient alpha between negative infinity and 1, with 0.6 considered acceptable for exploratory purposes, 0.7 considered adequate for confirmatory purposes, and 0.8 considered good for confirmatory purposes (Brown, 2001; Dörnyei, 2007). All the measures of the instrument were found to be highly reliable with Cronbach alphas (see Table 3.2 below). Detailed descriptive information of the scale reliability of

the pilot study attached in Appendix 7 (p. 260). In light of the pilot experience, each of the item groups demonstrated good internal reliability.

Table 3.2: Internal reliability analysis of the pilot study

Scale name	Subscale name	Factors	Variable name	Cronbach's Alpha	Item N
Stress	School organisation changes (Q1-Q14)	SMC	Q4,Q5,Q11-Q13	.773	5
		TMC	Q1- Q3,Q6,Q9	.769	5
		WL	Q7,Q8,Q10,Q14	.616	4
	Pupils' PDS issues		Q20 ST- Q25 ST	.840	6
			Q20 MT- Q25 MT	.929	6
Resilience			Q27 - Q35	.927	9
Well-being	Life and job satisfaction(LJS)		Q36 - Q38, Q42	.820	4
	Positive emotions (PEs)		Q39 - Q41;Q43 - Q45	.866	6
	Negative emotions (NEs)		Q46 - Q51	.865	6

(Note: SMC = School Management Change; TMC = Teaching Methods Change; WL= Work Load; ST = Short Term; MT = Medium Term)

The criterion of reliability examines “whether the instruments are neutral in their effect and would have the same result when used on other occasions or applied to the same subjects ”. For this reason, the questions asked are made as clear as possible in order that they have the same meaning for all the participants. I also consulted with colleagues about the design of the two intended instruments (questionnaire and semi-structured interview) in detail which is equally important for the construct validity of the research (Anderson and Arsenault, 1998).

I was in an “outsider” position in the data collection process. In order to ensure openness and to help develop a trusting relationship between the participants and the researcher, I provided a short presentation about my experiences as a volunteer involved in the 2008 earthquake to all participants. This was to allow the participants to have a greater understanding of my background and my motivations and purposes in carrying out this research. It helped to increase the reliability of research-relevant information. In addition, I tried to obtain data through face-to-face conversations which enhanced the response rate and quality.

3.5.2 Sampling

Schools in Beichuan face significant change. A sustainable and innovative school climate is emphasised by the Chinese Ministry of Education which leads to extensive challenges from school leadership, administrators and teachers to students and parents on a daily basis (Wei, 2008; Yang and Chai, 2010). Schools in this area have been almost marginalised, but after suddenly becoming the focus of society it is not surprising that school personnel felt overwhelmed (Zhao et al., 2010).

In order to select representable sample schools, a checklist of destroyed schools was developed based on a range of criteria relating to the purpose of the research. The criteria include the damage level of the school, population of the school, education and income of the school teachers, death or injury of the school staff, students and their families. The last criterion but most important was the accessibility of the school head teachers because they are judged to have an essential impact on the school reconstruction process and the effectiveness of school key stakeholders' recovery.

Five severely damaged schools were chosen because of the awareness of avoiding potential '*confounding variables*' (Dörnyei, 2007; Field, 2010) from different levels of damaged schools (e.g. severe or moderately damaged schools). In other words, it was on the basis of those schools located within Beichuan County which were completely destroyed by the earthquake. Permission to survey these participants was given to me by the local Chinese Ministry of Education. Information from the initial investigation has identified that there were approximately 300 staff distributed in chosen case study schools.

Choosing the sample involved a purposive sampling approach. Purposive sampling meant selecting particular cases or units "based on a specific purpose rather than randomly" (Cohen et al., 2009:115). Such sampling can be an essential strategy in accessing a body of participants who are relevant to the research questions (Dörnyei,

2007). In other words, it would help me to identify those who have in-depth knowledge about particular issues in PDSs. This involved making appropriate judgements about the selection of participants based on the conceptual framework and, to a lesser extent, practical considerations, rather than on the criterion of randomness (Punch, 2005).

The total teacher population is estimated to be between 2,490 and 6,308 in the 2010-2012 school year in Beichuan County. This assumption was based on the distribution of the five sampled school populations (see Chapter 4, p.110). I contacted the head teachers by email and to follow up with an arranged initial meeting, and to make contact with teachers via their head teachers. This would allow me to talk with participants in person in order to clarify what both parties can expect from their participation. The criteria of participants for the teacher questionnaire were as follows: school teachers who have experienced the 2008-earthquake and have been involved in the educational reconstruction process. It would also be worthwhile to look at participants' gender, age, professional rank, position and the teaching subjects because I wanted to see whether these factors have an impact on teachers' recovery. Based on the analysis of teacher questionnaires, a sampling framework for interviews was developed.

Four teachers and one head teacher from each school were selected on the basis of those who volunteered to provide their contact information and who had dealt with one or two traumatic "cases" of their students or colleagues during the school recovery process. In addition, head teachers were asked to identify teacher interviewees who were at risk of suffering traumatic symptoms or coping with traumatised students and also those who coped well or were more "resilient" after the earthquake. The number of participants drew equally from the five sample schools which strengthens the trustworthiness of this study.

3.5.3 Ethical considerations

In this research, the rights and the confidentiality of the participants from the three primary schools and two secondary schools are one of the main concerns. To ensure the confidentiality of the participants, a written permission from the University of Leicester, an Enhanced Criminal Records (CRB) check, and formal permission from the head teachers in Beichuan County, China were obtained before undertaking the study. There are some issues relating to cultures and identities and the challenges faced by affected teachers during the school recovery process which are sensitive ones, such as their personal emotional problems and their perceptions about the response of school leaders. Therefore, privacy and anonymity of individual data was assured, one of the most important ethical consideration (Cohen et al., 2009).

Potential participants were assured that the information requested was used for the purposes of this research only. Although some participants amongst those that may be subjects here were considered to be adult learners, they were contacted by email first and asked if they would like to complete a questionnaire. In the case of questionnaires, anonymity was assured and all participants had the opportunity to refuse to complete the questionnaire, with no pressure put on them to do so. All the participants were informed of the research schedule ahead of the process, and of what would be done with the information they provided. A letter was attached to the questionnaire informing the participants of how the research would be conducted and what subjects would be focused on. The results of this research will be cautiously protected for the purpose of avoiding inappropriate access to the data, only I can access the data.

3.6 Data collection

3.6.1 Administration of the questionnaire

One of the research tools chosen for this study was a questionnaire. The questionnaire was used because I sought to collect standardised responses from a reasonably large number of participants (Denscombe, 2003). It allowed for the gathering of quantitative estimations of the impact of the earthquake, measured according to the criteria of teachers' coping responses, and of the presence or absence of school organisational factors that are thought to help or hinder teachers coping following the earthquake. In terms of research administration, the questionnaire process provides a relatively easy method of gathering data (Yin, 2009), and it also allows for the fleshing out of qualitative data (Punch, 2005). The rank order type questions were designed with the purpose of answering the main research questions (see Table 3.3 below), which aimed to screen what variations arise from school organisational changes which affected teachers' stress and resilience levels in PDSs.

Table 3.3: Cross-checking Research questions and Questionnaire

Research questions	Sub-scales	Questions of questionnaire
RQ1	Sub-scale 1: Stressful experience	Q1- Q14
	Sub-scale 2: School organizational changes	Q15.1-Q15.7
RQ2	Sub-scale 4: Teachers' capability	Q17.1-Q17.6
	Sub-scale 8: Teachers' personal experience	Q21.1-Q21.8
	Sub-scale 9: Psychological response to PDS	Q22-Q46
RQ3	Sub-scale 6: Students' issues	Q19.1-19.8
RQ4	Sub-scale 7: Coping with students' issues	Q20.1-Q20.6
RQ5	Sub-scale 3: School support	Q16.1-16.6
	Sub-scale 5: General factors and supports	Q18.1-Q18.9

I decided upon using the five-point Likert-type scale questionnaire for data collection. According to Dörnyei (2007), a Likert-type scale uses fixed choice response formats and is designed to measure attitudes or opinions and concerns the questions within the

questionnaire that were closed-ended items, which were designed to consist of a characteristic statement and participants were asked to indicate the extent to which they “strongly agree” = 5 to “strongly disagree” = 1 (Dörnyei, 2007:105). I found this type of questionnaire is relatively easy to be constructed by a single researcher. The data can be gained relatively easily and can be reliably coded and entered into a computer database for later statistical analysis procedures (Cohen et al., 2009).

106 rank order type questions were composed for the questionnaire which was developed on the basis of the findings from a pilot study aligned with the outcomes from a review of international literature. Some questionnaires were delivered through a face-to-face data collecting technique, and some of them were distributed by the head teachers through a routine teachers’ meeting. There were about 200 staff in the chosen schools and I recognised that a response rate greater than > 70% would be considered appropriate (Cohen et al., 2009).

The questionnaire was composed of three parts which contained 56 main structured questions and 50 sub-questions as clarified earlier these questions were developed on the basis of the findings from the group interviews and the pilot study aligned with the outcomes from a review of international literature. The first part concerned teachers’ perceptions about school organisational changes as a response during the PDSs. Each question was an indicator which was designed to discover teachers’ perceptions about how schools, staff, students and parents respond to a PDS. The second part was concerned with teacher self-evaluation in which the level of teachers’ positive and negative emotions, life and job satisfaction, and resilience. The third part was concerned with personal information such as gender, age, teacher certification, degree, educational experience, teaching level and national culture of the participants, it laid out a total of 10 questions devoted to the collection of the subjects’ demographic data.

3.6.2 Administration of interview schedule

Questionnaires are a tool that is seemingly structured and easy to analyse but they may also have restricted the answers of the participants. Taking this into account, follow-up interview schedules were considered in light of the data collection of the questionnaire. There are several advantages to the use of an interview process (Yin, 2009). Firstly, it allows a researcher to cross-check and gain more detailed information from participants in order to confirm the correctness of the information provided by participants in the questionnaire (Punch, 2005; Thomas, 2009).

Secondly, it permits the participants to express how they experienced the major events without having to limit their reports to a number of a priori categories (Johnson and Onwuegbuzie, 2004), which allows participants to elaborate on “stories” or “cases” of the experience they were describing (Yin, 2009). Thirdly, the researchers are allowed to address some important issues raised from participants that they had not previously predicted (Neuman, 2006). Finally, the interview process (face-to-face) has been seen to be an effective tool in terms of securing the quality of response (Flick, 2007; 2009).

I found semi-structured interviews would be suitable for my “case” in light of what Thomas (2009) clarifies this type of interviews require the researchers to have a good overview of the issue they are exploring and are able to develop a list of sophisticated questions which they want to cover in advance. Any “ready-made response categories that would limit the depth and breadth of the respondents’ story” should be avoided for semi-structured interviews (Dörnyei, 2007:136). The foci of the interview schedules that I was looking to achieve were entirely guided by the outcomes that emerged from the questionnaire to specify the impact of the earthquake on educational sectors. In Table 3.4 below, I demonstrate how each head teacher interview theme/questions and teachers interview theme/questions link/s to the main research questions accordingly.

Table 3.4: Cross-checking Research questions and Interview schedules

Research question	Head teacher theme (HT) Teacher theme (TT)	Interview question
RQ1	HT1: head teachers' views of school issues during PDSs	Q1- Q4
	TT1: teachers' views of school disaster response	Q2.2;Q4-Q6
RQ2	HT2: head teachers' views of teachers' needs and response	Q5-Q6
	TT2: teachers' stressful experience	Q1
RQ3	HT3: head teachers' views of students' issues	Q7-Q8
	TT3: teachers' views of students' response	Q2.1
RQ4	HT4: head teachers views of parental absence	Q9-Q10
	TT4: teachers' views of parental support	Q3
RQ5	HT5: head teachers' views of school disaster management	Q11-Q12
	TT5: teachers' sense of resilience	Q7- Q9

There was a range of stressors affecting teachers' recovery specified in the survey but I needed a substantial amount of information to elucidate how teachers, students and parents coped with these stressors. Teacher participants were asked to interpret their experiences of and feelings about working in PDSs. In this way, they recalled their understanding on the key issues and referred to their own experiences. They had to describe the issues from their own perspective. To ensure I captured school leadership responses in ways that did not adversely affect the recovery of both teachers and students, I decided to conduct two kinds of semi-structured interview schedules:

The head teacher interview schedule

12 main semi-structured questions and 6 sub- questions along with several probes were contained in this schedule for interviewing head teachers (Appendix 5, p.257). I expected head teachers' narratives could reliably elicit school leadership reaction during PDSs and how those reactions interrelated with teachers' stress and resilience. The data gained from this schedule were categorised into five themes in relation to answering the five research questions accordingly.

The teacher interview schedule

9 semi-structured questions with several probes comprised the teachers' interview schedule (Appendix 6, p. 238). Similarly, the teacher interview schedule was consistent with the interests of collecting richer qualitative information in support of quantitative results. Five themes were identified from the data of teacher interviews in order to respond to the "how" inquiries within the research questions.

The interview data was collected, the next step was to analyse it. I now turn to discuss about the analysis of both the quantitative and qualitative data.

3.7 Data analysis

3.7.1 Quantitative data analysis

Statistical tests used in facilitating the quantitative analysis of this study including Factor analysis, Shapiro-Wilk test, Mann-Whitney and Kruskal-Wallis. The reason for employing these statistical tests is discussed in detail in following sections. Quantitative data was analysed using the SPSS v.20 software package. This statistical package is most commonly used for novice researchers, to perform mathematical analyses to convert raw data into meaningful numerical or graphic descriptions (Creswell, 2005; Neuman, 2006; Robson, 2002), to assist in the data analysis in social sciences (Dörnyei, 2007:198).

To give each question its own identifier they were sorted into a logical order, using a clear 'coding procedure' has to be made as the first step in raw data processing (Dörnyei, 2007). After converting the respondents' responses to numbers, I recognised each code should be meaningful and clear to me and the software package in order to facilitate a complex process of statistical analysis. I made annotations with the number for each

question from the SPSS spreadsheets to produce the required analysis. For example, gender data was annotated 'sex' and coded 'male'=1 and 'female' = 2.

During the procedure of analysis, I needed to make sure the number of variables could be reduced into a manageable size recommended by Punch (2005) and Thomas (2009). As mentioned in the data collection section 3.6.1 (p. 99), 9 sub-scales contained 106 items in this questionnaire and each scale enclosed multiple - items that measured the same underlying variable. To effectively manipulate the data "...the parallel items need to be summed up in 'multi-item scales'... this process should involve creating fewer but broader variables that carry almost as much information as the original variables" (Dörnyei, 2007: 206). A factor analysis procedure is most commonly used for this purpose and it suggests that those items put together should behave in a homogeneous manner. That is, each item on a multi-item scale should correlate with the other items and with the total scale score, which has been referred to as Likert's criterion of "internal consistency" (ibid).

The Shapiro-Wilk test was used to test the normality of the data that was collected for each question. This test suggested that the data was not normally distributed, thus a nonparametric test equivalent of the T-test was considered to be appropriate for analysing this kind of data set (Field, 2010: 540). In order to meet the purpose of answering each research question, two nonparametric tests (Mann-Whitney and Kruskal-Wallis) were performed for the quantitative data analysis. The method of analysis used for each research question is discussed below separately.

One of the aims of gaining quantitative data was to find out whether there is a significant difference between the responses from primary and secondary school teachers (or each school) regarding their stressful experience, resilience, positive and negative emotions. In order then to compare the different variables, there are descriptive and inferential statistics analyses involved in the analysis process. It is essential to explore both these principal areas in statistical analysis (Punch, 2005).

To describe the respondents' answers regarding the scale being measured, I can observe the outcomes from descriptive statistics (e.g. mean, median, standard deviation, minimum and maximum values) and it provides a very straightforward report. This analysis of the survey data is based on the frequency of responses as Neuman (2006: 347) recognises that these measures represent "a type of simple statistics used by researchers to describe basic patterns in the data". However, if hypothesise statistically significant differences between respondents based on the independent variable of primary/secondary school necessitated the use of inferential statistical procedures.

In order to ascertain what school organisational changes contributed to teachers' stress in PDS (RQ1), data from the participants' responses to questions regarding their perceptions of school changes were measured by the percentage of total participants' responses to questions from the sub-scale 1&2: "stressful experience related to school organisational changes". Descriptive statistics (number-size, mean, median and SD) were used in order to find out what factors the participants perceived to influence teachers' stress during the school changing process in PDSs. The Mann-Whitney (equivalent of the T- test) was used in order to analyse whether statistical differences exist between responses from primary and secondary schools.

Descriptive statistics were used in order to ascertain whether data from the participants' responses to questions regarding teachers' personal issues contributed to their stress in PDS (RQ2). Similarly, the Mann-Whitney test was performed in order to analyse whether statistical differences exist between responses from the sub-scale 4, 8, 9 and the demographic questions of gender, age, degree, years of teaching experiences and national culture.

The third research question (RQ3) considered school teachers' perceptions of pupils' PDS issues contributing to their stress. Descriptive data was provided by sub-scale 6: "pupils' PDS issues contributed to teachers' stress". The Mann-Whitney test was used in

order to analyse whether statistical differences exist between responses from primary and secondary students' issues.

In order to address RQ4, data from sub-scale 7: "parental absence contributed to teacher's stress" was used. Descriptive statistics were used in order to find out what factors the participants perceived to influence their' stress regarding the parental absence issues in PDSs. The final research question (RQ5) considered school post-disaster coping strategies in support of teachers' recovery in PDS. Data collected from sub-scale 3&5: "school support" and "general factor and support" were measured to determine the capability of school post-disaster management regarding school teachers' needs and supports. In order to find out which of five schools have a better post-disaster support system for school teachers, the analysis was conducted through the use of Kruskal-Wallis Test (equivalent to the one-way ANOVA). The Kruskal-Wallis Test ($p = .05$) is an extension of the Mann-Whitney test to allow the comparison of more than two independent groups (Field, 2010: 540).

3.7.2 Qualitative data analysis

The interview data was recorded, which enabled me to obtain a complete of conversations with the interviewees. Interviews were transcribed verbatim from the tapes, but the interviewees' personal information such as names, dates and working experience were substituted with practical codes to ensure confidentiality (Flick, 2009: 318-319). The interview transcriptions analysed thematically (Holliday, 2002:103-109; 115; 184-185) as Attride-Stirling (2001:386) suggests that in order to derive meaningful results from a substantial and disorganised initial data, the material must be analysed in a methodical manner. The techniques of identifying themes and patterns embedded in the qualitative data have been discussed widely by many researchers (Burton et al., 2008; Richards, 2003; Robson, 2002; Punch, 2005; Miles and Huberman, 1994).

Three activities (data reduction, data display and data conclusion) were introduced by Miles and Huberman (1994:10), it is useful to organise a great chunk of data. The first step involves selecting, focusing, simplifying, abstracting and transforming the data that appears in the transcription. Once data is condensed, it is displayed under advance organised themes accordingly. The final step is to detect any patterns and common themes that emerge from data, to determine any deviations and interrelationships that allow comparison and contrast action taking.

Transcription was done in the Chinese language initially. Selected quotes for this study were translated into English by myself but cross-checked by a professional translator. The presentation of the data analysis was firstly raw data coming from the interview transcriptions in a descriptive form; afterwards, the data was divided into categories and discussed in order to support the relevant findings of the questionnaire and the research questions (Thomas, 2009). The summaries and key responses from each interviewee were then classified thematically on the basis of headings from the literature, and also regrouped under themes that emerged from this process.

Originally, selected textual items were imported in Nivivo 10, a software package for qualitative analysis, under coded headings which could be printed as sets of theme-related raw data. However, this process was a time-consuming distraction rather than an aid as it requires a great amount of attention relative to the technological approach. This package finally was abandoned, and colour-pens were used to pick up the main themes from the interview transcripts. Repeated or similar views presented by participants integrated, to ensure a richer analysis of the views expressed (Burton et al., 2008).

After all the data had been coded and reduced, the items were coded into different themes in order to make for an easy their connection with the questionnaire and the research questions, and to incorporate any meaningful responses from the transcripts into each theme. The codes from head teachers' interview transcriptions were put into five themes.

These themes were linked to the sub-scales of the quantitative data in order to make a comparison and contrast with both quantitative and qualitative data sets. The codes from teachers' interview transcriptions were organised (see Table 3.4, p.102) and followed the same purpose of relating to quantitative scales and the main research questions.

In the next chapter I report findings from the questionnaire and semi-structured interviews respectively.

Chapter Four: Research Findings

4.1 Introduction

This research adopted both quantitative and qualitative methods to explore the dynamics of school post-disaster situations (PDSs) which influenced teachers' well-being after the 2008 earthquake in China. In Table 4.1, below, the survey and interview response rate are displayed. After piloting and modifying the questionnaire and the interview schedule, the main study was distributed to five target schools of 241 teachers (K-stage 1-3) during April and May 2012. 228 questionnaires were sent off and 206 questionnaires were returned, 10 of which were incomplete and thus will be disregarded in the analysis. The distribution rate was 83% and the actual response rate was 90%. The semi-structured interview schedule was applied to five head teachers and twenty teachers (Year1-9).

Table 4.1: The questionnaire and the interview response rates

Sample schools		N-size	Questionnaire Sent (n)	Return N-size	Incomplete N-size	Distribution & Response rate		Interview H (n)	Interview T (n)
PA		74	70	65	3	85%	92%	1	4
PB		30	30	27	2	83%	90%	1	4
PC		31	28	25	1	77%	89%	1	4
SA		30	30	29	-	96%	96%	1	4
SB		76	70	60	4	73%	85%	1	4
Total	PS	135	128	117	6			4	12
	SS	106	100	89	4			1	8
		241	228	206	10	83%	90%	5	20

*(PA – C = Primary school A- C; SA- B = Secondary school A - B; H = Head teacher; T = Teacher; 85% is the actual response rate from PA; 92% is the questionnaire return rate from PA.

4.1.1 Characteristics of the five schools

The five schools were located in Beichuan County in the northwest part of Sichuan, Southern China. This area was heavily damaged by the earthquake and had issues of family breakdown, unemployment, redevelopment and interpersonal conflicts. 83 educational institutions were fully or partially destroyed including the five sample schools of this study, and all the schools in this area were rebuilt. The names of the schools are fictitious in order to respect their confidentiality. It can be seen from Table 4.2, that the distribution rate of the five schools is unbalanced. SA has taken the highest student population, but the staff number is one of the lowest sizes (n=30).

Table 4.2: Characteristics of the five sample schools

Sample schools	Staff N-size	Student N-size	Staff/student ratio
PA	74	1800	24.3
PB	30	1010	33.6
PC	31	1100	35.4
SA	30	2000	66.6
SB	76	1172	15.4

PA - C = Primary school A- C; SA - B = Secondary school A - B

4.1.2 Demographic information of the questionnaires

Descriptive statistics for participants in this study are detailed in Table 4.3, below. There were 71 male (36.2%), 121 female respondents (61.7%) that showed this information respectively. 9 participants stated their position as “Below Junior”, 98 teachers (50%) have achieved a “Middle position”, 63 teachers (32.1%) occupy a “junior position” and 21 teachers (10.7%) hold “senior positions” in the sample schools. Regarding qualifications, 105 teachers (53.6%) have received a “Bachelor” degree and 87 teachers (44.4%) hold qualifications “Below Bachelor”. None of the teacher participants has a “Master” or “Above Master” degree.

The below 30 age group has the highest frequency while the 30--39 comes next. The lowest frequency group was the oldest age group (>50). The range of years of teaching experience of the participants varies quite significantly. The highest frequency groups were more than 20 and fewer than 5 years' experience (30.1% and 27.6% respectively). Participants with 10-14, 5- 9 and 15-19 years' experience made up 16.3%, 12.2% and 10.7% of the sample respectively. The majority of the respondents 60.2% (n = 118) were teaching "Major subjects". There were 117 participants teaching K-stage 1-3 and K-stage 4-6 of students who are aged 6-12 years old.

For the range of national culture, 71.4% of the participants come from Han culture, the rest of participants come from Qiang culture. Consequently, the data analysis of this study should take the local Han culture into account, but do not discount Qiang cultural influence in Beichuan people. The Han Culture is the largest ethnic group in China's population (92%), and Qiang Culture is one of the other 55 ethnic groups. There are more than 300, 000 Qiang people lived across Beichuan Qiang Autonomous County in Sichuan Province. As a result of the earthquake, quite a large number of Qiang people died and were severely affected during the 2008 earthquake (Xu, 2011:80).

Table 4.3: Demographic information of the survey participants (N = 196)

Teachers	Category	N-size	Percent (%)	Valid Percent (%)	Missing
Gender	Male	71	36.2	37.0	4
	Female	121	61.7	63.0	
Position	Below Junior	9	4.6	4.7	5
	Junior	63	32.1	33.0	
	Middle	98	50.0	51.3	
	Senior	21	10.7	11.0	
	Above Senior	-	-	-	
Degree	Below Bachelor	87	44.4	45.3	4
	Bachelor	105	53.6	54.7	
	Master	-	-	-	
	Above Master	-	-	-	
Age	<30	74	37.8	37.8	-
	30-39	64	32.7	32.7	
	40-49	38	19.4	19.4	
	>50	20	10.2	10.2	
Teaching experience	<5	54	27.6	28.4	6
	5-9	24	12.2	12.6	
	10-14	32	16.3	16.8	
	15-19	21	10.7	11.1	
	>20	59	30.1	31.1	
Teaching subject	Major subjects**	118	60.2	86.1	59
	Other subjects*	19	9.7	13.9	
Teaching level by year	K-stage 1-3	32	16.3	21.8	49
	K-stage 4-6	37	18.9	25.2	
	K-stage 7-9	78	39.8	53.1	
National culture	Han	140	71.4	71.8	1
	Qang	55	28.1	28.2	

** Chinese Literature, Math and English; * Physics, Chemistry, History and Geography etc.

There are two percentage columns presented in Table 4.2 above. The first column takes the number of respondents as a percentage of the n-size (196) - including non-respondents, while “valid percent” expresses the number responding as a percentage of those who responded. For example, there are 4 participants who did not state their gender, so the “valid percent” would be 37.0% of the male and 63.0% of the female answered this question.

4.1.3 Characteristics of the interviews

Of the five head teachers, three were male and the other two were female. All of them were serving Chinese government schools. One of the head teachers from secondary school A has held the position as a school leader for 10 years. The shortest leadership experience reported was 2 years by a head teacher who comes from secondary school B. There are 12 female (60%) and 8 male teacher participants (40%). The majority of teachers have taught for 10 - 15 years (70%) and 25% of teachers have less than 5 years' experience. All teachers have interacted with one or more traumatised students in his/her classroom after the earthquake.

Each interview quotation was indicated with a code, so that the response of the participants could be distinguished and categorised. The names of the participants are fictitious in order to respect their confidentiality and anonymity. First of all, the number of 01-05 was applied to specify each head teacher participant and the 01-04 was used to indicate each teacher participant from each school. The gender variance was indicated by 'M' for male and 'F' for female. 'H' and 'T' implied head teachers and teachers. Finally, as mentioned before the five sample schools were stated by "PA, PB, PC, SA and SB".

To combine the codes, for instance, the code for the first male head teacher from secondary school A would be 'SAH_01M'; the first female teacher from primary school A would be 'PAT_01F' and the last male teacher from the same school (PA) would be 'PAT_04M'. A detailed coding system is presented in table 4.4 below.

Table 4.4: Characteristics of the interviewees (N = 25)

Sampling	N-size	Gender	Codes	Year of teaching
Secondary school A	Head teacher 1	Male	SAH_01M	10
	Teacher 1	Male	SAT_01M	10
	Teacher 2	Male	SAT_02M	10
	Teacher 3	Female	SAT_03F	12
	Teacher 4	Male	SAT_04M	11
Secondary school B	Head teacher 2	Male	SBH_02M	2
	Teacher 1	Female	SBT_01F	10
	Teacher 2	Male	SBT_02M	15
	Teacher 3	Female	SBT_03F	12
	Teacher 4	Male	SBT_04M	12
Primary school A	Head teacher 3	Female	PAH_03F	5
	Teacher 1	Female	PAT_01F	10
	Teacher 2	Female	PAT_02F	10
	Teacher 3	Male	PAT_03M	10
	Teacher 4	Male	PAT_04M	10
Primary school B	Head teacher 4	Male	PBH_04M	5
	Teacher 1	Female	PBT_01F	11
	Teacher 2	Female	PBT_02F	5
	Teacher 3	Male	PBT_03M	5
	Teacher 4	Female	PBT_04F	5
Primary school C	Head teacher 5	Female	PCH_05F	8
	Teacher 1	Female	PCT_01F	5
	Teacher 2	Female	PCT_02F	5
	Teacher 3	Female	PCT_03F	10
	Teacher 4	Female	PCT_04F	10

4.2 Analysing quantitative findings

4.2.1 Scale reliability and Factor Analysis

The quantitative findings were clustered into nine sub-scales which were based on the internal reliability measure and the principal components analysis (PCA). The reliability of the nine sub-scales was calculated using Cronbach's alpha. PCA was used as an

exploratory approach to the data that allows researchers to gather information about relationships among variables and the hypothesised relationship between those variables and the underlying traits (Field, 2010).

As shown in Table 4.5, below, all the measures of the sub-scales were found to be highly reliable with alphas coefficients ranging from 0.72 to 0.95. A three factor solution was deemed by PCA to be the most interpretable within the sub-scale 1: “stressful experience” (Q1- Q14, statistical factors loading see Appendix 8, p. 260). The three factors were labeled as F1 = Teaching Methods Changes (TMC); F2 = School Management Changes (SMC); and F3 = Work Load (WL). Three more factors were identified under the sub-scale 9: “Psychological responses to PDS” (Q22- Q46, see Appendix 8, p. 260). These were labelled as F1 = Resilience; F2 = Life and Job Satisfaction (LJS); F3 = Positive Emotions (PEs); and F4 = Negative Emotions (NEs). The rest of seven sub-scales (2-8) did not need to be factor analysed because each item was selected from the pilot data of the interviews and those items under each sub-scale measured the same target area.

Table 4.5: Results of internal reliability analysis

9 sub-scales	Factors	Variable name	Alpha	Item N
1. Stressful experience	TMC	Q1- Q3; Q6; Q9	0.839	5
	SMC	Q4; Q5; Q11- Q14	0.720	6
	WL	Q7; Q8; Q10	0.655	3
2. School organisation changes		Q15.1- Q15.7	0.875	7
3. School support		Q16.1- Q16.6	0.896	6
4. Teacher’s capability		Q17.1- Q17.6	0.953	6
5. General factors & supports		Q18.1- Q18.10	0.923	10
6. Students’ issues		Q19.1- Q19.8	0.934	8
7. Coping with students’ issues		Q20.1- Q20.6	0.875	6
8. Teacher’s personal experience		Q21.1- Q21.8	0.775	8
9. Psychological responses to PDS	Resilience	Q22- Q30	0.955	9
	LJS	Q31- Q34	0.895	4
	PEs	Q35- Q40	0.910	6
	NEs	Q41- Q46	0.880	6

In order to identify the 9 sub-scales from the questionnaire it is recommended that a computer code be given for each item (see Appendix 9, p: 262). A breakdown of figures of the percentage (%), means (M), median and standard deviations (SD) in each sub-scale are reported in Tables 4.6- 4.15 as follows. The Shapiro-Wilk test ($p = .05$) was used to test the normality of the data that was collected for each question. This test suggested that the data was not normally distributed, in other words, the frequency distribution for the data of this study is skewed. Therefore, Field (2010: 539) suggests the median is a better measure of central tendency than mean to provide the appropriate central location for the data in this situation.

The nonparametric Mann-Whitney test (equivalent of the T-test) and Kruskal-Wallis Test (equivalent to the one-way ANOVA) are used in the following sections. The Mann-Whitney test compares whether or not there is a statistically significant difference between the different groupings in the data based upon independent variables. This test is performed on ranked data which has the advantage of not requiring the assumption of normality or the assumption of homogeneity of variance (Field, 2010: 539 - 540). It compares medians rather than means and, as a result, if the data has one or two outliers, their influence is negated. The Kruskal-Wallis Test ($p = .05$) is an extension of the Mann-Whitney test to allow the comparison of more than two independent groups (Field, 2010:540). The comparison between the responses from the five individual schools is tested in Table 4.16- 4.22.

Sub-scale1: Stressful experience related to school organisational changes

Table 4.6 and 4.7 report the frequency, means and standard deviations of sub-scale 1, which refers to participants' ratings of their stress levels during the school reconstruction process. Overall, the majority of the participants (74%) indicated that 14 statements were related to their experiences, 24% of the participants displayed statements which were not related to their stressful experiences. Four factors have been strongly recognised by the

participants (over 80%) that contributed to teachers' stressful experience during the school rebuilding process. These are “new procedures for teacher performance evaluation” (Q5A; 89.8%); “taking too much responsibility for students” (Q11A; 85.7%); “using new technological equipment for teaching” (Q1A; 84.2%) and “workload” (Q7A; 83.2%).

Table 4.6: The number and percentage of Sub-scale 1 (n=196)

Computer Code	Yes		Not applicable		Missing
	N-size [%]				
Q1A Teaching Equipment	165	84.2%	29	14.8%	2
Q2A Psychological Training	138	70.4%	54	27.6%	4
Q3A Psychological Treatment	155	79.1%	37	18.9%	4
Q4A Less Communicate Leader	131	66.8%	60	30.6%	5
Q5A Procedure Evaluation	176	89.8%	17	8.9%	3
Q6A Network with Teacher	147	75.0%	45	23.0%	3
Q7A WorkLoad	163	83.2%	32	16.3%	1
Q8A Network with Colleague	152	77.6%	41	20.9%	3
Q9A Network with Parent	141	71.9%	51	26.0%	4
Q10A Social Activity	136	69.4%	58	29.6%	2
Q11A Responsible for Student	168	85.7%	26	13.3%	2
Q12A School under Inspection	141	71.9%	53	27.0%	2
Q13A Unclear Scope	101	51.5%	92	46.9%	3
Q14A No Equal Promotion	111	56.6%	84	42.9%	1

Table 4.7: Number, Mean, Median and SD for Sub-scale 1 (n=196)

Item number	N-size	Mean	Median	SD
Q1B Teaching Equipment	159	2.47	3.00	1.101
Q2B Psychological Training	133	2.46	3.00	1.063
Q3B Psychological Treatment	150	2.78	3.00	1.209
Q4B less Communicate Leader	129	2.51	2.00	1.160
Q5B Procedure Evaluation	171	3.09	4.00	1.260
Q6B Network with Teacher	143	2.37	3.00	1.220
Q7B WorkLoad	158	3.30	3.00	1.264
Q8B Network with Colleague	148	1.80	1.80	0.931
Q9B Network with Parent	139	2.56	2.56	1.217
Q10B Social Activity	133	2.68	2.68	1.139
Q11B Responsible for Student	164	3.50	3.50	1.042
Q12B School under Inspection	139	2.73	2.73	1.114
Q13B Unclear Scope	101	2.71	2.71	1.033
Q14B No Equal Promotion	110	2.82	2.82	1.060

“Taking too much responsibility for students” (Q11B) and “new procedures for teacher performance evaluation” (Q5B) ranked highest with the means of 3.50 and 3.09 respectively, followed by the variable “work overloading” (Q7B) with the mean of 3.30. The lowest ranking of stressful experience was observed in Q8B ($M = 1.80$, $SD = .931$). This question referred to the teachers’ perceptions about the “new colleagues to adjust to”. These results indicate that the participants are getting along well with new colleagues and they do not consider this to be a stressor.

Sub-scale 2: School organisational changes after the Sichuan-earthquake

A 7- items scale was involved in sub-scale 2. This scale explored teachers’ perceptions about the school organisational changes since the 2008 earthquake. The statistical description reported that teachers “quite agree” with the statements pointed out from the Q15.7, Q15.6 , Q15.5 and Q15.4 (see Table 4.8), which referred to the changes of “school teaching facilities”; “school resource”; “school discipline” and “instructional methods”. These results indicate the level of participants’ agreement about their schools’ changes after the earthquake.

Table 4.8: Mean, Median and SD for Sub-scale 2 (n=196)

Computer Code	N-size	Mean	Median	SD
Q15.1 Administrative Power	196	3.55	3.00	0.973
Q15.2 Manage Personnel	196	3.76	4.00	0.933
Q15.3 Manage Student	196	3.83	4.00	0.866
Q15.4 Instructional Method	196	4.00	4.00	0.877
Q15.5 School Discipline	196	4.21	4.00	0.856
Q15.6 School Resource	196	4.34	4.00	0.777
Q15.7 Teaching Facilities	196	4.38	4.00	0.737

Sub-scale 3: School support during a PDS

The sub-scale 3 screened teachers' perceptions about their schools' support during the PDSs. Table 4.9 shows that, teachers hold “strongly agree” opinions about “improvement of school environment and work conditions” was one of the most important supporting factors for them during the school recovery process (Q16.5; $M = 4.12$). “Increase welfare” (Q16.6) observed the lowest value with the mean of 3.72 (Median = 3.00). In general, statistical descriptions showed a very positive attitude towards what the schools have been done in support of teachers during the disaster situations.

Table 4.9: Mean, Median and SD for Sub-scale 3 (n=196)

Computer Code	N-size	Mean	Median	SD
Q16.1 Available Material	196	4.11	4.00	0.856
Q16.2 Leader Attention	196	3.96	4.00	0.902
Q16.3 Psychological Debrief	196	3.82	4.00	1.026
Q16.4 Spiritual Encouragement	196	3.93	4.00	0.934
Q16.5 Work Condition Improved	196	4.12	4.00	0.748
Q16.6 Increase Welfare	196	3.72	3.00	1.223

Sub-scale 4: Teacher's capability

Table 4.10, below, reports teacher's perceptions about their own capability in coping with PDSs. “Collaboration and communication with colleagues” (Q17.6) ranked the highest agreement with the mean of 4.22, followed by Q17.2 and Q17.4 with the same means of 4.20. The statements were “understanding and communication with students” and “meet individual student' needs”. Again, the means of Q17.3 and Q17.5 were valued the same rate ($M = 4.18$; $SD = 0.756$; $SD = 0.782$). That meant the teachers agreed “enhancing myself problem-solving abilities” and “increasing communication with parents” are both important in recognising their capabilities in coping with PDSs. “Self-stimulation” (Q17.1) received the lowest rating with the mean of 4.09 being calculated.

Table 4.10: Mean, Median and SD for Sub-scale 4 (n = 196)

Computer Code	N-size	Mean	Median	SD
Q17.1 Self-stimulation	196	4.09	4.00	0.786
Q17.2 Communicate with Student	196	4.20	4.00	0.735
Q17.3 Problem-solving Ability	196	4.18	4.00	0.756
Q17.4 Meet Individual Needs	196	4.20	4.00	0.771
Q17.5 Communicate with Parent	196	4.18	4.00	0.782
Q17.6 Collaboration with Colleagues	196	4.22	4.00	0.770

Sub-scale 5: General factors and supports

The sub-scale 5 discovered teachers' perceptions about the most helpful factors in support of them responding effectively during the challenging situations (Table 4.11). "Support from my family" (Q18.6; M = 4.32) perceived as one of the most important factors. "Self-adaption" (Q18.8; M = 4.29) rated second, followed by Q18.10 which stated the item of "by time" (M = 4.22). The means of the items 'support from society' (Q18.7; M = 4.16) and "support from my friends" (Q18.5; M = 4.19) was similarly valued.

Table 4.11: Mean and SD for sub-scale 5 (n=195)

Computer Code	N-size	Mean	Median	SD
Q18.1 Leader Support	195	3.82	4.00	1.071
Q18.2 NGO Support	196	3.71	4.00	1.048
Q18.3 Government Support	196	3.83	4.00	1.033
Q18.4 Colleague Support	196	4.02	4.00	0.942
Q18.5 Friend Support	196	4.14	4.00	0.900
Q18.6 Family Support	196	4.32	4.00	0.710
Q18.7 Social Support	196	4.16	4.00	0.860
Q18.8 Self-adaption	196	4.29	4.00	0.703
Q18.9 Psychological Training	196	3.90	4.00	0.917
Q18.10 By Time	196	4.22	4.00	0.736

Sub-scale 6: Students' issues after the Sichuan-earthquake

Sub-scale 6 explored teachers' perceptions about their students' issues after the earthquake (Table 4.12). 196 participants seemed to 'agree' with the statements of "students' behaviour and classroom discipline worsened" (Q19.1; M = 3.28) and "I have the burden of parental care for pupils" (Q19.2; M = 3.21), which took the top two places in this scale. "Bullying is increasing in school" (Q19.6; M = 2.69), "violence and fighting is increasing in school since the 2008 earthquake" (Q19.8; M = 2.65) and "students' emotional instability and depression in classroom" (Q19.7; M = 2.40) were recognised as less significant than other variables among the students. Overall, the 196 teachers have a positive view towards the behaviours of their students.

Table 4.12: Mean and SD for sub-scale6 (n=196)

Computer Code	N-size	Mean	Median	SD
Q19.1 Student Worse Behaviour	196	3.28	3.00	1.201
Q19.2 Burden of Parental Care	196	3.21	4.00	1.152
Q19.3 Motivate Hard to Student	196	3.12	4.00	1.188
Q19.4 Performance Worse	196	3.12	3.00	1.257
Q19.5 Lack Confidence	196	3.08	3.00	1.176
Q19.6 Bullying Increases	196	2.69	3.00	1.146
Q19.7 Violence and Fighting	196	2.40	2.00	1.107
Q19.8 Depression	196	2.65	3.00	1.160

Sub-scale 7: Coping with students' issues

Judging by the scores of the mean values in these 6 items of sub-scale 7, teachers' perceptions of the factors influence their abilities to cope with students' issues was described in Table 4.13 below. Q20.2 seemed to take the highest place with the mean of 3.91. This statement indicated that the participants agreed "parents' overindulge their children" was one of the important factors which counteracted teachers' capability to cope with students' issues. Q20.6 (M = 3.86) "increased single parent and divorced family" was the second-most important issue. The participants disagreed with the

statement of “lack of effective instruction from school leaders” (Q20.5; M = 2.61) which received the lowest response rating.

Table 4.13: Mean and SD for sub-scale7 (n=196)

Computer Code	N-size	Mean	Median	SD
Q20.1 Lack Parental Support	196	3.43	4.00	1.224
Q20.2 Overindulge	196	3.91	4.00	1.022
Q20.3 Parents Do not Care Education	196	3.48	4.00	1.192
Q20.4 Lack Learning Atmosphere	196	3.32	4.00	1.217
Q20.5 Lack Instruction from School Leaders	196	2.61	3.00	1.116
Q20.6 Increased Divorced Family	196	3.86	4.00	1.018

Sub-scale 8: Teacher’s personal experience

Sub-scale 8 explored teachers’ personal experience during/after the earthquake. 59.7% of the participants pointed out that their home had been damaged moderately (M = 2.62). 4.6% of the participants’ homes had been destroyed completely. 3.6% of the participants had experienced “I have witnessed or experienced the death of my spouse or child” (Q21.1). 92.9% of the participants showed that they feel their lives are returning to normal after the disaster and losses, however, 6.1% of the participants revealed a negative aspect towards the normality of their lives. The statistical description is reported in Table 4.14 below.

Table 4.14: The number and percentage of Sub-scale 8 (n=196)

Computer Code		Frequency	Percent [%]	Missing
Q21.1 Death of Spouse	Yes	7	3.6%	1
	No	187	95.4%	
Q21.2 Death of Friend	Yes	82	41.8%	1
	No	114	58.2%	
Q21.3 Death of Pupil and Colleague	Yes	47	24.0%	
	No	148	75.5%	
Q21.4 Death of People Do not know	Yes	57	29.1%	2
	No	137	69.9%	
Q21.5 Injury Family	Yes	72	36.7%	1
	No	123	62.8%	
Q21.6 Injury Pupil and Colleague	Yes	51	26.0%	1
	No	144	73.5%	
Q21.7 Return Normal	Yes	182	92.9%	2
	No	12	6.1%	
Q21.8 Home Damaged	Completely	9	4.6%	23
	Severely	47	24.0%	
	Moderately	117	59.7%	

Sub-scale 9: Psychological responses to PDS

Table 4.15 shows the descriptive statistics of the findings of the questions 22-46. Generally, the participants' statements were quite consistent and the degree of the agreements was mostly rated from 4.15 to 3.79 for "resilience" (Q22- Q30). "Life and job satisfaction" (LJS) associated with the questions 31-34 followed very closely where a small range of mean values falling between 3.71 to 3.35 together with the standard deviation values of .971 to 1.115 were reported. Items 35-40 were constructed to identify the degree of the teacher's "positive emotions" (PEs) as well as the Q41-Q46 were designed to indicate the degree of the teacher's "negative emotions" (NEs).

Question 40 "I feel able to keep good relationships with students" was rated highest (M = 4.07) and Q38 "I have all the support I need from my school leadership" was rated slightly lower at 3.55. Q43 stated "I am not interested in most of the things that I used to

enjoy”, recorded the greatest level of disagreement ranked with the mean of 2.75. This suggests that participants have a positive attitude towards their future lives.

Table 4.15: Mean and SD for sub-scale 9 (Q22-Q46)

Factor	Computer Code	N-size	Mean	Median	SD
Resilience	Q22 Persevere	196	4.12	4.00	0.820
	Q23 Overcome	196	4.15	4.00	0.806
	Q24 LearnLesson	194	4.10	4.00	0.843
	Q25 Rebound Stronger	196	4.04	4.00	0.819
	Q26 Psychological Health	196	4.04	4.00	0.783
	Q27 Emotional Health	196	4.00	4.00	0.829
	Q28 Can Express Feelings	196	3.97	4.00	0.819
	Q29 LetAngerGo	196	3.79	4.00	0.901
	Q30 Overcome Discourage	196	3.87	4.00	0.835
Life and job satisfaction	Q31 Satisfied Life	196	3.64	4.00	1.000
	Q32 Satisfied Work	196	3.71	4.00	0.971
	Q33 Satisfied Leadership	196	3.68	4.00	0.988
	Q34 Autonomy In Position	196	3.35	4.00	1.115
Positive emotions	Q35 Stimulated Career	196	3.72	4.00	0.981
	Q36 InControl	196	3.87	4.00	0.879
	Q37 HopeInLife	196	3.96	4.00	0.911
	Q38 Support From School	196	3.55	4.00	1.068
	Q39 Relationship with Colleague	196	4.03	4.00	0.865
	Q40 Relationship with Student	196	4.07	4.00	0.817
Negative emotions	Q41 Disturb Memory	196	3.31	4.00	1.232
	Q42 FeelUnsafe	196	3.27	4.00	1.199
	Q43 NoInterest in Things	196	2.75	3.00	1.187
	Q44 FeelIrritable	196	2.99	4.00	1.172
	Q45 Pupil Lack Motivation	196	3.41	4.00	1.122
	Q46 Avoid to Think and Talk	196	3.17	4.00	1.171

4.2.2 Comparison between primary and secondary schools

Comparison between stressful experience and resilience

The Mann-Whitney test operates at the $p = 0.05$ significance level in this study. This test is used to compare teachers' stressful experiences and resilience between the primary school and the secondary school. The tests showed (see Table 4.16 below) that there is no statistically significant difference in teaching methods changes (TMC) between primary and secondary schools with a p value of 0.22. Comparison of TMC suggested that school type (primary or secondary) was not a significant variable in teacher responses. Work load (WL) was also not significant with a p value of 0.77. However, the variable of school management changes (SMC) showed a highly significant difference ($p < 0.001$) between responses from primary and secondary schools.

Table 4.16: Comparison the stress variables from two types of schools

Hypothesis Test Summary				
	Null Hypothesis	Test	Sig.	Decision
1	The distribution of TMC is the same across categories of Schooltype.	Independent-Samples Mann-Whitney U Test	.215	Retain the null hypothesis.
2	The distribution of SMC is the same across categories of Schooltype.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.
3	The distribution of WL is the same across categories of Schooltype.	Independent-Samples Mann-Whitney U Test	.770	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The concern now is how to define which school teachers suffered higher stress levels than others. Hence, post hoc analysis ($p = 0.05$) was performed for situations in which there is a significant finding obtained to ascertain exactly where the differences lay. The

result suggested that secondary school teachers generally reported higher stress levels ($n = 85$; $M = 3.03$) based upon the variable “SMC” than primary school teachers ($n = 111$; $M = 2.41$). There is no overlap between minimum and maximum estimates of the mean for primary and secondary schools at the 95% confidence interval. Detailed statistical descriptions are reported in Table 4.17 below:

Table: 4.17: Description of the response regarding ‘SMC’.

School type	SMC	Statistic
Primary schools	Mean	2.41
	95% Confidence Interval for Mean	2.18 to 2.63
	Median	3.00
	Std. Deviation	1.180
	Std. Error	0.112
	Minimum	0
	Maximum	5
Secondary schools	Mean	3.03
	95% Confidence Interval for Mean	2.80 to 3.26
	Median	3.00
	Std. Deviation	1.073
	Std. Error	0.116
	Minimum	0
	Maximum	5

Comparison of Resilience, LJS, PEs and NEs

Table 4.18 reports the significance test for the null hypothesis for the distribution of resilience, positive emotions (PEs) and negative emotions (NEs) cannot be rejected as these variables returned p values higher than 0.05 ($p = .14$; $p = .09$; $p = .18$ respectively). Again, comparison of resilience, PEs and NEs suggested that school type was not a significant variable in teacher responses. However, it can be seen that the null hypothesis for the distribution of life and job satisfaction (LJS) can be rejected ($p < .01$), which suggests there is a significant difference between responses from primary and secondary schools on the basis of the LJS variable. Similarly, post hoc analysis ($p = .05$) described

that primary school teachers showed a higher LJS response ($M = 3.81$) than secondary school teachers ($M = 3.41$) see Table 4.19 below.

4.18: Comparison of Resilience, LJS, PEs and NEs

Hypothesis Test Summary				
	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Resilience is the same across categories of Schooltype.	Independent-Samples Mann-Whitney U Test	.135	Retain the null hypothesis.
2	The distribution of LJS is the same across categories of Schooltype.	Independent-Samples Mann-Whitney U Test	.001	Reject the null hypothesis.
3	The distribution of PEs is the same across categories of Schooltype.	Independent-Samples Mann-Whitney U Test	.093	Retain the null hypothesis.
4	The distribution of NEs is the same across categories of Schooltype.	Independent-Samples Mann-Whitney U Test	.174	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 4.19: Description of the response regarding 'LJS'

	LJS	Statistic
Primary schools	Mean	3.81
	95% Confidence Interval for Mean	3.64 to 3.98
	Median	4.00
	Std. Deviation	0.900
	Std. Error	0.085
	Minimum	1
	Maximum	5
Secondary schools	Mean	3.41
	95% Confidence Interval for Mean	3.21 to 3.62
	Median	4.00
	Std. Deviation	0.952
	Std. Error	0.103
	Minimum	2
	Maximum	5

Comparison of differences between sub-scales

Table 4.20 shows a summary of hypothesis testing regarding teacher's response between two types of schools. The result of the test suggested that the null hypothesis of "school support" (sub-scale 3), "teacher capability" (sub-scale 4), "general factors and supports" (sub-scale 5) and "students' issues" (sub-scale 6) can be rejected as these variables returned statistically significant findings from $p < 0.01$ to $p < 0.05$. That meant the test suggested that school type was a significant variable in teacher's response based upon those factors.

Post hoc analysis revealed that the response from primary schools had a stronger level of school support, teacher capability, general factors and supports, and had less traumatic students' issues than secondary schools. Detailed descriptive statistics (post hoc analysis) are attached in Appendix 10 (Tables 1- 7, pp. 250 - 258). "School organisational change (SOC)" and "coping with student issues" retained the null hypothesis, which meant these variables were not significant difference between response from primary and secondary schools.

4.20. Difference between the six sub-scales from two school types

Hypothesis Test Summary				
	Null Hypothesis	Test	Sig.	Decision
1	The distribution of SOC is the same across categories of Schooltype.	Independent-Samples Mann-Whitney U Test	.108	Retain the null hypothesis.
2	The distribution of Schoolsupport is the same across categories of Schooltype.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.
3	The distribution of Teacherscapabil is the same across categories of Schooltype.	Independent-Samples Mann-Whitney U Test	.014	Reject the null hypothesis.
4	The distribution of Generalfactor is the same across categories of Schooltype.	Independent-Samples Mann-Whitney U Test	.011	Reject the null hypothesis.
5	The distribution of Studentissue is the same across categories of Schooltype.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.
6	The distribution of Copewithissues is the same across categories of Schooltype.	Independent-Samples Mann-Whitney U Test	.090	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

4.2.2 Comparison of responses from the five individual schools

The Kruskal-Wallis Test ($p = .05$) showed that the factors “school management change (SMC), work-load (WL), life and job satisfaction (LJS), positive emotions (PEs),” varied significantly, and the p values for these variables were reported respectively as < 0.001 , $= 0.008$, < 0.001 and $= 0.05$ (see Table 4.21 below). However, the variables “teaching method change (TMC), Resilience, negative emotions (NEs)” were not found to be significantly different among the five schools ($p = 0.08$; $p = 0.13$ and $p = 0.15$). Post hoc analysis ($p = 0.05$) suggested that there is a significant response revealed from by PA ($M = 2.27$) and SB ($M = 3.29$) based upon the variable “SMC”, and there is a significant difference between PA ($M = 2.25$) and PC ($M = 2.98$) concerning the variable “WL”.

Concerning the factors LJS and PEs, there is a statistically significant difference between PC (LJS: $M = 3.96$; PEs: $M = 4.25$) and SB (LJS: $M = 3.30$; PEs: $M = 3.82$) amongst the both factors ($p < .05$). Detailed descriptive statistics (post hoc analysis) are attached in Appendix 10 (Tables 8- 13, pp. 255-258).

Table 4.21: Comparison of the variables for each school
($n=196$)

Variables	Chi-Square	Asymp. Sig.
TMC	8.06	0.089
SMC	27.16	<0.001
WL	13.85	0.008
Resilience	7.10	0.131
LJS	15.49	0.004
PEs	9.68	0.046
NEs	6.81	0.146

Demographic information

I expected that the eight independent variables (gender, age, degree, teaching subject, teaching level, teaching experience and national culture) could have various impacts on teachers' stressful experience and resilience, but after performing the Kruskal-Wallis test, three independent variables (gender, age and teaching experience) were found to have an impact on the indicators (see Table 4.22 below). A significant difference was found between genders based upon the factors "teachers' capability" ($p = .03$) and "students issues" ($p = .00$). Specifically, female teachers ($M = 4.30$; $SD = .738$) were slightly higher with respect to their capabilities in dealing with PDSs than male teachers ($M = 4.11$; $SD = .645$). However, male teachers ($M = 3.38$; $SD = 1.07$) seemed more inclined to provide positive responses to "students' issues" compared to female teachers ($M = 2.80$; $SD = 1.07$).

Table 4.22: A summary of Kruskal Wallis-p values

Variables	Gender	Age group	Experience (years)
TMC	0.48	0.05	0.01
SMC	0.63	0.57	0.76
WL	0.88	0.10	0.28
Resilience	0.57	0.28	0.27
LJS	0.60	0.71	0.90
PEs	0.27	0.76	0.40
NEs	0.18	0.16	0.01
SOC	0.76	0.91	0.87
Schoolsupport	0.15	0.76	0.86
Teacher capability	0.03	0.91	0.89
General factor	0.09	0.55	0.40
Student issue	<.001	0.10	0.07
Copewithissues	0.06	0.01	0.11

Descriptive statistics are reported in Table 4.23 below. There was a difference found between four age groups based upon the stressful experiences of TMC ($p = 0.05$). Participants in 40-49 age group seemed to report a slightly higher stress level ($M=3.00$) than the other two groups (< 30 , $30-39$, $M = 2.00$). Teaching year showed an impact on the factors “TMC” ($p = 0.01$) and “WL” ($p = 0.03$). The descriptive information showed that teachers who have taught for longer years (15-19 and >20 ; $M=3.00$) in schools are more stressed than teachers who have taught less for 5 years ($M=1.25$) based upon the TMC during the PDSs. It is not surprising that teachers who have taught 15-19 ($M = 3.00$) years revealed the WL has an impact on them compared to the other two groups (< 5 and > 20 , $M = 2.00$) as well.

Table 4.23: Demographic analysis

	Student issues				Teacher capability			TMC			WL		
		Median	Min.	Max.	Median	Min.	Max.	Median	Min.	Max.	Median	Min.	Max
Gender	Male	3.50	1	5	4.00	3	5	2.00	1	4	2.00	1	5
	Female	3.00	1	5	4.00	2	5	2.00	1	5	2.00	1	5
Age group	<30	3.00	1	5	4.00	2	5	2.00	1	5	2.00	1	5
	30-39	3.00	1	5	4.00	2	5	2.00	1	4	3.00	1	5
	40-49	3.25	1	5	4.00	2	5	3.00	1	4	2.00	1	5
	>50	3.75	2	5	4.00	3	5	2.50	1	4	2.00	1	5
Teaching Experience	<5	2.50	1	5	4.00	2	5	1.25	1	4	2.00	1	5
	5-9	3.00	1	5	4.00	3	5	2.25	1	5	2.75	1	5
	10-14	3.00	1	5	4.00	2	5	2.00	1	4	3.00	1	5
	15-19	3.00	1	5	4.00	4	5	2.50	1	4	3.00	1	4
	>20	3.50	1	5	4.00	2	5	3.00	1	4	2.00	1	5

4.3 Analysing qualitative data

4.3.1 The interview results of the head teacher

Semi-structured interview questions were designed deliberately to gather in-depth information to explain the patterns that emerged from the questionnaire as well as their relevance in responding to the research questions. Five themes were generated from the results. The first theme was concerned with school external and internal issues during the PDSs along with how school leaders handled those issues which is designed to grasp an in-depth information for research question one (RQ1). The second theme was related to head teachers' awareness of teachers' stress and needs during the school recovery process (RQ2). The third theme was concerned with students' issues (RQ3), and the fourth explored the aspects of parental absence (RQ4). The final theme required head teachers to offer suggestions about school-based disaster management (RQ5). The five themes are defined as follows:

- Aspects of school issues during PDSs
- Aspects of teachers' needs and responses
- Aspects of students' issues
- Aspects of parental absence
- Vision of school-based disaster management

Theme 1: Aspects of school issues during PDSs

Five head teachers expressed their feelings of leading schools during the PDSs. In general, they have quite different views about the internal and external issues of their schools. One of the participants (SAH_01M) recognised that he didn't manage the school well and claimed it was due to his lack of disaster management experience. He

emphasised that he had never been trained to lead a school during a disaster situation. He commented that:

“Well I would have wanted to be able to lead the school effectively during that difficult situation, but I couldn’t do it well as I have never led any schools during that [post-disaster] situation before, honestly, I felt powerless as a leader” (SAH_01M).

PAH_03F’s stated that the Chinese ministry of education has refined a system of supervising teachers during PDSs. This policy had to establish in each school in the Beichuan region. She gave a brief explanation of this school-based post-disaster supervision:

- *Administration enhancement:*
“A more detailed regulation clarifies in what position teachers need to be, what duty teachers need to exercise during working time and how to perform effectively.”
- *Instructional aspect:*
“After the earthquake, students and teachers gathered from a very complex structure. Their background, culture, qualification and experience are different. Schools have to lead a thorough renewal in teaching systems and syllabus in a hope of breaking through the traditional teaching methods.”
- *Amendment in teacher’s power:*
“Self-disciplinary systems within each classroom, teacher in charge of his/her classes and they are given sufficient autonomy to manage and manipulate their classes and create activities amongst their classrooms.”

However, PCH_05F argued that the policy of this school-based disaster supervision put too much stress on educators who work on a managerial level rather than focusing on the regeneration of the school climate and culture as a whole. It emphasised that school post-reconstruction form was less than satisfactory because it was being implemented too quickly, lacked appropriate support structure and planning, and was not adequately explained or supported by school key stakeholders (teachers, students and parents).

When SAH_01M was asked about what school internal issues they faced during the PDSs. He believed that their school lacks a systematic disaster plan for the psychological relief of school staff which causes teachers' motivation and performance to fluctuate. He stated that "...you know emotionally...teachers' views about life have changed...after the earthquake they realised the importance of life...work and money seem not important to them anymore....". However, other secondary schools and their leaders appeared to face different issues. SBH_02M pictured that they were trying hard to balance teachers' work-load after the earthquake. He expressed that "...work-load rises due to an expansion of the school size after the earthquake... it does affect the quality of teaching...". An issue from a different school was contributed by PCH_05F. She said that:

"It sounds to me that our school's internal issues are caused by changing school heads frequently...and a shortage of experienced teachers... each head has different ideas of running a school, which makes school always set in a transition period...which confuses us..."

It seems that the priority of school leaders is to build a systematic disaster reconstruction plan in educational districts. This disaster recovery plan should not only should address the issues of stability and safety in schools, but also ensure the physical and psychological health of their staff and students. PCH_05F said that "*initially, her school teachers were united and enthusiastic for the sake of the schools development and reputation, but after the earthquake, teachers were demotivated as a result of the integration of four schools...*". That meant her school has the same issue of enlarging as secondary school B (SBH_02M).

PCH_05F recognised that because of the unsatisfactory salaries and enlargement, it seemed to her that teachers lose their focus and aims in life. There is a new salary-allocation policy launched after the earthquake which hoped to stimulate teachers' motivation of teaching. "*It has certain effects yet it has not recovered to the same level as in the pre-earthquake period...*" she explained. SAH_01M also mentioned about the new salary-allocation policy, in detail, that 15% of the teacher's income is closely linked

to their capability of dealing with students' issues during the specific situation after the earthquake. Teachers have weekly training in order to reinforce this mentality. Experienced teachers are encouraged to share their stories about how to cope traumatic problems.

SAH_01M additionally pointed out other issues at his school: “...*teachers increasingly pay more attention to their own health and their children after earthquakes and their teaching performance of course is affected*” This issue was mentioned by head teacher from secondary school A as well (SAH_01M). Nevertheless, PAH_03F suggested that “... *psychological training and activities should have been well-utilised in teacher professional development programs if we cannot afford to hire full-time professionals based in each school in Beichuan...*” She described that her school had organised a psychological training program and therapies such as dancing, story-telling and cooperative activities which trained teachers how to reduce stress. It seems to her that teachers were very positive about this kind of training.

Last point made by PBH_04M, he expressed that:

“Psychological issues definitely need to be addressed within school teachers and students. Teachers’ commitment seems to be good. The main factor challenging the school recovery process was parents’ involvement.”

Resulting from the earthquake, parents had to leave the area and went to other places to seek work which was a common issue faced by every school leader in Beichuan County. Boarding school leaders have to arrange a 24 hours teachers’ on-duty rota for school staff (Note: this statements were mentioned by the five head teachers and the five sample schools all are boarding schools). Some of the pupils in those schools were only five and half years old, they cannot be expected to deal with daily routines so teachers have to take the role of parental care for them in that situation.

The interview response from the five head teachers concerned school issues and how they coped with those issues in PDSs (see Table 4.24 below). It seemed that a range of

different challenges were faced by school leaders. Firstly, school leaders have to implement the command that the Chinese local government gives during the school reconstruction process. Secondly, school resources during the PDSs were allocated evenly, and the enlargement of school size and shortage of experienced teachers make schools' recovery process more problematic. Thirdly, the instability of teachers and students' academic, physical and psychological conditions has been repeatedly reported and those issues still need to be addressed. Finally, parental absence remains an unresolved problem in every school in the Beichuan region.

Table 4.24: A summary of the main school issues during PDSs

<p><u>School external issues</u></p> <ul style="list-style-type: none"> □ bureaucratic barriers □ high expectation from local government □ unbalanced allocation of disaster recourse □ school enlarging size □ change school heads frequently □ Geographical issues □ Lack of information exchange □ 90% of immigrant families □ Diversity of culture among school staff and students □ parents lack of awareness in education □ parental absence 	<p><u>School internal issues</u></p> <ul style="list-style-type: none"> □ lack a systematic disaster recovery plan □ lack of disaster management training for school leaders □ change school heads frequently □ increase the number of students □ shortage of experienced teachers □ increase work load on teachers □ a newly young teacher team □ change life values in teachers □ teacher loses expectation in teaching □ no parents-involvement
<p style="text-align: center;"><u>Strategies</u></p> <ul style="list-style-type: none"> □ follow the local government policy □ restore the stability of school development and create a safe school environment □ implement disaster drill in schools □ regularly organize teacher meeting □ regularly organize student meeting □ send teachers go out to study and travel □ retraining teacher program(contributing to the healing and reconstruction of PDSs in schools) □ plan to organise a parents society and improve cooperation between schools and parents 	

Theme 2: Aspects of teachers' needs and response

When asked about how they perceived teachers' feelings and experiences during the school reconstruction process, SAH_01M mentioned that he had a consultation with one of his staff, who had a family member die during the earthquake. He remembered during the whole consulting process he didn't know what was wrong with this teacher. He repeated that:

“I know he was depressed...I wanted to know what he really needed...he had to talk and share his feelings with me, otherwise, it would be very difficult for us to understand and identify his needs...” (SAH_01M)

Several head teachers expressed that it was the first time they had encountered a major earthquake, and the deaths, injuries and changes caused by the earthquake. They appreciated that teachers felt exhausted and depressed so they had to pay 100% effort to work on teachers' PDS issues. SBH_02M believed that after rebuilding new schools with advanced teaching equipment, computers, in pleasant teaching environment with training and salary comparatively increasing, it seemed to him that teachers' motivation was improving and they were happy to take on a greater workload.

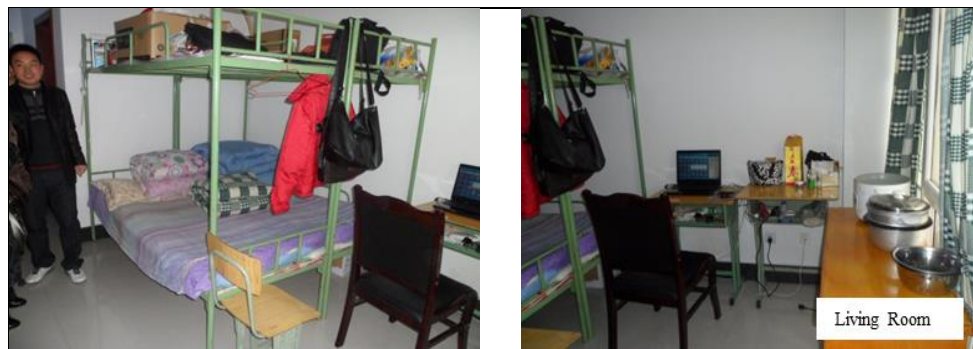
School leaders had invited professionals and experts to convey the knowledge of post-disaster management and guidance for themselves, and they also recognised outdoor recreational activities and physical education could foster leaders-teacher relationships. SBH_02M stated that “*school authorities would conduct counseling duty by talking with teachers with emotional problems individually*”. It can be seen that school leaders have the awareness that their staff need support, but they do need to turn their thoughts into action.

Some narratives showed that teachers were required to fill out a monthly form that would reflect on the schools' management strategies. School leaders responded to teachers'

comments through meetings. In doing so, school leaders could understand teachers' emotional shifts and recovery practice, then they could try to deal with identified problems. They hoped that a humanised management could enhance a harmonious school environment. PAH_03F had a similar statement regarding the question of the relationship between leaders and teachers. She expressed that the relationship between teachers and leaders are very harmonious at his school. School staff are happy to talk with school leaders when they experience difficulty.

She also revealed that the Government seemed to initially overlook teacher's welfare. They [the Government] have focused all their attention on school rebuilding, and ignored the need to rebuild residents homes too: "...*teachers need 24 hours on duty in turns in our school one year after the earthquake ... schools have to solve teachers' accommodation issues...they can't go home every day if they live far away...*" She emphasised that this issue has been proposed to the local government, and now there is enough temporary accommodation for teachers (see Picture 4.1 below).

Picture 4.1: Teachers' accommodation provided by schools



Source from the researcher's field study (2010) Taken with permission

PBH_04M acknowledged that some teachers were not happy to get psychological help for themselves even if they needed it. It appeared that teachers do not want to be stigmatised as having a "*psychological problem*". However, school teachers are expected to counsel those have experienced traumatic issues and can provide first-hand information to professionals. But if they are not ready to accept their own traumatic

symptoms then we would not trust them to be able to identify a traumatic issue among their students emphasised by PBH.

SBH_02M concluded that after the earthquake, school leaders and policy makers have tried every effort to help teachers and students in psychological support aiming at maintaining teachers' passion for their vocation and have achieved some results. But mental scars have been left behind in both teachers and students alike that will take time to heal. According to the five head teachers' statements, the proportion of PTSD is still high and goes beyond the warning level. Table 4.25, below, presents a summary of the head teachers' perceptions of teachers' responses and needs in PDSs.

Table 4.25: Head teachers' perceptions of teachers' needs and response in PDSs

Head teachers' view of teacher's response	Head teachers' view of teachers' needs
<ul style="list-style-type: none"> □ Physical and emotional grief □ Lack of interest in work and life □ Feel exhausted and depressed □ Avoiding to accept their own traumatic symptoms and psychological help □ Low motivation □ Feel themselves incapable □ Lack of confidence 	<ul style="list-style-type: none"> □ Increasing income and welfare □ Promoting capability to cope with PDS □ Encouragement and inspiration □ Outdoor recreational activities (singing and dancing) □ Psychological education □ Building leader-teacher relationship □ Financial support □ Family stability and support

Theme 3: Aspects of students' issues

When five head teachers were asked about the students' issues during PDSs, most head teachers (SAH_01M; SBH_02M and PCH_05F) explained that students lose confidence in their future life which worries them most. It seemed that the aspiration of being hard-working learners has gone after the earthquake. Studying is not considered as important as being alive [SBH_02M]. Apart from a few specific students with satisfactory results who had a good coping response, a downward trend is more significant on the majority of students. SAH_01M commented on one student's issues:

“One of my students tried to commit suicide after he knew his father was going to marry another woman (his mother died during the earthquake). We found him immediately and sent him to hospital and saved his life... he was begging us to get his mother back... I felt really sad... he was a special case in our school, now he is regularly sent to counselors. But still can’t change his angry behaviour and aggression...he has to let it go...”

When asked what did they do to help this boy, he explained that at that moment, they did not have a psychology room in school, but they were planning to create a consulting room and hire a full-time psychiatrist. He believed a specialised managerial department for students should have been established which could organise weekly individual counselling or movie viewings for problematic students.

PAH_03F noted that “students’ *lack of confidence, tremulousness and fear of speaking out things...they seemed not to enjoy the things they were supposed to enjoy at their ages*”. She noted the issues of students, but she was not sure why students reacted like that. She continued: “*Maybe, the earthquake experience has made them grow up quicker...*” It can be seen that it is maybe easy to see the changes among students, but the real stressors are difficult to tell. In order to understand and protect students’ psychological wellbeing, school leaders should have mastered this special knowledge and also encourage teachers to take a closer eye on problematic students. She found some cooperative and communicative activities were very useful to assist traumatised students such as watching movies together in classroom. PCH_05F’ observation:

“Pupils seemed ok during the day, no argument, no loudness just [they] don’t talk much...but during the nights, a few pupils continually have dreams in which they wake screaming which interrupts other pupils’ sleep as well...we mainly invited external professionals to come to the school and provide treatment to both teachers and pupils. Pupils learnt how to express thankfulness to people who helped us. Generally speaking, their attitude to study is going in a positive direction.”

By comparison, secondary school students tended to exhibit serious emotional disturbances more so than primary school students. As reported by secondary school heads [SAH_01M; SBH_02M], reaction to disaster experience varied according to age. SBH_02M commented that “...to make sure younger pupils enjoy nutritious food and can play in a safe school environment...but these are not enough to meet the needs of older students...” Primary school children tended to show more unconscious behaviours such as fear, dreams with screaming, inactivity or apathy. However, older students’ behaviour was seen as worse in secondary school such as aggressive, anti-social behaviour, sexual abuse, violence and fighting which led to many unpleasant student-to-student and student-to-teacher conflicts. A summary of the head teachers’ view of students’ issues in PDS illustrated in Table 4.26 below.

Table 4.26: Head teachers’ view of students’ issues

Head teachers’ view of students’ issues in PDSs
<ul style="list-style-type: none"> ❑ Lose confidence in future life ❑ Studying is not considered as important as being alive ❑ Fear of speaking out, inactivity and apathy ❑ Dreaming and screaming during nights (younger pupils) ❑ Anti-social behaviours ❑ A few commit suicide behaviours, violence and fighting
Coping methods
<ul style="list-style-type: none"> ❑ Organise weekly individual counseling ❑ Organise cooperative and communicative activities ❑ Watch movies ❑ Hire a full-time psychiatrist ❑ Establish a psychological consulting room in school

Theme 4: Aspects of parental absence

Five head teachers identified parental absence as one of the major challenges in dealing with students’ issues during the PDSs. They believed that if they could get even a bit of support from parents, it would make teaching and leading much easier for them in that specific situation. But they also stated that they understand the situation for families as

well.

SAH_01M stated that:

“There is a lack of involvement from migrant-worker parents and divorced parents (50%). I think the parents’ influence on their children’s study is limited. The duty of parenthood in our school is mostly taken by grandparents who are from the mountain region, illiterate, and lack the ability and skill to assist our schooling... [they] communicate via phone commonly.”

SBH_02M’s expression echoed the statement from SAH:

“If parents could get involved, teachers’ pressure would be significantly reduced... It could contribute to a more comprehensive acquaintance with children’s behavioural habits and their willpower in learning. We investigated and found that students from complete families are in a better condition than those from divorced families or with parents who are migrant workers working out of town. Those students are more difficult to manage.”

Overall, three primary school head teachers (PAH_03F, PBH_04M and PCH_05F) had a similar statement: *“Parents do not have any help for our schooling really...we can’t reach them, can’t communicate with them about pupils’ studies or any issues, it is a real headache...”* Parental absence is a major issue faced by Beichuan school leaders and teachers. This issue has been confirmed from my field investigation and findings as well. 99% of the children stay at boarding schools in Beichuan because it is one of the poorer areas of Sichuan Province.

This means that most parents and young people have to go to other cities for work, and they only get a chance to meet their children once or twice a year (Lei, 2010). School teachers become the main resource in care giving, and provide key parental relationships to often traumatised children in Beichuan County. This means parental absence has been shown to be a significant factor predicting higher levels of stress in teachers. Specific views of parental absence are presented in Table 4.27 below.

Table 4.27: Head teachers' views of parental absence

Head teachers' views of parental absence:
<ul style="list-style-type: none"> □ Parents illiteracy, migrant workers □ Traumatized parents □ Lack of ability and skill to assist children □ Financial disadvantaged area □ Go out for job seeking □ Divorced and broken families and single parent □ Communicate via phone mainly

Theme 5: Vision of school disaster management

The final part of the head teacher interviews asked them to give their suggestions about strategies towards the PDS if it ever happens again. Five head teachers mentioned the same priority was to “*make sure there is a safe school environment for staff and students...*” SAH_01M's statement:

“...Erm, well...I hope [the earthquake] will not happen again...but...I would make sure our staff and students can teach and learn in a safe school environment this is important to me. Then I would think about improving school culture and concerning staff and students' well-being and happiness. For the rest, we have to follow the policy of the government towards the specific strategies of managing the major events.”

SBH_02M' suggestions:

“We need to enlighten teachers about their sense of responsibilities towards their mission even during disaster or any crisis situations. 70% of the teaching staff are more responsible than the rest. Teachers should have their voice, the right of speech to provide their suggestions. The problems they [teachers] raised in our school are normally discussed and investigated by the school authorities. We would adopt and amend any reasonable proposal, as well as reject any unsuitable one with explanation.”

PBH_04M implied that he would open a course for survival capabilities training and anxiety techniques training for common disaster traumatized issues (e.g. sleep problems, disturbing memories, thoughts or images to what happened, startle reactions, fears). PAH_03F and PCH_05F suggested that they would put a disaster management plan in

place and keep practicing different crisis drills on a weekly basis. They mentioned that more importantly, they have learned lessons from the 2008 earthquake. They hope this experience would help them to overcome any forthcoming challenges.

They are confident about their capabilities in dealing with school crises in the future. Though they also expressed that education is a complicated obligation, even in a normal schooling condition, there are various challenges they need to deal with. PCH_05F expressed that “...*school is a complicated body; fighting, accidents, death of parents, parents’ divorce happen from time to time...we have to be able to handle these issues in order to reduce the harm to students...*” Table 4.28, below, shows a summary of the head teachers’ vision of school post-disaster management and leadership.

Table 4.28: Head teachers’ general suggestions of SDM

Head teachers’ vision of SDM	
<input type="checkbox"/>	Safe school environment and develop school culture
<input type="checkbox"/>	Focus more on staff’s mental health recovery
<input type="checkbox"/>	Follow the policy of the Government
<input type="checkbox"/>	Enlighten teachers’ sense of responsibilities
<input type="checkbox"/>	Teacher should take a leadership role in PDS
<input type="checkbox"/>	Coping capabilities training and anxiety techniques
<input type="checkbox"/>	Put disaster plan and preparation in place and
<input type="checkbox"/>	keep practicing crisis drills on a weekly basis

4.3.2 Interview results with teachers

The descriptions of twenty teachers’ post-earthquake experiences and responses is analysed in detail. This interview schedule it is hoped grasps different perspectives between head teachers and teachers towards school-based disaster recovery processes. Five primary themes emerged in answer of the purpose of the research questions.

- School post-disaster management strategies (RQ1)
- Teachers' perceptions of his/her own stressful experience (RQ2)
- Teachers' perceptions of pupils' response (RQ3)
- Teachers' perceptions of parental absence (RQ4)
- Teachers' perceptions of his/her resilience (RQ5)

Theme 1: School post-disaster response

When twenty participants were asked their perceptions of school supports to teachers' needs; generally, they hold a uniform opinion of strong support from the school leadership team (head teacher and deputy head teacher). A supportive and understanding leadership team within a school was regularly mentioned as a helpful factor. *"We can ask our head teacher for help at any time...the leadership team is quite close with us, so that's really helpful..."* [PAT_03M]. *"The most important thing is that we know we can rely on our head teacher, he is always there for us ..."* [PCT_01F]. If there is something teachers are unable to handle, they should report it to the school Office.

The school leadership team would get the problem resolved straight away *"...delays to handling a problem would escalate the consequences...our head teacher always told us that"* [PBT_03F]. Several teachers reported that school provides accommodation and psychological training to them which met their needs partly [PCT_01F- 04F]. The training helped them and students to reduce traumatic stress and improve the way of teaching and learning in specific situations [SBT_04M]. However, strong support did not always meet the needs of teachers. SAT_01M describes how the leadership team responded after a particularly traumatic experience:

"...a few leaders deal with things quite bluntly, for example, hold a subjective position to deal with issues. They should have communicated with us more and have got perspectives from a wider aspect. They should take responsibility if they make mistakes..."

The provided psychological training was seen to be too superficial and lacking a systematic track [SAT_02M]. Another reported that they understand how to mediate students' misbehaviour temporarily which helped their teaching in classroom [SAT_01M]. However, some indicated that dealing with the attitudes, emotions and feelings of traumatised student are still challenging them [SAT_03F, PAT_03F and PAT_04M].

Some statements indicated that teachers would have liked to receive the second-stage or even longer-term training regarding trauma relief knowledge. "...[it's] *not just students we need psychological assistance as well, though we had some chances to get trained, our school leader hoped we would learn more academic knowledge rather than trauma relief skills..*" [SAT_01M]. SAT_04F stated that: "*I would have hoped to learn about where to acquire resources, how to talk to my pupils and how to identify their traumatic symptoms...*" Teachers reported that an amount of practice drills are being performed intensively after the earthquake.

Teachers also expected information about offering emotional support to parents and helping them make transitions to normality, which in turn would help students adjust to changes easily. However, lack of proper parental discipline and support were mentioned by some teachers. They indicated that parents should be encouraged to join some parent-children relationship development activities after the earthquake, which should be organised by school but which did not occur in most of the schools in Beichuan. For example:

"One of my pupils she did not go to school for a considerably long period of time, she was very far behind in her studies. I became worried and called her grandmother...she told me that she was away with parents for a while as here [Beichuan] was not a safe place to be." [PAT_02F]

Faced with these situations, schools are largely impotent. There is no regulation to stop parents withdrawing their children from school. Schools consider it to be a parents' decision to withdraw a pupil from school and this may affect their educational progress

as a consequence. However, some teachers [SBT_04M, SAT_02M and SAT_03F] argued that if parents trusted schools to be a safe place for their children, this situation should have not happened. A parental involvement program should be established in schools during the PDSs in order to encourage parents' participation and support in children's trauma recovery and reduce the frequency and consequence of parents and students' absence.

A strong caring school leadership team was a major source of support for all teachers. When participants asked whether they are satisfied with the response from the school leadership, the following excerpt is typical:

“Erm, well...the school solved students' and teachers' basic needs (e.g. food, water, and shelter) immediately after the earthquake. Six months after the earthquake, the school has established a clear development goal towards the development ...” [PAT_03M]

“[I am] satisfied, the new salary-allocation policy is especially motivating. Teachers' workload and students' achievement have had a positive impact on each other which makes teachers happy. Besides, our new head teacher is a very competent leader, and he has a good relationship with us...” [PAT_04M]

“Erm..., the school tried their best to provide training and studying chances for us. Mainly, we have a positive attitude towards their future life and we are in it together and share each other's pain...” [PBT_03F]

“Well, after all, school leaders solved our accommodation issues, basic living needs and psychological assistance. It was also their first time in experiencing a major earthquake, they thought about the needs of us first I am really pleased. The school reopening was delayed slightly, but we were able to catch up on the regular curriculum at some point...” [SAT_03F]

It can be seen from the narratives that in general teachers were satisfied with basic support and situation, but this doesn't mean school post-disaster management strategies were effective in Beichuan schools. A summary of reflecting on this theme displayed in Table 4.29 below.

Table 4.29: Teachers' perceptions of school post-disaster response

School post-disaster response	
<input type="checkbox"/>	Provide basic need (food, water and temporary accommodation)
<input type="checkbox"/>	Change of school teaching methods
<input type="checkbox"/>	Change of school administrative power
<input type="checkbox"/>	Change of school environment and conditions
<input type="checkbox"/>	Practice drills regularly
<input type="checkbox"/>	Psychological training was superficial and lack a systematic track
<input type="checkbox"/>	Inadequate financial support for school staff
<input type="checkbox"/>	Lack of parental discipline and policy
<input type="checkbox"/>	Lack a parental involvement program

Theme 2: Teachers' stressful experience

Noticeable narratives of stressful experience from teachers were the challenges of taking a parental role for pupils in PDSs. The issues of lacking psychological knowledge to assist students with mental health issues and teachers' risk of experiencing secondary traumatic stress were mentioned frequently. Most teachers feel that they lack competence in supporting pupils suffering from trauma. Several teachers expressed their frustrations with the situations and wondered when their role could go back to normal as a teacher and when school leaders would be able to engage parents in the school-based recovery process for pupils. They felt that their mission of teaching has been taken away by *child care*.

Nevertheless, some teachers are aware that they play a major role in pupils' mental development and it is an integral skill as a good educator which others struggled to emulate:

“After the earthquake, my stress mainly came from taking on a caregiver's role for pupils. Parents go out job seeking and they leave their children at school 7 days a week...I am three months pregnant, one of my pupils felt sick while I was on duty, I had to take him to hospital at midnight...I couldn't just leave him alone, could I? His parents couldn't get back directly from another city...” [PBT_02F]

She also revealed that they [teachers] don't get extra pay for taking over the parental role. Teachers' income is quite limited in that region, she doesn't have extra to support herself even through pregnancy. *"Financially, we are overlooked in regards to houses, convenience to reach home to visit my husband...personal and professional needs due to the loss from the earthquake."*PBT_01F and PBT_04F added a similar comment to the low income issue resulting from the unbalanced resource distribution after the earthquake.

Adequate financial support from the school seemed to be an unfulfilled need mentioned by a teacher: *"...financially, I still struggled with rebuilding my house...I want my parents to stay with us as they are old and need people around... but I wouldn't be able to do it now...."* [SBT_02M]. On a personal level, teachers suffered their own traumatic stress. Several teachers were injured and some of their family members died during the earthquake. They had to overcome their own grief and be a role model for their students. Prominent statements from teachers show that the prevalence of traumatic stress does not only distress children it affects teachers severely too. A teacher expressed her own experience and difficulty in coping:

"Before the earthquake, I was a loving person, after I got injured during the earthquake, I have no smile on my face and I hardly communicate with others, I don't care about my pupils, which made it very difficult to carry on my life and work effectively." [PCT_04F]

Before the earthquake, less attention had been paid to Beichuan school teachers, but after the earthquake, they are expected to take different roles and responsibilities without checking out whether or not they are physically and/or psychologically capable to take on these roles (e.g. psychological assistance for traumatised children). They also struggled to adapt to a new environment as most children do. As a result of the earthquake, communities were displaced, which causes a tremendous amount of complexity among the recruitment of students. Basically, students come from very diverse cultural backgrounds mainly rural and poor areas.

On a professional level, teachers are concerned about their competence to cope with PDSs which in itself teachers find stressful. SAT_03F stated that: *“thinking about what my students have gone through... I was unable to help them, it is very frustrating...”* Teachers blame themselves for not having the skill set to complete their work which can be seen as a traumatic experience. Some frequently mentioned narratives such as: *“I feel awkward if I have to handle a tough issue alone relating to traumatic experiences of my students...”* [SAT_01M] *“...how can we get students back to a normal study environment...? ...how can we change parents’ attitude towards their disengagement from students’ studies?”* [PCT_01F].

All of these issues stated above have to be solved, which could practically generate a great deal of stress on teachers. Additionally, some teachers pointed out that every school wants to be the number one or the best school in that region. PCT_2F stated that:

“Our school wants to be the best one, well... we have to work very hard...the school started to check out our practice of managing classroom discipline every day which left little time for us to think about anything else...”

The Chinese government has invested substantial sums of money to rebuild this area; education was one of most important projects. School leaders were forced to lead an innovative and profound new school environment and culture; consequently, school teachers were expected to take a creative role in this pioneering process. Table 4.30, below, demonstrated a summary of teachers’ stressful experiences in PDSs.

Table 4.30: Teachers' stressful experiences in PDSs

Teachers' stressful experiences in PDSs:	
<input type="checkbox"/>	Taking parental role
<input type="checkbox"/>	Taking too much responsibility
<input type="checkbox"/>	Lacking psychological knowledge
<input type="checkbox"/>	Lacking competence in support of pupils' trauma
<input type="checkbox"/>	Financial burden and issues
<input type="checkbox"/>	Adapting to a new environment
<input type="checkbox"/>	No documental policy in place in school that protects teachers' rights
<input type="checkbox"/>	Parents don't appreciate teachers' hard-work
<input type="checkbox"/>	Teachers feel guilty and blame themselves for not having the skill set to assist their students.
<input type="checkbox"/>	Family member death and injury
<input type="checkbox"/>	Teachers own physical and psychological injury

Theme 3: Teachers' views of pupils' response

Substantial narratives were related to pupils' responses to the earthquake (see Table 4.31). The frequently mentioned reaction was "low motivation"(n = 20 times), followed by "isolation and disconnection" (n = 13 times), "difficulty concentrating" (n = 12times), "fewer smiles" (n = 12 times), "trouble sleeping" (n = 11 times), "fear and anxiety" (n = 10 times), "academic issues" (n = 10 times), "no ambitions" (n = 5 times) and "aggression" (n = 3 times).

Table 4.31: Teachers' views of pupils' issues in PDSs

Pupils' response	N-size	Frequency		Percent
		PS	SS	
Low motivation	20	10	10	100%
Isolation and disconnection	20	7	6	65%
Difficulty concentrating	20	6	6	60%
Fewer smiles	20	7	5	60%
Trouble Sleeping	20	6	5	55%
Fear and anxiety	20	9	1	50%
Academic issues	20	9	1	50%
No ambitions	20	-	5	25%
Aggression	20	-	5	25%

When teachers were asked about what they mean by saying “low motivation” and “academic issues”. They explained that: *“students don’t have any interest in study, they have poor discipline and are lax when it comes to completing tasks and homework...which really affects their academic performance badly...”* [SAT_01M; SAT_02M and SBT_03M]. Though, a few statements expressed that “anti-social behaviours” among some students such as bullying others and damage to public facilities.

A statement from PBT_02M: *“a boy in my class, he was a lovely little boy, but now, he is aggressive in class with both his teachers and classmates, short tempered and out of control. His emotions are not in check and he is prone to also damaging school property.”* However, this teacher also expressed that he is not sure whether his behaviour is related to the earthquake issues or just simply because the nature of growing up that people are changing. She lacked knowledge of identifying traumatic issues. A similar narrative mentioned by other teachers was that: *“it is very difficult to support someone who is with a severe trauma such as silence or excessive screaming without reasons...”* [PBT_04M].

Each sample school at least one interviewee provided their hands-on experiences of dealing with traumatised students after the earthquake. Some participants shared stories of their pupils. PAT_01F stated of girl in her class:

“She was living in a very remote mountainous area, after the earthquake, her previous school disappeared and she transferred to our [this boarding] school; everything was new to her, new environment, new teachers, new classmates. It was very difficult for her to cope. She hardly talks with others, and didn’t care about others and feared everything...crying and screaming were the reactions she always had...”

SBT_01F expressed a boy’s story:

“The earthquake destroyed this boy; I felt pain whenever I talked about him. He had suffered severe trauma during the earthquake as he lost his mum, he could never feel the love a mother could give...I used the weekends to take him home and let him play with my son. I cooked his favourite food and hoped he could feel me like a surrogate mother to him. Gradually, he started talking to me, he told me his fears, and how much he

missed his mum and what happened during the earthquake. I saw tears in his eye; I knew he was back...”

Their stories revealed that students had suffered overwhelming and different levels of trauma and the school had paid a great deal of attention in support of those pupils recovery. Personalised supports did take place in each school, and experienced teachers mainly, are in charge of those cases individually. After implementing the psychological assistance, the majority of pupils displayed marked improvement although exceptional cases remained. A teacher reported that:

“Most of the time I keep an eye on the special/traumatised pupils and encourage them to talk with other peers, introduce positive students to interact with them in a friendly open manner. Designing special activities for them...give them a chance to answer questions, and contacting parents and going to their homes to talk with their parents etc...I have to say it did pay back...my way of dealing with them [traumatised pupils] works well...” [PCT_02F]

However, some teachers expressed concerns in support of their students’ issues. Some statements on students’ needs and general concerns included: *“I feel my students don’t want to go back home during the weekends I guess they don’t want to face the empty home without their parents around...I feel so sad to think about their situations...”* A lack of parental support is the biggest concern to all Beichuan teachers. The earthquake forced parents to leave their children alone for job seeking which leads to a new disaster for children to face.

Theme 4: Parental support absence

As mentioned earlier in *The Interview Results of The Teachers* (Theme 2; pp.147-150), the lack of parental support for traumatised pupils was a stressful experience for teachers. Several reasons cause the absence of parental supports (see Table 4.43 below). Firstly,

some teachers noticed that parents themselves suffered unexpected trauma which was not surprising when parents were unable to participate in their children's recovery. Secondly, others reported that though some parents did pay attention to their children, they were overprotective behaviour undermining their role in support of the children's recovery. Thirdly, most parents are not educated; students don't listen to what their parents say.

Apparently, the low income or no income issues happened to all affected people including parents. The earthquake took their homes and jobs from them, they had to go to other cities for work or to rebuild new homes. That means the financial burden causes them to overlook their children's basic care and educational needs. For example, SBT_01F expressed that:

“Parents are not cooperating with us. Before the earthquake, parents' hope was to help their children get good results, but now they don't care about their studies any more...”

“Parents don't engage in their children's study, they think being alive is the most important thing and the rest is easy to deal with. The school needs high scores from students; we have to achieve the goal, if we cannot do the job well, it causes great stress to us.” [SAT_01M].

Parents lack education and don't appear to appreciate teachers' hard-work. If students make mistakes or get indifferent academic results, teachers are blamed for inefficient teaching skills. For example, a teacher said that: *“a parent used really unpleasant language abusing me last time because her son had a fight with another classmate... similar things happened to other teachers as well...”* [PAT_03M]. When asked if there was a policy for protecting teachers if assaulted by parents, he said school leaders normally come to defend them but there is no real paper policy in place that protects teachers' human rights in the region.

Parents can only take responsibility for their children's costs of living and education. For example, PCT_04F pointed out that: *“parents are lacking knowledge to support the emotional feelings of their children and they don't know how to talk or listen to their*

children's feelings and problems..." PCT_02F made a similar statement that: *"Their [parents] knowledge is generally less than their children regarding their ability to cope..."*

Resulting from the earthquake, some parents experienced the death of friends or relatives' children, they become overprotective and overindulgent to their own children. A teacher reported that: *"to parents' eyes, their children never make mistakes, one boy had a fight with another pupil, his mother blames us and says that the other student hit her kid... she didn't listen to what actually happened..."* [SAT_02M]. This phenomenon worries teachers, and one comment stood out: *"we don't know what the boundaries are, how we could manage classroom conflicts properly with parents support, but if all parents react like that, I would rather not involve parents when I handle my classroom issues..."* [SBT_04M]. Table 4.32, below, demonstrated a summary of teachers' view of parents absence in PDSs.

Table 4.32: Teachers' views of parental absence

Teachers' views of parental absence:	
<input type="checkbox"/>	Parents don't engage in their children's study
<input type="checkbox"/>	Lack of knowledge to understand children's emotional needs
<input type="checkbox"/>	Traumatized parents
<input type="checkbox"/>	Parents do not respect teachers' professional capabilities
<input type="checkbox"/>	Parents overprotective to their children
<input type="checkbox"/>	Parents believe education is not as important as their children being alive
<input type="checkbox"/>	Parents lose their jobs, economic resource and
<input type="checkbox"/>	Go out for job seeking

Theme 5: Teachers' sense of resilience

The final theme looked at teachers' perceptions of their sense of resilience in areas of personal importance and professional competence. Insights into the dimension of resilience came mainly from asking participants if there were any capabilities of which

they were particularly proud in relation of teaching in PDSs. Here are some of the expressions:

“I see pressure as a positive thing which could drive me forward.”
[SBT_02F]

“I recognised that only knowing academic knowledge is not enough for supporting students’ issues of trauma.”[SAT_01M]

“...my primary task is not to teach in PDSs... I need to show my caring and loving side... I think that is the right thing to do...though some people may think we cross the boundaries in education, our culture and morality drives us...” [SAT_04F]

“...I think we need the competence of observation, capability of identifying traumatic symptoms when facing such crisis...” [SAT_02M]

“I think teachers need sufficient patience and try to appreciate what is really bothering them...” [SBT_04M]

“I think we should be taught safety drills and crisis dealing techniques. Face a small crisis; learn how to save students and ourselves, face a major crisis like the Sichuan-earthquake, we would have been prepared to have a positive and resilient attitude towards future life and to be a role model to our students...”[SAT_02M]

“We should master emergency knowledge and skills, knowing how to be resilient and keep a positive attitude...” [SAT_04M]

“...I can’t say it [the earthquake experience] brings me stress but more like a different way of living, I feel like I have become stronger after the life-death experience...I pay more attention to my health and life...”[SAT_02M]

“...emergency program training has been stressful in our school after the earthquake, but it is ok, I don’t feel stressed...” [PCT_01F]

“...when I stand on the stage in front of my pupils and look at their lovely faces, I would forget every sad thing that happens to us...” [PAT_01F]

“Reconstruction is not only a repeat but also a kind of development; even an epoch-making development... reconstruction is a kind of surpassing which surpasses soul and mind. Our school will be the best school and our students can gain the best education. The development of our school and its

educational level are our mission.”[SBT_03F]

Experienced teachers [SAT_02M; SAT_03F; SBT_04M; PCT_02F] expressed that they had learned to cope with traumatic experiences over the years but recognised the challenges there for some of their young colleagues. They stated that: “*when I feel down or sad, I like to talk with my friends or colleagues as it could release my bad feelings (though not pleasant to hear it)...I found it is quite helpful...*” If teachers could find a way to share his/her anxiety and sadness with others, this may help them reduce the level of stress and increase the sense of resilience. They suggested a need to include intensive psychological-focused courses within inexperienced teachers’ training. A profound and long-term training investment for all teachers is necessary. Teachers should be introduced to more material regarding disaster recovery either in weekly meetings or as additional reading.

4.3 Synthesis of the quantitative and qualitative findings

In this section, the quantitative and qualitative findings are synthesised. In doing so, the similarities and differences of responding to a PDS in each school would be identified. In addition, it could provide an in-depth insight into issues concerning the disaster recovery of schools and its key stakeholders. The findings are generated from several dimensions for comparing the empirical results of the survey and the interview of the head teachers and teachers. The effectiveness of school post-disaster management is identified from the findings of the sample schools. Specifically, the distinguishing features of teachers’ resilience and stress would be recognised across each sample school. Through this process, the five research questions were addressed accordingly.

RQ1: School organisational changes contributing to teachers' stress

Seven indicators were designed in the survey concerning school organisational changes after the Sichuan-earthquake including school teaching facilities, school resources, school discipline, school administrative power, managing personnel, and students and instructional practice. It is clear that the respondents recognised changes during the school recovery process but they clarified that this does not mean that they see all the changes have a negative impact on them (sub-scales 1&2, pp.116-118).

Nevertheless, teachers' stressful experiences were measured with 14 items in relation to the seven indicators of school organisational changes. The majority of the respondents identified that "taking too much responsibility for students" was one of the most stressful experiences during the school renewal process (sub-scale 1, pp.116-117). Teacher interview data similarly elucidated that the earthquake required schools to make specific changes in instructional practice, teachers not only had to promote students' academic performance but also had to build up their social capabilities such as debriefing and monitoring skills in order to protect students suffering from chronic post-traumatic symptoms (see Head Teacher Theme 1- HT1, pp.133-137 and Teacher Theme 1- TT1, pp.146-148).

Those sudden changes and responsibilities brought an unexpected challenge to teachers (TT2, pp.149-152). Other commonly observed stressful experiences included school administrative power changes which related to "a new procedure to evaluate teachers' performance" after the earthquake. This result was stated consistently by several head teacher interviewees. They explained that because of the earthquake, affected schools could not follow the national curriculum, they had to change the traditional '*high score-oriented*' evaluation methods into a '*resilience-oriented*' method to assess teachers' performance. The phrase '*resilience-oriented*' translates directly from Chinese characters which means strong, motivated and resistant. Teachers have to gain these competences in order to meet the standard of evaluation (HT1, pp.133-137).

Several comparative analyses have been examined. The first comparison reported that secondary school teachers had a higher level of stress than primary school teachers when facing the school management changes (Table 4.16, p.125). Further post hoc analysis discovered that primary school teachers had a better school support and fewer students' traumatic issues occurred in classrooms than secondary school teachers perceived after the earthquake (Appendix 10, Tables 1- 4, pp.250-252). Accordingly, primary school teachers showed a higher life and job satisfaction (LJS) and less stress than secondary school teachers (Table 4.18, pp.126-127). Narrative evidence from teacher interviews suggested that a supportive school leadership team is very helpful for alleviating teachers' stressful experiences as well as stimulating teachers' problem-solving capabilities (TT1, p.146).

The second comparison disclosed that age had an impact on teachers' views about stressful experiences based upon "teaching method changes" (TMC) (p.131). Descriptive analysis showed that the middle age group (40-49) are most likely nominated to take an active role at the time of the PDSs and it is not surprising that this group of teachers perceived a higher level of stress than other age groups (pp.131-132).

The last comparison related to school organisational changes. It was looking for whether the year of teaching experience has an impact on teachers' stressful experience (Table 4.23, p.132). The result confirmed that teachers who have taught for more years in schools the more stress revealed than teachers who have taught fewer years based upon the TMC during the PDSs (p.131). As a result, those who had worked more years in education felt more "work overloaded" (WL) than other groups (p.131).

RQ2: Personal experiences contributing to teachers' stress

In order to address research question 2, scales 4, 8, and 9 from the survey were analysed in detail. First of all, findings from sub-scale 4 pointed out that teachers recognised they

had to draw heavily on their own personal capability to cope with PDSs (p.119). Some coping mechanisms acknowledged by teachers including how to collaborate with colleagues, students and parents and understand each individual student's needs (p.119). This response was consistent with an awareness of which could enhance his/her problem-solving abilities in dealing with PDSs.

However, on the other hand, teacher interview data showed that the majority of teachers were less confident to communicate with students who have a traumatic problem (TT2&3, p.151; p: 153). They explained that they were uncertain about who they should talk to, and when they should give additional care to a traumatised pupil (p.151). They had a problem of identifying what behaviours are a part of traumatic symptoms and which are the normal recovery reactions (PBT_02M, p.153).

Furthermore, post hoc analysis suggested that the response from primary school A showed a slightly higher level of awareness of teachers' capabilities in coping with PDSs than the response from the remaining four schools (Appendix 10, Table 6, p.253). Interview data from primary school A concluded that efficient support from school leaders and colleagues played a crucial role in developing their capabilities to cope effectively during the PDSs (PAT_03 M, PAT_04 M, p.148).

Statistical analysis consistently disclosed that female teachers are more likely to be confident of their capabilities to cope with PDSs than male teachers (p.130). Several interviewees expressed that they felt their male friends and colleagues do not know how to express or do not want to express their emotions to others, but they like to share their feelings with others (SAH_01M, p.138). This comment was confirmed by some male interviewees. They clarified they are less likely to seek support from others (school leaders or friends) when facing stressful experiences (p.139-140). Logically, male teachers showed less self-competence in coping with PDSs.

Secondly, scale 8 with 8 indicators concerning a number of teachers who themselves suffered from the earthquake and had to face the overwhelming realisation that the death or injury of their family members, colleagues, students, friends and neighbours (pp.122-123). Some teachers were blamed for leaving their students behind causing avoidable deaths or injuries (TT2: p.151). 3.6% of the teachers experienced the death of their loved one, 41% of the teachers experienced the death of their close friends and 24% of the teachers encountered the death of their students and colleagues (Table 4.14, p.123). Nevertheless, this revealed that they still suffer post-traumatic problems though 92.9% of the teacher participants reported their life eventually approached normality (pp.122-123).

Finally, scale 9 with 25 indexes was designed deliberately to disclose teachers' psychological reactions during the school recovery process (pp.123-124). It is important to note that the majority of teachers showed positive emotions, resilience and life and job satisfaction (p.123). Quantitative findings manifested that the responses from primary school A & C statistically showed a higher life and job satisfaction (LJS) than the other three schools while primary school C and secondary school A showed stronger positive emotions (PEs) compared to other two schools (Appendix 10, Tables 9-10, pp.255-256). From the interviews, it can be perceived that the majority of teachers indicated they do not need a follow-up psychological intervention for them personally but they did expect to get further psychological knowledge and debriefing skills for the purpose of professional preparation for the further (TT1, p.147).

RQ3: Pupils' PDS issues contributing to teachers' stress

Concerning research question 3, pupils' traumatic experiences had to be identified. Scale 6 explored a range of traumatic experiences of pupils including worse behaviours, low academic motivation, lack of confidence, bullying, violence and depression (p.121). The participants observed that only a few pupils were displayed "bullying" and "violent" behaviour but a wide spectrum of behavioural and emotional reactions among pupils

highlighted lack of confidence, low learning motivation and concentration in the classroom (Table 4.13, p.122). The results of comparison suggested that students' PDSs' issues displayed a difference between primary and secondary schools (Table 4.20, p. 129). In general, primary schools' teachers encountered fewer traumatic problems among pupils than secondary school teachers (Appendix 10, Table 4, p. 251). The responses from secondary school B reported that teachers' views about students' traumatic issues are slightly negative than secondary school A (Appendix 10, Table 7, p. 254).

The statistical findings implied that primary school pupils can be less sensitive to PDSs than secondary school students (Appendix 10, Table 4, p. 251). Some narratives explained younger pupils' cognitive ability is still developing and they are less likely to suffer from severe trauma compared to elder students after a major disaster (SBH_02M, p.142). Basic needs such as food, shelter and a safe environment are required to meet the needs of the younger pupils but these cannot satisfy on the elder students' needs.

The elder students have a better understanding of the devastation of a major disaster on their families and societies, which would affect their emotional process and development physically and psychologically (pp.141-142). If the needs of the elder students cannot be addressed that can cause a range of traumatic stress. At this point, the narrative explanation supported the reason why secondary school teachers faced a great deal more students' issues than primary school teachers.

A range of narratives related to teachers' stress to recognise students' traumatic issues. In general, teachers felt confident to recognise externalising behaviours such as aggression, bullying and anger (HT3, pp.140-141, TT3, pp.152-154) but they expressed that they were not confident to identify traumatic symptoms such as depression, anxiety or hyperactivity (p.153). PCT_2 F stated that they were too busy managing the discipline of class, which left little time for probing anything else (pp.152-153).

Several teacher interviewees emphasised they had a lack of knowledge when it came to using the most appropriate approach for supporting their students which was a real challenge to them (p.153). They confirmed that students had a lack of aspiration and confidence to be hard-working learners (HT3, p.140; TT3, pp.152-153). However, they were not sure whether the traumatic experience is the cause of students' low levels of motivation and lack of confidence or whether other circumstances exist (TT3, pp.152-153). Further expressions stated that it was hard for teachers to identify whether students' concentrative difficulties resulted from a trauma and whether it is necessary to treat him/her as a special "case" to be explored (p.153).

RQ4: Parental absence contributing to teachers' stress

Scale 7 was designed to discover parental involvement in pupils' recovery process. The findings displayed that inappropriate parental involvement had a negative impact on children's traumatic recovery which referred to parents' overindulgence with their children, broken families, single parent and stepparents' issues (pp.121-122). On the other hand, the results from interviews revealed that parental absence and parents' lack of knowledge and involvement were the major challenges for school leaders and teachers (HT4, pp. 142-143; TT4, pp. 154-155). Teachers expressed high levels of pressure with their efforts to engage parents and gather their support. SBT_04M spoke of his concerns about the low level of interest of addressing students' issues from parents. He described that generally parents were uncooperative, disengaged and unwilling to put effort into their children's issues and they expected teachers to take full responsibility for students' issues (TT4, p.155).

A substantial number of narratives expressed that teachers were aware that effective parental involvement could help children to improve their attitudes, behaviours and attendance at school as well as promote children's emotional process (HT4, pp.142-143). Head teachers found that when parents were involved in their children's recovery process

those children achieved a better academic performance and presented fewer behavioural and emotional problems (SBH_02M, p.143). However, resulting from the earthquake, parents had to go out job seeking. Boarding school is the first choice for most families in this area (p.143). Faced with such circumstances, encouraging parental involvement in school appears to be the way forward in aiding children's recovery in both primary and secondary schools.

A few parents exhibited an interest in being involved with their children's recovery program, but most of them are uneducated and suffering from traumatic problems as well (TT4, p.155). It is very difficult for them to gain the appropriate knowledge and skills in support of others. That is why several teachers expressed that some parents' involvement undermined the recovery process of children, and they would have preferred parents' absence though they had worked really hard to accommodate the parental role (pp.155-156). The findings suggested that lack of parental support was an important factor slowing down children's recovery, and teachers tried their best to take the role of parental care, but after all they just implemented what they thought they should do.

RQ5: Implementing methods in support of teaching in PDSs

Some prominent suggestions generated from the findings of sub-scale 3 & 5, which were about effective strategies in support of teachers in PDSs (sub-scale 3, p.119; sub-scale 5, p.120); how schools manage a PDS to stimulate teachers' resilience. The improvement of a school environment, culture, work conditions and family support were perceived to be the fundamental strategies for promoting teachers' resilience and decreasing their stress level (sub-scale 3&5). Self-adaption (M = 4.29, p.120) is an intrinsic capability which helped teachers' recovery and has been recognised by most participants. Primary school A was identified as most effective in support of teachers in PDSs compared to other primary schools (Appendix 10, Table 5, p. 252) while secondary school A was reviewed at slightly more efficient level than secondary school B based upon teachers' perceptions.

Teachers' interviews provided additional information to confirm that school administrative power was seen as being necessarily purposeful and an effective factor in support of teachers (TT1, pp.146-148). If schools had responded immediately to school stakeholders' needs after the earthquake the more benefits they would have got. Several interviewees responded with negative views associated with perceptions that school leaders did not respond in an appropriate and timely manner, or there was a lack of or inadequate, ongoing support for teachers and students (pp.147-148). School organisational changes after a disaster could be overwhelming to all school stakeholders, if the changes did not take account of the consideration of teachers' resistance competence that could bring a negative impact on the effective recovery of both the school organisation itself and school stakeholders.

The results emphasised that teachers seemed not to be taking the school leadership role during the PDSs (p.146). School leadership appeared to take on a more complex interaction structure because teachers did not directly get involved in the role of decision-making. If any issues appeared, teachers needed to report them to the Administration Office whom referred it to the school head or panels (p.146). This process may have undermined the communication among teachers and school leaders and potentially isolated teachers' power and contribution to the school recovery process. Teachers have hardly taken leadership roles not only because the school heads did not authorise them to do so but also because teachers seemed unprepared to be involved when required (TT1, p.146; TT2, pp.149-150). The post-disaster management seemed not to appear to play a positive role in facilitating the interaction of school leadership among key school stakeholders.

In general, the findings based upon how to implement effective strategies in PDSs suggested the following methods. First, open communication is the key between school leaders and teachers. It is also important for effective school reorganisation because it would allow teachers to involve and implement the process collaboratively and voluntarily. Second, sustainable changes and development during the PDSs should be

secured in order to make a safe school environment for school stakeholders. Third, a systematic disaster recovery plan has to establish a long-term framework encompassing a school psychological training program, teachers' well-being improvement, and parental involvement in children' recovery. Finally, to achieve these, the education of school leaders must be about more than simply managing the school. They must have knowledge about 'what' they have to do to make these happen, but also knowledge about 'how' to approach the unique post-disaster situations. Leaving any school stakeholders behind would hamper the effective recovery of the school as a whole.

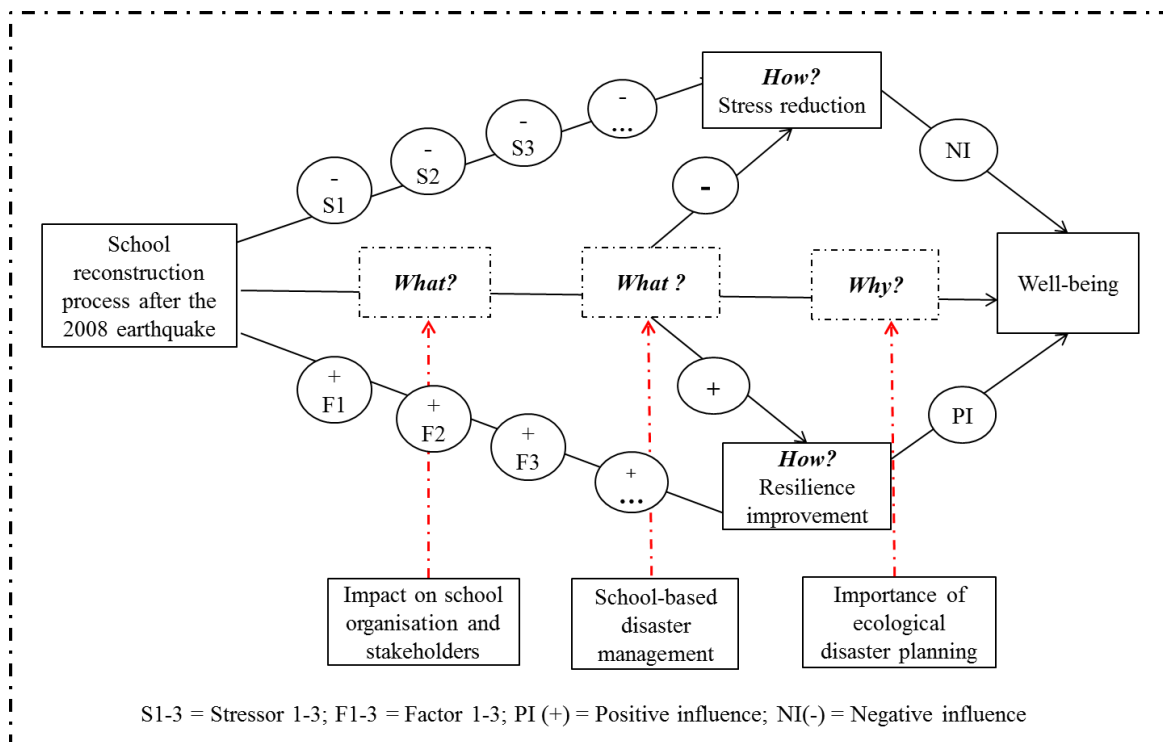
In the next chapter, a comprehensive discussion of these findings will be presented alongside the existing theory and literature review.

Chapter Five: Discussion

5.1 Introduction

This chapter discusses the data critically with references to relevant literature in an attempt to explore the deeper understandings of the impact of the Sichuan-earthquake on school organisations and individuals. Specifically, school teachers' challenges, experiences, coping strategies are examined in order to identify school post-disaster management strategies and how those responses influence teachers' recovery and resilience after the earthquake. Through a discussion and analysis of the findings from both questionnaires and interviews against the review of the literature demonstrated in chapters two and four of this thesis respectively (pp.18-80;109-156), a school-based disaster management model (SBDM) is developed in this chapter for understanding schools' PDS (see Figure 5.1).

Figure 5.1: Conceptual model for school post-disaster context



Section 5.2 abstracts the types of school organisational changes, issues and post-disaster response following the Sichuan-earthquake in order to understand the impacts of the earthquake on school organisations as well as addressing research question one, which is:

1. What have been the school organisational changes since the earthquake in 2008 and how have these contributed to the stress of school teachers? (RQ1)

In section 5.3, I demonstrate the impacts of the Sichuan-earthquake on school stakeholders especially school teachers' personal experience in a PDS in order to address research question two:

2. How have teachers' personal experiences of the earthquake contributed to their stress? (RQ2)

Section 5.4 discusses school teachers' professional challenges in a PDS relating to the experience of school new system and the challenge of students' behaviour after the earthquake. With a view to addressing research question three:

3. What are pupils' PDS issues and how do these contribute to the stress of school teachers? (RQ3)

Section 5.5 highlights parental absence contributing to teachers' stress in order to answer research question four, which is:

4. What are the perceived effects of parental absence on pupils' recovery processes, and on teachers' stress? (RQ4)

Section 5.6 develops an ecological disaster model for the school disaster context with a view to addressing research question five, which is:

5. What do teachers think needs to be done to increase their resilience and decrease their levels of stress, in order to help them teach effectively within a PDS context? (RQ5)

A summary of the discussion chapter is presented in section 5.7.

5.2 *RQ1*: Impact of the earthquake on school organisations

Some researchers describe a natural disaster such as an earthquake as a traumatic event that is unexpected and sudden and its consequences could change the entire school culture and values which could lead to vulnerability and helplessness in all school stakeholders (Brown and Yasukawa, 2010; Brown, 2008; Kovoov-Misra, 2009, Zhang et al., 2010; Zhao et al., 2010). The findings of this research support the above literature suggesting that the impact of a natural disaster on school community has been stronger than ever. It is evident from both the questionnaire and interview findings (Chapter 4, pp. 109-165) that the school organisation in the context of this particular study revealed several changes which were enforced as a result of the Sichuan-earthquake (sub-scales 1&2, pp.116-118; HT1, pp.133-137).

5.2.1 Geographic transformation in PDSs

Following the Sichuan-earthquake, affected regions were undergoing a period of comprehensive demographic and geographic transformation (pp.116-118; pp.133-137). The survey results of this thesis present a clear trend in school changes during the period of the 10-20 months following the Sichuan-earthquake (pp.116-118). This result supports the views of Openshaw (2011) who claims that school organisation is most likely going through a transformational change in order to meet the new school environment requirement following a disaster. This result also corroborates previous studies of (Alvarez, 2010; Beatty, 2007; Jaques, 2010; Tarrant, 2011; and Wachtendorf et al., 2008).

Five head teacher participants (SAH_01M; SBH_02M; PAH_03F; PBH_04M; PCH_05F) emphasised that the devastation of the earthquake brought unexpected changes and challenges to school organisations (HT1, pp.133-137). One of the most important external issues facing Beichuan schools is how to meet the high expectation of national

and local Chinese authorities (p.134; p.137). These results confirmed by Zeng et al. (2011) and Ho et al.'s (2012) research that school leadership has been challenged to balance the need for standard operating procedures against an ability to bring flexibility to existing school organisational structures in response to specific problems brought on by the disaster. That is, they need to consider how PDSs may impact on school communities and stakeholders, and what strategies may be effective to deal with the situations (Brown et al., 2011; Cederblad, 2009; Coonan, 2008), and what disaster planning programmes should be prepared to manage the future disasters efficiently in educational districts (Yang and Chai, 2010; Ritchie and MacDonald, 2010).

Previous small and remote rural schools have been displaced by a completely up-to-date school community (HT1, p.135; TT3, p.153). Most schools were found to be insufficiently prepared to enlarge the school community following the earthquake which is seen as other school issue (HT1, p.135). This frequently mentioned issue (enlarging size of schools) has led to a range of difficulties in the school reconstruction process, in connection with “diversity of culture among school staff and students” (p.134); “shortage of qualified teachers” (p.135) and “90% of immigrant families” (p.137). These, to some extent, partly relate to a sustainable development of China’s policy of disaster reduction across educational sectors in the seismic areas - merging and expanding schools (Watts, 2008). Partly, they also relate to the capabilities of school disaster management among school leaders (Leithwood and Jantzi, 2009).

5.2.2 Cultural adjustment

The frequently mentioned other school issue was that school-based disaster supervision put too much stress on educators who work on a managerial level than focusing on the regeneration of the school culture (PCH_05F, p.134). This comment supports the reviews of accessing support for working with stakeholders to create and develop a shared school culture for the future. This “shared vision” has been confirmed to be an

important innovation that influences both school development and teachers well-being in the Chinese context (Zhu et al., 2011). Therefore, it is important to gain collaboration and participation from all school stakeholders in order to reshape a new culture where all parties are committed to the school mission of recovery in the changing climate after an earthquake. It is also vital for school leadership to meet the new demands and prepare teachers for the changing conditions as positive and supportive school leadership is both a goal and a means for shaping a new school culture and promoting its growth and development (Zhu et al., 2011).

The results of the interview reported that teachers could cope well during PDSs if they experienced a positive school culture that is sharing and where school members support each other, demonstrate trust and openness between school leaders and staff (HT5, p.144). This report complements that of Papatraianou and Le Cornu's (2014:102) study. They propose that a positive school culture includes school leader support, good relationships with colleagues, having colleagues who specifically support teachers' work during a difficult situation (e.g. PDSs), a helping system is available among teachers they feel safe at school and have a fair opportunity for professional promotion. These factors have important implications for schools engaged in post-disaster recovery in helping them to move forward more effectively (Hallinger and Heck, 2010; Kurland et al., 2010; Leithwood et al., 2008).

However, it appeared from the data of this thesis that schools have difficulty in finding ways to create an appropriate school culture after the earthquake (pp.133-137), based on the head teachers' perceptions (PAH_03F, SAH_01M, PCH_05F, pp. 133-134) of school issues after the earthquake. The interview results indicated that after the earthquake, many schools faced a leadership transformation and each school head had different ideas of how best to run a school, this has left schools in a lengthy transition phase (PCH_05F, p.134).

As identified in this study, leadership plays a very important role shaping the school culture and influencing teacher recovery and resilience (HT1, pp.133-137). Therefore, school head teachers play an important role in influencing the school culture and consequently teachers' performance. This result supports previous studies that leadership has a significant impact on teachers' effectiveness and resilience (Zhu et al., 2011). Similarly, Nastasi et al. (2010) claim, culture sensitivity is an important and invisible feature which usually undermines a school's renewal process if school leaders did not have the vision to identify the importance of redeveloping a school' culture during the PDSs.

Facing a lack of vision for school' future development (p.134), and a lack of commitment among school staff (pp.135-137), and the pressure from Chinese authorities (p.137), school leaders often fail to lead a PDS for a sustainable and long-term basis (Kurland et al., 2010). Schools of this study seemed to experience the inefficient school post- disaster leadership transition issue following the Sichuan-earthquake (pp.134-137), it is not surprising given the environment that school organisation faltered.

The result of this thesis revealed some specific structures of school culture after the earthquake. In general, the school structures had a rather high goal orientation and traditional relations among head teachers (HT1, pp.133-137). The head teachers showed a relatively higher expectation for school's vision and future development (HT5, pp.144-145). However, the results seems to suggest that school culture is not positively supportive, as some teachers point out that a supportive school culture is considered as one in which higher level of support is provided (TT1, p.146).

Zhu et al. (2011:325-326) suggest three factors about rebuilding school culture including goal orientation, leadership and shared vision that can influence school culture and teachers' commitment and well-being. In other words, the more a school has clear goals, stronger leadership, and shared vision within the school, the more likely the teachers are to be committed to the school. The interview results of this study also pointed out that

teachers feel more attached to a school in a school culture that has a clear vision for future development and positive public relations (TT1, p.146; p.148).

Redeveloping a communal school culture can help school members to feel a sense of stability and safety as well as the understanding that comes from a shared experience “...we were in it together and share each other’s pain...” following the earthquake (TT1, PBT_03F: 146). Ho et al. (2012) take a similar view suggesting that school culture, values, stability, safety and future development needs to be well formed during a school’s renewal process otherwise uncertainty gives rise to a secondary crisis a lack of confidence in what the future has to offer.

The interview results of this thesis are consistent with other findings that suggest the presence of a clear school vision and development promote increased teacher recovery and resilience. Furthermore, the findings complement that positive relationships among school members are very important as a healthy school culture should be built upon collaborative activity among teachers, students, parents, staff, and the school leaders (p.146; p.158).

5.2.3 Managerial issues

The majority of teachers agreed that the bureaucratic structure of the educational system makes the school reconstruction process problematic because when it comes to managing a school-based disaster situation (p.135), the school leaders did not have a comprehensive plan in place, they have to follow the Chinese Government policies (p.135). This comment confirmed that school post-disaster management is a relatively new experience to most of Beichuan school leaders, and that it has only received attention after the earthquake in China (Wang, 2008; Sun et al., 2010; Ho et al., 2012; Zeng et al., 2011). Therefore, Bixi (2009) points out those Chinese authorities launched a substantial package to support the reconstruction of schools in Sichuan, showing a

remarkable effort and capacity. These reviews are supported by Kong et al. (2010) and Wei (2008) in understanding the situation after the earthquake.

Some school head teachers (SAH_01M; SBH_02M; PAH_03F) indicated that they had never led a school during PDSs before the Sichuan-earthquake, and they felt powerless (p.134). Beatty (2007) suggests that school leaders should provide the teacher professional training programs and pedagogical instruction based on a post-disaster scenario as opposed to the normal and pre-disaster training programs. Teachers/educators should be trained to be innovative and resistant in teaching during the PDSs regarding the needs of students they service as well as Ho et al. (2012) recognised. Their studies support the comments (p.136) that school leaders may need to put in place recruitment and training for school members following the disaster, the existing school teaching system (teachers) no longer delivers sufficient pedagogical instruction to the classroom and away from the needs of traumatised school children (TT2, pp.149-150).

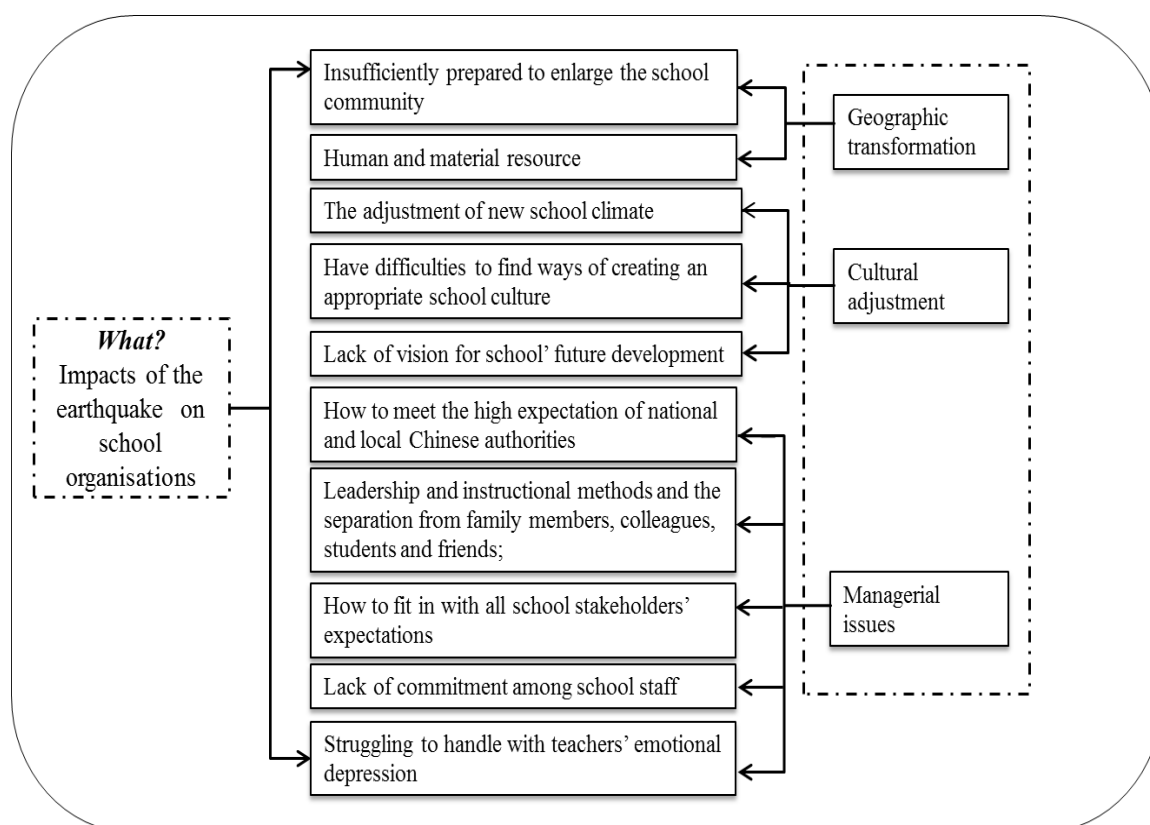
The school leaders recognised that the process is much more complex than they assumed (pp.134-137). The challenge for schools in PDSs appears to be in redefining the meanings of life (p.135), education (p.136) and school vision at all levels of the school community (pp.144-145), and putting these into school post-disaster management within the circumstances of sustainability-oriented renewal that schools in Sichuan China are facing. These findings disclose the reviews that previous studies (Astor et al., 2010:70; Diment et al., 2009) identified that from one side, school organisational changes need to piece together a construction of the school environment, from the other side, the new environment has to fit in with all school stakeholders' expectations (Edwards et al., 2008).

It appeared from the head teachers' interviews that most struggled to deal with teachers' emotional depression (HT2, pp.138-140). And yet, it is not surprising that the low levels of perceived general support for promoting teachers' recovery was seen in the lower support factor scores for the "support from school leaders" factor from the teachers'

survey results (sub-scale 5, p.120). Smith and Riley (2012) recommend that schools need to combine the emphasis on development of school organisation alongside with the needs of school stakeholders if they wish to respond effectively to a disaster scenario.

Figure 5.2 highlights the impacts of the earthquake on the school communities in Sichuan. The highlighted impacts provide a useful reference point from which to explore the coping strategies applying the same context as school PDSs. As discussed later in this chapter, an effective SBDM model cannot be constructed without a full understanding of the impacts and challenges that organisations and their people face.

Figure 5.2: Impacts of the Sichuan-earthquake on school organisation



As shown in Figure 5.2, above, it seems school leaders acknowledge that an effective school disaster recovery should consider both internal issues and external resources (section 5.2, p. 170). This result has confirmed what Jaycox et al. (2007) believed that a successful recovery from a disaster is shown by those schools that optimise conditions

for actively utilising and developing both internal and external resources. I now turn to the discussion of the impact of the earthquake on school stakeholders.

5.3 RQ2: Teacher personal experience in PDSs

This section discusses the challenges facing school teachers in responding to the school renewal resulting from the earthquake, and the coping mechanism teachers perceived from both school organisations and themselves (sub-scales 4, p.119, sub-scale 8, pp.122-123 and sub-scale 9, pp.123-124). As Openshaw (2011) cautions that traumatic experiences can cause strong emotional and psychological grief to normal and healthy people, and have the potential to disrupt their capability to function properly. Based on the socio-ecological structure, teachers' well-being and recovery is associated with a personal layer as well as a professional layer (Nastasi et al., 2010).

The personal layer refers to teachers' intrinsic capability, personality, and family-related traumatic experience, and the professional layer ties to teachers' social-status/stress and work environment. Those interrelationships are linked closely in reflecting the daily functioning of individuals (Deci and Ryan, 2008; Lucas and Diener, 2008). To find out the teachers' resilience and well-being levels, first, their personal experiences needed to be identified and the professional layer will be discussed following that (section 5.4).

A major disaster has a significant impact on teacher' psychological and physical health which directly undermines teachers' well-being (Bizumic et al., 2009). The dynamics of teachers' personal experience can be triggered by a range of traumatic stimuli including the death of spouse, children, family members, students and colleagues, and the destruction of their surroundings and properties (sub-scale 8, pp.122-123). Family members had to remain separated, and many teachers lived in the school residence without their family members (p.136; 147). From the teachers' survey results (sub-scale 8,

pp.122-123), 59.7% of the participants indicated their home had been moderately damaged and 3.6% of the participants had experienced the death of their spouse and child.

The findings of this thesis highlighted the traumatic experience teachers suffered which included physical and emotional responses, which over the long term may turn into exhaustion, depression, lack of interest in work or life in general (HT2, p.135; TT2: pp.149-151), withdrawal from family and friends, avoidance and overwork (pp.150-151). These stressful experiences have been highlighted by many researchers in the literature review (Bokszczanin, 2011; Norris et al., 2009; Şahin et al., 2009; Widyatmoko et al., 2011; Henderson and Hildreth, 2011). These responses can have a negative impact on teachers' family, social and work relationships and activities as Chaplain (2008) believes. Similarly, Tartakovsky (2009) believes that denial as a mechanism for avoiding trauma-related thoughts and feelings is counterproductive and can actually lead to post-disaster related stress in teachers. This point is confirmed by the comments from the interviews (p.138).

The interview results reveal that some teachers were not able to express their emotions about a particular trauma affecting themselves and students (p.138). However, most teachers found that in sharing anxiety and sadness with others they reduce their own level of stress (p.158). These teachers are unable to deal with their initial trauma they may well suffer more intense symptoms later (Kyriacou, 2007; Yang and Chai, 2010). Therefore, teachers need to pay attention to their own traumatic issues; they should take time to ensure they are fully recovered before helping others and conducting general teaching activities (Geving, 2007; Mohay and Forbes, 2009).

Xu and Feng (2012) research shows that people working in an intellectual field such as education may suffer less grief as they may have a better understanding of the consequences of the trauma and be able to self-adjust. The findings of the current study contradicts this point, educational level seemed not to impact on teachers' recovery and

resilience (p.130). However, the participants revealed that their teaching experience (longer than 15 years) and age did have a positive impact on their recovery (pp.130-132). They also recognised that family dysfunction, discord and departure could threaten their personal confidence and reduce their social support (TT2, p.150). As identified in the literature review (Gunderson, 2010; Goldstein, 2009; Haglund et al., 2007; Masten and Obradovic, 2008), teachers' self-confidence and social support are the vital aspects of enhancing resilience to a disaster, thus if a school wishes to address a teachers' trauma effectively they should bear this in mind.

A prominent narrative reported that most teachers struggled with rebuilding their own home and they wanted school authorities on their behalf to canvass the Chinese Government for financial support to repair/rebuild their homes (p.150). It appeared from the teacher interviews that school leaders need to do more in support of teachers' family issues. This result supports Low (2011)' statement that school leaders need to tailor their support during a PDS based on individual teachers' needs. If teachers consider that their depression can be minimized by solving his/her personal issues such as having a comfortable home and being with family, then school leaders should not consider giving them training (professional skill) themes, regardless of their needs as further distress can be evoked (Lowe, 2011).

5.4 RQ3: Teachers professional challenges in PDSs

5.4.1 School new system challenging teachers

The survey findings suggested that teachers' challenge in PDS was multi-dimensional, not only the personal issues, but also the changeable working environment and the interaction with the students and parents (sub-scale 1, pp.116-117). The interview results complement that teachers' work had transformed following the earthquake (TT2, p.149),

in part, by the school renewal situation teachers were expected to provide additional support and cope with a range of new issues.

Quantitative findings of this thesis consistently show a strong positive association between teacher post-disaster related stress and school environment changes (Table 4.16, p.125). Most of the stressful experiences measured in this study relate to school organisational changes including the adjustment to a new school climate, leadership and instructional methods, the separation from family members, colleagues, students and friends (sub-scales 1&2, pp.116-118). Contrary to previous studies of Chaplain (2008) and Geving (2007), identifying the types of stressful experiences associated with student behaviours and occupational burnout.

Additionally, factor analysis of teachers' response helped to identify three factors challenging teachers while at schools during the reconstruction stage (section 4.2.1, p.114). The three factors were identified as "teaching method changes" (TMC); "school management changes" (SMC) and "workload" (WL). Some comments stood out, "I haven't got used to using projection screens for teaching" (TMC)... "I don't understand why we should be scored by our students" (SMC - "new evaluation procedure for teachers").

Those situations required them to master specific skills in disciplinary content and instructional practice. Teaching is a difficult task in school PDSs, teachers not only need to manage to get back to the regular curriculum they also have to monitor traumatised students and cope with their own depression (Geving, 2007). The literature view supports the interview results that many teachers discussed what they considered to be the changed nature of their mission (TT2, p.149), and the stresses associated with the nature of taking too much responsibility for students (sub-scale1, p.118; TT2, p.149) in PDSs.

Workload seems to be a common issue facing school teachers even in a normal school condition (Bridges and Searle, 2011). However, the "workload" in a PDS is challenging

and difficult to compare to a normal teaching situation. This intensity of transformation challenges teachers, they often felt incapable of coping with and overcoming what they perceived as an overwhelming workload. The responsibilities and responses contributed to a substantial “workload” for school teachers in PDSs (sub-scale 1, pp.116-118; HT2, p.139; TT2, p.150-151), which has been identified from the results of this study.

In the earlier discussion of the school organisational changes (pp.116-117; HT1, pp.133-137), I have discussed that school teachers were forced to learn how to use new technology, new teaching equipment and developing links with social support (network with students, colleagues, parents and community), and be responsible for traumatised students and stabilising those who are emotionally and physically affected (sub-scale1, pp.116-117). This result was similar to what Wood and Olivier (2008), Bridges and Searle (2011) and Shen (2009:130) discussed in the literature review (p.29; pp.33-34), the transformation process could affect teachers functioning negatively, and students’ traumatic experiences could be exacerbated.

5.4.2 The changing behaviour of students

A significant number of teacher participants (74%) recognised that teaching after the devastation of the earthquake became harder in classroom (p.116; HT3, pp.140-142; TT3, pp.152-154). The reason is that schools in Beichuan consider the support of children’s post-trauma as a key role of teachers, which has been highly related to teachers’ performance and income evaluation (p.135). School leaders believe those teachers can have a positive impact on children’s recovery (p.136) as well as some researchers (Alisic, 2012; Alvarez, 2010; Bridges and Searle, 2011; Ho, et al., 2012).

It was expected that students who experienced such a devastating disaster would show frustration and anger leading to confrontation and violence in schools (Williams, 2008; Cohen and Mannarino, 2011; La Greca et al., 2008). Unexpectedly, the lowest score

perceived for students' issue rarely occurred "violence and fighting" among the students (Table 4.31, p.152). This may be due to the school responding well to children's traumatic intervention or general apathy perhaps they just did not care enough to fight.

In the Chinese disaster recovery context, restoring the well-being of children and women is the priority, and has a long tradition in China (Higgins et al., 2010). It seemed that schools in Beichuan have recognised that achieving this public objective would be impossible without making a great effort on behalf of the vulnerable school children (HT2, pp.141-142; TT1, pp.147-148; TT4, p.156). The most frequently mentioned students' issues were "students don't have interest in study" (HT3, p.140; TT3, p. 153). In comparison, primary school teachers appeared to face less of a challenge in dealing with pupils than secondary school teachers (Appendix 10, Table 4, p.251).

Two reasons for this were identified from the data, first, elder students tend to exhibit more severe behaviours than younger students (p.139) which confirmed what Margoline et al. (2010) identified in the literature review (p.27). It suggests that secondary teachers may need to put in more effort to deal with the consequences of students' actions (Clettenberg et al., 2011). For primary school teachers, younger children tend not to exhibit serious misbehaviour but they tend to have more internal abnormal feelings (Cederblad, 2009; Cohen et al., 2009; Overstreet et al., 2010) such as sleep disorder and screaming while sleeping. It requires experienced professionals to observe younger children's traumatic symptoms (Clettenberg et al., 2011). The primary school teachers felt less stressed regarding dealing with students' issues as they may not have recognised these symptoms in their students or they were not completely involved in the children's intervention in the first place (TT3, p.153).

Second, an effective school PDM team would help reduce teachers stress. The survey results suggested that in general the factor of school management change (SMC) has less negative impact on the primary school teachers (Table 4.17, p.126). Some narratives of this thesis explained that the school leadership team was quite helpful and supportive

(PAT_3M, p.148) and teachers felt they could rely on their leaders when they faced difficulties (PBT_03F, p.148).

There are inherent problems with teachers working with traumatised children. The problems include the difficulties in identifying traumatic symptoms in children (p.149; 151; 153); the limited access to specialised services for children to get treatment and learn how to take care of themselves under stressful conditions (p.154). Teachers recognised the struggles and issues students faced during the PDSs, but the lack of skills, training, information and resource hindered them in addressing those issues (TT2, pp.149-152).

The results of this thesis also indicated that teachers prefer to leave psychological care to professionals because they were confronted with daily difficulties when putting their limited psychological training into practice (p.153). This result confirmed what Wolmer et al. (2005; 2011) had suggested that teachers feel uncomfortable in undertaking teacher-mediated interventions for children due to their lack of adequate knowledge and skills. Likewise, Bizumic et al. (2009:133) caution that many teachers are incompetent in addressing the needs of traumatised children which in some part may be due to them suffering the loss of their homes or suddenly facing the stress of indefinitely teaching to large classrooms. Their personal issues having not been addressed they struggle to empathise with and address their students' needs.

Indeed, some interviews revealed that although teachers were able to identify the different work demands between pre- and post- earthquake (TT2, pp.149-151), the knowledge and competence required to handle those demands were perceived as inadequate (p.151). They were not able to identify severe trauma among students and were not able to ascertain if a student's behaviour was related to the traumatic experiences (p.153). Teachers clearly struggled to handle severe trauma in their students, if they are expected to intervene in cases of child trauma without training, further damage could be caused to both teachers and children (Brown, 2008; Paton, 2011). Teachers

given a task they are ill equipped to handle can fail leading to a lack of self-confidence and reduced teacher efficiency (Alvarez, 2010; Bokszczanin, 2011). If children are not getting appropriate intervention then their recovery from serious emotional trauma can be delayed (Cederblad, 2009; Cohen et al., 2009; Overstreet et al., 2010).

5.5 RQ4: Parental absence challenging teachers

Teachers appeared to struggle more following PDSs due to their additional responsibility of parental care (HT4, pp.142-143; TT4, pp.154-156). The survey results showed that “the burden of parental care for pupils” was consistent with the teachers’ professional challenge of dealing with students’ issues (sub-scale 6, p.121). The teachers’ interviews have highlighted this result as well (TT2, p.149; TT4, pp.154-156). The majority of the teacher participants affirmed that taking on a caregiver’s role for their pupils (7days per week) was a big challenge for them (p.149).

The interview results of this thesis suggested that teachers perceive their roles as extending beyond the teaching textbooks (p.149). Some senior teachers pointed out that they had found ways of controlling compassionate feelings over time, but they felt some inexperienced teachers were struggling (TT5, p.158). This result confirmed what Dean et al. (2008) stated that if teachers are unable to handle their traumatic feelings and thoughts properly, those teachers could suffer a secondary or vicarious traumatic response.

The frequently highlighted concerns of teachers were that parents don’t engage in their children’s study (HT4, pp.143-144; TT4: pp.155-156), and there was a lack of knowledge in understanding children’s emotional needs and feelings (p.155). Clearly, teachers were challenged by working with parents, and they also indicated that some parents did not respect their professional capabilities which made them lose teaching confidence and

efficiency (p.156).

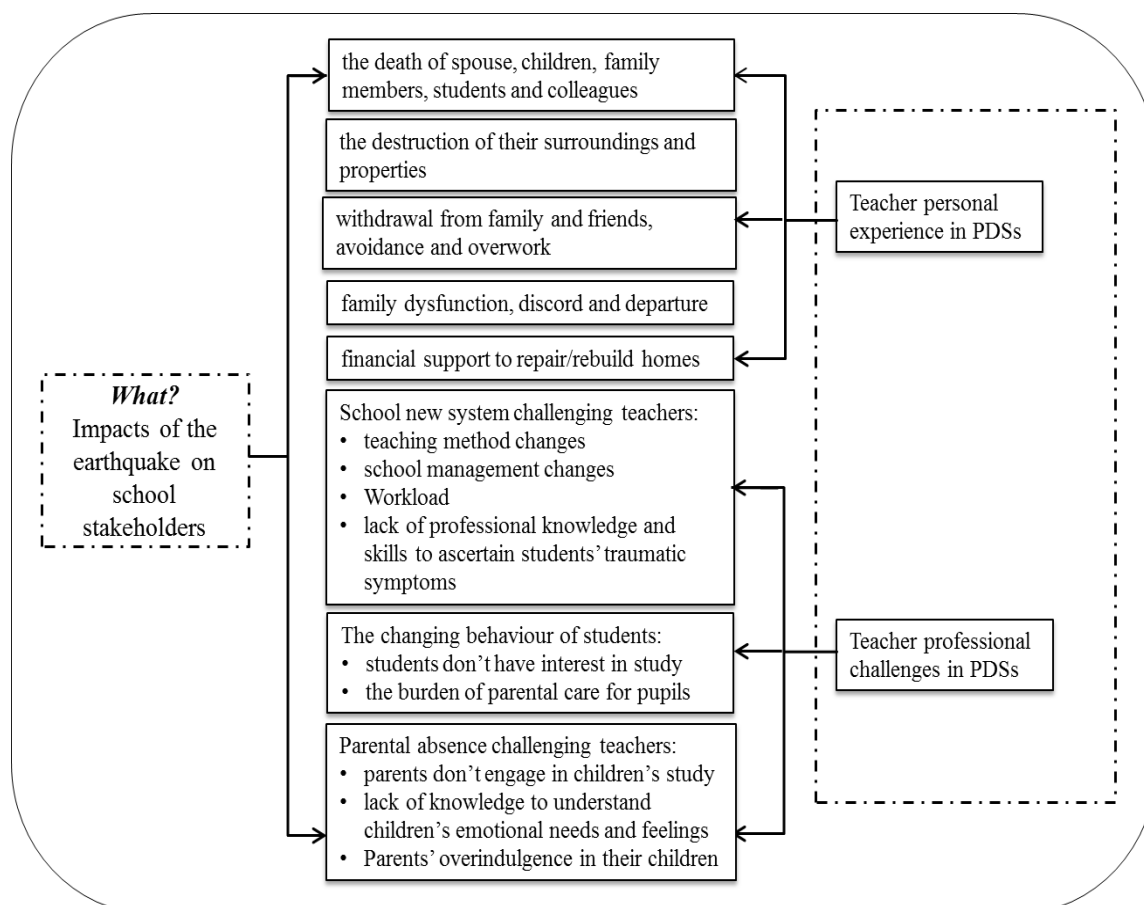
Two important issues are raised by these findings. First, these results were gathered via self-report stories and raise the possibility that teachers may be aware of the importance of parental involvement during the PDSs (p.155). Conversely, teachers seemed to have a different perspective about parental involvement in this context, but this doesn't mean that teachers were not aware of the benefit of involving parents in children's recovery, which led to the second issue - parents' incompetence (p.155).

This result revealed that some parents' involvement undermined children's recovery and challenged teachers' capability (p.156). For instance, some parents suffer from a variety of difficulties following a major disaster including losing their jobs, economic resource and properties which could destroy parents' social status and self-confidence (p.155). Under those circumstances, parents may transmit their anger and stress to children and this could jeopardise children's recovery and challenge teachers' coping mechanisms, this has been discussed in the literature review (Tartakovsky, 2009; Hornby and Witte, 2010; Pomerantz et al., 2007; Clettenberg et al., 2011).

Parents' overindulgence in their children has been perceived as another issue hindering teachers' practice (p.156). There are a few previous studies suggest that overprotective parents hinder children's development (Margoline et al., 2012; Vasterling, 2008:536). Some narratives explained that due to the traumatic experience of the parents they are still frightened and often react by being overprotective and afraid of losing their children again (p.155). This reaction could inhibit a child's recovery from a disaster. Parents were expected to offer a positive influence on the behaviour of their children, however, as mentioned, teachers felt that many parents were incapable of involvement, not only due to a lack of knowledge and education, but also because the parents were struggling with their own personal issues as well (HT4, p.143; TT4, pp.155-156). In addition, some parents changed their view of education after the earthquake, and they believed education was not as important as their children being alive (p.155).

Figure 5.3, below, highlights teachers' personal and professional experiences in PDSs. The impact of the Sichuan-earthquake on school organisations and individuals has also been discussed above. Now I turn to discuss the coping strategies and response perceived from school leaders and teachers following the Sichuan-earthquake in Section 5.4.

Figure 5.3: Impacts of the Sichuan-earthquake on school stakeholders

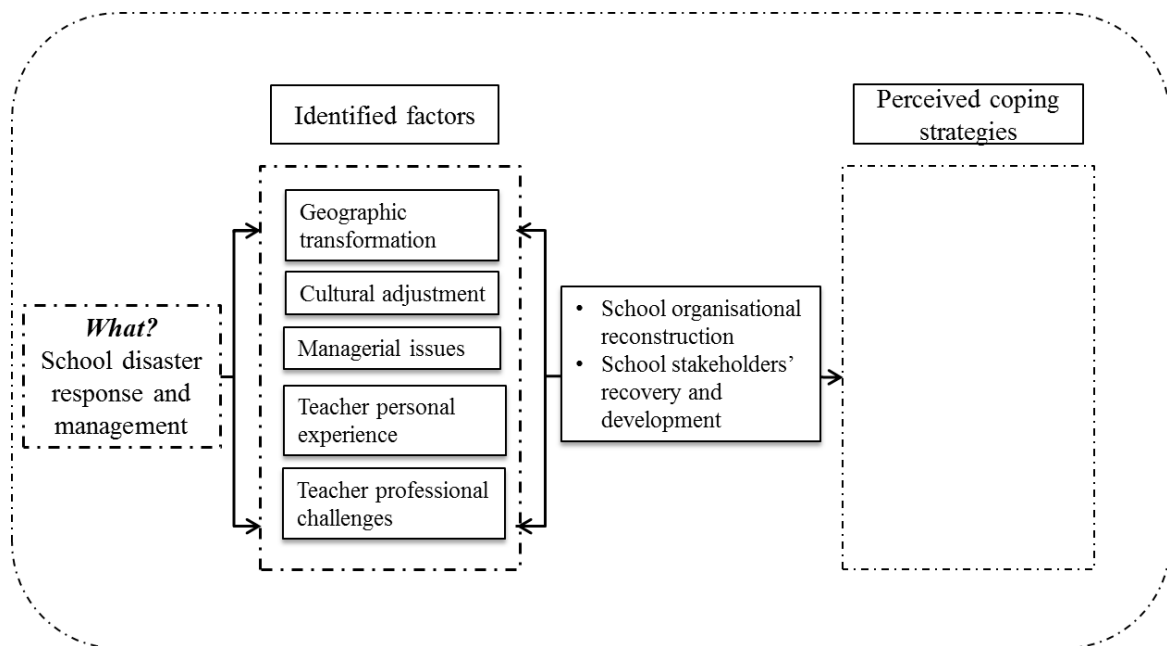


5.6 RQ5: Perceived coping strategies in school PDSs

This section is going to analyse what coping strategies school leadership have/haven't done in order to tackle the multi-dimensional challenges in a PDS and the useful strategies in promoting a SBDM model. As shown in Figure 5.4, below, on the left hand of the figure synthesises the challenges that school organisations face including

geographical transformation, cultural adjustment and managerial issues, along with teachers' personal and professional challenges following the Sichuan-earthquake. On the right hand side in Figure 5.4 is an empty box, this will be completed with a summary of the perceived coping strategies that school leaders and teachers are engaged during a PDS (see Figure 5.5).

Figure 5.4 Integrated factors in a school PDS



5.6.1 Coping with school changes in PDSs

The post-disaster related stressful experience resulting from school organisational changes is not surprising given the extent of devastation brought about by this natural disaster. Two years after the Sichuan earthquake, 100% of public schools in Beichuan rebuilt and moved to other regions, forcing many teachers and students to attend schools outside of their own district (Brown et al., 2011). School organisational change is a challenge, especially when changes are forced by a natural disaster (Birkmann et al., 2008; Yang and Chai, 2010; Ho et al., 2012). Thus, sustainable change and development during the PDSs should be based on the provision of a safe school environment, which was highlighted by several participants of this thesis (HT1, p.135). This result has also

been highlighted by some researchers (Kurland et al., 2010; Kovoor-Misra, 2009; Zhang et al., 2010; Zhao et al., 2010).

As Moniruzzaman (2010) implies a disaster could potentially boost a school's development towards a positive trajectory with adequate supports and a capable school leadership team. This view is supported by the head teachers perceptions suggesting that it is important to have familiarity and stability with the specific cultural norms perceptions and experiences of any culture that a school disaster leadership may wish to provide in the school reconstruction process (HT5, pp.144-145). This result is complemented by the view of Jaques (2010) that school as an organisation, recreating school environment and culture, constructive engagement involves them being able to appreciate emergent trends in the external situation and to link such future possibilities to the current school renewal priorities.

Other scholars (Beatty, 2007; Brown and Yasukawa, 2010; Bridges and Searle, 2011) suggest that school post-disaster recovery strategies should engage constructively and confidently within the prescriptive Government policy contexts. The interview result of this thesis suggested these views that some school heads did not have much authority to take the initiative regarding how to practise the school rebuilding project following the earthquake, an often mentioned comment was we "follow the government policy" (p.134; p.137). However, such a view contradicts Alvarez (2010)' argument that effective school post-disaster leadership is not just to follow the Government policy, but more importantly to involve and consider the best interests of valuable school members. School leadership may need to find a way to integrate both the Government policy and school members' needs into the promise of an effective school recovery process (Doherty, 2010; Gunderson, 2010; Openshaw, 2011; Smith and Riley, 2012).

The effectiveness of responding to changing conditions is that it stimulates interaction between school new system and stakeholders (Astor et al., 2010; Diment et al., 2009). School leaders need to empower all school staff in several ways, such as trusting,

respecting, building harmonious leader-staff relationships, and understanding their difficulties and needs (Smith and Riley, 2012; Brown, 2008). According to the data collected in this study, none of the school heads used the above mechanisms to encourage the teachers in the Sichuan PDS. Though “regularly organising teacher meetings” (p.137), and “send teachers away to study” (p.137) were mentioned by a few school head teachers (SAH_01M; PCH_05F).

However, to achieve the above, school leaders require the intelligence and wisdom to interact constructively with educational human resource (governors, qualified teachers, parents and students) (Widyatmoko et al., 2011: 485; Brici, 2009); and material resource (finances, social support, sponsorships and technological information) (Shen, 2009; Xu and Feng, 2012). In order to engage those to make the most contributions to the school renewal process (Bixi, 2009; Ho et al., 2012; Zeng et al., 2011), school leadership isn’t just simply to meet the demands of the changes, it is actually about going through a transformed ‘political’ and ‘systematic’ model (Busher, 2006:152; Yang and Chai, 2010; Ho et al., 2012).

5.6.2 Disaster planning and preparation in schools

Head teacher participants of this study believed a school-based disaster management plan should take place to help them deal with PDSs better (HT1, p.135). Many teacher participants also came up with suggestions regarding school-based disaster preparation and planning in the future (TT1, pp.146-149). An effective response process cannot go any further without robust school disaster planning beforehand (Doherty, 2010), thus, school disaster preparation for the management of PDSs has to take place practicing certain activities regularly and thoroughly ensuring all school members understand the content of the SBDM instruction (Coppola and Maloney, 2009; Mohapatra, 2009). This review seems to be confirmed from the head teachers (SAH_01M) suggestions about effective disaster management and leadership (p.144).

Some participants of this study reported that every school should have a constructive disaster plan ahead of time and also allow school staff involvement in the planned reconstruction process (SBH_02M, pp.144-145), and most importantly the school leadership need to lead staff and students to practise (p.145). Practice will allow school members to familiarise themselves with the plan and appreciate areas of potential weakness in the plan which can be adapted going forward. As Smith and Riley (2010:7) note: “it is easier to adapt an existing disaster plan rather than having to develop a new one from scratch...developing disaster plans creates a culture of preparedness which will improve school staff tolerance, confidence and morale when under threat”.

The findings of this thesis were similar to that MacNeil and Topping (2007), who also found that if schools have disaster plan ahead, it can make the school members respond more confidently in a PDS but these school members have to be trained sufficiently. The data of this study also suggested that school teachers’ psychological training is an important component of the disaster plan (p.144). However, it is noteworthy that the majority of schools had no disaster plan and no practice/drill for teachers prior to the Sichuan-earthquake (HT1, 133-137). As discussed earlier (Chapter 1, p.1), China suffers natural disasters on a regular basis, all schools are likely to encounter a disaster at some point, thus all schools should strive to construct an operational disaster plan along with a school-based disaster management team in order to most effectively cope with a PDS when they occur.

All participants of this study were asked to give suggestions on how their schools could better manage a PDS and respond to school teachers’ stressful experiences in the future (HT5, pp.144-145; TT5, pp.156-158). The suggestion from the survey findings of scale 3&5 were identified that is to redevelop school culture, safety, work conditions, and family support to make for a more effective response in a PDS (pp.119-120). To be able to achieve this, teachers need to be involved in the monitoring, performance evaluation, and policy processes. However, the interview data showed that teachers have rarely practised the leadership role, primarily due to the school leadership being unaware of the

importance of empowering teachers' voice (p.144), and second, teachers seemed to be unconfident and incapable of making decisions when required (p.146).

In general, a successful school leadership should be dependent on how clearly teachers' voices are heard and respected and involved (Adamson and Peacock, 2007), and whether they are contributing their perspectives in the school reconstruction process (Bemak and Chung, 2011), and how closely the school leadership responds to teachers' needs and demands being expressed (Brown et al., 2011; Smith and Riley, 2012). It appears that school leaders should strive to promote the best interests of the teachers by promoting their involvement and contribution, and ensuring their autonomy is extended and their issues are addressed.

Some prominent comments of this study suggested that open communication is the key to achieve this because it enables teachers to speak out and contribute their views in the process collaboratively and voluntarily (HT2, p.138). This result has confirmed Brown and Yasukawa (2010)'s suggestion, the purpose and values to structure modes of communication among the various school stakeholders to work together for the promise of an effective school recovery. Communication seemed to play a critical role in fostering the effective recovery of both school community and school stakeholders. The findings of this research indicated that "less communication with leaders" (Q4; M = 2.51, p.116) was not a stressor to teachers.

It is recommended that during the school reconstruction or change conditions of a disaster, its school members should be confirmed and involved in the transformations (Lewis, 2011), in doing so, it could directly reduce the sudden and negative impact on teachers and indirectly empower teachers in decision-making (Toland and Carrigan, 2011). Decentralising seems to be more commonly used in schools allowing school teachers autonomy in terms of decision-and policy-making (Henderson and Hildreth, 2011; Pedder and MacBeath, 2008). Similarly Gu and Day (2007) suggest that teachers are required to devote enormous emotional, behavioural and cognitive resources. It is

extremely important to make sure that teachers are willing to stick with decision-making for the sake of a school's effective recovery.

After a disaster, school as an organisation is expected to engage school members and live up to their expectations within every step of the school renewal process (HT1, p.134). School leadership needs a new conception of teaching professionalism that integrates moral purpose and change obligations. It should work simultaneously on the level of school members and organisational development (Wang, 2010). As Alvarez (2010) and Alisic (2012) caution that in the context of reconstruction, school teachers can effectively assist in making school-based recovery programmes accountable and in facilitating the implementation of the reconstruction strategy as well as national policies and standards related to school-based intervention programmes delivery.

5.6.3 Teacher resilience-building in PDSs

The following sections address the interaction between individuals' personal and professional resilience, specifically, to understand the key factors that influence a teachers' work and lives, and the ways school as an organisation responds to teachers' personal and professional experience following the earthquake (sub-scales 4, 8&9, p.119; pp.122-123). As discussed in the literature review, teacher resilience in PDSs is determined by the interaction between the internal qualities of the teacher and the external environment which the teacher faces and experiences (Bizumic et al., 2009; Goldstein, 2009; Sun et al., 2010). A school team is required to manage teachers stress and needs in order to deliver an effective school recovery process (Smith and Riley, 2010; Xu and Feng, 2012).

When school head teachers were asked about what processes and strategies they have employed in order to building school teachers' resilience during PDSs. They appeared to recognise internally that developing a systematic disaster intervention programme in

relation to gathering and sharing knowledge and skills within school staff is essential for an effective resilience-building of the whole school community (HT5, pp.144-145), in connection with “psychological training for teachers” (p.144) and “an ongoing psychological service for students” (p.141).

The results complement the literature view that school leadership should be responsible for the resilience-building of school teachers who gain the role of caregiver for their students (Pepper et al., 2010; Porter, 2010). In particular, teachers should receive sufficient disaster training, guidance on traumatic event management, and access to psychological debriefing if necessary (Butkovic et al., 201; Skakon et al., 2010; Paine, 2009). Increasing teachers’ resilience can aid in both their personal well-being as well as students’ educational achievements (Alisic et al., 2012; Go and Day, 2007).

Participants of this thesis also identified that the fundamental strategies for promoting teachers’ coping skills are getting more training and practice (p.147). This finding supports the literature review suggesting the importance of professional training and learning, and its role in shaping school organisations (Brix, 2009). The quality of leadership was frequently mentioned by teachers as playing a major role in their recovery and resilience-building (TT1, p.148). This result confirms Day et al.’s observation (2007:225-226) that school leaders need to be able to communicate with their staff, be approachable, demonstrate a commitment to the school, praising and rewarding staff contributions to the school, letting staff feel included in decisions and having a visible presence around school. They also believe that it is important to have someone to talk to when things go wrong, ideally someone who knows you.

The interview results from this study support their observations. Some teachers demonstrated their trust in their head teachers (TT1, p.146). They pointed out that school head teachers’ vision and support in their work during the PDS had contributed greatly to their recovery and their ongoing success in teaching and learning. Therefore, resilience-building processes in teachers require a combination of qualities, interpersonal

relationships, personal capacities and leadership support.

In contrasting, the quantitative findings seemed to suggest that “school leadership” and “their autonomy in position” were not satisfactory (Table 4.15, p.124). Over 300 teachers were surveyed in the current study, the majority of them were able to show positive effects across both their personal and professional life following the two years of the earthquake. However there were a number of teachers who did not cope well (Table 4.15, p.124; TT5, p.158). As Margolin et al. (2010) discussed in their literature review, a good school leadership is based on a friendly school environment. For those who did not receive sufficient support, they would not be satisfied with the school’s management techniques.

The findings from the teacher survey and the interviews (sub-scale 1, p.116; TT1&2, pp. 146-151) revealed that teachers require transparent promotion and professional development opportunities, financial rewards and payments, appropriate welfare improvement in support of a PDS which confirmed the views of Ho et al. (2012). Thus, the priority of school leaders is to identify the difficulties and the demands of school teachers working in PDSs (HT2, pp. 138-140), and then they need to carefully respond and take action on those difficulties and respond to the needs of teachers (Bridges and Searle, 2011).

It is necessary for school leaders to launch an effective reward policy to motivate qualified teachers to continue teaching there and also encourage those experienced teachers to give supervision to those new comers (Wang, 2010; Li and Lu, 2008). In doing so, a sustainable school renewal is going to succeed (Townsend, 2011). In some cases, school leadership has been required providing training, coordination and support for school staff to make them deliver appropriate disaster intervention for school children as teachers possess potentially valuable insights into the process of resilience development (Lowe, 2011:87).

In recent years, the Chinese education authorities have trained school staff to provide critical intervention for school children (Xin et al., 2009; Xu and Feng, 2012). In the Sichuan context, some school teachers were involved in an experiential learning associated therapeutic training program the training focused on developing teachers' teaching efficacies rather than dwelling on teachers' personal trauma (SAT_01M, p.147). The approach hoped to assist teachers' recovery process indirectly decreasing their negative emotions in the long run (Shen, 2009). This intervention approach can be practical for teachers training however it may need more experimental tests in the further Chinese disaster context.

It have been clearly demonstrated that when teachers get depressed and they are affected emotionally, support given from school leaders is crucial in terms of safety, stability, consistency and relationships in times of PDSs (Lowe, 2011: 96). School leaders failed to offer the appropriate supports in terms of teachers' emotional problems, which could cause complex consequences for both schools and the individuals' recovery (Geving, 2007; Liu and Zhang, 2008). School leadership needs a better understanding of the factors that enable the majority of teachers to sustain their positive attitude, effects and efficacy in teaching (Masten and Obradovic 2008). Nevertheless, it is necessary to mention that generally teachers continue to offer a positive contribution despite the devastation and experiences they encounter in their life (Deci and Ryan, 2008; Kimiecik, 2010; Lucas and Diener, 2008).

For instance, teachers may feel a diminished sense of safety and resilience and an increased sense of isolation which could adversely affect their performance (Alba and Gable, 2011). It is apparent that there is a lot more that could have been done in terms of supporting teachers' emotionally in some schools in Beichuan (TT2: pp.149-151). Better practice could have helped in developing a sense of security and resilience without jeopardising the recovery of school students (Alisic, 2012).

The findings of this study provide important indicators for the assumption that school can recover effectively when teachers are trained or practiced in strategies that promote resilience (sub-scale 4, p.119; TT1, p.147). When the teacher interviewees of this study were required to give their opinion about what helped them bounce back from the 2008 earthquake they frequently mentioned factors such as “support from family, colleagues and friends” (sub-scale 5, p.120; TT5, pp. 156-157). In a previous study the assumption was made that a supportive environment is a major factor in developing an individuals’ resilience (Malcom and Combes, 2007). The implication of the studies is that school leaders may need to be aware of potential stressors, and need to promote the establishment of psychological early stage awareness and intervention for the school members.

Family stability and support is critical to a teachers’ resilience-building (TT2, p.149). The general factors in the sub-scale 5 (p.120) have been identified in “support from my family” (M = 4.32) was seen as the most important factor for helping teachers’ recovery. This identification has been established by other scholars (Reid and Reczek, 2011; Hornby and Witte, 2010). They manifest that family stability is a major impact on how well and quickly teachers are able to recover from the trauma, return to their teaching and, more importantly, return to effective functioning.

Various family-related traumatic factors can delay the recovery of individuals, the greater an individual’s family-related tragedy, the stronger the experience of grief, as Bal (2008) identified. However, Henderson and Hildreth (2011) suggest that a traumatic recovery process can be influenced by peoples’ intrinsic capability; similarly, Johnson (2000:7) indicated that “the nature of the human intrinsic reaction may help victims to survive despite the traumatic sights and sounds or the impact of loss.

Those who were highly impacted often struggled to cope, school leaders should be able to identify those staff and provide specific interventions to them (Liu and Zhang, 2008; Ma et al., 2009; Ndiku et al., 2011), especially, the male teachers in need of special care

after a disaster because they often distance themselves from others' support (p.138). In order to address those teachers' trauma, school leaders may need to create a warm working environment and encourage senior teachers to work together as a small team enabling positive interaction between teachers and colleagues (Beatty, 2007:334; Eberts, 2010; Hornby and Witte, 2010; Janssen et al., 2010).

The highest scores perceived from "collaboration and communication with colleagues" factor has approved this review (sub-scale 4, pp.119-120). It indicates that teachers believe collaborating with colleagues could enhance their knowledge in helping professional development, self-stimulation and personal growth (TT5, pp.157-1558). It is an important part of the resilience-building process highlighted in the findings as well as the literature review (Day et al., 2007; Lei and Khan, 2012; Leithwood et al., 2008).

Monhay and Forbes (2009)'s research affirms that through collaborative group discussion therapy individuals are able to confront their intrusive thoughts and in so doing suffer less from grief and be more resilient within PDSs. By discussing with others, an individual can understand his/her thought processes and how to change his/her reactions to their stress helping them become more confident and face up to fears enabling them to focus on the present positive things rather than the past negative thoughts.

From the indicator of teachers' positive emotions, a consistent positive attitude towards teachers' relationships with school colleagues and students was noted (sub-scale 9, pp.123-124). As Toland and Carriganln (2011) emphasise a stable and safe school environment comprising warm relationships between school members is conducive to recovery. School teachers liked teaching and working with students and colleagues and supported each other which can contribute to a higher sense of resilience amongst teachers (Gu and Day, 2007). It is not surprising that teachers showed a low agreement on the indicators of their negative emotions (Table 4.15, p.124). Apart from that teachers had concerns about students' low motivation to learn, in general, teachers seemed to have a positive emotion towards their relationship with students and colleagues.

In addition, the interviewees of this thesis reported that school leaders were aware of the importance of practising disaster drills and of preparing school teachers to be ready for any future disasters (HT5, p.145). However, the survey results showed that schools in this specific investigation had not done enough to recognise how important teachers' resilience is which could have adversely affected the schools' post-disaster recovery process (sub-scale 9, pp.123-124), and this point has been identified by Kimiecik (2010)'s research.

Day et al. (2007) suggest that the resilience-building process in teachers requires them to have a positive and stable personal life, few problems at school in teaching and learning and with colleague and pupil relationships and behaviour with few if any threats to their personal sense of self as a professional. The level of resilience among teachers is not always directly connected to a school context as measured by the sub-scale 9 (p.123) and the Teacher Theme 5 (pp.156-158).

For example, Table 4.19 (p.127) of this thesis shows that the large majority of teachers in primary schools were still resilient. This may be because many of these teachers were committed by disposition to working with traumatised pupils after the earthquake, they have to be resilient in order to survive in these traumatic situations. The evidence from this research demonstrates three importance factors that contribute to teachers' resilience-building: leadership, relationships with colleagues and behaviour of pupils which are similar to what Day et al.'s (2007) earlier investigation found.

The highest score perceived from the survey results indicated that teachers believe the difficulties they faced were temporary and that they could overcome them and things could get better (Table 4.15; Q23, p.124). The findings provided an encouraging indication that the experience of trauma as a result of the earthquake need not be entirely negative, and that it has the potential to strengthen positive outcomes. This result has been confirmed by Haslam et al.'s (2011) study. They assert that stressors from a traumatic event are not all harmful if it is not exceeding an individual's capacity to cope,

although in some individuals' behavioural and emotional problems may occur. In some cases, stressors can be valued as contributing a positive challenge and serve as an incentive for enhancing an individual's personal development and growth because these experiences can be transformed into a "strength-and capacity-building process" (Reeves, 2008:14).

This result also supports an earlier statement by Gu and Li's (2013:300) that resilience in teachers is the capacity to manage the challenge adversity brings, this resilience is not simply getting by in difficult situations, it drives their moral values and professional commitment to serve the learning needs of the children during any circumstances. Many teachers actually demonstrated great resilience and even learned coping skills in the aftermath of the earthquake (TT5, pp. 156-158), but some were left with symptoms of distress and depression (p.158). Numerous research papers disclose that a traumatic event can cause distress, disorientation, anxiety, and a decline in mental health, but a systematic school-based disaster support, social support and collaboration, psychological training, personal capabilities, and stability in the family system can all influence a teachers' recovery process in a positive or negative way (Tartakovsky, 2009; Goldstein, 2009; Alvarez, 2010; Doherty, 2010; Kataoka, 2009; Buchanan et al., 2010; Gunderson, 2010; Masten and Obradovic, 2008).

Life and job satisfaction as an indicator was reported with a mean of 3.71 for work and 3.64 for life (Table 4.15, p.124), which suggested that the majority of teachers were satisfied with their job and family life. The most frequently mentioned narrative from the teachers' interview was that schools have tried their best to meet students and teachers' basic needs immediately after the earthquake (TT1, p.148), and they solved the majority of teachers' accommodation issues (HT2, p.139) although it has not reached their expectations (most couples/teachers, still live in a single room in the school residence).

The findings confirmed Bemak and Chung (2011) and Gunderson (2010) suggestion of the importance of understanding teachers' needs, and promoting their welfare as being

professionally intelligent and responsible. In the same way, Reid and Reczek (2011:1399) emphasise that the importance of improving teachers' commitment to their professions is to satisfy their material needs. Therefore, in a PDS, provision of personal needs and the effective organisational coping mechanisms (professional supports) has a potential to enhance the development of teacher resilience (Odhiambo and Hii, 2012).

In comparison, the results suggested primary school teachers showed a higher life and job satisfaction response ($M = 3.81$; $n = 196$) than secondary school teachers ($M=3.41$; $n = 196$) (Table 4.19, p.127). The data from the interview illustrated that teachers receive sufficient care and encouragement from school leadership along with their own motivation and sense of purpose to assist their students (TT1, pp.146-148), which helped teachers' self-satisfaction and competence (TT5, pp.156-158). Paine (2009)'s study confirms that caring for affected people following a disaster is a basic human need. These needs may be inducing teachers to meet the needs of their students and fulfil their mission at the same time. Similarly, Gu and Day (2007:1305)'s research observed that pupils' progress and growth could literally stimulate teachers' job satisfaction and motivation.

It is often necessary for school leaders to recognise that a clear sense of direction responds instinctively to the needs of school teachers, and to take stock of school teachers' emotional capacity to cope and be realistic about the duties they can perform (Malcom and Combes, 2007; McEntire, 2007). The data from interviews (PAT_03M, p.146; PBT_03F, pp.146-147) revealed that teachers' capability is closely associated with social/school support. It can be concluded that an efficient social support structure during the PDSs is imperative as it can enhance teachers' capability and confidence to cope, and increase their life and job satisfaction correspondingly, as Gunderson (2010) and Goldstein (2009) identified.

The data of this thesis also provide some examples, from the five schools, of informal courses bringing developmental consequences (p.136; 138). At work and elsewhere,

informal learning influences development, being transferred to other roles and situations (p.134), whereas lack of chance or opportunity in organisations is associated with lost motivation, hope or less meaning in life and workplace (p.135). Hence, teachers' training regards knowledge in support of a PDS either as self-determining autonomy (Yang and Chai, 2010) or as professional development (Pepper et al., 2010).

Several methods may engage teachers in practical training comprising sharing experiences and feelings, personal story-telling and cooperative activities but one of the methods that were commonly applied in Beichuan schools was *dancing* (p.136). The reason is that the majority of people in Beichuan County were influenced by traditional Qiang culture which has a long history and is a national minority in China (Xu, 2011). Qiang people are good at dancing and singing which is an important component of Chinese civilisation incorporating traditional regional practices into a recovery plan may help in other disaster zones. They used their natural talent to help them to overcome the difficulties and disasters (Xu, 2011; Xin et al., 2009; Zhang et al., 2009).

The research findings of this thesis suggested that school coping capability and management, student and parents were important to teachers' resilience (TT2, p.149; TT4, p.154). This result identified what Ho et al., (2008) suggest that teachers may be the front line troops for a schools' effective recovery as well as children, but they have to be equipped with the tools to do it. Some scholars (Kano et al., 2007; Salazar, 2011; MacNeil and Topping, 2007) advocate that teachers' professional training may need to include the knowledge associated with post-trauma intervention in order to aid a schools effective recovery in educational sectors in future disaster situations.

However, in the Chinese context, a school's renewal emphasises catching up with National Standards Curriculum in terms of students' academic outcomes and competencies (Chen, 2010; Liu and Zhang, 2008; Ma et al., 2009). There is no attention to conduct education associated psychological interventions in connection with a range of concerns such as suicide, substance abuse and safety as secondary crises occurring in

schools which has been identified by many researchers (Sun et al., 2010; Watts, 2008; Zhang et al., 2009).

In order to prevent inefficiencies, resistance or incapability in the face of the supporting needs of traumatised teachers and students, school leaders may wish to endorse a systemic integrative perspective that allows responsible and effective recovery teamwork (Mohay and Forbes, 2009). The constant training and supervision is a central component in involving teachers because an appropriate training programme can build up teachers' leadership capabilities and self-confidence in order to motivate them to engage more successfully and effectively with their students (Liu and Zhang, 2008; Wood and Olivier, 2008).

5.6.4 Coping strategies for parental absence

Issues triggering parents' absence and unavailability are discussed earlier (HT4, pp.142-143; TT4, pp.154-156), school leadership teams should take the responsibility to handle those issues not teachers. There is a need for additional practices to enhance parents involvement such as providing parents resources and information services where parents can receive assistance and instruction to aid their children's recovery (Cederblad, 2009; Hornby and Witte, 2010). Unfortunately, the findings revealed that none of the sampled schools had a documental policy on parental involvement (p.143; p.155). The majority of teacher participants revealed that their schools provided brief psychological debriefings services, and conducted teacher meetings (TT1, pp.146-148), but did not organise any parents and community debriefings and meetings after the earthquake (TT4, pp.154-156).

Parental involvement is paid insufficient attention in these schools and therefore there may be a lack of clarity about the importance of parental involvement in the schools. It is suggested that all schools should develop written policies on parental involvement and

that this should be done in collaboration with parents (Koutrouba et al., 2009). Policies and practices should set out all the different phases (preparation, intervention, recovery and mitigation) in which parents can be involved in their children's recovery following a disaster as well as the procedures through which schools and teachers can help parents to accomplish this (Hornby and Witte, 2010:504).

The data highlighted certain common and context-specific concerns of the balance of when and how parents should be involved, and the parental absence seemed to be the norm rather than an issue in Beichuan schools, all of these can be seen as challenges to address (HT5, pp. 144-145; TT5, pp.156-158). Such an evolving post-disaster scenario reinforces the need for school effective post-disaster leadership as any one of the multitude of organisational changes (Hipp et al., 2008; Jaques, 2010; Lewis, 2011).

When school head teachers were asked to provide suggestions about the involvement of parents, only one school head teacher (SBH_02M, p.141) mentioned they are going to set up a school-based parents' committee soon. The rest of the four school head teachers (SAH_01A; PAH_03F; PBT_04M and PCH_05F) appeared to exclude parents' involvement or they did not have a constructive plan for parents' involvement. Given the special needs facing the affected population groups, school leaders could usefully involve parents in outlining the exact scope and mode of delivery of essential school-based disaster response interventions (Putnam and Amaya-Jackson, 2008; Widyatmoko et al., 2011; Reid and Reczek, 2011).

Many schools do not have a parent committee during the recovery stage and do not include parents as part of a recovery plan. A schools-based disaster response team should improve their post-disaster management mechanisms by involving parents more in both immediate and median-term response efforts this has been recommended by a number of researchers (Henderson and Hildreth, 2011; Hornby and Witte, 2010; Putnam and Amaya-Jackson, 2008; Widyatmoko et al., 2011; Reid and Reczek, 2011). However, it appears from the results of this study that school disaster leaders did not recognise the

importance of parental involvement.

Using a parents committee and other innovative information channels to gain feedbacks may reveal weaknesses in the performance of intervention providers or school professionals (Hornby and Witte, 2010). It is useful to anchor the collection of parents' feedback on an independent performance evaluation system. If parents could be effectively involved in the school reconstruction process, then teachers' workload and responsibility could be relatively reduced which could potentially encourage teachers' resilience, flexibility, durability, openness to decision-making and problem-solving skills allowing them to make reasoned and appropriate decisions in the presence of a disaster situation (Hornby and Witte, 2010:469; Longstaff and Yang, 2008).

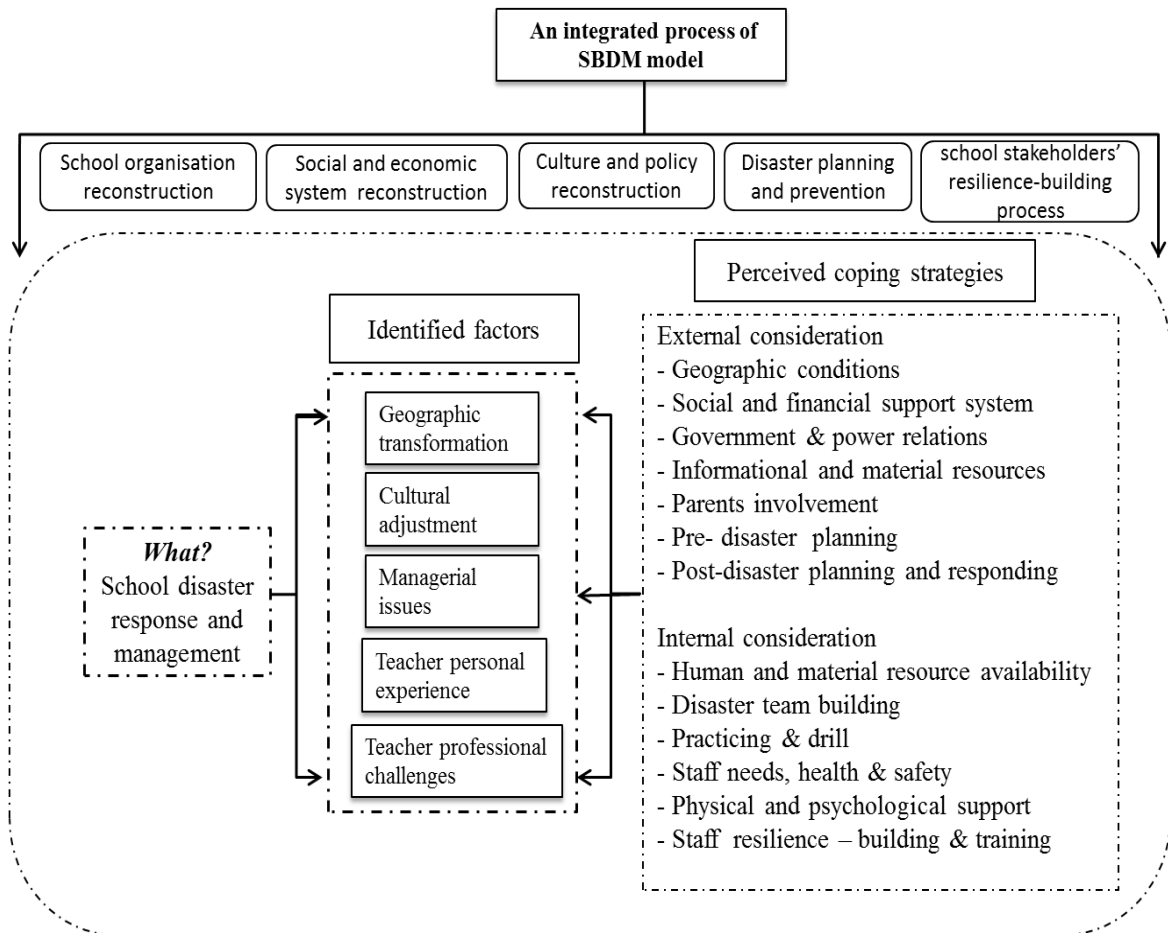
5.6.5 Integrated framework within school PDSs

The focus is on a social-ecological framework improving teachers' resilience as a mechanism for schools' effective post-disaster management. Based on the empirical investigation and the ecological model in this research, an integrated framework of the SBDM model is constructed as shown in Figure 5.5. From a social-ecological perspective, the complete SBDM model is roughly divided into two phases as discussed in this chapter:

1. School organisational reconstruction: i) rebuild facilities, i.e. reconstruction of school building and infrastructure; ii) systematic reconstruction of the economic, policy, social, culture and ecological systems and iii) to achieve sustainable development, such as a disaster planning and prevention system, operational and coordinated support system for school stakeholders.
2. School stakeholders' recovery, training and development: teachers' resilience has been highlighted throughout the whole study, it has to be understood and addressed in order to achieve the promise of school effective recovery. Analysis of the prevalence

of resilience revealed that the availability of social and material support or the lack of support, teacher's adjustment and satisfaction in the new school environment or school conditions, and teacher post-disaster related stress have a strong influence on each other (sub-scales 4, 8&9, pp.116-117; pp.119-121). Teachers' training, students' education and parental involvement also play a significant role in the SBDM model.

Figure 5.5: An integrated process of SBDM model



Several indicators have been identified educational, professional and personal within socio-ecological domains which are positively correlated with school disaster coping competences in this study. Although the short-term post-disaster response of schools was not known, it appears that the school-based disaster management techniques did have both positive and negative impacts on teachers well-being expressed by the five sampling schools.

There is no one ‘magic bullet’ for resilience during an enormously complex disaster recovery process (Masten and Obradovic, 2008: 8-10). Thus, it is essential to consider various levels and strategies for preparation and intervention following a disaster, as well as the possibility of matching interventions to individual and contextual differences (Dean et al., 2008). Effective disaster preparation for and response to school teachers’ recovery require an innovative integration of knowledge of resilience across interdependent systems and across scales in educational sectors.

5.7 Chapter summary

This chapter has discussed the findings from both quantitative and qualitative approaches alongside the literature against the five research questions. The interrelationship between school post-disaster coping strategies and school teachers’ response, stress and resilience were analysed through the questionnaire survey and the follow-up interviews. The analysis and discussion were conclusive that school teachers’ well-being is an important pointer of school effective recovery from a disaster in the Chinese context.

The school leader participants recognised that a successful school post-disaster management needs systematic and innovative school stakeholders’ involvement and contributions, and school coping strategies cannot succeed without the consideration of school teachers’ challenges and needs (Wood and Olivier, 2008; Brown, 2008; Damiani, 2011). The teacher participants perceived that teaching became harder after the disaster, but with sufficient support and training they are ready to commit their time to work through a PDS.

In the last chapter, I present a synthesis of the outcomes of the whole study alongside the contributions, limits, implications and reflections of this study.

Chapter Six Conclusion

6.1 Purpose and outline of this study

The purpose of this chapter is to present a summary of the whole study and a synthesis of its outcomes. This study examined around three hundred school teachers and five school leaders' experiences within five schools (three primary and two secondary schools) following the Sichuan-earthquake, 2008. Drawing from the socio-ecological framework of Bronfenbrenner (1989) to understand the experience of school teachers who are coping with PDSs under highly stressful conditions, and to establish school leadership capability in responding to PDS.

Teachers' perceptions of their school's disaster responses, management and leadership and the school's support for them are the main measurements of this study. School head teachers' interviews show a different perspective to school PDSs and allow the data to be cross checked. The findings from the questionnaires and the interviews are summarised as follows taking on board the primary research question:

What processes influence the resilience and well-being of the school teachers in terms of the consequences of school post disaster responses following the Sichuan-earthquake within the medium-term (2-4 years)?

The following sections of this chapter will cover five areas to draw together a comprehensive conclusion and commentary on the implications of school disaster management and teachers' personal and professional development to research, policy and practice in educational sectors. It starts (section 6.1 above) with a review of the purposes and the main research question of this research. In section 6.2, a synthesis of the findings is presented against the main research question and its key elements. Section 6.3 provides a discussion of the contribution of this study to knowledge, research, policy and practice

in educational sectors. Section 6.4 reveals some of the limits perceived from this study. Section 6.5 continues with a discussion of the recommendation and implications of this study to education, policy and practice within school PDM scenarios. Section 6.6 highlights some areas of the study which may be useful to explore in future research, ending with reflection on the research journey.

6.2 Overview of the key elements

6.2.1 Impact of the Sichuan-earthquake on school organisation

One of the aims of this research is to identify the school organisational changes, issues and post-disaster response strategies in PDSs, under this aim this thesis has demonstrated that despite increasing recognition of the impacts of disaster events, most school leaderships are found to be insufficiently prepared for an effective response in managing PDSs (HT1, pp.133-137; TT1, pp.146-148). This result contrasts with the views of Bridges and Searle (2011) the need for the development of school-based disaster management in preparing schools and their members for PDSs to aid in the recovery process.

School culture, values, stability, safety and future development should be well formed during a school's renewal process (HT1&5: pp.133-137; 144-145). These outcomes are consistent with socio-ecological models (Bronfenbrenner, 1989). This model suggests that policies related to disaster recovery should focus on a broad and flexible definition of environmental conditions (Gunderson, 2010), as this study demonstrated it is imperative that school organisation in whatever form it exists is kept together and supported throughout every level of the disaster and recovery process (HT2, pp.138-140; HT4, pp.142-143). In order to achieve a sustainable and resilient school renewal process, school leadership activities need to appreciate the involvement of school key

stakeholders (e.g. teachers, students and parents)

The other research question of this study taken from teachers comments indicated the types of challenge they faced in a PDS. Teachers as a key stakeholder in schools are the best people to evaluate what their school needs to do to aid the effective recovery of school itself and school stakeholders from a major disaster (Brown, 2008). The result of this study endorses the views of Brown (2008) indicating that teachers provide support to their students at the expense of their own well-being (sub-scale 7, p.121; TT2, p.149), thus school disaster recovery policy should take into account the unique needs and experiences of the school teachers in the post disaster context and provide assistance that allows all affected teachers to feel supported and empowered.

Taking on a parental' role and too much responsibility and lack of knowledge were reported as the most important challenges relating to teachers' stressful experience (TT2, pp. 149-150). The majority of the teachers indicated that they would have hoped the school leadership could manage parents' involvement more efficiently, and correspondingly they would have struggled less to provide services for traumatised children (TT1, p.147). These findings reiterate those of Ho et al. (2012) who investigated the school response and coping strategies for children's trauma and parental' involvement during a school's crisis situation and outlined the complexity of recovery and decision-making. Parents' involvement could potentially reduce teachers' responsibilities and workload in coping with students' issues.

There were a number of factors which affected school teachers' work and life after the Sichuan-earthquake including Chinese educational policy (p.134) and where they work (school environment), the ways they managed and were supported in managing PDSs (p.148), their beliefs and capacity to sustain a positive and resilient demeanour (p.157). These factors contributed positively or negatively to the teachers' capacities to cope with their professional work and personal life. A PDS can potentially threaten a teachers' motivation and resilience potentially making them less effective, most of the teachers in

Beichuan region were continuing to face this complex situation (HT2, pp.138-139;TT2, pp.149-151), though many of them developed a strong sense of resilience and coped in traumatic situations and rebounded to normality (TT5, p.157).

6.2.2 Expectations for SBDM model

Recognising the dynamics and interconnectedness of school disaster management and school organisational changes, this thesis suggests an integrated proposition of the school-based disaster management (SBDM) model by focusing on school organisational reconstruction, social and economic system reconstruction, school culture and policy reconstruction, disaster planning and prevention and school stakeholders' resilience-building process.

The findings of this thesis indicate that rebuilding a safe school environment after a natural disaster is one of the essential elements during a schools' reconstruction process. Participants of this study highlighted core school reconstruction dimensions (sub-scale 2, p.118; HT5, p.144), which included improving school external issues (e.g. geographic transformation, p.130-134; government and power relations, p.137; social and financial support system, p.139); as well as rebuilding school culture such as developing the ideology level of a schools' norms, beliefs, behavior, languages and physical environment, which are associated with effective school disaster reconstruction and development (see Figure 5.5, p.205).

In addition, the SBDM model suggests dealing with a school' internal issues by developing a school-based disaster management team (p.135), school-based psychological intervention programs (p.144), and sufficient material and informational resource (p.139), with well-trained staff (p.144); however, this is not enough, without inclusive preparation, practice and advance planning to ensure a safe and effective reconstruction for the school organisation (p.144-145).

The results of this thesis highlights the importance of teachers' resilience-building as other significant elements in the SBDM plan (sub-scale 9, pp.123-124; TT5, pp.156-158), this result complements the views of Bridges and Searle (2011). They believe resilience development is the key to effective PDSs' response it could help teachers to deal with the challenge and alleviate stress while helping students and a school's effective reconstruction process. Similarly Day and Gu (2007) suggest that enhancement of teacher resilience and commitment in challenging scenarios is the essential part to be addressed for school effectiveness and development, for efficient and operational responses to student's traumatic issues.

Bridges and Searle (2011) identify that when teachers sustain a great deal of pressure, they may have expected school leaders to provide sufficient support so that they could satisfy their work-life balance. However, the result of this study contradicts with the views of Bridges and Searle (2011). Teachers in this study appeared to be dissatisfied with their school leaderships' ability to manage a PDS (p.148), it also highlighted that some teachers were not satisfied with "their autonomy in position" (Table 4.15, p.124; TT1, 147). The SBDM model demands schools to make organisational changes in terms of the education of its teachers to build resilience and support students through both their social and emotional needs as well as their academic performance (Alisic et al., 2012).

Some coping techniques have been identified from the literature (section 2.5.3, pp.45-47; section 2.6, pp.47-78) as well as the results of this study (section 5.6. pp.186-205) on resilience promotion including supportive leadership from schools (p.193), harmonious relationship building with others (p.196), a sense of interconnection, personal, social and professional efficacy (p.197), leadership and problem-solving skills (p.193), a sense of expectation in future achievement and life (p.198). If school teachers could draw on the same kind of coping strategies when it comes to future PDSs, the benefits would clearly enhance the ability of schools to cope in subsequent disaster situations (Brown, 2008; Pepper et al., 2010).

6.3 Contribution of the study

The current research is significant not only because of the innovative conceptual framework that can contribute to a schools' effective response and recovery from a natural disaster, but also it is a major area associated with school teachers' professional development and personal well-being in future uncertainties (section 2.6, pp.47-80). It is clear that any disaster or crisis can undermine school teachers' health, morale and commitment to education (Bridges and Searle, 2011), schools' effective recovery could provide opportunities for school teachers' development. This study is an innovation for educational research on teachers' stress and resilience-building which is based on their traumatic experiences (sub-scale 8&9, pp. 122-124), coping mechanisms (sub-scale 7, p.121) and capabilities during a PDS (TT5, 156-158).

School teachers' personal and professional experiences following a natural disaster is insufficiently documented in contemporary school psychosocial research (Ho et al., 2012; Şahin et al., 2009; Zhang et al., 2009). This thesis suggests an integrated conceptualisation which can offer a more coherent and more robust theory-orientated structure for school teachers' personal efficacy and professional development when encountering a disaster. The suggested conceptual framework embraces the complex association between a school's capacity and response system and teachers' learning and adaptive development (section 2.6, pp.47-80). It provides theoretical insight in understanding the factors that influence school teachers' life and work experiences (sub-scale 1, pp.116-117; TT2, pp.149-151), and resilience-building after a natural disaster (sub-scale 9, pp.123-124; TT5, pp.156-157).

This research project is the first study to look at school teachers' personal and professional needs and traumatic issues during PDSs in China instead of focusing only on school children's traumatic issues, while of course not discounting them (sub-scale 6, p.121; HT3, pp.140-141; TT3, pp.152-153). Though a few previous studies on school

post-disaster intervention focus on teachers' perceptions about school children's recovery (Alisic et al., 2012; Wolmer et al., 2005, 2011), this study extends to an understanding of school effective post-disaster response by measuring school teachers' stress (sub-scale 1, pp.116-117; TT2, pp.149-151) and resilience (sub-scale 9, pp.123-124; TT5, p.156-158) as the indicators following the impact of a natural disaster which makes it a benchmark, reference, and a guide for future research and investigation in this field.

The study contributes to the literature on the challenges facing school teachers during a PDS (section 2.3, pp.29-33), and to the stress and struggle school teachers experience in the Chinese disaster educational sectors. Literature related to similar scenarios as the 2008 Sichuan-earthquake indicate that school teachers face challenges in coping with PDSs relating to school organisational changes, lacking a supportive system, and teachers' capacities in terms of resilience to stress and emotional trauma (section 2.6, pp.47-78).

The findings of this study initially reveal the factors responsible for the incapability of teachers in responding to PDSs (sub-scale 4, p.119; sub-scale 7, p.121; TT2, pp.149-151). The responses of the participants help us to understand that if school teachers in the PDS have less experience and resilience than the tasks they serve, facilitating and managing traumatised behaviours and situations become problematic (ibid). Secondly, the responses of the interviewees help us to understand that the redevelopment of a school culture after a disaster creates a familiar and safe environment among school teachers, affecting school teachers' resilience and recovery positively (HT5, pp.144-145; TT1, pp.146-148; TT5, pp.156-158).

Another key finding of this study relates to the provision of adequate information on school leadership and management following a natural disaster in China (sections 4.2 & 4.3. pp.114-156). A better understanding of what contributes to the stress of school teachers in a PDS (sub-scale 1, p.116; sub-scale 7, p.121; TT2, 3&4, pp.149-155) has been developed through the scales and themes relating to school organisational changes, post-disaster issues (sub-scale 2, p.118; HT1, pp.133-137) and support factors (sub-scale

3, p.119; TT1, pp.146-148); teachers' capabilities and resilience related to their responsibilities (sub-scales 4, p.119; sub-scale 9, p.122; TT5, pp.156-158); students' PDS's issues and responding factors (sub-scale 6&7, p.121; HT3, pp.140-141; TT3, pp.152-153); the issues of parental absence and influencing factors (HT4, pp.142-143; TT4, pp.154-155).

This research advances our knowledge of the relationships between school organisational capability and individual resilience (pp.165-167). It suggests that teachers' resilience to a natural disaster follows a school renewal process, does not stand alone in their ability to cope with this kind of traumatic event but rather (sub-scale 4, p.119; TT1, pp.146-148), their resilience can be measured as an indicator for school organisations to practise and respond to PDSs (sub-scale 3, p.119; TT1, pp.146-148). Teachers who show strong resilience and maintain their well-being can contribute significantly to a schools' effective renewal process (sub-scale 9, pp.123-124; Table 4.18, p.127; TT5, pp.156-158).

Responding to teachers' management issues in PDSs are unlike the management of absenteeism, lateness, low motivation and alcoholism in teachers, but rather, more focused on managing "compassion fatigue" (Johnson et al, 2005) and "secondary traumatic stress" (Dean et al., 2008) and depression issues that may arise (TT2, pp. 149-151). Teachers professional issues raised in this thesis encompassed incapability, guilt, emotional distress as well as their failure to handle parents and different tasks (ibid). The factors contribute to teachers' issues in management, which could help school leaders promote a new structure for teacher management, and legislative changes to aid teachers' emotional development positively.

The research also contributes to knowledge about the SBDM model preparation and promotion of school disaster reconstruction strategies and the training of practising teachers in dealing with PDSs (section 5.6, pp.186-205; Figure 5.5, p.205). There is an on-going debate about the influence of psychological training for traumatic situations on the performance of school teachers in the Chinese educational setting (Brix, 2009;

Higgins et al., 2010). The data of this thesis relating to psychological training for trauma relief and practical disaster drill activities sheds light on the issues involved in the preparation of school disaster management in the Chinese educational context (HT5, p.144). School disaster preparation will require teachers to develop their capacities and resilience, and to seek support and training to deal with the emotional demands of environmental disruption (sub-scale 2, p.118; sub-scale 8, p.122; TT1&2, pp.146-151), changes in students' behaviours and academic performance (sub-scale 6, p.121; HT3, pp.140-141; TT3, pp.152-153), and interactions with parents (HT4, pp.142-143; TT4, pp.154-155).

Consideration of the developmental capacity and resilience of teachers is essential. It will not be sufficient to rely on general sources of professional development training with content that may be of little relevance to the specific needs of teachers in dealing with a PDS and inappropriate for the support of traumatised students (Pfefferbaum, 2004:251). Also, by presenting a picture of how schools should be prepared for their recovery and development (HT5, p.144) and how the teacher participants think they should be prepared and trained, this study provides a new direction for further debate (section 4.3.2, pp.146-157).

In offering more clarity, the study has potential significance for educational practice, policy, and research. Such awareness helps policy-makers in education in the disaster regions, especially the Government bodies, to develop appropriate and effective strategies and policies to address the problems in PDSs. To education, it offers innovative concepts for needs-based practice involving responsibilities and capabilities in professional development in future teachers training (HT2, pp.138-140; HT5, pp.144-145), both from individual and organisational perspectives; a common focus on recognising intrinsic capabilities within an individual and how they are influenced socially and environmentally (sub-scale 9, pp.123-124; TT1&2, pp.146-151). This reveals a more subtle exploration of human potential resilience and perseverance than a sequence of planned development along predetermined pathways of external demands

(Kaklauskas et al., 2009; Odhiambo and Hii, 2012).

The significance to the Chinese policy is that a stronger concept of school development after a natural disaster is presented than currently available. The participants of this research describe resilience as achieved, despite the challenges and stressful experiences (TT5, pp.156-158). Policy-making for teachers' resilience-building is not just an emotional exercise, but involves practical recognition and profound human resource development (TT1, pp.146-148). The major potential benefit to policy is conceptual coherence: it becomes possible to ally development in school teachers with that in students those they serve, educational establishments with school communities, and education policy with health, social and welfare policies; the same principle applies.

6.4 Limits of the study

Although this research has identified important issues that have not been well studied in educational literature, it is necessary to acknowledge some of its limits. First, because of the restraint of the Chinese disaster policy in the educational sector, there was no way of closely observing and investigating school teachers' traumatic response and experience in the immediate aftermath of the earthquake. The research findings only indicate the school post-disaster phenomenon during the medium-term (2-4 years) of the earthquake among school teachers, if teachers' psychological status could have been captured in the immediate aftermath of the earthquake, a more concrete conclusion would have been made in order to understand their acute traumatic history, which could have enhanced our understanding of a teachers' resilience and stress management after a disaster in particular their improvement over time.

However, the findings of this study provide a clear picture that the majority of teachers have returned to their regular life as well as having developed a long-term perspective

involving school organisational renewal and individual's development and growth. Secondly, the nature of the cross-sectional analysis and the constraints of the research design limit the scope of this study to implement Bronfenbrenner's ecological model in full. The mixed methods approach with a self-evaluation questionnaire and the semi-structured interview schedule were used in this study. The results disclosed in the study reflected only the status of post-disaster related stress of the participants at a particular point of time. In other words, it did not reveal the changes of the stress level throughout the entire school reconstruction process (immediate - , medium - and long - term), nor is it able to reveal the relationship between the change of stress and the involvement of earthquake related experience.

Thirdly, observational methods could have been used to witness school teachers' actual daily work life and students' behaviours. The use of the self-constructed instrument needs further testing, even though its internal reliability was pre-tested with more than one hundred participants and the outcomes were suggested to be highly reliable (> 0.8). In addition, the strengths of the study comprise its basis in both qualitative and quantitative findings and the inclusion of a relatively large regional sample, but most importantly its innovative nature: through understanding school teachers' response, resilience and well-being to observe the efficiency of school post-disaster management and leadership. This innovative study has not been used before in a mixed-methods approach. This study adds to the literature by its focus on a seriously under researched topic and the use of an innovative method for systematic analysis.

Finally, schools stakeholders are the best people to evaluate what their school needs to do to recover effectively from a major disaster. The perspectives of pupils and parents are of course important to identify teachers' resilience and well-being and to the development of any effective strategy of school organisational change in PDSs. Even though, I carried out group interviews with a few students and parents, the time and resource constraints associated with doctoral research meant that, the analysis of the extensive data has to be mainly focused on school teachers alongside some school head teachers. Recognition of

the limits of this study mentioned above mean readers should interpret the results with caution. Despite the limits placed on this study it still indicates important recommendations for practice, policy and future research within the school post-disaster management field.

6.5 Recommendations for policy and practice within school PDM

The following recommendations are based on the findings of this research project and current literature on effective disaster management strategies associated with the school post-disaster reconstruction process. As mentioned throughout this research, teachers' perceptions of their stress and resilience during the school PDSs have been ignored in international and national literature. The findings of this research project would be an initial point for future research on this issue and will serve as a revelation to school leaders that more measures need to be taken to help teachers prepare for PDSs.

This thesis explores important issues for school-based disaster management in educational sectors. While school disaster management has always been recommended by implementing trauma or psychology intervention programs in past research, this research suggests the importance of developing school-based specific response teams and strategies that are particularly related to resilience-building and support of school teachers. School leaders and policy-makers are suggested to routinely communicate through meetings with teachers to assess their personal needs and to pinpoint training activities that would help school teachers feel adequately supported to manage a PDS (Kano et al., 2007; Smith and Riley, 2012; Wang, 2008).

The study highlights the importance of school disaster management capability, social support, personal and professional experience dimensions of teachers' responses, challenges, coping and resilience, and ultimate recovery following the earthquake. The

dimensions of school organisational changes, response and management provide a useful framework for understanding the capacity and effectiveness of school leadership following a disaster. A comprehensive post-disaster management plan can be developed and based on the identified attributes to meet the needs and issues of managing a school's PDSs. Such a plan may include guidelines for identifying direct and indirect changes of a school organisation following a disaster, and responses that guarantee the changes are manageable and sustainable. The plan also should include a clear guideline for school teachers' role, responsibility, professional training and support system.

A school post-disaster leadership structure needs to improve school post-disaster preparation, response and intervention practices, but more importantly it must emphasise the promotion of a school teachers' personal and emotional reactions such as grief, stress and depression. The dimensions of teachers' personal indicators reveal important information for a school intervention program following a disaster. The stressful factors (TMC, SMC, WL) and four psychological factors (Resilience, LJS, PEs and NEs) point to psychological, personal and associated factors that have the potential for facilitating and enhancing both pre-existing as well as new coping techniques after a disaster. For instance, encouragement, empowerment, involvement, emotional and practical support can contribute to teachers' stress reduction and ultimately strengthen their resilience and well-being.

This study argues that if the coping strategies that improve a teachers' resilience are equally learnable and/or simple to promote, then teacher education faculties, education bureaucracies, school leadership teams and others with responsibilities for the training, care and management of practising teachers can help them to avoid the incapacitating and stressful experiences associated with disaster traumas. The basis of the nature and strength of the perceived factors that impact school teachers during a PDS should be considered in the first place. The importance of responding effectively to affected school teachers should be based on their specific needs, experience and perceptions, and should not be underestimated.

The dimensions of teachers' professional indicators such as challenges of interacting with traumatised students and parents, capability of achieving the tasks given to them, can be adapted for training program preparation for a disaster. Teachers' perceptions about their capability to assist with students' issues, and to develop a network with parents, school leaders should be acutely aware of the needs and offer the relevant support to teachers when they respond to and prepare for a disaster.

To be specific, some teachers report that they continued with the normal and regular national curriculum during the medium-term aftermath of the earthquake. The lack of precise curricular adjustment may affect teachers' ability to manage students and classroom issues. This point suggests that educational policy-makers may need to make a temporary but constructive adaption to the curriculum during the aftermath of a disaster. This curriculum may need to be calculated to meet the students' needs and interests, and consider the flexibility and accessibility for teachers to deliver effectively.

Hobfoll et al.'s (2007) study reveal that some psychological activities teachers take part in in the classroom help students cope with traumatic situations; teachers are in an excellent position to monitor, support and collaborate with students because 'trust' has been developed between teachers and students as they spend so much time together at school, however teachers should not be expected to take the role of professional psychologists (Jaycox et al., 2007). Therefore, the boundaries of a teachers' role, responsibility and capability need to be considered when educational policy makers design the training program for teachers in a PDS.

The findings provide direct insight into school policy making practice. It appears important to help teachers feel confident in their capability to assist students in a PDS. This result could be better facilitated by establishing a constructive policy within school PDSs on the role and responsibility of teachers and what is exactly expected of them (Ho et al., 2012). The perceived factors identified from this study can be utilized by a school disaster leadership team to explore each teacher's strengths and weaknesses and then

provide them with personalised support and training.

A training programme should aim to improve school teachers' professional working skills, to ensure that they are skilled and effective in responding and meeting the needs of their students and themselves. Training activities may involve the development of resilience and social problem solving skills, and to be more effectively supported and empowered by working with school leaders and colleagues. If these training programs are successful, then teachers will be better prepared to deal with traumatic events and be more confident and capable to work professionally and effectively when a disaster occurs. The impact of traumatic experiences from a disaster should become less harmful for teachers.

6.6 Recommendations for future research

This study interrogates the school post-disaster management literature in an attempt to understand the nature of school teachers' experience and response to successfully deal with and learn from the post-disaster experiences they inevitably encounter. Three domains appear to be prominent for further research. First, some effective post-disaster leadership techniques have been identified from this study. However, the challenge that emerges from this study is how to verify the necessary school-based leadership strategies that will be working in future school leadership when natural disasters occur. Thus, future studies assessing the long-term aftermath of disasters on school leadership capability and valuation systems are needed.

The further insight into these issues may require longitudinal data that describe perceptions from a large group of stakeholders, such as students, parents and school administrators. To examine the various school members and the various planning principles and alternative dispute resolution techniques which can facilitate the coordination of resources across the school-based disaster assistance network and help to

address identified limitations in the existing assistance framework.

Secondly, school-based disaster management is a relatively new field that has only received research attention in recent years (Smith and Riley, 2012; Salazar et al., 2011). The development of a SBDM model in the current study is to guide the analysis of the research for understanding school post-disaster components, not as a model of the entire school disaster management. A model of SBDM is beyond the scope of this study. In that sense, there is still much more to learn about the phenomenon. That is, research needs to consider how natural disasters may impact the society, communities, organisations and individuals, and what strategies may be adopted to handle a major disaster.

Despite the increasing awareness of the impact of a natural disaster on human beings such as death, injury, insecurity, economic and psychological consequences, most schools are found not to have sufficiently prepared for its occurrence (Wang, 2008:426). Schools that do have disaster plans often find themselves at a loss in a real disaster situation (Paine, 2009; Phillips, 2009). Further research needs to explore thoroughly and systematically, not just provide assumptions why schools are still failing to manage a disaster situation. Drawing lessons from school members' experiences and interpretations of a disaster can present considerable opportunities for launching an effective strategy to response to future disasters.

Finally, this study is a foundation for additional research on teachers' perceptions about school post-disaster management and leadership following a natural disaster. As previously noted, there is little literature on teachers' perceptions about their traumatic experiences, needs and coping strategies during a PDS. However, this study still misses out by being unable to capture teachers' PTSD and severe traumas in the immediate aftermath of the earthquake. This topic should be further explored in teachers, including potentially important variables such as their own traumatic history and support from others. Meanwhile, the results of this study point to the importance of paying attention to the emotional burden teachers may experience. The importance of parental involvement

for children's recovery is an interesting topic that has not been studied broadly, how to involve traumatised parents in children's recovery also requires further research.

The research findings should be used in the context of Chinese educational policy so that school disaster management and leadership strategies will succeed in learning and developing from the previous effective disaster management strategies, which can contribute to the well-being of school stakeholders suffer in future disasters. There is a great opportunity that this study affords for an innovative and valuable framework for Chinese future disaster recovery and reduction, with an emphasis on school teachers' efficient participation in educational sectors.

To conclude, this study draws on international disaster reduction experiences in school post-disaster reconstruction and outlines the educational and policy framework to be drawn up for reconstructing school organisation and teachers' well-being after a disaster. The study emphasises the functional, practical and educational issues that need to be addressed in order to truly contribute to the well-being of school communities affected by the earthquake. Although the thesis reflects China's policy and educational contexts, the proposed framework is relevant for other developing countries as well.

6.7 Reflections

Over a four years period of research, I have learnt a number of things, and not only academic I have learnt how to switch my thinking into a new educational setting with different cultural, linguistic, structural, and contextual components. To begin with my reflection about the experience of conducting this research, the concepts initially identified about disaster management and leadership were found to be too broadly defined to adequately encompass the current study. Disaster occur all over the world, after experiencing the 2008 Sichuan-earthquake, China, viewing Japan's massive (Ms 9.0)

earthquake on March 11, 2011 and Philippines' Typhoon Haiyan (320km/h) on 8 November, 2013, I started to recognise that much of my early thinking focused on the implications of instinct in the worldwide issue of "Disaster Reduction", without comprehending specific issues outlined in this study.

Over time, I came across several important literature reviews to gain a more relevant understanding of the matter within the scope of this study. For example, Nastasi et al. (2010, 2011) described the school disaster management and school teachers' role for traumatised pupils within educational sectors. Another source was the research by Xu and Lu (2012), their research used a meta-synthesis model to analyse the pre-disaster prevention and post-disaster reconstruction of 14 world-famous disasters. These studies led to a change in the conceptual framework for this study and enhanced my understanding of this topic.

Apart from that, this research was originally intended to focus on an evaluation of a psychological intervention program for vulnerable children in schools within Beichuan region after the 2008 earthquake China, but was actually focused on teachers' stress and resilience with a view to investigating school disaster management during a PDS. The final conceptual framework of this study resulted partially in a unique social-ecological model of Bronfenbrenner (1989) for understanding human development within the context of school disaster situations.

This research journey with its multiple challenges has made me more persistent and motivated not only on completing the thesis, but also coping with my future life. I appreciate the difficulties and the differences of conceiving academic practice as a non-native speaker of English, I have recognised the importance of commitment, persistence and determination to carry out my academic study.

Appendix 1: Group interviews (Extract)

受访人 1: 李副校长（男）地点：西苑中学心理咨询室时间：2012.5.7 (9:15-10:15)

1. 08 年大地震对您的学校造成的问题。

- 自从 08 年大地震灾后重建以来，什么是你们学校最突出的内部问题和困扰？

答：学校的管理没有系统化，老师的工作和情绪不稳定。老师人生观的改变（生活重于工作，意识到生命的重要）。本校是北川的一大校，**保第一的压力，教学得出质量，还要关心老师的身体、心理。老师对他们自己的健康很重视，工作和休息两不误。2200 个住校生，从学生起床到晚上就寝时间比较长，需利用老师的休息时间来管理。实行班级、年级老师负责管理（制度化）

要点：学校老师人生态度发生变化、工作积极性下降、情绪不稳定
学校重组后规模变大，教学工作量增大
制度化的灾后教育重建管理机制亟待建立

Question 3: Have you noticed any attitudinal changes among the school staff since the above reforms/ changes occurred? If so, how did you deal with these issues?

Answer: Due to the unsatisfactory salaries and enlargement of the school size, it seems to me that teachers lose their focus and aims in lives. A new salary-allocation policy is launched after the earthquake which hoped to stimulate teachers' motivation of teaching... it has certain effects yet it has not recovered to the same level in the pre-earthquake period. We learn lessons from previously happened disaster management, teaching methods and instruments. School leaders have invited professionals from universities to deliver post-disaster management and guidance at our school. Also, school leaders organize outdoor recreational activities and physical education and wanted to make a closer relationship with teachers and students.

Answer: '...In new salary-allocation policy, 15% of the teacher's income is closely linked to their capability of dealing with students' issues during the specific situation after the earthquake. [Support]: Teachers have weekly training in order to reinforce their mentality. Encouraging experienced teachers to share their stories of problem-solving...well there was no needing such thing [psychological problem-solving] before.'

Answer: 'School authorities would conduct counselling duty by talking with teachers with emotional problems individually. Teachers would fill in a form monthly that reflects on the school's management and gives comment. Questions from teaching staff could be responded through a teacher meeting. The leadership understood teachers' emotional shifts and new cognitive process after the earthquake. As a result, we tried our best to achieve a humanised management and adjustment, such as organising drawing and sports activities for teachers, and so on. Through these activities, harmony among teachers could be enhanced.'

Head teacher Question 7: Students' PDS' issues and coping strategies? SAH_Li:

Answer: The aspiration of being hard-working learners has gone amongst students. The initiative and enthusiasm of learning have decreased as study is not considered as important as their lives. Apart from a few specific students with satisfactory results to be able to tackle with learning difficulties, a downward trend is more significant on average students. Establishing and reinforcing a psychological counseling room as well as a specialised managerial department (student affairs office) to organise weekly individual counseling and movie viewings for problematic students.

SBH_Cheng's expression echoed the statement from SAH:

If parents could get involved, teachers' pressure would reduce largely you know... It could contribute to a more comprehensive acquaintance with children's behaviour habits and their willpower of learning. We have also investigated that students from complete families are in a better condition than those from divorced families or with parents who are migrant workers working out of town. Those students are more difficult to manage.

Teacher Question 5: Are you satisfied with the school leadership regarding their response and administration of the post-disaster recovery?

Probe: If yes, please explain why? If no, what do you think has the school missed in responding to PDS?

Satisfied, school leaders solved our accommodation issues, basic living needs and psychological assistance. It was also their first time in experiencing a major earthquake, they thought about the needs of us first I am really pleased. The school reopening was delayed slightly, and we were unable to catch up on the curriculum, but this is because of the government's instruction... [SAT_03F]

After the earthquake, my stress mainly came from taking on a caregiver's role for pupils. Parents go out for job seeking and they leave their children at school 7 days a week... I am three months pregnant, one of my pupils felt sick while I was on duty, I had to take him to hospital at midnight... I couldn't just leave him alone, could I? His parents couldn't get back directly from another city... (PBT_02F)

SBT_01F expressed a boy's story:

The earthquake destroyed this boy, I felt pain whenever I talked about him. He had suffered severe trauma during the earthquake as he lost his mum, he could never feel the love a mother could give... I used the weekends to take him home and let him play with my son. I cooked his favourite food and hoped he can feel me like a surrogate mother to him. Gradually, he started talking to me, he told me his fears, and how much he missed his mum and what happened during the earthquake. I saw tears in his eye; I knew he was back...

Appendix 2: Teacher questionnaire for pilot study

Demographic Information

1. Gender	Male <input type="checkbox"/> Female <input type="checkbox"/>
2. Teacher certification	Below Junior <input type="checkbox"/> Junior <input type="checkbox"/> Middle <input type="checkbox"/> Senior <input type="checkbox"/> Above Senior <input type="checkbox"/>
4. Teacher Degree	Below Bachelor <input type="checkbox"/> Bachelor <input type="checkbox"/> Master <input type="checkbox"/> Above Master <input type="checkbox"/>
5. Age	<30 <input type="checkbox"/> 30-39 <input type="checkbox"/> 40-49 <input type="checkbox"/> > 50 <input type="checkbox"/>
6. Educational experience as a teacher(in years)	<5 <input type="checkbox"/> 5-9 <input type="checkbox"/> 10-14 <input type="checkbox"/> 15-19 <input type="checkbox"/> >20 <input type="checkbox"/>
7. Teaching subject	
8. Teaching level by age group	
9. National culture	Qiang Culture (Wen, Mao, Li) <input type="checkbox"/> Han Culture <input type="checkbox"/> Other:
10. School name	

Please state your opinion to each of the following statement by circling ‘Y/N’ yes or not applicable, ‘1’ not at all stressful, ‘2’ not very stressful, ‘3’ somewhat stressful, ‘4’ very stressful.

No.	<p>With reference to the impact of the 2008 earthquake <u>my perception of stressors is related to school organisational changes.</u></p> <p>If the statement is not related to you, please click ‘N’, then you don’t need to answer B, if the statement is related to you, then</p> <p>Please indicate the degree of stress experienced in relation to the following factors</p>		A	B			
1.	Using new technological equipment for teaching	Y/N	1	2	3	4	
2.	The experience of psychological training for myself	Y/N	1	2	3	4	
3.	The experience of psychological treatment for pupils	Y/N	1	2	3	4	
4.	My involvement in decision-making about school management changes	Y/N	1	2	3	4	
5.	Procedures for teacher performance evaluation	Y/N	1	2	3	4	
6.	Creating a network with other teachers and schools	Y/N	1	2	3	4	
7.	Work overloading	Y/N	1	2	3	4	
8.	Playing a new role after the disaster (e.g. counsellor, mediator)	Y/N	1	2	3	4	
9.	Creating a network of support from parents	Y/N	1	2	3	4	
10.	Participating in a great number of social activities outside of school working hours	Y/N	1	2	3	4	
11.	Taking too much responsibility for pupils	Y/N	1	2	3	4	
12.	I have too little authority to carry out responsibilities assigned to me	Y/N	1	2	3	4	
13.	Being unclear on just what my scope and responsibilities are	Y/N	1	2	3	4	
14.	There is not an equal opportunity for promotion	Y/N	1	2	3	4	
15.	Please state up to three procedures that your school organisation has been changed since the 2008 earthquake?						

	a) b) c)
16.	How has the school helped staff in coping with post-disaster situations, please state here: a) b) c)
17	Give no more than three ways here which you think helped you in dealing with teaching difficulties in post-disaster situations. please state here: a) b) c)
18.	Has any psychological counselling room been set-up in your school for long-term staff and student support following the earthquake? (Yes/ No) Please give brief details for your answer: a) b) c)
19.	Have you witnessed or experienced any death/ serious injury of your family members, friends, relatives, colleagues and pupils? a) b) c)

Please state your opinion to each of the following statement by circling '1' strongly disagree, '2' disagree, '3' neither agree or disagree, '4' agree, '5' strongly agree in the box for that item.

No.	With reference to impact of <u>pupils' PDS issues</u> following the 2008 earthquake, please indicate the degree of stress experienced in relation to the following factors:	Short-term (6-12months)					Medium-term (12ms- Present)				
20.	I found it hard to deal with pupils PDSs issues.	1	2	3	4	5	1	2	3	4	5
21.	I feel pupils' behaviour and classroom discipline worsened	1	2	3	4	5	1	2	3	4	5
22.	I feel I have burden of the parental care for pupils	1	2	3	4	5	1	2	3	4	5
23.	I find it hard to motivate my pupils learning effectively in post-disaster situations.	1	2	3	4	5	1	2	3	4	5
24.	I find it more difficult to keep good relationships with pupils after they have experienced the 2008 earthquake.	1	2	3	4	5	1	2	3	4	5
25.	I find students' academic performance is becoming worse than pre-earthquake.	1	2	3	4	5	1	2	3	4	5
26. Please list no more than three other factors that have affected your relation in dealing with pupils issues in post-earthquake situations. (a) (b) (c)											

(‘1’ strongly disagree, ‘2’ disagree, ‘3’ neither agree or disagree, ‘4’ agree, ‘5’ strongly)

No	What are your responses to post-disaster situations?					
27.	I choose to persevere rather than give-up during stressful and challenging times.	1	2	3	4	5
28.	I see difficulties as temporary, expect to overcome them and have things turn out well	1	2	3	4	5
29.	I learnt valuable lessons from my experiences	1	2	3	4	5
30.	I do not just survive periods of high levels of stress but rebound stronger than before.	1	2	3	4	5
31.	I remain physically healthy while dealing with traumatic events	1	2	3	4	5
32.	I remain emotionally healthy while dealing with traumatic events	1	2	3	4	5
33.	I can express feelings to others/ask for help	1	2	3	4	5
34.	I be able to let anger go	1	2	3	4	5
35.	I be able to overcome discouragement	1	2	3	4	5
36.	I am satisfied with my life environments and conditions	1	2	3	4	5
37.	I am satisfied with my work environments and conditions	1	2	3	4	5
38.	I am satisfied with school leadership and administration	1	2	3	4	5
39.	I have full of hope in my future life.	1	2	3	4	5
40.	I have experienced PDSs which have stimulated my commitment to my career	1	2	3	4	5
41.	In general, I feel I am in control of the post-disaster situation in which I work.	1	2	3	4	5
42.	I have a great deal of autonomy in my position	1	2	3	4	5
43.	I have all the support I need from my school leadership.	1	2	3	4	5
44.	I feel able to keep good relationships with my colleagues	1	2	3	4	5
45.	I feel able to keep good relationships with students.	1	2	3	4	5
46.	I have repeated, disturbing memories, thoughts or images of what happened in the 2008 earthquake.	1	2	3	4	5
47.	I feel unsafe inside buildings.	1	2	3	4	5
48.	I am not interested in most of the things that I used to enjoy	1	2	3	4	5
49.	I feel irritable or have angry outbursts.	1	2	3	4	5
50.	I feel some pupils are lacking motivation to learn, but I don't know what should do	1	2	3	4	5
51.	I avoid thinking about or talking about a traumatic event or avoid having feelings related to it.	1	2	3	4	5
52.	The factors which have helped me to bounce back from the 2008 earthquake are: (a) (b) (c)					
53.	Give no more than three coping strategies which helped you bounce back from the 2008 earthquake? (a) (b) (c)					
54.	Do you feel your life is returning to normal (after the disaster & losses)? (Yes, No) Yes, how? _____ No, why? _____					

(The end)

Appendix 3: Revised Questionnaire for Main Study

Section I: Stressful experience and responses

The following statement is a list of experiences that some teachers have found stressful which relate to descriptions of school organisation changes since the 2008 earthquake. Please state your opinion to each of the following statement by circling.

A: 'Y/N' yes or not applicable, if the statement is not related to your experience, please click 'N', then you don't need to answer B.

B: If the statement is related to you, please indicate the degree of stress experienced in relation to the following factors

'1' not at all stressful; '2' not very stressful; '3' somewhat stressful; '4' quite stressful; '5' very stressful

No.	My stressful experience from school organisational changes	A	B				
1.	Using new technological equipment for teaching	Y/N	1	2	3	4	5
2.	A variety of psychological training for myself	Y/N	1	2	3	4	5
3.	The experience of psychological treatment for students	Y/N	1	2	3	4	5
4.	I get less chances to communicate with school leaders	Y/N	1	2	3	4	5
5.	New procedures for teacher performance evaluation	Y/N	1	2	3	4	5
6.	Creating a network with other teachers and schools	Y/N	1	2	3	4	5
7.	Work overloading	Y/N	1	2	3	4	5
8.	New colleagues to adjust to	Y/N	1	2	3	4	5
9.	Creating a network of support from parents	Y/N	1	2	3	4	5
10.	Participating in a great number of social activities outside of school working hours	Y/N	1	2	3	4	5
11.	Taking too much responsibility for students	Y/N	1	2	3	4	5
12.	The period time of the viability of the school is under inspection by the local education authority	Y/N	1	2	3	4	5
13.	Being unclear on just what my scope and responsibilities are	Y/N	1	2	3	4	5
14.	There is not an equal opportunity for promotion	Y/N	1	2	3	4	5

('1' strongly disagree, '2' disagree, '3' neither agree or disagree, '4' agree, '5' strongly agree)

15.	Your perception about the school organisation changes since the 2008 earthquake are:						
	15.1. School administrative power	1	2	3	4	5	
	15.2. Personnel management	1	2	3	4	5	
	15.3. Student management	1	2	3	4	5	
	15.4. Instructional methods	1	2	3	4	5	

	15.5. School environment	1	2	3	4	5
	15.6. School facilities	1	2	3	4	5
	15.7. Instructional instruments	1	2	3	4	5
	Other:					
16.	The school helped you in coping with post-disaster situations, please state here:					
	16.1. Availability of teaching materials and support	1	2	3	4	5
	16.2. Attention from school leadership	1	2	3	4	5
	16.3. Psychological assistance (e.g. teacher debriefing meeting)	1	2	3	4	5
	16.4. Spiritual encouragement	1	2	3	4	5
	16.5. Improvement of school environment and work conditions	1	2	3	4	5
	16.6. Increase teachers' welfare	1	2	3	4	5
	Other:					
17.	The methods which have helped your in dealing with teaching difficulties in post-disaster situations.					
	17.1. Self-stimulation	1	2	3	4	5
	17.2. Understanding and communication with students	1	2	3	4	5
	17.3. Enhancing myself problem-solving abilities	1	2	3	4	5
	17.4. Availability of training on teaching and learning to meet individual student' needs	1	2	3	4	5
	17.5. Increasing communication with parents	1	2	3	4	5
	17.6. Collaboration and communication with colleagues	1	2	3	4	5
	Other:					
18.	The factors/support which have helped you to cope with the 2008 earthquake are:					
	18.1. Support from my school leadership	1	2	3	4	5
	18.2. Support from Non-government organisation (NGO)	1	2	3	4	5
	18.3. Support from local Chinese ministry of education	1	2	3	4	5
	18.4. Support from my colleagues	1	2	3	4	5
	18.5. Support from my friends	1	2	3	4	5
	18.6. Support from my family	1	2	3	4	5
	18.7. Support from society	1	2	3	4	5
	18.8. Self-adaption	1	2	3	4	5
	18.9. Availability of psychological training	1	2	3	4	5
	18.10. By time	1	2	3	4	5
	Other:					
19.	Students' issues which you have found hard to deal with in PDSs:					
	19.1. Students' behaviour and classroom discipline worsened	1	2	3	4	5
	19.2. I have burden of the parental care for pupils	1	2	3	4	5
	19.3. It is hard to motivate my pupils learning effectively	1	2	3	4	5
	19.4. Students' academic performance is becoming worse than pre-earthquake	1	2	3	4	5
	19.5. Students' lack of confidence	1	2	3	4	5
	19.6. Bullying is increasing in school	1	2	3	4	5

	19.7. Violence and fighting is increasing in school since the 2008 earthquake	1	2	3	4	5
	19.8. Students' emotional instability and depression in classroom.	1	2	3	4	5
	Other:					
20.	The factors which have influenced you in dealing with students' PDS issues.					
	20.1. Lack of parental support	1	2	3	4	5
	20.2. Parents' overindulge their children	1	2	3	4	5
	20.3. Parents don't care about education and they think nothing is important but still alive after the earthquake	1	2	3	4	5
	20.4. Lack of learning atmosphere	1	2	3	4	5
	20.5. Lack of effective instruction from school leaders	1	2	3	4	5
	20.6. Increase single parent and divorced family	1	2	3	4	5
	Other:					

21.	My personal experience of the 2008 earthquake				
	21.1. I have witnessed or experienced the death of my spouse or child.	Yes <input type="checkbox"/>	No <input type="checkbox"/>		
	21.2. I have witnessed or experienced the death of a close friend, relative or neighbours.	Yes <input type="checkbox"/>	No <input type="checkbox"/>		
	21.3. I have witnessed or experienced the death of my pupils or colleagues.	Yes <input type="checkbox"/>	No <input type="checkbox"/>		
	21.4. I have witnessed or experienced the death of people I don't know	Yes <input type="checkbox"/>	No <input type="checkbox"/>		
	21.5. I have experienced the serious injury of my family member or friends.	Yes <input type="checkbox"/>	No <input type="checkbox"/>		
	21.6. I have seen the serious injury of my pupils and colleagues.	Yes <input type="checkbox"/>	No <input type="checkbox"/>		
	21.7. I feel my life is returning to normal after the disaster & losses.	Yes <input type="checkbox"/>	No <input type="checkbox"/>		
	21.8. My home has been damaged: Completely <input type="checkbox"/> Severely <input type="checkbox"/> Moderately <input type="checkbox"/>				

Section II: Self-evaluation Inventory

('1' strongly disagree, '2' disagree, '3' neither agree or disagree, '4' agree, '5' strongly agree)

No	What are your responses to post-disaster situations?					
22.	I choose to persevere rather than give-up during stressful and challenging times.	1	2	3	4	5
23.	I see difficulties as temporary, expect to overcome them and have things turn out well	1	2	3	4	5
24.	I learnt valuable lessons from my experiences	1	2	3	4	5
25.	I do not just survive periods of high levels of stress but rebound stronger than before.	1	2	3	4	5
26.	I remain physically healthy while dealing with traumatic events	1	2	3	4	5
27.	I remain emotionally healthy while dealing with traumatic events	1	2	3	4	5
28.	I can express feelings to others/ask for help	1	2	3	4	5
29.	I be able to let anger go	1	2	3	4	5
30.	I be able to overcome discouragement	1	2	3	4	5
31.	I am satisfied with my life environments and conditions	1	2	3	4	5
32.	I am satisfied with my work environments and conditions	1	2	3	4	5

33.	I am satisfied with school leadership and administration	1	2	3	4	5
34.	I have a great deal of autonomy in my position.	1	2	3	4	5
35.	I have experienced PDSs which have stimulated my commitment to my career	1	2	3	4	5
36.	In general, I feel I am in control of the post-disaster situation in which I work.	1	2	3	4	5
37.	I have full of hope in my future life.	1	2	3	4	5
38.	I have all the support I need from my school leadership.	1	2	3	4	5
39.	I feel able to keep good relationships with my colleagues	1	2	3	4	5
40.	I feel able to keep good relationships with students.	1	2	3	4	5
41.	I have repeated, disturbing memories, thoughts or images of what happened in the 2008 earthquake.	1	2	3	4	5
42.	I feel unsafe inside buildings.	1	2	3	4	5
43.	I am not interested in most of the things that I used to enjoy	1	2	3	4	5
44.	I feel irritable or have angry outbursts.	1	2	3	4	5
45.	I feel some pupils are lacking motivation to learn, but I don't know what should do	1	2	3	4	5
46.	I avoid thinking about or talking about a traumatic event or avoid having feelings related to it.	1	2	3	4	5

Section III: Demographic information

1. Gender	Male <input type="checkbox"/> Female <input type="checkbox"/>
2. Teacher certification	Below Junior <input type="checkbox"/> Junior <input type="checkbox"/> Middle <input type="checkbox"/> Senior <input type="checkbox"/> Above Senior <input type="checkbox"/>
4. Teacher Degree	Below Bachelor <input type="checkbox"/> Bachelor <input type="checkbox"/> Master <input type="checkbox"/> Above Master <input type="checkbox"/>
5. Age	<30 <input type="checkbox"/> 30-39 <input type="checkbox"/> 40-49 <input type="checkbox"/> > 50 <input type="checkbox"/>
6. Educational experience as a teacher(in years)	<5 <input type="checkbox"/> 5-9 <input type="checkbox"/> 10-14 <input type="checkbox"/> 15-19 <input type="checkbox"/> >20 <input type="checkbox"/>
7. Teaching subject	
8. Teaching level by age group	
9. Ethnicity	Qiang Culture (Wen, Mao, Li) <input type="checkbox"/> Han Culture <input type="checkbox"/> Other: <input type="text"/>
10. School name	

Are there any additional comments you wish to make in here, which relate to your stressful experiences, resilience and well-being in post-disaster situations?

(The end)

Thank you for your precious time and cooperation

Appendix 4: Original Interview Schedule for Pilot Study

The interview questions for Head teacher ...

1. How long have you been working as a head teacher?
2. Have you involved in any post-disaster or crises management before? If yes, what was about?
3. What are the major issues raised to education by the 2008 earthquake?
4. What are your internal issues and concerns regarding school reconstruction 5.process since the 2008 earthquake?
6. What factors do you think contribute to each of the internal issues and concerns?
7. What are your external issues and concerns regarding the support from the Chinese government or society on the reconstruction of your school since the 2008 earthquake?
8. What factors do you think contribute to each of the external issues and concerns?
9. What the policies or strategies do you think should be established in schools in helping the normalisation of the educational function following a disaster or crisis?
10. From my pilot study, I have noticed that the school leadership and administration have been changed a lot since the 2008 earthquake...Would you like to tell me why you have made these changes, in other words, what has driven you to make these changes?
11. Do you feel there are any differences or changes in attitude, motivation and behaviour amongst the staff and pupils in your school since you have made these changes?
12. How do you think the role of teachers in post-disaster reconstruction process? Why?

The interview questions for teacher...

The results of my pilot study suggest that some teachers have experienced stressful events in facing school organisational changes and students' issues in post-disaster situations, my questions are:

1. Would you like to tell me how you feel these stressful experiences compare with any other stress you had before the earthquake?
2. Have you been asked to deal with distressed students? If yes, how have you dealt with the issues?
3. What special skills and competences do you need?
4. As many teachers mentioned that your school has provided specific support and psychological assistance or training after the 2008 earthquake, my question is how do you feel about the support and assistance and how relevant are they to your needs?
5. Are you satisfied with the school leadership regarding their response and administration in the post-disaster recovery process? If yes, please explain why? If no, why not, what are you expecting?
6. How have these experiences influenced your life personally and psychologically?
7. How do you feel your capability/ willingness/preparedness to help yourself and students cope with future adversities?
8. What specific support or help do you need in terms of handle student issues in the aftermath of the earthquake?

9. If you had a wish list regarding the management of post-disaster situations in schools, what would be on it?

Student interview questions...

School conditions...

1. How do you feel about the new school environment? (Buildings, library, classrooms, atmosphere of learning and teaching space, the hall of residence, teachers and classmates etc...)

2. How do you feel about the security system in your new school?

Have you been taught lessons on preparation for future natural or man-made disasters?

Teacher and student relationships ...

3. How do you like your teachers?

4. Have you felt any changes in the attitude and behaviour of your teachers between the pre-earthquake and post-earthquake situations? If so, what are they?

5. What or who do you think gives you support most in post-disaster response?(Parents, peers, teachers, societies)

Psychological and mental health...

6. In general, what are you afraid of?

Appendix 5: Semi-Structured Head teachers Interview Schedule

The interview questions for Principals/Deputy Principal...

1. How long have you been working as a principal/deputy principal?
2. Were you involved in any post-disaster or crises management before (the 2008 earthquake)? If so, please describe.

Stressors from school organisation changes (RQ1):

1. Major problems caused by the 2008 earthquake on your school.
 - What are the most outstanding/ fundamental internal issues and concerns regarding the school reconstruction process since the 2008 earthquake?
 - What factors would you regard as having contributed to the mentioned internal issues and concerns?
 - What are the major external issues and concerns about receiving governmental or social aids/ funding for reconstruction of your school? (Principal)
 - What factors do you think contributed to these/ the mentioned the external issues and concerns? (Principal)
2. From my pilot study, I have noticed that the school leadership and administration have changed since the 2008 earthquake...Would you like to tell me why these changes have been made? (e.g. Instructional leadership; transformational leadership)
3. Have you noticed any attitudinal changes among the school staff since the above reforms/ changes occurred? If so, how did you deal with these issues?
4. What criteria has the school used to assess teachers work during the post-disaster recovery process?
5. What policies or strategies do you think should be established in schools to facilitate a better recovery of teachers after experiencing a disaster or crisis, and what was your role? (Intra-agency strategies or interagency strategies)

Stressors from teacher personal experiences (RQ2):

6. Have you ever been consulted by teacher(s) who faced difficulties (professional and personal inter-relationship between teachers and yourself)?

Stressors from students' issues (RQ3):

7. A. What policies or strategies do you think should be established in schools to facilitate a better recovery of students after a disaster or crisis?
B. what do you think is the role of teachers in post-disaster reconstruction process? Probe: Do you think teachers should involve in the policy-making and practising of these strategies? Why?
8. Have you noticed any attitudinal/behavioural changes amongst students of your school since the mentioned changes in policies made?
Probe: What specific methods have school leaders applied to help teachers dealing with post-disaster issues?

Stressors from parental absence (RQ4):

9. Were parents involved in the process of school post-disaster recovery?
Probe: If so, what was their role? If no, what would be the reason?
How would the school deal with this issue?

Relationships of school post-disaster management and teacher stress (RQ5):

(Along with the findings from above questions of 2, 3, 4, 5, 6, 7.2., 8.2., 9, 10)

10. What do you think teachers should do in order to exert their autonomy and subjective initiative into the recovery process?
11. What is the essence/core for you to effectively lead and manage a school (or staff)?

Appendix 6: Semi-Structured Teacher Interview Schedule

(Questions heightened in yellow were added in the main study)

The interview questions for teacher...

The initial results of my pilot study indicate that some teachers have experienced a certain degree of stress/ tension in facing school organisational changes and students' issues in post-disaster situations, my questions are:

Stressors from teacher personal experience (RQ2):

1. Would you like to tell how you feel these stressful experiences compared with any other stress you faced before the earthquake?
2. What special skills and competences do you need in terms of handling student issues in the aftermath of the earthquake?
3. How do you exert your autonomy and subjective initiative into the recovery process?

Teacher perceptions of school post-disaster management (RQ6):

4. Many teachers mentioned that your school has provided some specific support and psychological assistance or training after the 2008 earthquake, how relevant has that supports been to your needs?
5. Are you satisfied with the school leadership regarding their response and administration of the post-disaster recovery?
Probe: If yes, please explain why? If no, what do you think has the school missed in responding to PDS?
6. How do you feel about your professional and personal relationships with the school leaders?
7. a) Have you recognised any change in attitude and behaviour of your students since the earthquake? Probe: If so, what are they? i.e. in classroom, school dorms, etc.
b) What specific methods have school leaders applied to help teachers in dealing with PDSs?
8. Have you received any assistance from parents in dealing with students' issues during the post-disaster situations?
Probe: If yes, how did their assistance and support help? If no, why not and how would your school deal with this issue?
9. How do you feel about the involvement of the parents during the post-disaster situations?
Probe: do you think parents should have more involvement in...?
10. Please explain how you are prepared to help yourself and students in coping with future adversities?

Appendix 7: Pilot study analysis (Extract)

Scale reliability

Questionnaire analysis of this pilot study was calculated by using SPSS v.18. The scale reliability used Cronbach's alpha which is a common accepted reliability measure in social science research (Brown 2001). The average of possible coefficient alpha between minus infinity and 1, with 0.6 considered acceptable for exploratory purposes, 0.7 considered adequate for confirmatory purposes, and 0.8 considered good for confirmatory purpose (Brown 2001). As shown in Table 1, below, all the measures of the instrument were found to be highly reliable with Cronbach alphas ranged from .71 (items = 26) for stress, .93 (items = 12) for resilience and .91 (items =16) for well-being. A three factor solution was deemed by *principal component analysis* to be the most interpretable in the scale of school organization change (Q1-Q14). The three factors were labeled as F1= School management changes (SMC); F2 = Teaching methods change (TMC); and F3 = Work loading (WL) showed in Table 4.2. Again, the other three factors were identified for the scale of well-being, which were labeled as F1 = Life and job satisfaction (LJS); F2 = Positive emotions (PEs); and F3 = Negative emotions (NEs).

Table 1: Results of internal reliability analysis

Scale name	Subscale name	Factors	Variable name	Cronbach's Alpha	Item N
Stress	School organisation changes (Q1-Q14) Alpha .883 (N=14)	SMC	Q4,Q5,Q11-Q13	.773	5
		TMC	Q1- Q3,Q6,Q9	.769	5
		WL	Q7,Q8,Q10,Q14	.616	4
	Pupils' PDS issues Alpha .896 (N=12)		Q20ST-Q25ST	.840	6
			Q20MT-Q25MT	.929	6
Resilience			Q27-Q35	.927	9
Well-being	Life and job satisfaction(LJS)		Q36-Q38, Q42	.820	4
	Positive emotions (PEs)		Q39-Q41;Q43-Q45	.866	6
	Negative emotions (NEs)		Q46-Q51	.865	6

(SMC =school management change; TMC = teaching methods change; WL= work loading)

Correlation coefficient

The following Table 2 displays the correlation coefficients of three stressful factors with the scale of resilience and well-being (LJS, PEs and NEs). Statistically, the variables of **resilience and well-being** in the pilot study had significant negative correlations with the variable of **school management change** (SMC), including resilience ($r = -0.390$, $p < 0.05$), Life and job satisfaction (LJS) ($R = -0.631$, $P < 0.01$) and teacher positive emotions (TPE) ($r = -0.388$, $p < 0.05$). **That meant, the less stressful experiences the teachers faced from the school management change, the quicker the teachers could recover from the impact of the earthquake or vice versa.** This relationship was also applied to LJS and TPE, it meant the less stressful experiences the teachers suffered, then the higher satisfaction and positive emotions the teachers should express or vice versa. The SMC was found to have the most significant level of negative correlation with the scale of LJS ($r = -0.631$, $p < 0.01$).

Table 2: Correlation of the three factors with the scale of resilience and well-being

Scale name	Stressors (n=14 items)			Resilience n=9items	Well-being (n=16 items)		
	SMC	TMC	WL	Resilience	LJS	PEs	NEs
SMC	1						
TMC	.684**	1					
WL	.748**	.623**	1				
Resilience	-.390*	.012	-.300	1			
LJS	-.631**	-.131	.300	.685**	1		
TPE	-.388*	.077	-.180	.784**	.760**	1	
TNE	.022	.188	-.138	.346**	.324**	.481**	1

**Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2 tailed).

Table 3: Correlation of school organisational changes (Q6, Q9, and Q10 and Q12) with resilience components (Q27-Q35)

	Stressors from school organisational changes				Teacher resilience components								
	Q6	Q9	Q10	Q12	Q27	Q28	Q29	Q30	Q31	Q32	Q33	Q34	Q35
Q6	1												
Q9	.379**	1											
Q10	.275*	.595**	1										
Q12	.338*	.532**	.472**	1									
Q27	-.352**	.220	.107	-.370**	1								
Q28	.221	.204	.020	.275*	.842**	1							
Q29	-.356**	-.267*	-.009	-.275*	.795**	.799**	1						
Q30	.105	.096	.234	-.324*	.737**	.729**	.714**	1					
Q31	-.073	.062	-.325*	.171	.537**	.454**	.586**	.713**	1				
Q32	.072	.148	.249	-.310*	.592**	.486**	.604**	.685**	.645**	1			
Q33	-.048	.064	.223	.240	.520**	.551**	.485**	.694**	.608**	.583**	1		
Q34	-.141	.072	-.373**	.097	.357**	.333**	.439**	.477**	.579**	.681**	.570**	1	
Q35	.068	.144	.158	.213	.475**	.508**	.565**	.568**	.523**	.684**	.494**	.533**	1

**, Correlation is significant at the 0.01 level (2-tailed). *, Correlation is significant at the 0.05 level (2-tailed).

Table 4 :Correlation of stressor from school organisational changes with teacher life and job satisfaction components

	Stressor from school organisational changes								Life and job satisfaction			
	Q1	Q4	Q5	Q10	Q11	Q12	Q13	Q14	Q36	Q37	Q38	Q42
Q1	1											
Q4	.220	1										
Q5	.201	.244	1									
Q10	.289*	.199	.201	1								
Q11	.290*	.276	.409**	.610**	1							
Q12	.231	.298	.346*	.472**	.606**	1						
Q13	.338**	.322*	.355**	.248	.413**	.446**	1					
Q14	.192	.153	.361**	.183	.192	.305*	.547**	1				
Q36	-.305*	.224	-.252*	.134	-.381**	-.338*	-.339**	-.278*	1			
Q37	.214	.304*	.094	.193	-.322*	.197	.171	.205	.568**	1		
Q38	.288*	.334*	.000	-.272*	.320*	.190	.256*	.176	.603**	.743**	1	
Q42	.390**	.156	.208	.202	.427**	.234	.030	.140	.429**	.469**	.413**	1

*, Correlation is significant at the 0.05 level (2-tailed). **, Correlation is significant at the 0.01 level (2-tailed).

Table 5: correlation of school organisational changes with teacher positive emotions

	Stressors from school organisational changes						Teacher positive emotions					
	Q1	Q6	Q8	Q10	Q11	Q12	Q39	Q40	Q41	Q43	Q44	Q45
Q1	1											
Q6	.060	1										
Q8	.354**	.357*	1									
Q10	.289*	.275*	.622**	1								
Q11	.290*	.185	.457**	.610**	1							
Q12	.231	.338*	.538**	.472**	.606**	1						
Q39	.225	.038	.046	.310*	.320*	.359**	1					
Q40	.154	.169	-.073	.019	.098	.142	.626**	1				
Q41	.107	.177	-.083	.099	-.017	.085	.628**	.679**	1			
Q43	-.363**	-.171	-.016	.179	.198	.000	.451**	.368**	.358**	1		
Q44	.281*	.356**	.276*	-.270*	.108	-.349*	.479**	.509**	.542**	.478**	1	
Q45	-.285*	-.254*	.173	-.262*	.183	-.293*	.548**	.473**	.555**	.464**	.770**	1

**, Correlation is significant at the 0.01 level (2-tailed). *, Correlation is significant at the 0.05 level (2-tailed).

Table 6: correlation of school organisational changes with teacher negative emotions

	Stressors from school organisational changes						Teacher negative emotions					
	Q3	Q8	Q9	Q10	Q13	Q14	Q46	Q47	Q48	Q49	Q50	Q51
Q3	1											
Q8	.657**	1										
Q9	.213	.705**	1									
Q10	.214	.622**	.595**	1								
Q13	.286*	.349*	.267*	.248	1							
Q14	.146	.288*	.325**	.183	.547**	1						
Q46	-.220	-.153	-.055	-.120	.164	.247*	1					
Q47	-.201	-.191	-.087	-.232	-.099	-.052	.630**	1				
Q48	.241*	.389**	.267*	.329*	.051	.085	.651**	.564**	1			
Q49	-.037	-.033	-.046	.047	.297*	-.026	.357**	.626**	.382**	1		
Q50	.020	-.075	-.090	-.101	-.054	.016	.414**	.587**	.460**	.700**	1	
Q51	.095	.055	-.119	-.049	-.011	.145	.322**	.512**	.379**	.562**	.588**	1

**, Correlation is significant at the 0.01 level (2-tailed). *, Correlation is significant at the 0.05 level (2-tailed).

Table 7: Correlation of students' issues with resilience components

	Stressors from students' issues					Teacher resilience components									
<div></div>	Q20 MT	Q21 MT	Q22 ST	Q22 MT	Q23 MT	Q27	Q28	Q29	Q30	Q31	Q32	Q33	Q34	Q35	
Q20MT	1														
Q21MT	.743**	1													
Q22ST	.427**	.324**	1												
Q22MT	.626**	.666**	.633**	1											
Q23MT	.777**	.753**	.356**	.601**	1										
Q27	.182	.172	.159	.166	.193	1									
Q28	.203	.208	.176	.192	.252*	.842**	1								
Q29	.189	.233*	.225	.268*	.204	.795**	.799**	1							
Q30	.278*	.252*	.194	.194	.300*	.737**	.729**	.714**	1						
Q31	.197	.221	.077	.064	.203	.537**	.454**	.586**	.713**	1					
Q32	.082	-.012	.340**	.199	-.021	.592**	.486**	.604**	.685**	.645**	1				
Q33	.187	.112	.200	.041	.171	.520**	.551**	.485**	.694**	.608**	.583**	1			
Q34	.097	-.029	.081	.039	-.044	.357**	.333**	.439**	.477**	.579**	.681**	.570**	1		
Q35	-.038	.006	.206	.053	-.037	.475**	.508**	.565**	.568**	.523**	.684**	.494**	.533**	1	

** . Correlation is significant at the 0.01 level (2-tailed). * . Correlation is significant at the 0.05 level (2-tailed)

Appendix 8: Factor analysis

4.1 Principal component Analysis of sub-scale 1 (Q1-14)

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.720
Bartlett's Test of Sphericity	Approx. Chi-Square	472.725
	df	91
	Sig.	.000

Component Matrix ^a				
	Component			Communalities
	1	2	3	
Q1_B	.598	.458	-.235	.623
Q2_B	.631	.343	-.286	.598
Q3_B	.587	.653	.179	.803
Q4_B	.699	-.343	-.131	.623
Q5_B	.551	-.453	.250	.572
Q6_B	.798	-.233	.181	.724
Q7_B	.440	-.668	.096	.648
Q8_B	.460	.653	-.189	.674
Q9_B	.545	.353	.445	.620
Q10_B	.719	.021	.116	.531
Q11_B	.356	.008	.809	.781
Q12_B	.664	.107	-.218	.500
Q13_B	.749	-.219	-.366	.743
Q14_B	.495	-.653	-.251	.735
Eigenvalues	5.123	2.615	1.437	9.175

4.2 Principal component Analysis of sub-scale 9 (Q22-46)

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.912
Bartlett's Test of Sphericity	Approx. Chi-Square	4403.307
	df	300
	Sig.	0.000

Component Matrix ^a					
	Component				Communalities
	1	2	3	4	
Q22	.839	-.037	.358	-.093	.842
Q23	.860	-.059	.347	-.046	.866
Q24	.832	-.043	.374	-.039	.836
Q25	.854	-.024	.271	-.086	.811
Q26	.841	-.078	.293	-.104	.810
Q27	.821	-.104	.259	-.081	.759
Q28	.789	.020	.064	-.202	.668
Q29	.675	-.060	.021	-.164	.487
Q30	.829	-.045	.084	-.177	.728
Q31	.767	.084	-.206	-.247	.698
Q32	.769	.134	-.388	-.267	.832
Q33	.736	.167	-.392	-.288	.807
Q34	.581	.247	-.431	-.320	.687
Q35	.733	.136	-.134	.322	.678
Q36	.786	.055	-.094	.332	.740
Q37	.749	-.099	-.119	.380	.730
Q38	.655	.222	-.525	.167	.782
Q39	.757	-.037	-.095	.478	.812
Q40	.733	.001	-.014	.470	.759
Q41	.066	.758	.060	.002	.582
Q42	-.064	.821	.007	.118	.692
Q43	-.067	.807	-.035	.001	.657
Q44	-.073	.807	.190	.000	.694
Q45	-.101	.681	.323	.098	.588
Q46	-.106	.809	.097	-.082	.681
Eigenvalues	11.370	3.895	1.640	1.320	18.225

Appendix 9: Computer coding for statistical analysis

Sub-scale 1: Teacher's perceptions of their stressful experience during school rebuilding (SR)

1. Using new technological equipment for teaching [Q1 TecEquipment]
2. A variety of psychological training for myself [Q2 PsyTrain]
3. The experience of psychological treatment for students [Q3 PsyTreat]
4. I get less chance to communicate with school leaders [Q4 LessComLeader]
5. New procedures for teacher performance evaluation Q5 ProceEvalua
6. Creating a network with other teachers and schools [Q6 NetTeacher]
7. Work overloading [Q7 WorkLoad]
8. New colleagues to adjust to [Q8 NewColleague]
9. Creating a network of support from parents [Q9 NetParent]
10. Participating in a great number of social activities outside of school working hours [Q10 SociActivity]
11. Taking too much responsibility for students [Q11 RespoStudent]
12. The period time of the viability of the school is under inspection by the local education authority [Q12 Authority]
13. Being unclear on just what my scope and responsibilities are [Q13 UnclearRespon]
14. There is not an equal opportunity for promotion [Q14 EquPromotion]

Sub-scale 2: Teacher's perceptions of school organisation changes

- 15.1. School administrative power [Q15_1 AdmiPower]
- 15.2. Personnel management [Q15_2 ManagePersonel]
- 15.3. Student management [Q15_3 ManageStudent]
- 15.4. Instructional methods [Q15_4 InstrMethod]
- 15.5. School discipline [Q15_5 Schdiscipline]
- 15.6. School resource [Q15_6 Schresource]
- 15.7. School teaching facilities [Q15_7 Teachfacilities]

Sub-scale 3: Teacher's perceptions of their schools' supports during PDSs

- 16.1. Availability of teaching materials and support [16_1 AvailableMaterial]
- 16.2. Attention from school leaders [16_2 LeaderAttention]
- 16.3. Psychological assistance (e.g. teacher debriefing meeting) [16_3 PsyDebrief]
- 16.4. Spiritual encouragement [16_4 SpiritEncorage]
- 16.5. Improvement of school environment and work conditions [16_5 ConditImprove]
- 16.6. Increase teachers' welfare [16_6 IncreaseWelfare]

Sub-scale 4: Teachers' perceptions of his/her own capability to cope with PDSs

- 17.1. Self-stimulation [17_1Self-stimulation]
- 17.2. Understanding and communication with students [17_2 Communicate Student]
- 17.3. Enhancing myself problem-solving abilities [17_3 Problem Solve]
- 17.4. Availability of training on teaching and learning to meet individual student's needs[17_4 MeetStuNeed]
- 17.5. Increasing communication with parents [17_5 CommuniParent]
- 17.6. Collaboration and communication with colleagues [17_6 ColaboraColeag]

Sub-scale 5: Teacher's perceptions of the general factors and supports helped Them

- 18.1. Support from my school leadership [18_1 LeadSuport]
- 18.2. Support from Non-government organisation (NGO) [18_2 NGOSuport]
- 18.3. Support from local Chinese ministry of education [18_3 GoverSupport]
- 18.4. Support from my colleagues [18_4 ColleSupport]
- 18.5. Support from my friends [18_5 FrienSupport]
- 18.6. Support from my family [18_6 FamilSupport]
- 18.7. Support from society [18_7 SociSupport]
- 18.8. Self-adaption [18_8 Self-adaption]
- 18.9. Availability of psychological training [18_9 PsyTrain]

Sub-scale 6: Teacher's perceptions of students' issues

- 19.1. Students' behaviour and classroom discipline worsened [19_1WorseBehave]
- 19.2. I have the burden of parental care for pupils [19_2ParentalCare]
- 19.3. It is hard to motivate my pupils learning effectively [19_3MotivateHard]
- 19.4. Students' academic performance is becoming worse than pre-earthquake [19_4 Performance]
- 19.5. Students' lack of confidence [19_5 LackConfid]
- 19.6. Bullying is increasing in school [19_6 Bully]
- 19.7. Violence and fighting is increasing in school since the 2008earthquake [19_7 ViolFight]
- 19.8. Students' emotional instability and depression in classroom [19_8 Depress]

Sub-scale 7: Teacher's perceptions of the factors affect their ability to deal with students' issues

- 20.1. Lack of parental support [20_1 ParentSupport]
- 20.2. Parents' overindulge their children [20_2 Overindulge]
- 20.3. Parents' don't care about education and they think nothing is important but still alive after the earthquake [20_3 AliveImportant]
- 20.4. Lack of learning atmosphere [20_4 LackLearAtmos]

- 20.5. Lack of effective instruction from school leaders [20_5 LackInstruction]
20.6. Increase single parent and divorced family [20_6 PrentDivorce]

Sub-scale 8: Teacher's personal experience of the 2008 earthquake

- 21.1. I have witnessed or experienced the death of my spouse or child
[21_1 DeatSpouse]
21.2. I have witnessed or experienced the death of a close friend, relative or
neighbours [21_2 DeatFriend]
21.3. I have witnessed or experienced the death of my pupils or colleagues
[21_3 DeatPuCole]
21.4. I have witnessed or experienced the death of people I don't know
[21_4 DeatPeople]
21.5. I have experienced the serious injury of my family member or friends
[21_5 InjuryFamily]
21.6. I have seen the serious injury of my pupils and colleagues [21_6 InjurPuCole]
21.7. I feel my life is returning to normal after the disaster & losses
[21_7 ReturnNormal]

21.8. My home has been damaged [21_7 HomeDamage]

Sub-scale 9: Teacher's psychological responses to PDSs

22. I choose to persevere rather than give-up during stressful and challenging times
[Q22 Persevere]
23. I see difficulties as temporary, expect to overcome them and have things turn out
well [Q23 Overcome]
24. I learnt valuable lessons from my experiences [Q24 LearnLesson]
25. I do not just survive periods of high levels of stress but rebound stronger than
before [Q25 RebStrong]
26. I remain physically healthy while dealing with traumatic events [Q26 PhyHealth]
27. I remain emotionally healthy while dealing with traumatic events
[Q27 EmoHealth]
28. I can express feelings to others/ask for help [Q28 ExpFeeling]
29. I am able to let anger go [Q29 LetAngerGo]
30. I am able to overcome discouragement [Q30 OvDiscourage]
31. I am satisfied with my life environments and conditions [Q31 SatiLife]
32. I am satisfied with my work environments and conditions [Q32 SatiWork]
33. I am satisfied with school leadership and administration [Q33 SatiLeadership]
34. I have a great deal of autonomy in my position [Q34 AutoInPosition]
35. I have experienced PDSs which have stimulated my commitment to my career
[Q35 StimCareer]
36. In general, I feel I am in control of the post-disaster situation in which I work
[Q36 InControl]

- 37. I have full of hope in my future life [Q37 HopeInLife]
- 38. I have all the support I need from my school leadership [Q38 SupFroSchool]
- 39. I feel able to keep good relationships with my colleagues [Q39 RelColleague]
- 40. I feel able to keep good relationships with students [Q40 RelStudent]
- 41. I have repeated, disturbing memories, thoughts or images of what happened in the 2008 earthquake [Q41 Disturb Memory]
- 42. I feel unsafe inside buildings [Q42 FeelUnsafe]
- 43. I am not interested in most of the things that I used to enjoy [Q43 NoInterest]
- 44. I feel irritable or have angry outbursts [Q44 FeelIrritable]
- 45. I feel some pupils are lacking motivation to learn, but I don't know what should do [Q45 PupilLackMotiv]
- 46. I avoid thinking about or talking about a traumatic event or avoid having feelings related to it [Q46 AvoidThink]

Appendix 10: Post Hoc Analysis

Table 1: Description of the response regarding ‘Schoolsupport’ from primary and secondary schools (n=196)

School	Schoolsupport	Statistic
Primary school	Mean	4.10
	95% Confidence Interval for Mean	3.93 to 4.27
	Median	4.00
	Std. Deviation	0.894
	Std. Error	0.085
	Minimum	1
	Maximum	5
Secondary school	Mean	3.62
	95% Confidence Interval for Mean	3.43 to 3.80
	Median	4.00
	Std. Deviation	0.851
	Std. Error	0.092
	Minimum	1
	Maximum	5

Table 2: Description of the response regarding ‘Teachercapability’ from primary and secondary schools (n=196)

School	Teacher capability	Statistic
Primary school	Mean	4.30
	95% Confidence Interval for Mean	4.15 to 4.44
	Median	4.00
	Std. Deviation	0.770
	Std. Error	0.073
	Minimum	2
	Maximum	5
Secondary school	Mean	4.07
	95% Confidence Interval for Mean	3.92 to 4.23
	Median	4.00
	Std. Deviation	0.720
	Std. Error	0.078
	Minimum	2
	Maximum	5

Table 3: Description of the response regarding ‘General factor’
from primary and secondary schools (n=196)

School	General factor	Statistic
Primary school	Mean	4.23
	95% Confidence Interval for Mean	4.07 to 4.38
	Median	4.00
	Std. Deviation	0.803
	Std. Error	0.076
	Minimum	1
	Maximum	5
Secondary school	Mean	3.98
	95% Confidence Interval for Mean	3.83 to 4.13
	Median	4.00
	Std. Deviation	0.701
	Std. Error	0.076
	Minimum	1
	Maximum	5

Table 4: Description of the response regarding ‘Student issue’
from primary and secondary schools

School	Student issue	Statistic
Primary school	Mean	2.70
	95% Confidence Interval for Mean	2.52 to 2.87
	Median	3.00
	Std. Deviation	0.930
	Std. Error	0.088
	Minimum	1
	Maximum	5
Secondary school	Mean	3.39
	95% Confidence Interval for Mean	3.14 to 3.65
	Median	4.00
	Std. Deviation	1.170
	Std. Error	0.127
	Minimum	1
	Maximum	5

Table 5: Descriptive statistics of the response regarding ‘Schoolsupport’ from the five individual schools (n=196)

Variable	School	Description	Statistics	Std. Error.
Schoolsupport	Primary School A	Mean	4.32	.100
		95% Confidence Interval for Mean	4.12 to 4.52	
		Median	4.00	
		Std. Deviation	.785	
		Minimum	2	
		Maximum	5	
	Primary school B	Mean	3.90	.161
		95% Confidence Interval for Mean	3.57 to 4.23	
		Median	4.00	
		Std. Deviation	.804	
		Minimum	2	
		Maximum	5	
	Secondary school A	Mean	3.90	.150
		95% Confidence Interval for Mean	3.59 to 4.20	
		Median	4.00	
		Std. Deviation	.806	
		Minimum	3	
		Maximum	5	
	Secondary school B	Mean	3.47	.113
		95% Confidence Interval for Mean	3.25 to 3.70	
		Median	3.50	
		Std. Deviation	.844	
		Minimum	1	
		Maximum	5	
	Primary school C	Mean	3.73	.223
		95% Confidence Interval for Mean	3.27 to 4.19	
		Median	4.00	
		Std. Deviation	1.093	
		Minimum	1	
		Maximum	5	

Table 6: Descriptive statistics of the response regarding ‘Teacher capability’ from the five individual schools (n=196)

Variable	School	Description	Statistics	Std. Error.
Teacher capability	Primary School A	Mean	4.42	.094
		95% Confidence Interval for Mean	4.23 to 4.61	
		Median	5.00	
		Std. Deviation	.737	
		Minimum	2	
		Maximum	5	
	Primary school B	Mean	4.24	.133
		95% Confidence Interval for Mean	3.97 to 4.51	
		Median	4.00	
		Std. Deviation	.663	
		Minimum	3	
		Maximum	5	
	Secondary school A	Mean	4.07	.131
		95% Confidence Interval for Mean	3.80 to 4.34	
		Median	4.00	
		Std. Deviation	.704	
		Minimum	2	
		Maximum	5	
	Secondary school B	Mean	4.07	.098
		95% Confidence Interval for Mean	3.87 to 4.27	
		Median	4.00	
		Std. Deviation	.735	
		Minimum	2	
		Maximum	5	
	Primary school C	Mean	4.04	.185
		95% Confidence Interval for Mean	3.66 to 4.43	
		Median	4.00	
		Std. Deviation	.908	
		Minimum	2	
		Maximum	5	

Table 7: Descriptive statistics of the response regarding ‘Studentissue’ from the five individual schools (n=196)

Variable	School	Description	Statistics	Std. Error.
Studentissue	Primary School A	Mean	2.44	.096
		95% Confidence Interval for Mean	2.24 to 2.63	
		Median	2.00	
		Std. Deviation	.755	
		Minimum	1	
		Maximum	4	
	Primary school B	Mean	3.34	.189
		95% Confidence Interval for Mean	2.95 to 3.73	
		Median	3.50	
		Std. Deviation	.943	
		Minimum	1	
		Maximum	5	
	Secondary school A	Mean	2.90	.221
		95% Confidence Interval for Mean	2.44 to 3.35	
		Median	3.00	
		Std. Deviation	1.191	
		Minimum	1	
		Maximum	5	
	Secondary school B	Mean	3.65	.145
		95% Confidence Interval for Mean	3.36 to 3.94	
		Median	4.00	
		Std. Deviation	1.083	
		Minimum	1	
		Maximum	5	
	Primary school C	Mean	2.71	.210
		95% Confidence Interval for Mean	2.27 to 3.14	
		Median	3.00	
		Std. Deviation	1.031	
		Minimum	1	
		Maximum	5	

Table 8: Comparing 'SMC' between PA and SB

School	SMC	Statistic
Primary school A	Mean	2.27
	95% Confidence Interval for Mean	1.96 to 2.57
	Median	2.5
	Std. Deviation	1.193
	Std. Error	0.152
	Minimum	1
	Maximum	5
Secondary school B	Mean	3.29
	95% Confidence Interval for Mean	3.02 to 3.55
	Median	3.25
	Std. Deviation	1.004
	Std. Error	0.134
	Minimum	1
	Maximum	5

Table 9: Comparing 'WL' between PA and PC

School	WL	Statistic
Primary school A	Mean	2.25
	95% Confidence Interval for Mean	1.91 to 2.59
	Median	2
	Std. Deviation	1.348
	Std. Error	0.171
	Minimum	1
	Maximum	5
Primary school C	Mean	2.98
	95% Confidence Interval for Mean	2.61 to 3.35
	Median	3
	Std. Deviation	0.878
	Std. Error	0.179
	Minimum	1
	Maximum	5

Table 10: Comparing 'LJS' between SB and PC

School	LJS	Statistic
Secondary school B	Mean	3.30
	95% Confidence Interval for Mean	3.05 to 3.56
	Median	3.5
	Std. Deviation	0.957
	Std. Error	0.128
	Minimum	2
	Maximum	5
Primary school C	Mean	3.96
	95% Confidence Interval for Mean	3.65 to 4.26
	Median	4
	Std. Deviation	0.721
	Std. Error	0.147
	Minimum	3
	Maximum	5

Table 11: Comparing 'PEs' between SB and PC

School	PEs	Statistic
Secondary school B	Mean	3.82
	95% Confidence Interval for Mean	3.65 to 3.99
	Median	4
	Std. Deviation	0.628
	Std. Error	0.084
	Minimum	2
	Maximum	5
Primary school C	Mean	4.25
	95% Confidence Interval for Mean	3.99 to 4.51
	Median	4
	Std. Deviation	0.608
	Std. Error	0.124
	Minimum	3
	Maximum	5

Table 12: Descriptive statistics of the response regarding 'LJS' from the five individual schools (n=196)

Variable	School	Description	Statistics	Std. Error.
LJS	Primary School A	Mean	3.80	.127
		95% Confidence Interval for Mean	3.54 to 4.05	
		Median	4.00	
		Std. Deviation	.998	
		Minimum	1	
		Maximum	5	
	Primary school B	Mean	3.70	.161
		95% Confidence Interval for Mean	3.37 to 4.03	
		Median	4.00	
		Std. Deviation	0.804	
		Minimum	2	
		Maximum	5	
	Secondary school A	Mean	3.62	.171
		95% Confidence Interval for Mean	3.27 to 3.97	
		Median	4.00	
		Std. Deviation	0.922	
		Minimum	2	
		Maximum	5	
	Secondary school B	Mean	3.30	.128
		95% Confidence Interval for Mean	3.05 to 3.56	
		Median	3.50	
		Std. Deviation	0.957	
		Minimum	2	
		Maximum	5	
	Primary school C	Mean	3.96	.147
		95% Confidence Interval for Mean	3.65 to 4.26	
		Median	4.00	
		Std. Deviation	0.721	
		Minimum	3	
		Maximum	5	

Table 13: Descriptive statistics of the response regarding ‘PEs’ from the five individual schools (n=196)

Variable	School	Description	Statistics	Std. Error.
PEs	Primary School A	Mean	3.84	.135
		95% Confidence Interval for Mean	3.57 to 4. 11	
		Median	4.00	
		Std. Deviation	1.067	
		Minimum	1	
		Maximum	5	
	Primary school B	Mean	3.90	.108
		95% Confidence Interval for Mean	3.68 to 4.12	
		Median	4.00	
		Std. Deviation	.540	
		Minimum	3	
		Maximum	5	
	Secondary school A	Mean	4.07	.126
		95% Confidence Interval for Mean	3.81 to 4.33	
		Median	4.00	
		Std. Deviation	.678	
		Minimum	3	
		Maximum	5	
	Secondary school B	Mean	3.82	.084
		95% Confidence Interval for Mean	3.65 to 3.99	
		Median	4.00	
		Std. Deviation	.628	
		Minimum	2	
		Maximum	5	
	Primary school C	Mean	4.25	.124
		95% Confidence Interval for Mean	3.99 to 4.51	
		Median	4.00	
		Std. Deviation	.608	
		Minimum	3	
		Maximum	5	

Reference

- Adamson, A. and Peacock, G. G. (2007) Crisis response in the public schools: A survey of school psychologists' experiences and perceptions. *Psychology in the Schools*, 44:8, 749-764.
- Alba, D. J. and Gable, R. K. (2011) Crisis Preparedness: Do School Administrators and First Responders Feel Ready to Act? *Paper presented at the 42nd annual meeting of the Northeastern Educational Research Association*, October 19.
- Alisic, E. (2012) Teachers' Perspectives on Providing Support to Children After Trauma: A Qualitative Study, *School Psychology Quarterly*, American Psychological Association, 27:1, 51-59.
- Alisic, E., Bus, M., Dulack, W., Pennings, L., and Splinter J. (2012) Teachers' Experiences Supporting Children After Traumatic Exposure. *Journal of Traumatic Stress*, 25, 98-101.
- Alvarez, D. (2010) "I Had To Teach Hard": Traumatic Conditions and Teachers in Post-Katrina Classrooms. *The High School Journal*, 94:1, 28-39.
- Allen. K. M. (2006) Community-based disaster preparedness and climate adaptation: Local capacity building in the Philippines. *Disasters*, 30:1, 81-101.
- Anderson, G. L. and Arsenault, N. (1998) *Fundamentals of Educational Research*. London: Routledge.
- Asian Disaster Reduction Center (2010) Disaster information archive: China. Asian Disaster Reduction Centre http://www.adrc.asia/latest_disaster.php (assessed in July 29, 2013)
- Asian Development Bank (ADB, 2009) *Proposed Loan People's Republic of China: Emergency Assistance for Wenchuan Earthquake Reconstruction Project*; Report and Recommendation of the President to the Board of Directors Project Number: 42496.
- Astor, R. A., Guerra, N. and Acker, R. V. (2010) How Can We Improve School Safety Research? *Educational Researcher*, 39:1, 69-78.
- Attride-Stirling, J. (2001) Thematic networks: An analytic tool for qualitative research. *Qualitative Research*, 1:3, 385-405.
- Ballenger-Browning, K. and Johnson, D. C. (2010) *Key Facts on Resilience*. Naval Center for Combat & Operational Stress Control (NCCOSC) www.nccosc.navy.mil

Baxter, P. and Bethke, L. (2009) *Alternative Education: Filling the Gap in Emergency and Post-conflict Situations*. International Institute for Educational Planning/CfBT Education Trust.

Baxter, P. and Jack, S. (2008) Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers. *The Qualitative Report*, 13:4,544-559.

Bal, A. (2008) Post-traumatic stress disorder in Turkish child and adolescent survivors three years after the Marmara earthquake. *Child and Adolescent Mental Health*, 13, 134-139.

Beltman, S., Mansfield, C. and Price, A. (2011) Thriving not just surviving: A review of research on teacher resilience. *Educational Research Review*, 6, 185-207.

Bemak, F. and Chung, R. C.Y. (2011) Post-Disaster Social Justice Group Work and Group Supervision. *The Journal for Specialists in Group Work*, 36: 1, 3- 21.

Beatty, B. (2007) Going through the emotions: leadership that gets to the heart of school Renewal. *Australian Journal of Education*, 51:3, 328-340.

Birkmann, J., Buckle, P., Jaeger, J., Pelling, M., Setiadi, N., Garschagen, M., Fernando, N. and Kropp, J. (2008) *Extreme events and disasters: a window of opportunity for change? Analysis of organizational, institutional and political changes, formal and informal responses after mega-disasters*. Springer Science Business.

Bizumic, B., Reynolds, K. J., Turner, J. C., Bromhead, D. and Subasic, E. (2009) The Role of the Group in Individual Functioning: School Identification and the Psychological Well-Being of Staff and Students. *Applied Psychology*, 58:1, 171-192.

Blaikie, P., Cannon, T., Davis, I. and Wisner, B. (1994) *At Risk: Natural Hazards, People's Vulnerability and Disasters*. London, Routledge.

Bokszczanin, A. (2011) Social support provided by adolescents following a disaster and perceived social support, sense of community at school, and proactive coping. *Anxiety, Stress & Coping*, 25:5, 1-18.

Boxer, P., Huesmann, L. R., Dubow, E.F., Landau, S.F., Gvirsman, S.D., Shikaki, K. and Ginges, J. (2013) Exposure to Violence Across the Social Ecosystem and the Development of Aggression: A Test of Ecological Theory in the Israeli–Palestinian Conflict. *Child Development*, 84:1, 163-177.

Boon, H.J., Cottrell, A., King, D., Stevenson, R. B. and Millar, J. (2012) Bronfenbrenner's bioecological theory for modelling community resilience to natural disasters. *Nature Hazards*, 60, 381- 408.

Bonanno, G.A. and Mancini, A. D. (2008) The Human Capacity to Thrive in the Face of Potential Trauma. *Pediatrics*, 121:2, 369-375.

Bonanno, G. A. and Galea, S. (2007) What Predicts Psychological Resilience After Disaster? The Role of Demographics, Resources, and Life Stress. *Journal of Consulting and Clinical Psychology*, 75:5, 671-682.

Butkovic, A., Brkovic, I. and Bratko, D. (2012) Predicting Well-Being from Personality in Adolescents and Older Adults. *Journal of Happiness Studies*, 13:3, 455-467.

Bridges, S. and Searle, A. (2011) Changing workloads of primary school teachers: 'I seem to live on the edge of chaos'. *School Leadership & Management: Formerly School Organisation*, 31:5, 413-433.

Brix, H. (2009) *Reconstructing well-being after a disaster: Bringing public service to those who need them most in China*. United Nations Children's Fund (UNICEF), Social and Economic Policy.

Brown, D., Saito, K., Meng L. M., Spence, R., So, E. and Ramage, M. (2011) *The use of remotely sensed data and ground survey tools to assess damage and monitor early recovery following the 12.5.2008 Wenchuan earthquake in China*. Bulletin of Earthquake engineering, Springer Science+Business Media B.V.

Brown, T. and Yasukawa, K. (2010) Learning and adapting for organisational change: researching union education in Australia. *Studies in Continuing Education*, 32:1, 61-71.

Brown, D., Saito, K., Spence, R., Chenvidyakarn, T., Adams, B., Mcmillan, A. and Platt, S. (2008) *Indicators for measuring, monitoring and evaluating post-disaster recovery*. In: Proceedings of the 6th international workshop on remote sensing for disaster applications, Pavia. <http://www.willisresearchnetwork.com>

Brown, L. L. (2008) *The Role of Teachers in School Safety*. ProQuest LLC.

Bronfenbrenner, U. (1989) Ecological systems theory. In R. Vasta (Ed.) *Annals of child development* (pp. 187-249). Greenwich, CT: JAI Press.

Brown, J. D. (2001) *Using Surveys in Language Programs*. Cambridge University Press.

Bryman, A. (2007) Barriers to Integrating Quantitative and Qualitative Research. *Journal of Mixed Methods Research*, 1:1, 8-22.

Buchanan, T. K., Casbergue, R., and Baumgartner, J. (2010) Consequences for class room environments and school personnel: Evaluating Katrina's effect on schools and system response. In Kilmer, R., Gil-Rivas, V., Tedeschi, R. and Calhoun, L. (eds.)

Helping families and communities recover from disaster: Lessons learned from Hurricane Katrina and its aftermath (pp.117-139). Washington, DC: American Psychological Association.

Burton, N., Brundrett, M. and Jones, M. (2008) *Doing your education research project* London: SAGE.

Busher, H. (2006) *Understanding Educational Leadership: People, Power and Culture*. Buckingham: Open University Press.

Cacciatore, J., Carlson, B., Michaelis, E., Klimek, B., and Steffan, S. (2011) Crisis intervention by social workers in fire departments: An innovative role for social workers. *Social Work*, 56:1, 81-88.

Casper, N. (2011) *Organizational Leadership's Impact on Emergent Behavior During Disaster Response and Recovery Operations*. Naval Postgraduate School, Monterey, California.

Cameron, E. and Green, M. (2009) *Making Sense of Change Management: A Complete Guide to the Models, Tools and Techniques of Organizational Change*. Kogan Page.

Canada, M., Heath, M. A., Money, K., Annadale, N., Fischer, L. and Young, E. L. (2007) Crisis intervention for students of diverse backgrounds. *Brief Treatment and Crisis Intervention*, 7:1, 12-24.

Cederblad, M. (2009) *The school crisis response team: reaching out to children and youth in traumatic situations*. 1, pp. 49-63, Lund University.

Chaplain, R. P. (2008) 'Stress and psychological distress among trainee secondary teachers in England'. *Educational Psychology*, 28:2, 195-209.

Chen, J. (2010) Chinese middle school teacher job satisfaction and its relationships with teacher moving. *Asia Pacific Education*. 11: 263-272.

Chen, R., Sharman, R., Rao, R., and Upadhyaya, S. (2008) Coordination in emergency response management. *Communications of the ACM*, 51:5, 66-73.

Chen, J. J. (2008) Grade level differences: Relations of parental, teacher and peer support to academic engagement and achievement among Hong Kong students. *School Psychology International*, 29, 183-198.

Clettenberg, S., Gentry, J., Held, M. and Mock, L.A. (2011) Traumatic loss and natural disaster: A case study of a school-based response to Hurricanes Katrina. *School Psychology International*, 32:5, 553-566.

Coady, N. (2001) An overview of Theory for Direct Practice and an Artistic, intuitive-Inductive Approach to Practice. In Lehmann, P. and Coady, N. (Eds.) *Theoretical Perspectives for Direct Social Work Practice: A Generalist-eclectic Approach*. Springer Series on Social Work.

Cohen, J. A. and Mannarino, A. P. (2011) Supporting children with traumatic grief: What educators need to know? *School Psychology International*, 32:2, 117-131.

Cohen, L., Manion, L and Morrison, K. (2009) *Research Methods in Education (6th Ed.)*. London and New York.

Cooke, A., Friedli, L., Coggins, T., Edmonds, N., Michaelson, J., O' Hara, K., Snowden, L., Stansfield, J., Steuer, N. and Scott-Samuel, A. (2011) *National MWIA Collaborative* (3rd ed.), London.

Coppola, D.P. and Maloney, K.E. (2009) *Communicating Emergency Preparedness: Strategies for Creating a Disaster Resilient Public*. New York, Taylor & Francis Group.

Coonan, C. (2008) Beichuan: a vision of hell. *The Independent*, China Internet centre <http://www.independent.co.uk/news/world/asia/beichuan-a-vision-of-hell-829301> (assessed June 1, 2008).

Coppola, D. P. (2007) *Introduction to International Disaster Management*. New York, Butterworth-Heinemann.

Creswell, J. W. (2007) *Qualitative inquiry and research design: Choosing among five approaches (2nd ed.)*. Thousand Oaks, CA: Sage Publications.

Creswell, J. W. (2005) *Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research*. New Jersey, Pearson Education.

Crotty, M. (1998) *The foundations of social research: Meaning and perspective in the research process*. Great Britain by The Cromwell Press.

Czubaj, C.A. (1996) Maintaining teacher motivation. *Education*, 116:3, 372-378.

Damiani, V. (2011) *Crisis Prevention and Intervention in the Classroom: What Teachers Should Know?* Published by Rowman & Littlefield Education.

Day, C. and Gu, Q. (2007) Variations in the conditions for teachers' professional learning and development: sustaining commitment and effectiveness over a career. *Oxford Review of Education*, 33:4, 423-443.

Denzin, N.K. and Lincoln, Y. S. (2011) *The handbook of qualitative research 4th ed.* London, SAGE Publications.

Deci, E. L., and Ryan, R. M. (2008) Hedonia, eudaimonia, and well-being: An introduction. *Journal of Happiness Studies*, 9:1, 1-11.

Dean, K. L., Langley, A. K., Kataoka, S. H., Jaycox, L. H., Wong, M., and Stein, B. D. (2008) School-based disaster mental health services: Clinical, policy, and community challenges. *Professional Psychology: Research and Practice*, 39:2, 52-57.

Devitt, K.R. and Borodzicz, E.P. (2008) Interwoven leadership: The missing link in multi-agency major incident response. *Journal of Contingencies and Crisis Management*, 16: 4, 208-16.

Denscombe, M. (2007) *The Good Research Guide: for small-scale research projects.* Open University Press, England.

Doherty, G. W. (2010) *From Crisis to Recovery: Strategic Planning for Response, Resilience and recovery.* Rocky Mountain Region Disaster Mental Health Institute Press.

Dörnyei, Z. (2007) *Research methods in applied linguistics: quantitative, qualitative, and mixed methodologies.* Oxford University Press.

Dyregrov, A. and Yule, W. (2008) Psychological interventions in disasters-reflections from professional experience. *Tidsskrift for Norsk Psykologforening*, 45:12, 1512-1516.

Eberts, S. E. (2010) *School Mental Health Professionals' Experiences of Hurricane Katrina Evacuees: A Phenomenological Approach.* Georgia State University.

Edwards, J. R. (2008) '4 Person-Environment Fit in Organizations: An Assessment of Theoretical Progress'. *The Academy of Management Annals*, 2:1, 167- 230.

Edwards, J. R. (2007) The Relationship Between Person-Environment Fit and Outcomes: An Integrative Theoretical Framework; In Ostroff, C. and Judge, T. A. (Eds.) *Perspectives on organizational fit* (pp. 209-258). San Francisco: Jossey-Bass.

Edwards, J.R. (2005) Work and Family Stress and Well-Being: An Integrative Model of Person-Environment Fit Within and Between the Work and Family Domains; In. Kossek, E. E and Lambert, S. J. (Eds.) *Work and life integration: Organizational, cultural, and individual perspectives* (pp. 211-242). Mahwah, NJ: Erlbaum.

Edwards, J. R. and Rothbard, N. P (1999) Work and Family Stress and Well-Being: An Examination of Person-Environment Fit in the Work and Family Domains. *Organizational Behaviour and Human Decision Processes*, 77:2, 85-129.

Edwards, J. R., Caplan, R. D., and Harrison, R. V. (1998) Person-environment fit theory: Conceptual foundations, empirical evidence, and directions for future research. In C. L. Cooper (Ed.) *Theories of organizational stress* (pp. 28-67).Oxford University Press.

Facts and Details (2010) *Schools hit by the Sichuan earthquake in 2008*.
<http://factsanddetails.com/china.php?itemid=1020>(assessed in 09/08/2013)

Field, A. (2010) *Discovering statistics using IBM SPSS statistics and sex drugs and rock 'n' roll* (4thed.). SAGE.

Flick, U. (2009) *An introduction to qualitative research* (4th ed.). SAGE.

Fowler, K. L., Kling, N. D., and Larson, M. D. (2007) Organizational preparedness for coping with a major crisis or disaster. *Business & Society*, 46:1, 88-103.

French, J. R. P. Jr, (1974) Person role fit, in McLean A. (Eds) *Occupational Stress*, Charles C. Thomas, Springfield, II.

Fu, J., Nilsson, E. and Hu, Y. (2010) *Unshakable Sichuan: Chronicles of the Wenchuan Earthquake*. China Intercontinental Press.

Gainey, B.S. (2009) Crisis management's new role in educational settings. *A Journal of Educational Strategies*, 82: 6, 267-274.

Gall, M. D., Gall, J. P., and Borg, W. R. (2003) *Educational Research-An Introduction* 7th (ed.). Allyn and Bacon, Pearson Education, Inc.

Geving A. M. (2007) Identifying the types of student and teacher behaviours associated with teacher stress. *Teaching and Teacher Education*, 23, 624-640.

Goldstein, B. (2009) Resilience to surprises through communicative planning. *Ecology and Society*, 14:2, 33-44.

Greguras, G. J. and Diefendorff, J. M. (2009) *Different Fits Satisfy Different Needs: Linking Person-Environment Fit to Employee Commitment and Performance Using Self-Determination Theory*. Research Collection Lee Kong Chian School of Business (Open Access) Paper 2559; http://ink.library.smu.edu.sg/lkcsb_research/2559

Gu, Q. and Li, Q. (2013) Sustaining resilience in times of change: stories from Chinese teachers, *Asia-Pacific Journal of Teacher Education*, 41:3, 288-303.

Gunderson, L. (2010) Ecological and human community resilience in response to natural disasters. *Ecology and Society*, 15:2, 18-28.

Gu, Q. and Day, C. (2007) Teachers resilience: A necessary condition for effectiveness. *Teaching and Teacher Education*, 23:8, 1302-1316.

Hallinger, P. and Heck, R. H. (2010) Collaborative leadership and school improvement: understanding the impact on school capacity and student learning. *School Leadership & Management*, 30:2, 95-110.

Haglung, M.E.M., Nestadt, P. S., Cooper, N.S., Southwick, S.M. and Charney, D.S. (2007) Psychobiological mechanisms of resilience: Relevance to prevention and treatment of stress-related psychopathology. *Development and Psychopathology*, 19:3, 889-920. Cambridge University Press.

Hamlyn, D.W. (1995) *'Epistemology, history of' the oxford companion to philosophy*. Oxford University Press, Oxford 242-245.

Henderson, T. L. and Hildreth, G. (2011) Experiences in the Face of Disasters: Children, Teachers, Older Adults, and Families. *Journal of Family Issues*, 32:10, 1277-1284.

Hipp, K, Huffman, J., Pankake, A. and Olivier, D. (2008) Sustaining professional learning-communities: Case studies'. *Journal of Educational Change*, 9, 173-195.

Hirschhorn, M. (2009) Student-teacher relationships and teacher induction: Ben's story. *Teacher Development*, 13:3, 205-217.

Higgins, L.T., Xiang, G. and Song, Z. (2010) The development of psychological intervention after disaster in China. *Asia Pacific Journal of Counselling and Psychotherapy*, 1:1, 77-86.

Ho, R.T. H, Fan, F., Lai, A. H. Y., Lo, P. H. Y., Potash , J. S., Kalmanowitz, D. L., Nan , J. K. M., Pon , A. K. L., Shi, Z. and Chan, C. L.W. (2012) An Expressive Arts-Based and Strength-Focused Experiential Training Program for Enhancing the Efficacy of Teachers Affected by Earthquake in China. *Creative Education*, 3:1, 67-74.

Hornby, G. and Witte, C. (2010) Parental involvement in secondary schools in New Zealand: Implications for school psychologists. *School Psychology International*, 31:5, 495-508.

Hoy, W. K. and Miskel, C. G. (2008) *Education administration: Theory, research, and practice* (Eighth ed.). Boston: McGraw Hill.

Hobfoll, S. E., Watson, P., Bell, C.C., Bryant, R. A., Brymer, M. J. and Friedman, M. J. (2007) Five essential elements of immediate and mid-term mass trauma intervention: empirical evidence. *Psychiatry*, 70:4, 283-315.

- Holliday, A. (2002) *Doing and Writing Qualitative Research*. London: Sage.
- Imberman, S., Kugler, A., and Sacerdote, B. (2009) *Katrina's children: Evidence on the structure of peer effects from hurricane evacuees*. NBER Working Papers 15291: National Bureau of Economic Research, Inc.
- Inter-Agency Standing Committee (IASC) (2007) *Guidelines on Mental Health and Psychosocial Support in Emergency Settings*. Geneva: IASC.
- Izadkhah, Y. O. and Hosseini, M. (2006) Earthquake disaster planning in nursery school Proceedings of the 8th U.S. *National Conference on Earthquake Engineering April 18-22*, San Francisco, California, USA. Paper No. 494.
- Jaques, T. (2010) Reshaping crisis management: The challenge for organisational design. *Organizational Development Journal*, 28:1, 9-17.
- Janssen, M., Lee, J., Bharosa, N. and Cresswell, A. (2010) Advances in multi-agency disaster management: Key elements in disaster research. *Information Systems Frontiers*, 12:1, 1-7. Springer Science + Business Media.
- Jaycox, L.H., Tanielian, T. L., Sharma, P., Morse, L., Clum, G. and Stein, B.D. (2007) Schools' Mental Health Responses after Hurricanes Katrina and Rita. *Psychiatric Service*, 58:10, 1339 - 1343.
- Johnson, R. G., Aitken, J. A. and Steggerda, R. (2005) Emotions and educational leadership: Narratives from the inside'. *Planning and Change*, 36:3-4, 235-253.
- Johnson, R. B. and Onwuegbuzie, A. J. (2004) Mixed Methods Research: A Research Paradigm Whose Time Has Come. *Educational Researcher*, 33: 7, 14-26.
- Johnson, K. (2000) *School crisis management: A hands-on guide to training crisis response teams* (2nd ed.). Alameda, CA: Hunter House.
- Johnson, D. (1994) *Research Methods in Educational Management*. Harlow, Longman.
- Joseph, S. and Linley, P. A. (2006) *Positive therapy: A meta-theory for positive psychological practice*. London: Taylor & Francis.
- Kataoka, S. H., Nadeem, E., Wong, M., Langley, A. K., Jaycox, L. H., Stein, B. D. and Young, P. (2009) Improving Disaster Mental Health Care in Schools A Community-Partnered Approach. *American Journal of Preventive Medicine*, 37: (6S1), S225-S229.

Kaklauskas, A., Amaratunga, D. and Haigh, R. (2009) Knowledge model for post-disaster management. *International Journal of Strategic Property Management*, 13:2, 117-128.

Kano, M., Ramirez, M., Ybarra, W. J., Frias, G. and Bourque, L. B. (2007) Are Schools Prepared for Emergencies? A Baseline Assessment of Emergency Preparedness at School Sites in Three Los Angeles County School Districts. *Education and Urban Society*, 39: 3, 399-422.

Kashdan, T., Biswas-Diener, R. and King, L. (2008) Reconsidering happiness: The cost of distinguishing between hedonics and eudemonia. *The Journal of Positive Psychology*, 3:4, 219-233.

Kimiecik, J. (2010) Exploring the Promise of Eudaimonic Well-Being within the Practice of Health Promotion: The “How” is as Important as the “what”. *Journal of Happiness Studies*, 12:5, 769-792.

Kliman, G., Oklan, E., and Wolfe, H. (2008) *A guided activity workbook for children, families, teachers and caregivers*. <http://www.childrenspsychological.org>

Knight, C., Balatti, J., Haase, M. and Henderson, L. (2010) *Preservice teacher stressors and their reactions to those stressors: Resilient responses*. ATEA Paper reference 402.

Kong, F., Wang, L., Chen, H., Gao, X., Tan, X., Chen, H. and Liu, Y. (2010) Mental health and coping styles of children and adolescent survivors one year after the 2008 Chinese earthquake. *Children and Youth Services Review*, 32:10, 1403-1409.

Kothari, C. R. (2005) *Research Methodology: Methods & Techniques* (2nd ed.). New Delhi: Wiley Eastern.

Kovoor-Misra, S. (2009) “Understanding perceived organizational identity during crisis and change: A threat/opportunity framework”. *Journal of Organizational Change Management*, 22: 5, 494 - 510.

Koutrouba, K., Antonopoulou, E., Tsitsas, G., and Zenakou, E. (2009) An investigation of Greek teachers’ views on parental involvement in education. *School Psychology International*, 30:3, 311-318.

Kurland H., Peretz, H. and Hertz-Lazarowitz, R. (2010) Leadership style and organisational learning: the mediate effect of school vision. *Journal of Educational Administration*, 48:1, 7-30.

Kumar, V., Abbas, A. K., Fausto, N. and Aster, J. C. (2010) *Robbins and Cotran pathologic basis of disease* (8th ed.). Philadelphia PA: Saunders/Elsevier.

Kyriacou, C. (2007) *Stress-busting for teachers*. Nelson, Thornes a Wolters Kluwer business.

La Greca, A. M., Sevin, S., and Sevin, E. (2008) *After the storm: A guide to help children cope with the psychological effects of a hurricane*. 7-Dippity, Inc. http://www.7-dippity.com/other/op_storm.html (assessed 21/03/2011).

Lei, B. (2014) A preliminary investigation of school teachers' stress, resilience and well-being over the medium-term following the 2008 earthquake in Sichuan province China. *Management in Education* (in process) Elsevier.

Lei, B. (2013) Teachers' perceptions of school post-disaster management following the 2008 earthquake in Sichuan province China. *Asia Pacific Education Review* (in process) Springer.

Lei, B., and Khan, M.I. (2012) Problems and Prospects of Collaborative Learning in an Asian Cross-cultural Student Group at a Higher Education Institution in England. In European Association for International Education (eds.) *Internationalisation of European Higher Education* (Raabe Academic Publishers), D3.10 pp.1-18.

Leithwood, K. and Jantzi, D. (2009) A review of empirical evidence about school size effects: A policy perspective. *Review of Educational Research*, 79:1, 464-490.

Lewis, L. K. (2011) *Organizational Change: creating change through strategic communication*. Blackwell Publishing Ltd.

Leithwood, K, Harris, A. and Hopkins, D (2008) Seven strong claims about successful school leadership. *School Leadership and Management*, 28:1, 27-42.

Liu, L. and Zhang, Y. (2008) *Development of Work Support Scale for Middle-School Teachers*. Teacher Education Research http://en.cnki.com.cn/Article_en/ (assessed March, 2011 in Chinese Journal Special Education)

Longstaff, P. H., Armstrong, N. J., Perrin, K., Parker, W. M. and Hidek, M. A. (2010) Building Resilient Communities: A Preliminary Framework for Assessment. *Homeland security affairs*, 6:3, 1-230.

Longstaff, P. H. and Yang, S. (2008) Communication management and trust: their role in building resilience to "surprises" such as natural disasters, pandemic flu, and terrorism. *Ecology and Society*, 13:1, 3-1.

Lowe, T. (2011) The impact of disasters on schools and the school community; In Tehrani, N. (2011) (Ed.) *Managing trauma in the workplace: supporting workers and organizations* (81-99). New York, published by Routledge.

Lopez, S. J., Rose, S., Robinson, C., Marques, S. C., and Pais-Ribeiro, J. L. (2009) Measuring and promoting hope in school children. In R. Gilman, E. S. Huebner, & M. J. Furlong (Eds.) *Handbook of positive psychology in the schools* (pp. 37-51). Mahwah, NJ: Lawrence Erlbaum.

Lombardo, K. L., and Motta, R. W. (2008) Secondary trauma in children of parents with mental illness. *Traumatology*, 14:3, 57-67.

Lucas, R. E., and Diener, E. (2008) Personality and subjective well-being; In John, O. P. Robins, R. W. and Pervin, L.A. (Eds.) *Handbook of personality: Theory and research* (3rd ed., pp. 795-815). NY: The Guilford Press.

Mancini, J.A. and Bowen, G. L. (2013) Families and Communities: A Social Organization Theory of Action and Change. In Peterson, G.W. and Bush, K.R. (Eds.) *Handbook of Marriage and the Family*. Springer Science+Business Media New York.

Mansour, A. (2011) *Building Leadership-capacity for Sustained School-improvement* Thesis submitted for the degree of Doctor of Education at the University of Leicester.

Margolin, G., Ramos, M. C. and Guran, E. L. (2010) Earthquakes and Children: The Role of Psychologists with Families and Communities. *Professional Psychology: Research and Practice. American Psychological Association*, 41:1, 1-9.

Ma, Y. P., Yin, H.B., Tang, L.F. and Liu, L.Y. (2009) Teacher receptivity to system-wide curriculum reform in the initiation stage: a Chinese perspective. *Asia Pacific Education Review*, 10:3, 423-432.

Masten, A. S. and Obradovic, J. (2008) Disaster preparation and recovery: lessons from research on resilience in human development. *Ecology and Society*, 13:1, 9-24.

Marcus, L., Ashkenazi, I., Dorn, B., and Henderson, J. (2007) *The five dimensions of meta-leadership*. National Preparedness Leadership Initiative, Cambridge, MA: Harvard School of Public Health.

Malcom, L.A., Combes (2007) *Beginning Teachers, Resilience and Retention*. Dissertations-Counseling, Leadership, Adult Education, and School Psychology (P: 5) <http://ecommons.txstate.edu/eapstad/5>

MacNeil, W. and Topping, K. (2007) Crisis management in schools: evidence-based prevention. *Journal of Educational Enquiry*, 7:1, 64-94.

Maxcy, S. J. (2003) Pragmatic Threads in Mixed Methods Research in the Social Sciences: The Search for Multiple Modes of Inquiry and the End of the Philosophy of Formalism. In Tashakkori, A. and Teddlie, C. (Eds.) *Handbook of Mixed Methods in*

Social & Behavioral Research. SAGE.

McEntire, D.A. (2007) *Disaster Response and Recovery: Strategies and Tactics for Resilience*. New Jersey, John Wiley & Sons.

Meece, J. and Eccles, J. (ed.) (2010) *Handbook of Research on Schools, Schooling and Human Development*. Published by Routledge in the UK.

Meyer, C. (1995) The eco-systems perspective: Implications for practice. In Meyer and Mattaini, M. (Eds.) *The foundations of social work practice* (pp.16-27). Washington, DC: NASW Press.

Miles, M. and Huberman, M. (1994) *Qualitative Data Analysis: a Sourcebook of New Methods* (2nd ed.). SAGE.

Mohapatra, R. (2009) *Community Based Planning in Post-Disaster Reconstruction: A Case Study of Tsunami Affected Fishing Communities in Tamil Nadu Coast of India*. The University of Waterloo, Canada.

Moniruzzaman, M. (2010) "The ripples changed our lives": health in post-tsunami Thailand. *Disaster Prevention and Management* 19: 3, 333-344.

Monhay, H. and Forbes, N. (2009) Reducing the Risk of Posttraumatic Stress Disorder in Children Following Natural Disasters. *Australian Journal of Guidance and Counselling*, 19:2, 179-195.

Nastasi, B. K., Jayasena, A., Summerville, M. and Borja, A. P. (2011) Facilitating long-term recovery from natural disasters: Psychosocial programming for tsunami-affected schools of Sri Lanka. *School Psychology International*, 32:5, 512-532.

Nastasi, B. K., Overstreet, S. and Summerville, M. (2011) School-based mental health services in post-disaster contexts: A public health framework. *School Psychology International*, 32:5, 533-552.

Nastasi, B. K., Hitchcock, J. H., Varjas, K., Jayasena, A., Sarkar, S., Moore, R. B., Burden, F., and Albrecht, L. (2010) School-based stress and coping program for adolescents in Sri Lanka: Using mixed methods to facilitate culture-specific programming. In Collins, K.M.T; Onwuegbuzie, A. J. and Jiao, Q. G. (Eds.) *Toward a broader understanding of stress and coping: Mixed methods approaches. The Research on Stress and Coping in Education*, 32:5, 305-342.

Ndiku, J. M., Achoka, J. and Onkware, K. (2011) Empowering Teachers for Leadership in Conflict Transformation and Peace Building in Kenya. *Journal of Research in Peace, Gender and Development* (ISSN: 2251-0036), 1:5, 166-172.

- Neuman, L. W. (2006) *Social research methods: Qualitative and quantitative approaches* (6th ed.). Boston, MA: Person Education.
- Norris F.H., Tracy M. and Galea S. (2009) Looking for resilience: understanding the longitudinal trajectories of responses to stress. *Social Science and Medicine*, 68:12, 2190-2198.
- Norris, F. H., Stevens, S. P., Pfefferbaum, B., Wyche, K. F. and Pfefferbaum, R. L. (2008) Community Resilience as a Metaphor, Theory, Set of Capacities, and Strategy for Disaster Readiness. *America Journal Community Psychology*, 41:127-150.
- Odhiambo, G. and Hii, A. (2012) Key Stakeholders' Perceptions of Effective School Leadership. *Educational Management Administration & Leadership*, 40:2, 232-247.
- Onwuegbuzie, A. J. and Collins, K. M. T (2007) A Typology of Mixed Methods Sampling Designs in Social Science Research. *The Qualitative Report*, 12: 2, 281-316.
- Onwuegbuzie, A. J. and Leech, N. L. (2004b) Enhancing the interpretation of "significant" findings: The role of mixed methods research. *The Qualitative Report*, 9:4,770-792.
- Openshaw, L. L. (2011) School-based support groups for traumatised students. *School Psychology International*, 32:2, 163-178.
- Overstreet, S., Salloum, A. and Badour, C. (2010) A school-based assessment of secondary stressors and adolescent mental health 18 months post-Katrina. *Journal of School Psychology*, 48:5, 413-431.
- Papatraianou, L. H. and Le Cornu, R. (2014) Problematising the Role of Personal and Professional Relationships in Early Career Teacher Resilience. *Australian Journal of Teacher Education*, 39:1, 100-116. <http://dx.doi.org/10.14221/ajte.2014v39n1.7>
- Paton, D., Reese, S., Ronan, K. and Wilson, T. (2011) Exploring elements of an effective recovery process. Proceedings of the Ninth Pacific Conference on *Earthquake Engineering Building an Earthquake-Resilient Society*, 14-16 April, 2011, Auckland, New Zealand.
- Paine, C. K. (2009) *School Crisis Aftermath: Care for the Caregivers*. Principal Leadership. <http://www.nasponline.org/resources/principals/>
- Pepper, M. J., London, T. D. and Dishman, M. L. (2010) *Leading schools during crisis: what school administrators must know*. Published by Rowman & Littlefield Education.
- Peters, E. J. and McDonald, C. (2011) The contributions and performances of Grenadian main NGOs after a natural disaster. *International NGO Journal*, 6:3, 62-70.

- Pedder, D. and MacBeath, J. (2008) Organisational learning approaches to school leadership and management: teachers' values and perceptions of practice. *School Effectiveness and School Improvement: An International Journal of Research, Policy and Practice*, 19:2, 207-224.
- Pearson, C. M. and Clair, J. A. (2008) *Reframing crisis management*, In *Crisis management*, 11, 1-24. SAGE.
- Phillips, B. (2009) *Disaster Recovery*. Auerbach Publications, Taylor and Francis Group.
- Pina, A.A., Villalta, I.K., Ortiz, C.D., Gottschall, A.C., Costa, N. M. and Weems, C.F. (2008) Social support, discrimination and coping as predictors of post-traumatic stress reactions in youth survivors of Hurricane Katrina. *Journal of Clinical Child and Adolescent Psychology*, 37:3, 564-574.
- Pomerantz, E. M., Moorman, E. A., and Litwack, S. D. (2007) The how, whom and why of parents' involvement in children's academic lives: More is not always better. *Review of Educational Research*, 77:3, 373-410.
- Porter, B. J. (2010) *A portrait of school district crisis management: leadership choices in Montgomery County during the sniper shootings of October 2002*. Thesis submitted for the award of Doctor of Philosophy, University of Maryland, College Park.
- Putnam, F. W. and Amaya-Jackson, L. (2008) Evidence-based psychosocial treatments for children and adolescents exposed to traumatic events: A review and meta-analysis. *Journal of Clinical Child and Adolescent Psychology*, 37, 156-183.
- Punch, K. F. (2005) *Introduction to social research: quantitative and qualitative approaches*. SAGE.
- Pyles, L. and Harding, S. (2011) Discourses of post-Katrina reconstruction: a frame analysis. *Community Development Journal*, 1-18. Oxford University Press.
- Reid, M. and Reczek, C. (2011) Stress and Support in Family Relationships after Hurricane Katrina. *Journal of Family Issues*, 32:10, 1397-1418.
- Reeves, M.A., Brock, S. E. and Cowan K.C. (2008) Managing school crises: more than Just response. *Principal Leadership*, 10-14.
- Richardson, G.E. (2002) The metatheory of resilience and resiliency. *Journal of Clinical Psychology*, 58:3, 307-21.
- Richards, K. (2003) *Qualitative Inquiry in TESOL*. Basingstoke, Hampshire: Palgrave MacMillan.

Riether, J. and de Gaalon, H. (2008) *Healing Young Hearts: A Handbook of Practical Teaching Material for Disaster Recovery*. Copies of this material are available for download at website: healingyounghearts.org.

Ritchie, L. A. and MacDonald, W. (2010) Enhancing disaster and emergency preparedness, response, and recovery through evaluation. In Ritchie, L. A. and MacDonald, W. (Eds.) *Enhancing disaster and emergency preparedness, response, and recovery through evaluation New Directions for Evaluation*, 126, 3-7.

Robinson, V., Lloyd, C. and Rowe, K. (2008) The impact of leadership on student outcomes: an analysis of the differential effects of leadership types. *Educational Administration Quarterly*, 44:5, 635-674.

Robson, C. (2002) *Real world research: A resource for social scientists and practitioner-researchers* (2nd ed.).Oxford: Blackwell.

Rumsby, R. (2009) *Development, well-being and organisation: perceptions of employees in schools*. Thesis submitted for the award of Doctor of Philosophy, University of Leicester School of Education.

Ryff, C. and Singer, B. (2008) Know thyself and become what you are: A eudemonic approach to psychological well-being. *Journal of Happiness Studies*, 9:1, 13-39.

Şahin, N. H., Batıgün, A. D. and Yılmaz, B. (2009) Debriefing with teachers after the Marmara earthquake: an evaluation study. *Disasters*, 33: 4, 747-761.

Salazar, M., Wang, X.S., Hu, X.J., Lu, Q., Zhang, Q., Zhou, L. and Zhang, X. L. (2011) *The impact of natural disasters on the social protection system: empirical evidence from the Wenchuan earthquake*. Centre for Social Protection (CSP) Research Report.

Sandoval, J. (2009) *Handbook of crisis counselling: Intervention and prevention in the Schools* (2nd ed.). Mahwah, New Jersey: Lawrence Erlbaum Associates.

Schoon, I. (2006) *Risk and resilience-Adaptations in changing times*. Cambridge University Press.

Shen, Y. E. (2009) Relationships between self-efficacy, social support and stress coping strategies in Chinese primary and secondary school teachers. *Journal of the International Society for the Investigation of Stress*, 25:2, 129-138.

Sharp, J. G. (2009) *Success with your Education Research project*. Learningatters Ltd.

Shervington, D. O. and Richardson, L. (2007) *State of black New Orleans 2007: Mental health*. Institute of Women & Ethnic Studies.

Simmons, R. (2008) Questionnaires. In Gilbert, N. (ed.) *Researching social life*.182-205. SAGE.

Skakon, J., Nielsen, K., Borg, V. and Guzman, J. (2010) Are leaders' well-being, behaviours and style associated with the affective well-being of their employees? A systematic review of three decades of research. *Work & Stress*, 24:2, 107-139.

Smith, L. and Riley, D. (2012) School leadership in times of crisis. *School Leadership & Management: Formerly School Organisation*, 32:1, 57-71.

Smith, L., and Riley, D. (2010) *The business of school leadership*, Camberwell, VIC: Acer Press.

Stake, R. E. (1995) *The Art of Case Study Research*.SAGE.

Sun, J., Xiao, W. and Lan, H. (2010) The Research on Coping Style, General Well-Being and the Relation between them on Middle School Teachers in Earthquake Disaster Areas[J]. *Chinese Science of Social Psychology*, 25: 4, 34-38.

Suldo, S. M., Friedrich, A. A., White. T., Farmer, J., Minch, D. and Micholowski, J. (2009) Teacher support and adolescents' subjective well-being: a mixed-methods investigation. *School Psychology Review*, 38:1, 67-85.

Suldo, S. M., Shaunessy, E., and Hardesty, R. (2008) Relationships among stress, coping, and mental health in high-achieving high school students. *Psychology in the Schools*, 45:4, 273-290.

Suldo, S. M., and Shaffer, E. J. (2008) Looking beyond psychopathology: The dual-factor model of mental health in youth. *School Psychology Review*, 37:1, 52-68.

Swann J. and Pratt J. (2007) *Educational Research in Practice: Making sense of the Methodology*, Continuum, London.

Tarrant, R. (2011) Leadership through a School Tragedy: A Case Study (Part 2-The Next Two Years). *Australasian Journal of Disaster and Trauma Studies*, 3:2, 77-88.

Tartakovsky, E. (2009) the Psychological Well-Being of Unaccompanied Minors: A Longitudinal Study of Adolescents Immigrating From Russia and Ukraine to Israel Without Parents. *Journal of research on adolescence*, 19:2, 177-204.

The State Council (2008) Regulations on Post-Wenchuan Earthquake Rehabilitation and Reconstruction. Beijing, China

Toland, J. and Carrigan, D. (2011) Educational psychology and resilience: New concept, new opportunities. *School Psychology International*, 32:1, 95-106.

Thomas, G. (2009) *How to do Your Research Project: A guide for students in education and applied social sciences*. SAGE.

Townsend, T. (2011) School leadership in the twenty-first century: different approaches to common problems? *School Leadership and Management* (Formerly School Organisation), 31:2, 93-103.

Tudge, J. R.H., Mokrova, I., Hatfield, B.E. and Karnik, R.B. (2009) Uses and Misuses of Bronfenbrenner's Bioecological Theory of Human Development. *Journal of Family Theory & Review* 1:1, 198-210.

Tudge, J. R. H., Gray, J., and Hogan, D. M. (1997) Ecological perspectives in human development: A comparison of Gibson and Bronfenbrenner. In Tudge, J. R. M., Shanahan and Valsiner, J. (Eds.), *Comparisons in human development: Understanding time and context* (pp. 72-105). New York: Cambridge University Press.

Tutt, R. and Williams, P. (2012) *How Successful Schools Work: The Impact of Innovative School Leadership*. SAGE.

United Nations International Children's Emergency Fund (UNICEF) (2006) *Education in emergencies- A resource Tool Kit*, Regional Office for South Asia in Conjunction with New York Headquarters.

Vasterling, J. (2008) The aftermath of Hurricane Katrina: A trauma researcher's perspective. *Traumatology*, 14:4, 21-26.

Verma, G. K. and Mallick, K. (1999) *Researching Education: Perspectives and Techniques*. Taylor & Francis Inc.

Vijayakumar, L., Kannan, G.K., Kumar, B.G., and Devarajan, P. (2006) Do all children need intervention after exposure to tsunami? *International Review of Psychiatry*, 18, 515-522.

Wachtendorf, T., Brown, B. and Nickle, M.C. (2008) Big Bird, Disaster Masters, and High School Students Taking Charge. *The Social Capacities of Children in Disaster Education, Children, Youth and Environments*, 18:1, 456-469.

Wagner, C. C. (2012) *Motivational interviewing in groups*. New York; London: Guilford.

Wang, J. (2008) Developing Organizational Learning Capacity in Crisis Management. *Advances in Developing Human Resources*, 10: 3, 425-445.

Watts, J. (2008) *Chinese earthquake “biggest disaster for children in seven years”*-The Guardian <http://www.guardian.co.uk/world/2008/may/22/china> (assessed 21/3/2011)

Weems, C.F. and Overstreet, S. (2009) an ecological-needs-based perspective of adolescent and youth emotional development in the context of disasters: Lessons from Hurricane Katrina. In K. E. Cherry (Ed.) *Lifespan perspectives on natural disasters* (pp. 27-44). New York, NY: Springer.

Wei, M. Y. (2008) *Sichuan Provincial Education Department plans to recruit volunteers to teach in quake zone*. From China Internet Information Center, http://big5.china.com.cn/news/zhuant/wxdz/2008-05/29/content_15536377

Widyatmoko, S.C., Tan, E. T., Seyle, C. D., Mayawati, E. H. and Roxane, C. S. (2011) Coping with natural disasters in Yogyakarta, Indonesia: The psychological state of elementary school children as assessed by their teachers. *School Psychology International*, 32:5, 484-497.

Williams, R., Alexander, D. A., Bolsover, D. and Bakke, F.K. (2008) Children, resilience and disasters: Recent evidence that should influence a model of psychosocial care. *Current Opinion in Psychiatry*, 21:4, 338-344.

Williams, J. H., Horvath, V. E., Wei, H., Dorn, R. A. V. and Jonson-Reid, M. (2007) Teachers' Perspectives of Children's Mental Health Service Needs in Urban Elementary Schools. *Children & Schools*, 29:2, 95-107.

Wood, L. and Olivier, T. (2008) Addressing the needs of teachers in disadvantaged environments through strategies to enhance self-efficacy. *Teacher Development: An international journal of teachers' professional development*, 12:2, 151-164.

Wolmer, L, Hamiel, D. and Laor, N. (2011) Preventing Children's Posttraumatic Stress After Disaster With Teacher-Based. *Journal of the American academy of child & adolescent psychiatry*, 50:4, 340-348.

Wolmer, L., Laor, N., Dedeoglu, C., Siev, J., and Yazgan, Y. (2005) Teacher-mediated intervention after disaster: a controlled three-year follow-up of children's functioning. *Journal of Child Psychology and Psychiatry*, 46:11, 1161-1168.

Xu, J. P. and Feng Y.Z. (2012) A study of the impact of emotional distress following the 5.12 Wenchuan. *Public Health*, 126:4, 286-288.

Xu, Z. H. (2011) Study on Beichuan Qiang Cultural Preservation and Development Strategies after the 5.12 Earthquake. *Asian Culture and History*, 3:1, 80-85.

Xin, J. L., Wu, S.T., Wu, K. K., Wang, W. and Zhang, J. X. (2009) *Social Support System of People in Sichuan Earthquake Area and Its Relationship with Subject Well-Being*. Advances in Psychological Science.

Yang, D. P. and Chai, C.Q. (2010) (Ed.) *The China Educational Development Yearbook, Vol.2-The Chinese Academy of Social Sciences Yearbooks: Educational Development*. Leiden and Social Sciences Academic Press, Beijing, China.

Ying, D. (2013) *Better prepared for disaster-Major improvement in emergency response and relief work credited for saving lives*. China Watch in China Daily 14 May, Newspaper.

Yin, R. K. (2009) *Case study research-Design and Methods* 4th ed. (Applied social research methods series, Vol. 5). SAGE

Yu-Li, K.N. (2006) *A study on the relationships among stress, coping strategies and job burnout of mainstream secondary school principals in Hong Kong*. Thesis submitted for the award of Doctor of Philosophy. University of Leicester, School of Education.

Zeng, E.J., Bordeaux, L. and Silverstein, L.B. (2011) China earthquake relief: Participatory action work with children. *School Psychology International*, 32:5, 498-511.

Zhao, B., Taucher, F. and Lu, X. (2010) *Lesson Learned from Wenchuan Earthquake of 12 May 2008*. State Key Laboratory of Disaster Reduction in Civil Engineering, Tongji University, Shanghai 200092, and China.

Zhang, C., Zeng, N. and Lai, C. (2009) A survey on teachers' mental health after Wenchuan earthquake. *Chinese Journal Special Education*, 5, 46-50, Serial.107 http://en.cnki.com.cn/Article_en/cjfdtotal-zdtj200905011.htm (assessed March, 2011)

Zhu, C., Devos, G. and Li, Y. (2011) Teacher perceptions of school culture and their organizational commitment and well-being in a Chinese school. *Asia Pacific Education Review*, 12, 319-328.