

Organisational intervention development and piloting for staff wellbeing



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A thesis submitted for the degree of
Doctor of Philosophy
Trinity Term 2015

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Glossary of Abbreviations

BERA	British Educational Research Association
CBA	Controlled before-and-after study
CES	Collective Efficacy Scale
CI	Confidence interval
CPD	Continuing Professional Development
cRCT	Cluster Randomized Controlled Trial
CUREC	Central University Research Ethics Committee
CV	Curriculum Vitae
DfES	Department for Education and Skills
DREC	Departmental Research Ethics Committee
EAL	English as Additional Language
ESRC	Economic and Social Research Council
FSM	Free School Meals
GCSE	General Certificate of Secondary Education
HSE	Health and Safety Executive
ICT	Information and Communications Technology
ITT	Intention-to-treat analysis
LOCF	Last observation carried forward
MBI-ES	Maslach Burnout Inventory- Educators Survey
MAR	Missing at random
MCAR	Missing completely at random
MD	Mean difference
MI	Multiple Imputation
MRC	Medical Research Council
NMAR	Not missing at random
NPM	New Public Management
NUT	National Union of Teachers
Ofsted	Office for Standards in Education
OHI-S	Organisational Health Inventory- Secondary Schools
PRIMA-EF	European Framework for Psychosocial Risk Management
QALY	Quality Adjusted Life Years
RCT	Randomized Controlled Trial
SD	Standard Deviation
T	Time
TAP	Teacher Advancement Program
TSI	Teacher Stress Inventory
WHO	World Health Organisation

Acknowledgements

First and foremost, I dedicate this thesis to my mother, who sadly passed away before witnessing my graduation. She was an amazing, joyful, and selfless human being, and a source of peace and encouragement throughout this journey. I am forever indebted to my father, who has been my role model and provided invaluable advice and support throughout my doctoral studies.

Special gratitude is due to Marzyeh, my wonderful wife. She has kindly been by my side through challenging times and has given me unwavering support. My son, Taha, was born in the midst of my doctoral studies. He has opened my eyes to the beauty of life, and along with Marzyeh, has been a source of joy, energy, and perseverance in completing this chapter in my life.

I am grateful to my supervisors, Professor Paul Montgomery and Dr Marc Thompson. Paul has been a great mentor, providing me with unique learning opportunities and giving me the appropriate space to flourish. Marc has provided invaluable support with his vast network, and his scholarly insights helped re-focus my thinking at various stages of the doctoral project.

I would like to thank my examiners, Professor Simon Murphy and Dr Rachel Bray, for their illuminating insights, not just for improving the thesis but also helping clarify my thinking on future direction.

I would like to acknowledge kind support from the following esteemed academics. They have added value to my doctoral journey in various ways, from a discussion that helped focus my thinking, to more elaborate support with methods and conceptual frameworks: Professors Larry Aber, Chris Bonell, Bernard Burnes, Harry Daniels, Sue Dopson, Anne Edwards, Yrjo Engestrom, Frances Gardner, Chris Kyriacou, Tim Morris, Rafael Ramirez, Brian Schaffner, Jaakko Virkkunen, Theodore Zeldin, and Dr's Andromachi Athanasopoulou, Joshua Brown, David Humphreys, Susan James, Heli Kaatrakoski, G.J. Melendez-Torres, Elizabeth Peretz, Michael Smets, and Thees Spreckelsen.

Special mention goes to my sister, Erfaneh, and my brothers Ehsan and Amir. They have always been there for me in times of need and I hope to be able to repay their loving support. I would like to thank my supportive officemates and my group of fabulous friends in Oxford who have made life joyful in the past number of years.

Finally, I am grateful to the Oxford University Press John Fell Fund for providing funds for my DPhil project. Further, I must acknowledge my Oxford College, Green Templeton College, which provided me with tremendous personal, social and academic opportunities to learn, network and excel.

Abstract

This thesis presents an empirical investigation to address the psychosocial work environment as an established social determinant of health. The focus was narrowed to a single occupation, teachers, due to high reported stress levels in national surveys and other consequential policy challenges. The focus of intervention was narrowed to tackling the causes of stress after a scoping literature review found that most effort in this area has been directed towards individual-level interventions and programmes.

A systematic review was conducted to assess the evidence-base, which demonstrated availability of limited and low-quality evidence for the evaluation of organisational interventions for teacher wellbeing. It was found that organisational interventions lead to improvements in teacher wellbeing and retention rates, although most of the trials in this review were affected by methodological shortcomings. Because of the paucity of such intervention studies, and the heterogeneous nature of the interventions in the four included studies in this review, implications for practice were found to be very limited. Further well-designed research in the development and testing of organisational interventions for teacher wellbeing was recommended as a result, while outlining the requirements for a rigorous study in this area.

An intervention development endeavour was subsequently undertaken, which pointed to participatory approaches. An intervention entitled Change Laboratory was identified due to its relatively robust theoretical and methodological basis.

An exploratory pilot trial of the participatory organisational change intervention was conducted in four secondary schools in the UK, with 2 schools as intervention and 2 schools as control. Qualitative findings, process evaluation, and quantitative findings of the study are subsequently presented.

The analysis focuses on the actions that teachers and managers collaboratively designed in the intervention schools, in order to address organisational and systemic factors generating stress. The common theme in the output of both Change Laboratory cases was their focus on the object of decision-making, and leading to an expansive learning in terms of a reconceptualization of decision-making within their respective organisations. The central contradiction was found to be between the macro perspective and priorities and agendas of the senior leadership that shape policies and processes, and the micro perspective of those having to enact and comply with the decisions made by senior leaders. The intervention outputs can be seen as mediators synthesized from this contradiction. Following the intervention impact longitudinally demonstrated a developing and evolving reconceptualization of pedagogy, which is more central to teachers' object of activity and their professional identity. The analysis demonstrates that professional identity may be a crucial dimension of wellbeing at work in tandem with work-related stress theories. The findings suggest that the Change Laboratory group initially embarked on a re-conceptualisation of decision-making, and utilised the new systems and way of working as a means to address teaching and learning which is more central to their professional identity and their object of activity.

The quantitative findings suggests an indication of beneficial effects of the intervention at end-of-intervention point, also considering the limitations. The process evaluation focuses on delineating the different facets of the intervention and assuring intervention integrity, assessing feasibility and acceptability, and generating insights for scaling-up of the intervention. An implementation framework developed in this study was found to be of value in the endeavour to adopt, adapt, and develop process-oriented structural interventions.

Chapter 1- Wellbeing at Work: Case study of teachers

Overview

This chapter outlines the public health and social policy challenge of stress in teachers, with reference to risk, prevalence and implications. It situates teacher wellbeing within the wider policy context of staff wellbeing and the psychosocial work environment, and outlines the policy challenges of teacher retention and sickness absence. A discussion of the wider structural factors is also presented, pointing to changes in the organisation of schools in the new public management era that has encompassed the public sector since the 1980's. The chapter proceeds to providing definitions for teacher stress and teacher wellbeing, and elaborates on the individual-level consequences of stress and burnout in teachers. This is then followed with a scoping review of existing teacher wellbeing reports, focusing on the actions taken. These reports allude to a number of organisational interventions to tackle the causes of stress in teachers, but all lack adequate description of content and rigorous evaluations. The chapter concludes with establishing the need for a systematic review, and outlines the key research questions guiding the project.

1.1- Wellbeing at work

Wellbeing at work and work-related stress are prominent social determinants of health, and important contemporary challenges in the areas of public health and social policy. Wellbeing at work is often measured by individual's job satisfaction, feelings of self-efficacy, work stress or burnout (Bricheno *et al.*, 2009), as well as organisational indicators such as sickness absence and staff turnover. Work stress can refer to stressors, as well as the stress response. Stressors are the conditions at work that generate stress, while the stress response refers to how people feel, think and behave in response to the stressors. The Fourth European Working Conditions survey (EuroFound, 2007) found that 20% of workers from the EU15 and 30% from the 10 new member states believed that their health was at risk due to work-related stress. Health and Safety Executive statistics show that for 2006/07, stress, depression, or anxiety accounted for 46% of days lost due to work-related illness and constitute the single largest cause of all absences attributable to work-related illness (Cooper and Dewe, 2008). It is estimated that each year one in six workers in England and Wales are affected by anxiety, depression and unmanageable stress (Mind, 2011).

The psychosocial work environment is thus an established and prominent social determinant of health and health inequalities (Benach *et al.*, 2007; Black, 2008). Siegrist and Marmot (2004) define psychosocial environment as the "socio-structural range of opportunities that is available to an individual person to meet his or her needs of wellbeing, productivity and positive self-experience" (pp.

1465). Concentrating on the two main organisational stress models, they argue that exposure to an adverse psychosocial environment, defined in terms of job tasks by high demands and low control (demand-control-support model, (Karasek and Theorell, 1990) and/or by effort-reward imbalance (Siegrist, 1996), elicits sustained stress reactions with negative long-term consequences for health. In an analysis based on the Whitehall II Study, North *et al.* (1996) found that the psychosocial work environment predicts rates of sickness absence, and argued that increased levels of control and support at work could have beneficial effects in terms of improving the health and wellbeing of employees, increasing productivity, and reducing the costs of sickness absence. A substantial body of evidence links adverse psychosocial work environments with an increase in the incidence of cardiovascular disease (Karasek and Theorell, 1990; Schnall *et al.*, 1994; Hemingway and Marmot, 1999; Kivimaki *et al.*, 2002; Kuper and Marmot, 2003; Belkic *et al.*, 2004; Chandola *et al.*, 2008). Psychosocial work stressors such as job strain, low decision latitude, low social support, high psychological demands, effort-reward imbalance, and high job insecurity have all been implicated as causes of work stress-related anxiety and depressive illnesses (Stansfeld and Candy, 2006).

Psychosocial risks at the workplace are a major policy concern and have resulted in the formation of a large European Union consortium to develop the European Framework for Psychosocial Risk Management (PRIMA-EF). Work-related psychosocial risks refer to aspects of the design and management of work and its social and organisational contexts that have the potential for causing psychological or physical harm (Leka *et al.*, 2003). The PRIMA-EF and the related

regulatory framework provide guidance for psychosocial risk management in the workplace, to be utilised by stakeholders within policy and practice (WHO, 2008).

1.2- Policy-level drivers of stress and wellbeing in teacher

In aiming to conduct evidence-based intervention research and in order to identify the gaps in knowledge within the study of psychosocial work environments, it is helpful to narrow the focus to one particular occupation. The teaching profession seems to be a suitable focus for a number of reasons outlined herein. Several large-scale surveys have consistently pointed to higher than average levels of occupational stress amongst teachers compared to other occupations. For example, a Health & Safety Executive report (Smith *et al.*, 2000) showed that whereas 20% of all workers report very high levels of stress at work, 42% of teachers reported such levels. Similarly, the recent three-year estimate (2011-2014) of the Self-reported Work-related Illness questionnaire module in the national Labour Force Survey in the UK demonstrates more than double the average rates of self-reported stress, depression and anxiety for the teaching profession (HSE, 2014). Policy challenges in the educational arena such as teacher retention and sickness absence are underpinned by the wellbeing of teachers. A report for the Department for Education and Skills (DfES) identified excessive workload, stress, and government initiatives as the main reasons for leaving classroom teaching in maintained schools (Smithers and Robinson, 2003). As Smith and Ingersoll (2004) assert, “high rates of teacher turnover can inhibit the development and maintenance of a learning community; in turn, lack of community in a school may have a negative impact on teacher retention, thus creating a vicious cycle” (p. 686). In addition, Ronfeldt *et al.* (2012) demonstrate that teacher turnover harms student achievement. Kyriacou *et al.* (2003) state that “in England, about 40 per cent of those who embark on a training course

never become teachers, and of those who become teachers, about 40 per cent are no longer teaching five years later” (p. 256). The problem is similar in the US, with more than 30 per cent of teachers leaving within five years (Darling-Hammond and Sykes, 2003). Sickness absence is another major policy problem, with work-related stress as one of its main causes (Black and Frost, 2011). In the UK, the financial burden of sickness absence in teachers is valued at over £500 million a year (Audit-Commission, 2011).

The education sector in the UK has been subject to on-going cycles of reform over the past 25 or more years, driven by neo-liberal philosophy articulated in movements such as new public management (Verbeeten and Spekle, 2015). The ideology of new public management (NPM) (Hood, 1991) has included the development of quasi-markets for public sector educational provision within which schools and other educational institutions have been expected to operate as competing business units. Furthermore, in the place of more local, teacher generated assessment of students, national standardised testing systems have been introduced. This has led to the production of national league tables, with rankings and ratings of pupil, teacher and school performance (Ball, 2003). The NPM focus on business like values such as efficiency, transparency and client choice is often in competition with or seeks to supplant traditional professional values such as autonomy and equity (Tummers *et al.*, 2012).

The increasing role played by the market in the design and delivery of public services has a number of interrelated outcomes. As the market logic begins to dominate, the role of collective institutions that supported professional

communities development, knowledge transfer, growth and agency can become eroded. In their place, individual performativity is lauded and public agencies reinforce this process through the intense use of performance indicators and audits. Evidence suggests that performance indicators are used more for meeting external reporting requirements than for achieving internal improvements (Taylor, 2011). As Shore and Wright (1999) suggest, the consequence has been 'the re-invention of professionals themselves as units of resource whose performance and productivity must constantly be audited so that it can be enhanced'. A managerialist ethos increasingly supplants the professional ethos in public services and in schools where traditionally head-teachers have had a strong connection with their professional roots. This trend is exemplified in the emergence of head-teachers as a new type of managerial cadre whose commitment is to leading organizational performance and change as opposed to developing teaching as a profession (Ball, 2012).

The consequences of NPM for teaching professionals is a bone of political contention in the UK. On the one hand, regulatory agencies such as Ofsted (Office for Standards in Education) argue that performance measurement, greater managerial control and accountability through artefacts such as school ratings provide an effective methodology for school improvement. Conversely, teaching professionals and their representative bodies argue that this emphasis is undermining motivation and commitment amongst teachers and leading to unintended consequences such as high levels of stress, poor psychological well-being, increased sickness absence and teachers leaving the profession.

Prior research on the factors associated with stress in teachers have identified: heavy workload, relationships with colleagues and management, poor working environment, pupil behaviour, long working hours, providing cover for teacher shortages and absences, pressure of school targets and inspections, coping with change, and administrative duties (Travers and Cooper, 1996; Benmansour, 1998; Lambert and McCarthy, 2006; NUT, 2011). Many of these factors are connected to NPM inspired reforms driven by the new cadre of managerialist school leaders (Ball, 2003; Hargreaves, 2003; Helgøy *et al.*, 2007). Cumulatively the evidence points to organisational level factors, and broader NPM-related sectoral factors which are mediated by organisations, as critical determinants of teacher stress outcomes. Furthermore, the consequences of stress for an individual teacher can generate organisational level outcomes, which in turn increase demands on other teachers in the system, potentially raising stress levels further. Thus the system level factors that generate stress in the first place are further reinforced by the outcomes of the stress generated by the system. This suggests a negative, self-reinforcing loop in schools driven by organisational stress and the individual and systemic responses.

1.3- Professional identity and psychological wellbeing of teachers

Professional identity is a relational phenomenon, and an ongoing process of interpretation and re-interpretation of experiences (Beijaard *et al.*, 2004). It is continually constructed and re-constructed in situated context (Sunley and Locke, 2010). Professional identity comprises the notion of agency, and the active pursuit of professional development in accordance with a teacher's goals and values (Coldron and Smith, 1999). It stands at the core of the teaching profession and provides a framework for teachers to construct their own ideas of 'how to be', 'how to act' and 'how to understand' their work and their place in society (Sachs, 2003).

NPM has challenged notions of teacher professional identity with its twin emphasis on individualism and performativity (Ball, 2003). Performativity is a 'powerful and insidious policy technology that is now at work at all levels and in all kinds of education and public service, a technology that links effort, values, purpose and self-understanding to measures and comparisons of output' (Ball, 2012). New managerialist forms of control and the role of standards in defining and controlling professionalism points to an on-going redefinition of the 'professional' teacher over the last two decades or more. Some commentators argue that being 'professional' has come to mean being 'compliant' with state mandates on 'professional standards' and the processes and procedures for their measurement (Mahony and Hextall, 2000). These policy changes have been seen to 'instrumentalise' professionals and encouraged them to live an existence of calculation where they see their lives as an 'enterprise of the self' (Rose, 1989).

As Ball (2003) asserts: 'the novelty of this epidemic of reform is that it does not simply change what people, as educators, scholars and researchers do, it changes who they are'. Indeed, Hall *et al.* (2012) argue that NPM is about changing teachers identities and is a form of socio-ideological control that enables the remodelling of schools to meet the requirements of this ideology. This social determination perspective is countered in the literature by those highlighting the role of agency in determining identity, and the personal dimensions to the teaching professional (see Coldron and Smith, 1999).

In an exhaustive review of the literature on professional values in teaching, Sunley and Locke (2010) concluded that 'whereas weight continues to be accorded to values and values education, there is recognition that little attempt has been made to engage teachers in dialogue and reflection on the 'implicit' values that underpin their work and lives'. The authors argue that teacher identity and notions of professionalism is something that is continually being constructed and re-constructed in situated context. There is a need for teachers to create dialogic spaces where identity work can be undertaken, and values made explicit and refined in practice. Such work becomes more pressing considering that the literature suggests a conflict between personal values of teachers and the NPM-inspired organisational values of the school. While NPM is a national and international phenomenon, schools can play an important role in mediating how the prevailing managerialism is experienced and articulated. As such, it is important to study school contexts and culture in order to understand their critical role in shaping teacher experiences and identity. Indeed, Beijaard *et al.* (2004) found that the culture of the school, its internal dynamics and

organisation, enable or constrain the achievement of 'satisfaction', 'commitment' and 'motivation' and impact upon teachers' constructions of their teacher identities and the acceptance or rejection of new policies and practices.

Teachers' feelings of vulnerability have been identified when professional identity and moral integrity are questioned either by policy changes, parents, inspectors, or colleagues in the light of unrealistic expectations or their failure to help students achieve higher standards (Kelchtermans, 1996). In England, Woods and Jeffrey (2002) found 'professional uncertainty, confusion, inadequacy, anxiety, mortification and doubt' among teachers when they investigated primary school teachers' responses to an external inspection by the Office for Standards in Education (Ofsted), associating these with 'dehumanisation' and 'deprofessionalism'. Such state was characterised by Webb (2006) as 'professional-identity stress', who found that external accountability pressures exacerbated teacher stress by questioning the legitimacy of their professional decisions.

The psychological literature demonstrates how challenges to identity and social roles, articulated by Thoits (1991) as 'identity-relevant stressors', impact psychological wellbeing. These stressors are related to the individual's conceptions of themselves in terms of the social roles that they enact, the magnitude of which depends on the salience to the individual of the role-identity domain in which they occur (Thoits, 1995). This is paralleled in the management literature with the notion of 'work-identity integrity violations' (Pratt *et al.*,

2006), which result in a struggle by the individuals to reconcile their professional self-conceptualizations with the work that they do. Despite evidence that the relative status of the teaching profession has declined over the last few decades (Hargreaves *et al.*, 2007), teaching continues to have high levels of identity salience. In an updated report on the status of the teaching profession, researchers found that although current teachers perceived their social status to have declined significantly compared to those interviewed in the 1970s, they gained a sense of positive status when they felt trusted, appreciated and rewarded by parents and through collaborative work with other professionals. Their schools were critical in this respect. They felt positive about their status through experiencing supportive leadership, collaborative working and having time for personal development (Hargreaves *et al.*, 2007).

In engaging a sense making framework, Rothausen *et al.* (2015) explore the meaning for employees of quitting or staying in an organization. They find that from the perspective of the actors, retention or turnover are part of a complex process of building identity and wellbeing resources. Perceived threats to identity and wellbeing leads to varying levels of psychophysiological strain, coping with threat or strain, and reassessment, often in escalating cycles resulting in turnover. Siegrist and Marmot (2004) underline two general patterns of human motivations in relation to their social environment. First, the need for physical and psychological wellbeing, and secondly, the need for experiencing a positive self. In turn, the aspects of positive self-experience that are of particular importance for wellbeing and health include self-efficacy and self-esteem. A social environment conducive to self-efficacy provides the

individual with a sense of mastery and control. Nurturing self-esteem strengthens feelings of belonging, approval and success, and allows individuals to connect themselves with significant others and to receive appropriate feedback for well accomplished tasks. Thoits (1991) asserts that threats to self-conception and self-esteem are involved in the aetiology of psychological disorder, and (Siegrist and Marmot, 2004) draw on the literature to outline the psychobiological pathway for these mechanisms. In summarizing the stress literature, Thoits (2010) asserts that the impact of stressors on health and wellbeing are reduced when individuals have high levels of mastery, self-esteem, and/or social support. The challenges of NPM to personal and professional identity, meaning and purpose can translate to identity-relevant stressors, which may demonstrate significant consequences for individual's psychological wellbeing. The link between the wider structural stressors (such as the impact of new public management), identity and wellbeing of teachers is under explored in the literature. In a primary study, it would be interesting to assess whether evidence of structural stressors can be identified in practice, and whether potential interventions can address these stressors.

1.4- Conceptualising teacher wellbeing at the individual level

Teacher occupational wellbeing is defined by Aelterman *et al.* (2007) as a positive emotional state resulting from harmony between the sum of specific environmental factors on the one hand, and personal needs and expectations of teachers on the other. Kyriacou (2011) defines 'teacher stress' as the experience by teachers of unpleasant negative emotions, resulting from aspects of their work as a teacher which is triggered by a perception of threat in dealing with the demands made upon them. This trigger of threat involves three elements: having to deal with the demand, the fear of being unable to deal with the demand satisfactorily, and the fear that not dealing with the demand satisfactorily may have negative consequences. Another concept used in the literature with close links and overlaps is 'teacher burnout', which refers to a state of emotional, attitudinal and physical exhaustion that follows from a prolonged exposure to chronic stress (Vandenberghe and Huberman, 1999). Schwab *et al.* (1986) provide a vivid description of the dimensions of teacher burnout:

"The first sign of burnout is a feeling of being emotionally exhausted from one's work...emotionally exhausted teachers might say they feel drained or used-up, that they are at the end of their rope and are physically fatigued...they cope by depersonalizing their co-workers and students by putting distance between themselves and others. They develop a "detached concern", become cynical, and feel callous toward others in the organization. A third aspect of burnout is a feeling of low personal accomplishment. Many individuals began their careers with great expectations of making a contribution to their employer and to society. After a year or two on the job, they begin to realize they are not living up to these expectations..."

these employees may not recognize the role of the organization in producing their frustration. Instead, they may feel personally responsible and begin to think of themselves as failures” (pp. 14-15).

There is an extensive body of observational research worldwide documenting symptoms and consequences of teacher stress, including studies in the UK (Dunham, 1992; Travers and Cooper, 1996; Rothi *et al.*, 2010), Australia (Goddard and Goddard, 2006), Greece (Lazuras, 2006), Norway (Skaalvik and Skaalvik, 2009), Switzerland (Huberman, 1993), Qatar (Al-Mohannadi and Capel, 2007), and China (Chan and Hui, 1995; Yang *et al.*, 2011). Kyriacou (2011) categorises symptoms of teacher stress in the three broad areas of physical (e.g. back aches, indigestion), mental (e.g. depression, loss of self-confidence, cynicism), and behavioural (e.g. loss of temper, sleeplessness) characteristics.

1.5- Interventions for teacher stress and wellbeing

A number of reports have discussed occupational stress and wellbeing interventions relevant to teachers. The Teachers Health and Wellbeing Study Scotland (Dunlop and Macdonald, 2004) provides the following framework for interventions in support of teacher wellbeing:

1. *Individual level interventions* – interventions with a focus on the teacher as an individual. Most commonly, these interventions include Employee Assistance Programmes (EAPs), stress management courses, and workplace health promotion initiatives (e.g. smoking cessation seminars, information on exercise and diet).
2. *Individual-Organisational Interface level interventions* – interventions with a focus on the workplace. These will seek to modify either the day-to-day work environment or to address staff relationships within schools.
3. *Systemic level intervention* – initiatives that usually take the form of policy-related changes which influence health and well being in a wider structural or organisational manner.

Interventions to tackle the causes of stress and proactively improve wellbeing fall within the scope of the individual-organisational interface level and the systemic level in the above framework. In the Teachers Health and Wellbeing Study Scotland (Dunlop and Macdonald, 2004), which incorporated the results of an unpublished systematic review, only 23 interventions were identified in the international literature. The vast majority of the interventions (17) were focused on the teacher as an individual. Also, only four interventions addressed

structural issues. The review lacked a comprehensive search strategy for identifying organisational interventions, and the authors accept the paucity of studies and the fact that none of the interventions in the review had been subject to rigorous evaluations. Further, the report only alluded to examples from the findings, rather than presenting all interventions found in the search.

An intervention reported in the Scottish study that spans across the individual-organisational interface and the systemic levels, is the pilot project of the 'Wellbeing Programme' in various LEAs and schools in England (Norfolk, Wirral, Suffolk and Kent) in 1999. 112 of the 450 schools within the authorities participated in the two-year project, which involved all staff rather than just teachers. The intervention used the Health and Safety Executive's Management Standards for the reduction of work-related stress, as a basis for a bottom-up 'organisational self review' and action planning. It aimed to foster a healthier environment and develop strategies within schools that encourage better communication and a social support culture for teachers. A number of low quality evaluations of this pilot project have been identified, the first of which was limited to gathering the views of head-teachers regarding the project. The evaluation by Phillips (2001) was relatively more comprehensive, tracking the changes in staff's views and experiences in four areas of most concern identified by staff before the Wellbeing pilot. On average, a 4 per cent improvement was found across the four areas. In the evaluation by Rumsby (2001), initial and follow-up survey data was collected from school staff in all participating schools, providing some longitudinal data. There was improvements in some areas such

as support, rewards, and management communication, and decline in areas such as workload, work-life balance, commitment, and health.

The Wellbeing Programme was later extended to over 2,600 schools in the UK by the social enterprise Worklife Support, albeit without robust evaluation of its effectiveness. Another pilot of the Wellbeing Programme was conducted by a London education authority (Worklife-Support, 2006), who found that between 2003 and 2004, sickness absence fell by 33 per cent in primary schools participating in the programme, saving each an average of £2,981 per year. Sickness absence in primary schools that didn't join the programme went up by 15 per cent in the same period. Further, sickness absence fell by 36 per cent in secondary schools participating in the programme, saving each an average of £11,025 per year. Sickness absence in secondary schools that didn't join the programme fell by only 5 per cent over the same period. It is worth noting that the report of these findings does not elaborate on the actual data, or on research design, methods of data collection, and analyses. As Bricheno *et al.* (2009) assert, this evidence does not look at differences in sickness absence between these two groups prior to the introduction of the Well-being Programme. Further, due to the selection bias of schools self-selecting into the programme, no conclusions can be drawn about the cause of the reduction in sickness absence.

The Wellbeing of Teachers in Wales study (Davies, 2007) found two examples of evaluated interventions at the individual-organisational interface and systemic levels in Britain. These were the 'Wellbeing Programme' – discussed above – and the 'Creating the Conditions' initiative piloted by Teacher Support Scotland in

2007. It is worth noting that the report did not aim to follow a systematic review approach, and the aforementioned interventions were found as a result of an introductory literature review.

The Creating the Conditions pilot was conducted between 2005 and 2007 in 18 schools in Scotland, and aimed to develop a multi-faceted approach to improve teacher wellbeing by trialling different measures to improve teacher efficacy and resilience. It used the model of the Wellbeing Programme as a foundation to build on, and like the latter, followed an action research approach. The pilot was designed in a way to encourage individual and school ownership and to be integrated into mainstream activity. A qualitative evaluation of the pilot by Consultancy World (Stewart, 2007) found that the project had a positive impact on schools, raising the awareness and profile of staff wellbeing and introducing wellbeing into school development planning. Benefits included improved morale and better communication within schools. The evaluation also reported higher average 'wellbeing scores' for the pilot schools in comparison to the average national scores for schools participating in the Wellbeing Programme in England and Wales (wellbeing scores were derived from the same tool used in the Wellbeing Programme- the Organisational Self Review Measure survey). The report did not however disclose the data or comment on the statistical significance of these scores. Further, the evaluation was not able to assess whether the specific health, financial and effectiveness outcomes envisaged were achieved, due to the limited time frame of the study.

The Welsh report (Davies, 2007) also referred to a policy intervention – Planning Preparation and Assessment (PPA) Time. The purpose of this policy is to enable teachers to raise standards through individual or collaborative professional activity, and to improve teacher’s work-life balance. It guarantees teachers a minimum of 10 per cent of their timetabled teaching time for planning, preparation and assessment. The report states that although PPA time has had a positive impact on work-life balance for a majority of teachers, workload and excessive administration were still identified by teachers as two of the key stressors they face. The report recommends that steps need to be taken to ensure that PPA is being consistently implemented so that it is equally available to all teachers. Further, it suggests that additional initiatives need to be explored in order to decrease teacher workload and the administrative burden.

In a Teacher Support Network report titled ‘Teacher Wellbeing: A Review of the Evidence’, Bricheno *et al.* (2009) found that most intervention strategies for teachers have been tertiary management techniques (e.g. employee assistance programmes; workplace counselling), in contrast to primary interventions (e.g. structural/organisational interventions). However, the study also included interviews with school stakeholders, who paid most attention to primary strategies. Lamontagne *et al.* (2007) refer to primary interventions as preventive and proactive, secondary interventions as ameliorative, and tertiary interventions as reactive. Bricheno *et al.* (2009) cite the preliminary evidence for the Wellbeing Programme, pointing to the potential of such primary interventions to influence problems such as communication issues and sickness absence. They recommended that all interventions should be rigorously and

systematically evaluated, with the imbalance among primary, secondary and tertiary approaches made public for action to be taken. It is important to note that the review reported on longitudinal, cross-sectional, and case studies, and the authors did not claim to have followed a thorough and systematic search and review process for effective interventions for teacher wellbeing.

Considering the quality of the available reviews and the apparent paucity in the syntheses of high quality evidence, a systematic review of the international literature is required for robustly evaluated interventions to improve wellbeing and reduce the causes of stress in teachers. Systematic reviews are regarded as 'gold standard' in the hierarchy of evidence quality. They use explicit and transparent methods and follow a peer-reviewed and published protocol in their search and review method. As such, they are accountable, replicable, and updateable. Studies are thus searched in a global way in order to minimise the risk of selection, publication, and other biases that are inevitable in unsystematic narrative reviews. They produce an objective summary of existing research, and identify gaps in knowledge in the area in question. The proposed systematic review can serve as a foundation for subsequent efforts to develop and test evidence-based interventions for adequately tackling this important policy challenge.

1.6- Guiding Research Questions

- 1- What is the evidence-base for effective interventions to reduce the causes of stress and improve wellbeing in teachers?

Tackling the causes of stress (stressors) will require interventions at the regulatory/policy or organisational level, and the focus of this project will be on the latter. Many of the stressors are within the organisation of schools, and include organisational culture and climate, senior management practice and culture, relationship with colleagues and management, organisation of the teacher's workload, communication, role ambiguity and role conflict, etc. Further, in comparison with regulatory/policy change, interventions at the organisational level seem to be more amenable to experimental design evaluations, and within the scope of the DPhil in Social Intervention. It is worth noting that an organisational focus is more upstream than targeting individuals to increase their coping skills and alter their responses to stressors.

- 2- How can the evidence-base be utilised to establish sustainable solutions in schools for improving wellbeing and reducing the stressors at work for teachers?

This research question is contingent on the results from the first question. If there is a rigorous evidence-base in the form of effectiveness trials, we will embark on studying scalability, transportability, and sustainability of the effective intervention(s). On the contrary, if no high-quality evidence is found with scalability potential, it will be necessary to draw on theory-driven

approaches as well as lower quality of evidence (e.g. observational studies; case studies), in order to embark on intervention development and testing in an exploratory pilot trial.

Chapter 2: Systematic Review-

Organisational interventions for improving wellbeing and reducing work-related stress in teachers

This chapter is now published in the Cochrane Database of Systematic Reviews (Naghieh *et al.*, 2015). It addresses the following Research Question:

What is the evidence-base for effective interventions to reduce the causes of stress and improve wellbeing in teachers?

Overview

Background

The teaching profession is an occupation with high levels of prevalence of work-related stress. This may lead to sustained physical and mental health problems in teachers, negatively affect the health, wellbeing and educational attainment of children, and impose a financial burden on the public budget in terms of teacher turnover and sickness absence. Most evaluated interventions for the wellbeing of teachers are directed at the individual level, and so do not tackle the causes of stress in the workplace. Organisational-level interventions are a potential avenue in this regard.

Objectives

To evaluate the effectiveness of organisational interventions for improving

wellbeing and reducing work-related stress in teachers.

Search methods

CENTRAL, MEDLINE, PsycINFO, ASSIA, AEI, BEI, BiblioMap, DARE, DER, Embase, ERIC, IBSS, SSCI, Sociological Abstracts, a number of specialist occupational health databases, and a number of trial registers and grey literature sources were searched, from the inception of each database until December 2013.

Selection criteria

RCTs, cRCTs, and Controlled Before After studies of organisational-level interventions for the wellbeing of teachers.

Data collection and analysis

Two author teams independently extracted data and assessed trial quality. Results were tabulated, as studies were considered too dissimilar to combine using meta-analysis.

Results

Four studies met the inclusion criteria, three of which were cluster randomised controlled trials and one had a stepped wedge design.

Changing task characteristics

One study with 961 teachers in eight schools compared a task-based organisational change intervention along with stress management training to no intervention. It found a small reduction at 12 months in 10 out of 14 of the subscales in the Occupational Stress Inventory, with a mean difference (MD) varying from -3.84 to 0.13, and a small increase in the Work Ability Index (MD 2.27; 95% confidence interval (CI) 1.64 to 2.90; 708 participants, low-quality evidence).

Changing organisational characteristics

Two studies compared teacher training combined with school-wide coaching support to no intervention. One study with 59 teachers in 43 schools found no significant effects on job-related anxiety (MD -0.25 95% CI -0.61 to 0.11, very low-quality evidence) or depression (MD -0.26 95% CI -0.57 to 0.05, very low-quality evidence) after 24 months. The other study with 77 teachers in 18 schools found no significant effects on the Maslach Burnout Inventory subscales (e.g. emotional exhaustion subscale: MD -0.05 95% CI -0.52 to 0.42, low-quality evidence) or the Teacher Perceived Emotional Ability subscales (e.g. regulating emotions subscale: MD 0.11 95% CI -0.11 to 0.33, low-quality evidence) after six months.

Multi-component intervention

One study with 1102 teachers in 34 schools compared a multi-component intervention containing performance bonus, job promotion opportunities and mentoring support to a matched-comparison group consisting of 300 schools. It found moderately higher teacher retention rates (MD 11.50 95% CI 3.25 to 19.75 at 36 months follow-up, very low-quality evidence). However, the authors reported results only from one cohort out of four (eight schools), demonstrating a high risk of reporting bias.

Conclusions

This review demonstrates availability of limited and low-quality evidence for the evaluation of organisational interventions for teacher wellbeing. It was found that organisational interventions lead to improvements in teacher wellbeing and

retention rates, although most of the trials in this review were affected by methodological shortcomings. Because of the paucity of such intervention studies, and the heterogeneous nature of the interventions in the four included studies in this review, implications for practice are currently very limited. Further well-designed research in the development and testing of organisational interventions for teacher wellbeing is needed.

2.1 Rationale

The purpose of the review was to evaluate the effectiveness of organisational interventions for improving wellbeing and reducing work-related stress in teachers.

To date, two reviews in the areas of occupational stress and wellbeing interventions exist that are relevant to teachers. In the Teachers Health and Wellbeing Study Scotland (Dunlop and Macdonald, 2004), which incorporated the results of an unpublished systematic review, only 23 interventions were identified in the international literature. The vast majority of the interventions (17) were focused on the teacher as an individual. Also, only four interventions addressed structural issues. The review lacked a comprehensive search strategy for identifying organisational interventions, and the authors accept the paucity of studies and the fact that none of the interventions in the review had been subject to rigorous evaluations. In a Teacher Support Network report titled Teacher Wellbeing: A Review of the Evidence, (Bricheno *et al.*, 2009) found that interventions have focused mainly on secondary and tertiary management techniques. The authors assert that some evidence have suggested that individual interventions are the most effective for mental health problems, but organisational interventions are most effective for job-related stress reduction. Further, the stakeholders interviewed in the study paid most attention to primary strategies. The authors concluded that most intervention strategies for teachers have been tertiary, and so less likely to counter the problems of stressful work environments. The review reported on longitudinal, cross-sectional, and case studies, and the authors did not claim to have followed a

thorough and systematic search and review process for effective interventions for teacher wellbeing.

A synthesis of the evidence for managing stress at work from systematic reviews published up to July 2011 (Bhui *et al.*, 2012) found a greater effect size of individual interventions on individual outcomes. Organisational interventions showed mixed evidence of benefit, although the authors conflate worksite health promotion programmes with the definition that we have outlined for organisational interventions as changing the structure and/or context of the work environment. Moreover, none of the studies were conducted in a school setting. Due to the distinct nature of the teaching profession and the context of educational settings, and also the potential for organisational interventions to adequately tackle psychosocial work stressors, school-level intervention development and evaluation would require a high quality context-specific evidence base. The present systematic review aimed to fill this important gap in the research literature.

2.2 Criteria for considering studies for this review

Types of studies

All eligible randomised controlled trials (RCTs), cluster-randomised controlled trials (cRCTs) and controlled before-and-after studies (CBA) were considered. Furthermore, studies that featured randomization at the classroom, department, or school level. Studies that combine or compare individual-level and organisational-level interventions, but excluded studies with interventions only at the individual level were considered.

Types of participants

Studies conducted with teachers working at primary and secondary schools, serving children aged between 4-18 years were included.

Types of interventions

Organisational interventions for employee wellbeing target the stressors in the work environment, rather than the stress response of the individual employee. They aim to alter the psychosocial work environment by changing some aspect of the organisation, such as structures, policies, processes, climate, programmes, roles, tasks, etc. Included interventions can be described within the following categories:

- Changing organisational characteristics or conditions: e.g. school-level policy and governance; communication; school climate, culture, or ethos

- Changing role characteristics or conditions: e.g. senior management practice and culture; teacher autonomy and empowerment; or role conflicts
- Changing task characteristics or conditions: e.g. workload or the work-environment

Studies where the intervention is compared with non-intervention controls or usual practice were considered for inclusion, as well as studies that compare interventions with one or more alternative interventions.

Distinction was made between organisational prevention and individual stress management interventions. Further, worksite health promotion interventions and educational interventions were regarded as typically targeting individuals, rather than aiming to change organisational characteristics. Any intervention directed at the individual and not the organisation was thus excluded. An exception was applied for those individually-directed interventions that were 1: universally delivered, and 2: had an organisation change component that supported implementation. The latter may include organisational policy changes or installing support functions (e.g. coaching). These components can change practices and affect organisational culture, which may subsequently lead to health and wellbeing outcomes for individuals within organisations.

For example, (Cullen *et al.*, 1999) was a school-wide health promotion intervention, but the study explicitly states that: “no special environmental

support or school policy changes were implemented to support the program". On the other hand, (Tyson *et al.*, 2009) and (Brown *et al.*, 2010) are individually-directed educational interventions that are deemed as included studies. Both studies have a 'coaching' component, which extends the intervention from a limited set of training sessions to provision of school-wide support for the implementation of the intervention for its full duration. In the case of (Tyson *et al.*, 2009), there are two intervention arms: teacher training, and teacher training & coaching. We decided that the arm with teacher training only is strictly an educational intervention, as it is aiming to equip individual teachers with knowledge of a particular programme to be delivered to children. However, the coaching component aims to provide "assistance in implementing specific content from the programs, and in structuring and timetabling the programs; and getting support for individual student or class issues as well as support for teacher and parent issues". This remit for the coaching component of the intervention suggests an environmental support function, which can be interpreted with the demand-control-support model of organisational stress. Due to its school-wide implementation, the coaching can affect organisational culture and climate, and the organisation may subsequently be perceived as having better support functions in place. This component can also have a governance function, ensuring and enhancing school-wide implementation, while the training only arm does not address teacher engagement with the programme, implementation, and programme fidelity.

Another example of an individually-directed intervention with an organisation change component is illustrated in the distinction between the studies by

(Goodman and Turner, 2010) and (Glazerman and Seifullah, 2012). (Goodman and Turner, 2010) evaluated the provision of performance bonuses, without any school-level organisation change supplements to this cash transfer intervention. The objective was to raise teacher effort and school results, and the study was not concerned with teacher wellbeing or organisational climate. For example, the measure of absenteeism combined sickness absence with personal business absence, aiming to determine whether cash transfers would motivate teachers to take less leave of absence. On the other hand, the trial by (Glazerman and Seifullah, 2012) involved an intervention that provided teachers with performance bonuses, along with job promotion opportunities and tools to track and improve their performance (classroom observations and weekly mentoring). This organisational complement to the individual cash transfers provide support functions to achieve performance aims, and improve the recognition of teachers via promotion opportunities. Both factors may affect the culture and climate of the organisation, and subsequently improve the health and wellbeing outcome of individual teachers.

Types of outcome measures

Primary outcomes

1- Subjective measures: Validated measures of work stress and wellbeing e.g. Maslach Burnout Inventory (Maslach *et al.*, 1996b), Teacher Stress Inventory (Fimian, 1988), Occupational Stress Inventory (Osipow, 1998), Work Ability Index (Tuomi, 1998), Minnesota Satisfaction Questionnaire (Weiss, 1967),

Organisational Climate Description Questionnaire (Hoy *et al.*, 1991),
Organisational Health Inventory (Hoy *et al.*, 1991).

2- Objective measures: Teacher turnover (retention rates) and sickness absence.

Secondary outcomes

1- Biological measures such as cardiovascular outcomes (Steptoe *et al.*, 1999)
and cortisol levels (Steptoe *et al.*, 2000).

2- Where possible, we planned to consider the relationship between teacher
wellbeing and student attainment.

2.3- Search methods for identification of studies

We developed a search strategy based on the inclusion criteria to be used in electronic database searching. We took the following essential concepts of the inclusion criteria to develop the search string: teachers; stress/wellbeing; school organisation. The combination of these three concepts was considered to be specific enough to include all available studies regardless of study design.

To locate studies for inclusion, we used a sensitive and precision-maximising search strategy as recommended by the Cochrane Collaboration (Chapter 6 of the *Cochrane Handbook for Systematic Reviews of Interventions*) (Higgins *et al.*, 2011). For PubMed databases we used the most sensitive search strategy proposed by the Occupational Safety and Health Review Group (Verbeek *et al.*, 2005). We did not restrict the searches by date, language or publication type. The date of the last search was 1 December 2013.

See Appendix 2.1 for the search strategy used in PsycINFO. This search strategy was adapted for other databases accordingly (Appendix 2.2).

Electronic searches

We searched the following databases from inception to present:

ASSIA (Applied Social Science Index and Abstracts)

AEI (Australian Education Index)

BiblioMap (Database of health promotion research)

BEI (British Education Index)

CENTRAL (Cochrane Central Register of Controlled Trials)

CISDOC (The Health and Safety Information Centre of the International Labour Office)

DARE (Database of Abstracts of Reviews of Effects)

DER (Database of Educational Research)

Embase

ERIC (Education Resources Information Centre)

HSELINE (UK Health and Safety Executive Information Services)

IBSS (International Bibliography of the Social Sciences)

International Bibliographic

International Clinical Trials Registry Platform

Medline (PubMed)

NIOSH and NIOSHTIC2 (US National Institute for Occupational Safety and Health)

OpenGrey (System for Information on Grey Literature in Europe)

Proquest Dissertations and Theses

PsycINFO

RILOSH (Ryerson International Labour Occupational Safety and Health)

SSCI (Social Science Citation Index)

Sociological Abstracts

TRoPHI (Trials Register of Promoting Health Interventions)

Searching other resources

1. We searched reference lists from all studies that met the inclusion criteria.
2. We searched for references to relevant studies in international government reports and in teacher union and NGO publications available on the internet.
3. We contacted subject experts to identify unpublished or on-going research.
4. We searched all available trial registers (e.g. clinicaltrials.gov) for relevant on-going and unpublished trials.

2.4 Data collection and Analysis

Selection of studies

All search results were imported into a reference management software package. Three review authors operated in two teams to independently screen the title and abstract of each reference in light of the inclusion criteria for our review. If the two screening teams independently agreed that an article does not fulfil the inclusion criteria, the study was excluded from the review. Full reports were obtained for studies that the title and abstract suggested should be included or which contained insufficient information in the title and abstract to make a clear decision regarding inclusion for review. Where the two review teams disagreed, they met to discuss this and if possible reach a consensus. In the case that they could not reach consensus regarding inclusion of a specific article, judgement for selection was planned to be referred to a third party. Records were maintained of the selection process for all screened material.

Data extraction and management

Two review authors independently extracted data from studies meeting the inclusion criteria, using a piloted data extraction form developed for this review. Where the two authors disagreed, they met to discuss this and if possible reach a consensus. If they could not reach consensus regarding the particulars of data extraction for a specific study, judgement was planned to be referred to a third review author.

Information was extracted pertaining to: basic study details (individual and organizational participant characteristics, study location, timing and duration, research questions or hypotheses); study design and methods (design, allocation, blinding, sample size, accounting for data clustering, data collection, attrition, analysis); intervention characteristics (including timing and duration, programme development, theoretical framework, content and activities, providers, details of any intervention offered to the control group, and uptake of intervention and control by participants); process evaluation of the intervention (including acceptability, reach, fidelity/adherence, intensity and context of intervention); outcome measures at post-treatment and follow-ups where reported, as well as effect size and costs of intervention. The data extraction form also incorporated assessment of the included studies' risk of bias (see below for details). The two authors entered data from the data extraction forms into Review Manager 5.1 (RevMan, 2014). Study authors were contacted to provide data that may be missing from the study reports or to resolve any uncertainty about reported information.

Assessment of risk of bias in included studies

Risk of bias was assessed within each included study by using the tool outlined in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins et al., 2011). For each study, the two review authors engaged with data extraction independently judged the likelihood of bias in six domains: sequence generation, allocation concealment, blinding (of participants, personnel, or outcome

assessors), incomplete outcome data, selective outcome reporting, and other sources of bias (e.g. recruitment bias in cluster-randomised studies). Each study was subsequently allocated a score of 'high risk', 'low risk' or 'unclear risk' within each domain. In cases of disagreement, the authors met to aim to establish consensus. Where the two authors could not reach consensus regarding categorisation for risk of bias for a specific study, we planned to refer judgement to a third review author.

Measures of treatment effect

The results of each trial were plotted as means and standard deviations (SD) for continuous outcomes. When the results could not be plotted, we described them in the 'Characteristics of included studies' table and the 'Effects of Interventions' section.

Unit of analysis issues

Interventions addressing departments or whole schools require randomisation at the group (rather than individual) level. For some outcomes, analysis took place at the school level and thus did not require special statistical analysis. Where studies reported data at the individual level, we assessed whether the study accounted for the effect of clustering using appropriate statistical techniques such as multi-level modelling. Where this was not done, we attempted to correct for this clustering following methods set out in section

16.3.4 of the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins *et al.*, 2011).

Dealing with missing data

If statistics such as SDs or correlation coefficients were missing and could not be obtained from the authors, we planned to calculate them from other available statistics such as p values, according to the methods described in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins *et al.*, 2011). In the event of missing or unclear data within the included studies (e.g. group means, standard deviations, details of dropouts), we planned to contact the authors for further information. If authors were not traceable or sought information was unavailable from the authors within two months of contacting them, it was planned to record that the study information is missing on the data extraction form, and this was captured in our risk of bias assessment of the study.

Assessment of heterogeneity

Considering the diversity of the range of organisational interventions to improve employee wellbeing, content and methodological diversity arising from different types of interventions, outcome measurements, and study designs were expected. Prior to data synthesis, it was planned to group together studies judged to be sufficiently homogenous regarding intervention content, research design, time to outcome measurement, and outcome measures. All teaching tasks were considered as similar. Interventions were considered as similar if they fall

into one of the pre-defined categories of interventions (as elaborated in the section: Criteria for considering studies for this review). Stress and burnout measures were considered as similar. Follow-up times of less than three months, three months to one year and more than one year were regarded as different.

For each study grouping that has a sufficient number of studies to undertake meta-analysis, it was planned to produce forest plots, calculate chi-squared test and the I^2 statistic to measure heterogeneity. The results of these statistical tests were planned to be evaluated in accordance with (Higgins *et al.*, 2011). In the case of statistical heterogeneity in any of the study groupings, it would be investigated further using subgroup and sensitivity analyses. If an indication of substantial heterogeneity was determined (e.g. I^2 value of greater than 50%), pooled estimates would not be produced, and a narrative summary of findings would be presented.

Assessment of reporting biases

Reporting bias was assessed according to (Sterne *et al.*, 2008). The effect of reporting bias was reduced by including studies and not publications in order to avoid the introduction of duplicated data (i.e. two articles could represent duplicate publications of the same study). Following the (Cho *et al.*, 2000) statement on redundant publications, it was attempted to detect duplicate studies and, if more articles report on the same study, to extract data only once. Location bias was prevented by searching across multiple databases. Language bias was prevented by not excluding any article based on language. In the case

that sufficient studies are found, it was planned to draw funnel plots to assess the presence of possible publication bias (trial effect versus standard error). Whilst funnel plot asymmetry may indicate publication bias, this can be misleading with a small number of studies (Lau *et al.*, 2006). Possible explanations for any asymmetry in the review in light of the number of included studies was planned to be discussed. Outcome reporting bias was assessed during the data extraction process by determining if all outcomes that have been stated to have been collected were reported in analyses.

Data synthesis

It was planned to undertake meta-analysis and produce a pooled estimate using Review Manager 5.1 software (RevMan, 2014), as well as a narrative account for each study group, in the case of identifying groups of clinically homogenous studies (those with similar intervention content, research design, time to outcome measurement, and same outcome measures). Weighted mean differences with 95% confidence intervals would be used for combining continuous outcomes, and standardised mean differences where different scales measuring the same outcome were identified. When studies were found to be statistically heterogeneous, using a random-effects model was planned. When using the random-effects model, it was planned to conduct a sensitivity check by using the fixed-effect model to reveal differences in results.

Data from short term and long term effects were planned to be analysed separately for potential included studies that have conducted a series of follow-up outcome measurements.

It was planned not to produce a pooled estimate and present a narrative summary of findings, in the case that substantial heterogeneity is present for any group of studies. The narrative report would classify and present studies according to: intervention content, research design, time to outcome measurement, outcome measure, and intervention effect.

The GRADE approach was planned to be used as described in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins *et al.*, 2011) and as implemented in the GRADEPro 3.2 software (Brozek *et al.*, 2008) to present the quality of evidence and 'Summary of findings' tables.

The downgrading of the quality of a body of evidence for a specific outcome will be based on five factors.

1. Limitations of study.
2. Indirectness of evidence.
3. Inconsistency of results.
4. Imprecision of results.
5. Publication bias.

The GRADE approach specifies four levels of quality (high, moderate, low and very low).

Subgroup analysis and investigation of heterogeneity

If sufficient studies were found, the moderating effects of the following factors on the studied interventions would be investigated, using subgroup analysis with formal tests for interaction:

1. Primary schools versus secondary schools
2. Teacher status (seniority)
3. Individual characteristics and/or state of health of teachers
4. Organisational characteristics

Sensitivity analysis

Sensitivity analysis was planned to be undertaken to explore whether the findings of the review are robust in light of the decisions made during the review process.

In order to check for the influence of small study effects, a sensitivity analysis was planned to compare the point estimates from fixed-effect meta-analysis to those from random-effects meta-analysis. The impact of risk of bias in the included studies was also planned to be assessed via restricting analyses to studies deemed to be at low risk of selection bias, performance bias, and attrition bias.

2.5 Results

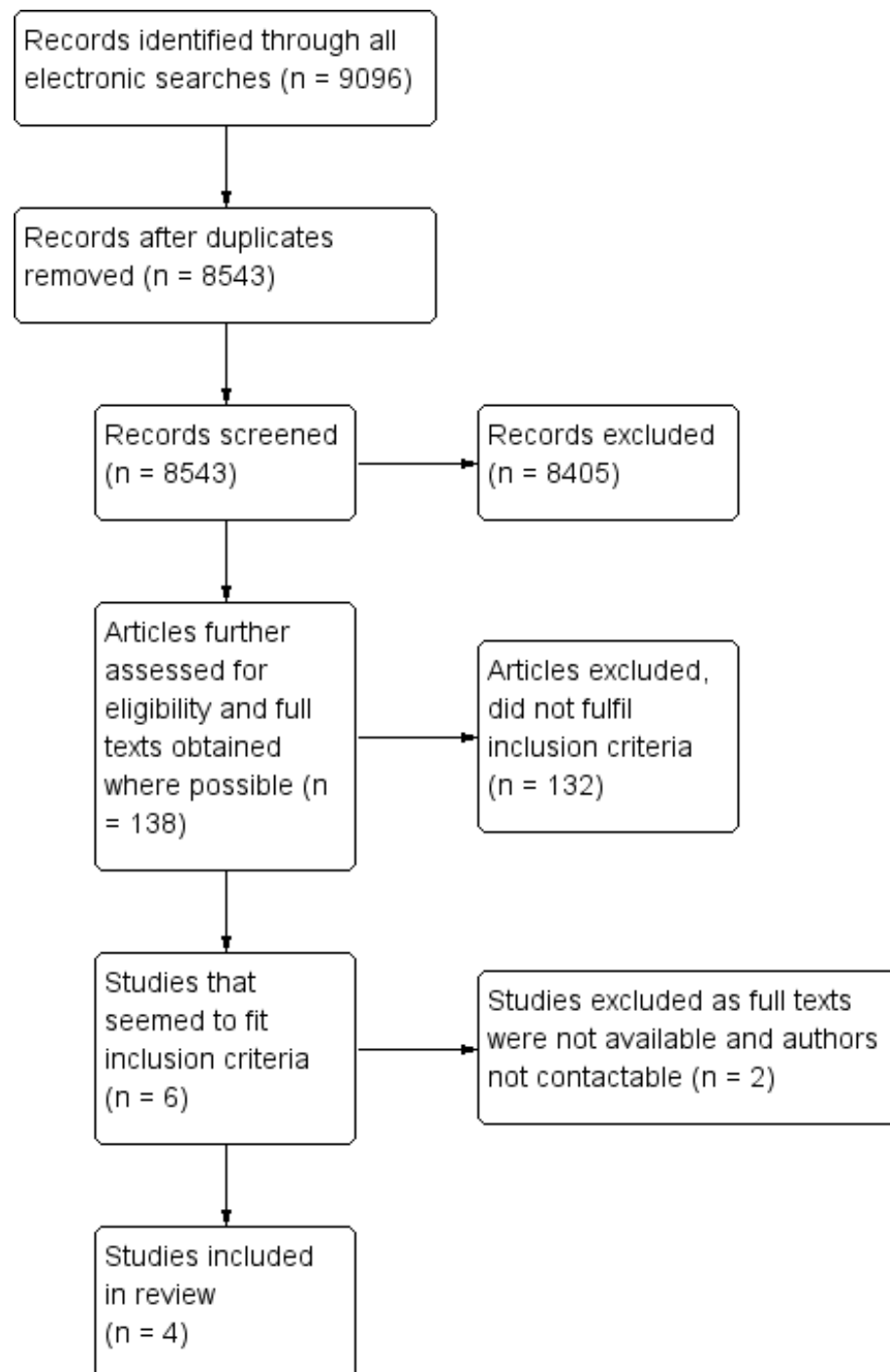
Description of studies

Four studies were included in this review. Two were conducted in the USA, one in Australia, and one in China. Three studies were conducted in primary schools and one was conducted in middle schools. Interventions included task-based organisational change, child-centred interventions with organisation change components, and performance related cash transfer with job promotion and mentoring support components. Three of the studies were cluster randomized trials, and one study had a stepped wedge design. The follow-up periods of included studies ranged from 6 months to 36 months.

Results of the search

The search strategy identified titles and abstracts for 8543 publications after de-duplication. Upon first assessment by the two author teams, 138 studies were identified for further assessment. Four studies were subsequently found to meet the inclusion criteria following further examination and obtaining full texts where necessary. Of the four included studies, two studies were published in journals, one study was a conference presentation, and one study was a non peer-reviewed report by a policy research organisation. The study selection process is outlined in Figure 2.1.

Figure 2.1 PRISMA Study flow diagram



Included studies

Study designs

Three studies (Wu *et al.*, 2006; Tyson *et al.*, 2009; Brown *et al.*, 2010) were cluster randomized controlled trials. One study (Glazerman and Seifullah, 2012) was a stepped wedge design with two types of control groups, including random assignment of schools to year of implementation, and propensity score matching of intervention schools to non-intervention schools in the district. Wu (2006) and Brown (2010) had 'no intervention' control groups. Tyson (2009) had a 'usual care' control group, who received a local health education curriculum.

Place where studies conducted

Two studies were carried out in the USA (Brown 2010; Glazerman 2012), in New York and Chicago respectively. One study was carried out in Perth, Australia (Tyson 2009), and one study in Sichuan Province, China (Wu 2006).

Type of schools

Three studies (Tyson 2009; Brown 2010; Glazerman 2012) were conducted in primary schools. One study (Wu 2006) was conducted in middle schools.

Participants

Wu 2006 included 961 teachers in eight schools. The intervention group consisted of 459 teachers in four schools, and the control group consisted of 502 teachers in four schools. After adjusting for clustering using the intra-cluster

correlation coefficient (0.003) provided by Brown 2010, the numbers of participants we used in the analysis were 338 and 370 respectively.

Tyson 2009 included 405 teachers in 63 schools. Authors reported only data for teachers who completed the outcome measures at all three time points ($n = 96$). Further, considering that this study was a three-arm trial, we deemed only one of the intervention groups to contain an organisational intervention relevant to this review. Thus the total number of participants analysed for this review was 59 teachers in 43 schools. The intervention group consisted of 26 teachers in 22 schools, and the control group consisted of 33 teachers in 21 schools. In the analysis the authors properly adjusted for the clustering effect.

Brown 2010 included 77 teachers in 18 schools. The intervention group consisted of 43 teachers in nine schools, and the control group consisted of 34 teachers in nine schools. In the analysis the authors properly adjusted for the clustering effect.

Glazerman 2012 included 34 schools randomly assigned to four intervention years. Eight schools in cohort 2 served as the control group for eight schools in cohort 1 (intervention group). The control group was used for the outcome of teacher attitudes. Three hundred matched comparison schools were used as controls for the outcome of teacher retention. For teacher attitudes, the authors report a sample size of 270 to 278 teachers, without any indication of the number of teachers in the intervention and control groups. For teacher retention, the authors report a sample size of 1102 teachers for one-year rates, 881 teachers for two-year rates, and 781 teachers for three-year rates. There is no indication of the specific number of teachers in the intervention and matched

comparison schools. In the analysis the authors properly adjusted for the clustering effect.

Follow-up periods

The follow-up periods of included studies ranged from 6 months to 36 months. Wu (2006) had a 12-months follow-up. Tyson (2009) had two follow-ups, at 12 months and at 24 months. Brown (2010) was a 3-year study, although the publications only provide analysis for the first year of the study (6 months follow up). Glazerman (2012) was a 4-year study, with assignment of a new cohort of schools in each year of the study. For this reason, Cohort 2 served as control to Cohort 1 and Cohort 4 served as control to Cohort 3 for only one year, before implementation of the intervention was commenced in those schools. The outcome measure for which the control groups were used (teacher attitudes) therefore had a 12-months follow-up. The outcomes measure that utilised the matched comparison groups (teacher retention) had three follow-ups at 12 months, 24 months, and 36 months.

Interventions and outcomes

From the four included studies, one study (Wu 2006) contained a task-based organisational change intervention, with teacher stress and wellbeing measured as the primary outcome. One study (Glazerman 2012) had a multi-component intervention containing performance bonus, job promotion opportunities and mentoring support, measuring teacher attitudes and teacher retention outcomes. Two studies had teacher training for child-centred interventions along with

school-wide coaching support (Tyson 2009; Brown 2010), with teacher affective wellbeing measures as secondary outcomes.

Changing task characteristics

Wu 2006 contained an intervention involving both individual (stress management training) and organisational approaches (e.g. redesigning the task, establishing flexible work schedules and redesigning the work environment). There is no further information on the content of the organisational component of the intervention. However, the authors have alluded to feeding the baseline data back to the participants in order to develop the intervention. Outcomes measures include the Occupational Health Inventory and the Work Ability Index.

Changing organisational characteristics

Tyson (2009) contained an intervention titled the Aussie Optimism program, which is a universal, mental health promotion program, delivered by teachers and aimed at preventing anxiety and depression in children and adolescents. The aim of the study was to assess whether program training and implementation has a secondary positive impact on teachers' job-related affective wellbeing. The study involved two intervention arms: teacher training, and teacher training along with coaching for the duration of the study. Outcome measures include the Job-related Anxiety-Contentment Scale and the Job-related Depression-Enthusiasm Scale.

Brown (2010) contained an intervention titled the 4Rs Programme, which is a universal, school-based intervention in literacy development, social-emotional

learning, and conflict resolution delivered by teachers. The basis for the study was that positive changes in teacher affective and pedagogical processes and practices underlies positive change in children. Teachers in the intervention group receive training and on-going coaching in the delivery of the 4Rs curriculum to school children. Outcome measures include the Maslach Burnout Inventory and the Teacher Perceived Emotional Ability scale.

Multi-component intervention

Glazerman (2012) contained an intervention titled the Chicago Teacher Advancement Program, which is a school-wide intervention whereby teachers can earn extra pay and take on increased responsibilities through promotion, and become eligible for annual performance bonuses based on a combination of their contribution to student achievement and observed performance in the classroom. The intervention also involved classroom observations and weekly mentoring in order to track and improve the performance of teachers. The amount available in the bonus pool was an average of \$2000 per teacher per year. Payments were expected to average \$500 per teacher based on classroom observations and up to \$1,500 per teacher based on school-wide student achievement growth. Job promotion opportunities involved the positions of Chicago TAP Lead and Mentor Teachers, who received an additional \$15,000 and \$7,000, respectively, as compensation for assuming more responsibility. Outcome measure include teacher retention rates and an un-validated teacher attitudes questionnaire to assess school climate.

Excluded studies

Studies failing to meet inclusion criteria were rejected in the initial stage of study selection, for reasons such as study design, randomization at the individual level, no control group, no measure of stress or wellbeing, and individually directed intervention without an organisational component. Other studies had to be assessed with more scrutiny, and were excluded for the following reasons:

- Worksite health promotion programmes that are effectively individually-directed interventions, such as Allegrante and Michela (1990), (Blair *et al.*, 1986), Cullen (1999).
- Educational interventions that focus on strengthening individuals, such as classroom management training e.g. (Bishop, 1983), (Sharp, 1982), and (Sharp, 1985); discipline management training e.g. (Snyder, 1986).
- Support groups in isolation, as opposed to a new organisational function e.g. (Cecil and Forman, 1990b)
- Cash transfer interventions without an organisation change component and not addressing outcomes of interest e.g. Goodman (2010)
- No measure of school-level effects e.g. Larsson (1990)
- Full text unavailable- Coad (1976) and Charters (1978) seemed to have potential for inclusion, but they were conference proceedings and we had no success in making contact with the authors.

Risk of bias in included studies

Allocation (selection bias)

All included studies were stated to be randomised. Only one study elaborated on their sequence generation (Brown 2010), utilising a MATLAB uniform random numbers generator. Glazerman (2012) alluded to their sequence generation, by reporting that a lottery was conducted in May 2007 for Cohorts 1 & 2, and March 2009 for Cohorts 3 & 4. Glazerman (2012) was also the only study that alluded to allocation concealment, reporting that after the lottery assigning schools into cohorts were conducted, the research team sent the school assignments to the local education authority, who subsequently informed the school principals of their assignment.

Two studies (Brown 2010; Glazerman 2012) used a stratified random sampling approach. Glazerman (2012) imposed constraints on the randomization based on observable school characteristics to improve homogeneity of the two groups. Brown (2010) pairwise matched schools based on a range of demographic and school characteristics, prior to randomizing. In this regard, Brown (2010) stated that: “because the final set of 18 schools was not randomly selected from the initially recommended pool of 41 schools, nor drawn randomly from the entire population of elementary schools in this city, the external validity or generalizability of the results from the present study is compromised’.

Blinding (performance bias and detection bias)

The study designs and the nature of interventions evaluated in these studies make blinding of participants and personnel impossible. None of the studies mention any attempt to blind outcome assessment, which was conducted by researchers in all included studies.

Incomplete outcome data (attrition bias)

All authors were contacted to obtain missing data. (Wu *et al.*, 2006) were not traceable, and sought information was unavailable from (Tyson *et al.*, 2009) and Glazerman (2012) within 2 months of contacting them. We judged the attrition bias high for two studies (Wu 2006; Tyson 2009). Wu (2006) did not provide any information on attrition in the data, and the sample size for the pre- and post-intervention data appear to be the same. When we conducted mean difference calculations of the data in Revman, we found a significant effect in one of the subscales (Role Insufficiency) for which the study reports non-significance. This can be due to us assuming sample sizes for pre- and post-intervention data to be the same, while the authors may have calculated the mean difference with the actual post-intervention sample size (after attrition). It can thus be assumed from the evidence that intention-to-treat analysis was not conducted. Tyson (2009) only reported results for teachers who completed the outcome measures in both post-intervention time points, which equates to 96 teachers from the total of 405 teachers in the study sample.

Selective reporting (reporting bias)

We judged the reporting bias high for two studies (Tyson 2009; Glazerman 2012). Tyson (2009) did not report an intention-to-treat analysis that they conducted for the total sample of 405 teachers, as it showed no significant results. Glazerman (2012) only reported 12-months, 24-months, and 36-months retention rates for Cohort 1. They did not report retention rates for the other cohorts independently, and only reported them in combination with other cohorts, limiting their usefulness.

Other potential sources of bias

The knowledge of whether each school is an intervention or control could affect the types of participants who respond to surveys, and this can be overcome by conducting baseline measures prior to randomization of clusters. None of the studies reported any attempts to address this recruitment bias. All studies except Wu (2006) accounted for clustering in their analysis. Glazerman (2012) used an un-validated survey to measure teacher attitudes on school climate. Further, there is no clear indication of the number of teachers in each cohort and in total. In the study by Tyson (2009), mean differences did not show any significant effects, but the authors utilised hierarchical regression analysis to claim significant effects on job-related anxiety at 24-months assessment and job-related depression at both 12- and 24-months assessment compared to the control group. Brown (2010) did not provide data on the total teacher population (sampling frame) and non-responders, and we have no indication of whether the study was sufficiently powered.

Effects of interventions

The studies in this review vary greatly with respect to their objectives, types of interventions, and outcome measures. Meta-analysis was not performed, as the interventions were too heterogeneous to be combined meaningfully. Utilising the three categories of organisational-level interventions as changing organisational, role, or task characteristics: Wu (2006) contained a task-based organisational change intervention, categorised as changing task characteristics; Glazerman (2012) had a multi-component intervention containing performance bonus, job promotion opportunities and mentoring support, categorised as changing organisational and role characteristics; Tyson (2009) and Brown (2010) both evaluated teacher training for child-centred interventions with a school-wide coaching support component, categorised as changing organisational characteristics. The latter two studies had clear differences in study design and quality, intervention content, study objectives, and outcome measures. Tyson (2009) aimed to assess whether program training and implementation had a secondary positive impact on teachers' job-related affective wellbeing, while the basis for the study by Brown (2010) was that positive changes in teacher affective and pedagogical processes and practices underlies positive change in children. The former measured job-related anxiety and depression, while the latter measured burnout and emotional ability.

Changing task characteristics versus no intervention

Wu (2006) was a cluster-randomised controlled trial of 961 teachers in eight middle schools. The authors did not account for clustering. We employed the intra-cluster correlation coefficient for the burnout scale (0.003) provided by

Brown 2010 in a personal communication. After adjusting for clustering, the total number of participants used in the analysis was 708 teachers in eight schools. Intervention involved both individual (stress management training) and organisational approaches (e.g. redesigning the task, establishing flexible work schedules and redesigning the work environment). Compared to the control group at 12 months, there was a modest reduction in most of the subscales in the Occupational Stress Inventory (See Data and analyses table), and a modest increase in the Work Ability Index (MD 2.27; 95% CI 1.64 to 2.90). The six subscales of the Occupational Stress Inventory (from 14) reported in the corresponding Summary of findings for the main comparison was selected as derived from the theories of change. These include Role Overload (MD -0.94; 95% CI -1.61 to -0.27), Role Ambiguity (MD -0.23; 95% CI -0.84 to 0.38) Responsibility (MD -1.19; 95% CI -1.91 to -0.47), Vocational Strain (MD -0.78; 95% CI -1.42 to -0.14), Interpersonal Strain (MD -0.78; 95% CI -1.33 to -0.23), and Social Support (MD -0.50; 95% CI -1.49 to 0.49). See Appendices 2.3-2.4.

Changing organisational characteristics versus no intervention

Tyson 2009 was a cluster-randomised controlled trial involving 59 teachers in 43 primary schools in the analysis. The intervention was teacher training in the Aussie Optimism programme along with school-wide coaching support. The Aussie Optimism programme is a universal, mental-health promotion programme, delivered by teachers and aimed at preventing anxiety and depression in children and adolescents. The aim of the study was to assess whether the programme had a secondary positive impact on teachers' job-related

affective wellbeing. Compared to the control group, there was no significant effect on the Job-related Anxiety-Contentment scale or the Job-related Depression-Enthusiasm scale after 12 and 24 months. These include Job-related Anxiety at 12 months (MD -0.25; 95% CI -0.72 to 0.22), Job-related Anxiety at 24 months (MD -0.25; 95% CI -0.61 to 0.11), Job-related Depression at 12 months (MD -0.38; 95% CI -0.76 to 0), and Job-related Depression at 24 months (MD -0.26; 95% CI -0.57 to 0.05). See Appendices 2.5-2.8.

Brown 2010 was a cluster-randomised controlled trial involving 77 teachers in 18 primary schools. The intervention was the 4Rs Program, a universal, school-based intervention in literacy development, social-emotional learning, and conflict resolution. Teachers in the intervention group received training and school-wide coaching support for the delivery of the 4Rs curriculum to school children. Compared to the control group at six months, there was no significant effect on the Maslach Burnout Inventory or the Teacher Perceived Emotional Ability subscales. These include Maslach Burnout Inventory emotional exhaustion (MD -0.05; 95% CI -0.52 to 0.42), Maslach Burnout Inventory depersonalisation (MD -0.17; 95% CI -0.72 to 0.39), Maslach Burnout Inventory personal accomplishment (MD 0.06; 95% CI -0.23 to 0.35), Emotional Ability perceiving emotions (MD 0.13; 95% CI -0.13 to 0.38), Emotional Ability understanding emotions (MD -0.07; 95% CI -0.27 to 0.13), and Emotional Ability regulating emotions (MD 0.11; 95% CI -0.11 to 0.33). See Appendices 2.9-2.10.

Multi-component intervention versus no intervention (matched comparison)

Glazerman 2012 was a stepped-wedge design involving 34 primary schools with two types of control groups, including random assignment of schools to year of implementation, and propensity-score matching of intervention schools to non-intervention schools in the district. The intervention was the Chicago Teacher Advancement Program (TAP), which is a school-wide intervention whereby teachers can earn extra pay and take on increased responsibilities through promotion, and become eligible for annual performance bonuses based on a combination of their contribution to student achievement and observed performance in the classroom. Compared to a matched-comparison group, the study found higher teacher retention rates at 12-month (MD 7.90; 95% CI 2.00 to 13.80), 24-month (MD 18.30; 95% CI 8.75 to 27.85), and 36-month (MD 11.50; 95% CI 3.25 to 19.75) follow-ups. The mean differences are percentages, and so demonstrate moderate effect sizes, albeit with wide confidence intervals. What is more, these findings are based on only a small subset of all data as the authors report data only for the first cohort (eight schools). Results of an unvalidated teacher attitudes survey also demonstrate that Chicago TAP had no effect on school climate in the intervention schools, compared to control schools and to matched comparison schools at 12 months. See Appendix 2.11.

Grading of the evidence

The GRADEPro 3.2 software (Brozek *et al.*, 2008) was used to present the quality of evidence. The five factors in the GRADE Approach (as described under Data synthesis) for assessing the quality of evidence for each outcome were employed. This included utilisation of assessments in the Risk of Bias tables for the 'Limitations of study' factor. 'Indirectness of evidence' was present in all comparisons, as all intervention packages in this review included an individual-level intervention, confounding the effect of the organisational-level component. Findings for each outcome was based on only one study, and due to the paucity of studies in this review, 'Inconsistency of results' and 'Publication bias' could not be adequately examined. 'Imprecision of results' was present in the 'Changing organisational characteristics' and the "Multi-component intervention" comparisons, due to under-powered studies and wide confidence intervals.

2.6 Discussion

Summary of main results

Based on one study, changing task characteristics resulted in modest reductions in stress levels and improvements in work ability when compared to no intervention. Based on two studies, changing organisational characteristics resulted in no significant effects on burnout, emotional ability, job-related anxiety and job-related depression when compared to no intervention. Based on one study, multi-component intervention resulted in a moderate increase in retention rates at 12 months, 24 months, and 36 months when compared to a matched-comparison group. Overall the results are generally positive but small to moderate in effect size and yield low-quality evidence mainly due to the included studies being underpowered.

Overall completeness and applicability of evidence

Four studies were included in this review, which aimed to assess the state of evidence for organisational interventions to improve wellbeing and reduce work-related stress in teachers. As expected, there are generally far more studies on individually-directed interventions, compared to those that aim to change some aspect of the work environment to improve staff wellbeing. Two of the four included studies (Tyson 2009; Brown 2010) were in fact teacher training for child-centred interventions. They were included due to having an organisation change component, rather than being a predominantly organisational intervention.

There are some common patterns in the four studies. For example, three included studies had a mentoring or coaching component. Moreover, all had an individually-directed intervention component. The latter affected the directness of the body of evidence by confounding outcome effects due to the organisational component of the intervention package. We therefore did not find any studies that exclusively tested an organisational intervention. The included studies were from the USA, China, and Australia, and so no studies were identified in Europe, Africa, and Latin America, further limiting applicability of the evidence. The organisational intervention content was not elaborated in any of the studies, and so it would be difficult to replicate the interventions in practice. Furthermore, none of the studies included an economic evaluation of the intervention or the trial. Organisational interventions to improve staff wellbeing can involve significant costs, and cost-effectiveness of interventions would be crucial in decisions to scale up the evaluations by researchers or adopt the interventions by policy-makers.

Quality of the evidence

Most of the trials in this review were affected by methodological problems. Wu (2006) did not account for clustering in the analysis, which was corrected by employing the intra-cluster correlation coefficient for the burnout scale (0.003) provided by Brown 2010 following our request for further information. The study does not refer to attrition in the data and there is no mention of intention-to-treat (ITT) analysis. Further, the intervention in this study is not replicable, mainly because its content is unclear. If the analysis for this study had been done

correctly and if the organisational component of the intervention were more explicit, it would still be difficult to draw conclusions from the results for the effectiveness of organisational interventions, as the intervention also involved an individually-directed component (stress management training).

Tyson 2009 only reported data for teachers ($n = 96$) who completed the outcome measures at both post-intervention time points, without an ITT analysis. An ITT analysis for 405 teachers who participated in the study showed no significant results and the authors did not report it. The study reports that non-completers of the surveys had significantly higher levels of pre-test job-related anxiety and depression than the completers at the pre-test, and at 12-month and 24-month assessments. The authors suggest that this may explain why ITT analyses were non-significant. An evaluation that effectively involves only 59 teachers in 43 schools would lead to spurious results, predominantly because the study is heavily underpowered. Another methodological error in this study is the utilisation of the same control group for both intervention arms. Brown 2010 was a well-conducted trial of a higher methodological quality compared to the other included studies. However, the follow-up period was only six months, and the study was not sufficiently powered, with a sample size of 77 teachers in 18 schools. Moreover, there was no mention of the total teacher population (sampling frame) or of non-responders.

Glazerman 2012 was a well-conducted trial with clear justifications for study design choices. For the teacher retention outcome, the authors adopted a matched-comparison approach as opposed to utilising the control group. They gathered administrative data on over 300 Chicago schools that were not

participating in the Chicago Teacher Advancement Program (TAP), and then used propensity-score matching to identify the schools that were closely matched to each group of Chicago TAP schools. The rationale for this decision was that for outcomes that can be affected by knowledge of future implementation, such as teacher retention, the randomised control group is not a pure standard of comparison. The control group is also affected by Chicago TAP, although less directly than the treatment group, as the school's staff know that they will be implementing Chicago TAP in the future, and that knowledge could change their behaviour. On the other hand, the matched-comparison group can be much larger than the randomised control group, and its members continue to be non-TAP schools during the course of the study, allowing more years for a comparison between Chicago TAP and non-TAP schools. The study reports and elaborates a rigorous procedure for the propensity-score matching. Shortcomings of the study include reporting bias, as the authors report results only for the first cohort for all three follow-up time points. The authors did not report retention rates for the other three cohorts independently, and only reported them in combination with other cohorts, thus limiting their usefulness. Further, the study does not provide a clear indication of the number of teachers in each cohort and in total. In order to assess school climate, the study utilised an unvalidated survey, with no reporting of its psychometric properties.

The included studies in this review were of mixed quality in terms of reporting process and implementation data, and elaborating on the design, delivery, and participant uptake of the intervention. Wu 2006 did not report any process and implementation data. Tyson 2009 referred to intervention developers, and

provided some description of the delivery and participant uptake of the intervention but apparently did not conduct a formal process evaluation. Brown 2010 elaborated on the intervention design, reported having collected implementation data, and provided some description of the participant uptake of the intervention. Glazerman 2012 elaborated on a process evaluation in their study, including quantitative surveys, qualitative interviews, and administrative data. The authors provided information on delivery and uptake of the intervention, including teacher pay-outs, intervention fidelity, and teacher attitudes. They also provide information on contextual factors affecting these variables. Components of the process evaluation were conducted by external bodies, including teacher surveys and focus groups by the local education authority, and intervention fidelity ratings by a national regulatory body.

Potential biases in the review process

Every effort was made to conduct this review to the highest standards recommended in the *Cochrane Handbook of Systematic Reviews of Interventions* (Higgins 2011). It seems that this is an emergent and inter-disciplinary field, and although we searched an extensive number of sources, we may have not had an exhaustive strategy for non-database searching. Two older studies were identified as potential for inclusion, but it was not possible to obtain full-text articles and this may have influenced our conclusions. Further, due to the paucity of included studies, we were unable to assess for publication bias.

Another potential source of bias may be our strict inclusion criteria with respect to study design. Researchers may find it challenging to incorporate organisational change interventions into an experimental design, and we might have excluded potentially useful studies with lower quality study designs.

Agreements and disagreements with other studies or reviews

This is the first systematic review looking at the impact of organisational interventions on teacher wellbeing. Two related studies that contained non-systematic reviews of interventions for teacher wellbeing (Dunlop 2004; Bricheno 2009) suggest a major focus in research and practice on individually-directed interventions, and a paucity of evidence for organisational interventions. The current review confirms this, and provides a basis for further intervention development and testing in this area. Further, none of the included studies appeared in the previous reviews, since all but one (Wu 2006) were published after the aforementioned reviews.

2.7 Conclusions

Implications for practice

Because of the paucity of organisational intervention studies for teacher wellbeing, low-quality evidence in this review, and the heterogeneous nature of the interventions in the four included studies, implications for practice are currently very limited. Such organisational interventions could usefully be conducted in organisations in the context of a research study. They can safely be put into practice as a trial for the purposes of intervention development and efficacy evaluations, since all but one of the studies reported benefits. Further, there is no evidence or rational arguments for harm arising from these interventions.

Implications for research

This review demonstrates that low-quality evidence is available for the evaluation of organisational interventions for teacher wellbeing. The teaching profession is one of the occupations with high levels of prevalence of work related stress, working in complex organisational environments with multiple sources of stressors. Effective school-level action to reduce teacher stress may positively impact on the health and well-being of teachers, and potentially the health, well-being and educational attainment of the children they teach. There may also be a reduction in the financial burden of teacher turnover and sickness absence in schools. This is therefore a strong imperative for conducting well-designed research in the development and testing of organisational interventions for teacher wellbeing, following the MRC Complex Interventions

Framework. The present review demonstrates that this is ideally achieved via a cluster randomized controlled trial design. There is also scope for a qualitative review to provide further grounds for intervention development and piloting in this area. Intervention studies need to have a concrete conceptual understanding of organisational interventions and their theory of change. They need to provide elaborate detail on the intervention content and on process evaluation. Collection of contextual data in no intervention control schools will help the understanding of why and how the intervention has worked. Socioeconomic or performance indicators need to be used to justify similarity between the initial pool of schools prior to randomization, so that they can be meaningfully compared. Further, sample size calculations need to be conducted to ensure sufficiently powered trials, taking into account the effect of clustering. Drawing on data from the included studies and following Roberts and Roberts (2005), a minimum of 18 schools (9 per trial arm) would be required for a pool of schools with an average of 50 teacher participants per school. This calculation was conducted with a power of 0.8, an alpha of 0.05, and using the `clsampsi.ado` package in Stata 11. The Outcome should preferably be a combination of objective (e.g. teacher retention) and subjective (e.g. teacher burnout; organisational climate) measures. It is also important for the outcome to be measured at a sufficient medium or long-term follow-up, such as 3 years after the intervention has been conducted. Structural interventions will take time to be fully embedded, and for their impact to be realised.

Chapter 3- Organisational intervention development

Overview

The first section of the chapter starts with conceptualising organisational interventions to address work-related stress and wellbeing. It situates the notion of 'organisational interventions' within social ecology theory and the influence of the environment on the individual. The overarching work stress models which contribute to the theory of change of such interventions are discussed. The section proceeds to focus on the form and process of the intervention, and situates such interventions within the planned organisational change literature. It then provides a taxonomy of the types of organisational interventions, and the potential mechanisms of action under each type. The second section of the chapter focuses on intervention development. In line with the MRC Complex Interventions Framework, the chapter is guided by the gap identified in the systematic review to conduct primary studies for intervention development and piloting. Included studies were found to have limitations for contribution to the intervention development endeavour due to problems of efficacy, quality, and reporting. However, a number of non-experimental studies from the systematic search were identified which helped direct the intervention development focus. The common theme in these studies was the participatory nature of their intervention strategies, which can be of potential for increasing the decision latitude and recognition of teachers and thus in line with the theory of change. This focus is corroborated by theoretical models and guidelines in the health promotion literature. Within the family of participatory organisational change

and action research methods, an intervention was identified which appears to have relatively more rigour with respect to its methodology and theoretical grounding. Subsequently, the identified intervention (Change Laboratory), its theory of change, and strengths and limitations are elaborated.

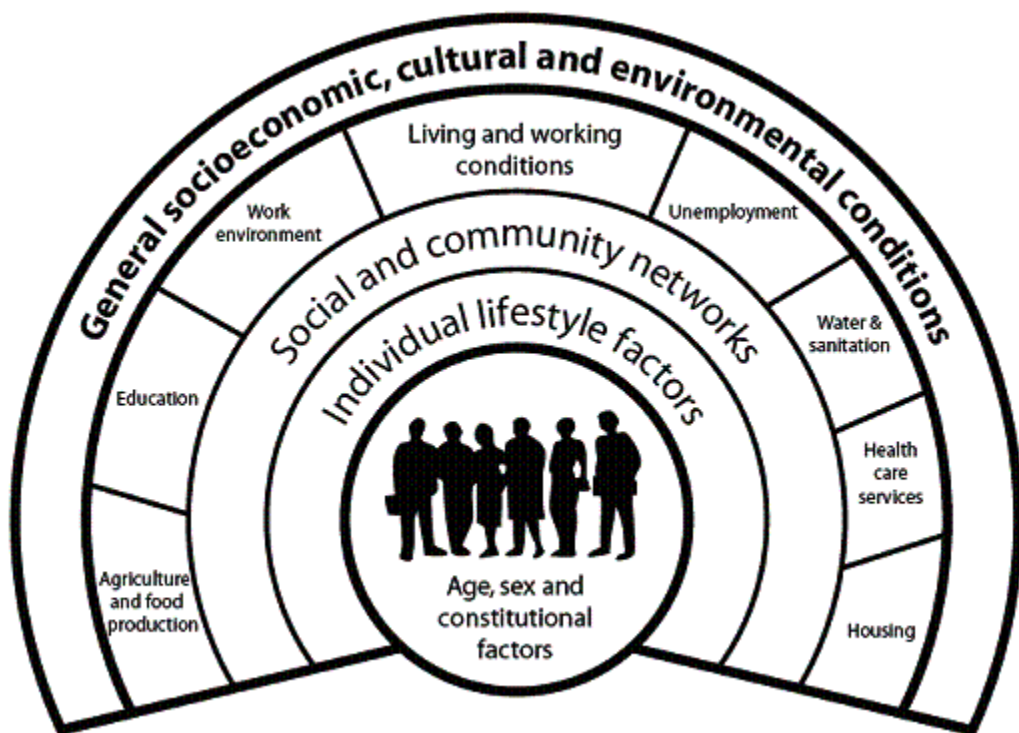
This chapter addresses the following Research Question:

How can the evidence-base be utilised to establish sustainable solutions in schools for improving wellbeing and reducing the stressors at work for teachers?

3.1- Influence of the environment on the individual

It is well established that the health and wellbeing of individuals are not only influenced by individual factors such as genetics and lifestyle, but also by a wide range of economic, social, and environmental factors. The wider determinants of health are represented in the 'layers of influence' model by Dahlgren and Whitehead (1991), who adopt an ecological systems perspective, and demonstrate the different nested layers of influence on health and wellbeing (Figure 3.1).

Figure 3.1- The Main Determinants of Health (Dahlgren and Whitehead, 1991)



Ecological systems theory (Bronfenbrenner, 1979; Bronfenbrenner, 1989) describes the interdependency of the individual and the context in which they are situated, and the influence of different nested environmental systems on the individual. The theory recognises a mutual influence between individuals and the environments in which they are situated, as participants in settings can modify the health effects of their surroundings through their individual and collective actions. Ecological analyses characterise environmental settings as having multiple physical, social, and cultural dimensions that can influence a variety of health outcomes, including physical health status, developmental maturation, emotional wellbeing, and social cohesion (Stokols, 1996). Building on Bronfenbrenner's ecological theory, McLeroy *et al.* (1988) propose an ecological model for health promotion that proposes interventions at each level of interaction of the individual and their environment, including interpersonal, organisational, community, and public policy levels. These ecological levels are analogous to Bronfenbrenner's conceptualisation of micro, meso, and macro-systems, and are useful for conceiving the significance of different levels of intervention for improving the health and wellbeing of individuals.

Utilising a social ecological perspective, McLeroy *et al.* (1988) argue that organisational structures and processes can have substantial influence on the health and health-related behaviours of individuals. They assert that many people spend one-third to one-half of their lives in organisational settings, beginning with formal day care settings and extending through primary and secondary schools, universities, and work settings. In the context of the latter, a substantial body of research have demonstrated that adverse working

conditions such as physical and chemical hazards, long working hours, shift-work, and a broad range of psychological and social stressors at work contribute to the burden of disease in the working population (Siegrist and Theorell, 2006). Tackling these risk factors have been, and continues to be, a major policy attention. The focus of the present study is on the psychological and social stressors in the organisation of work.

3.2 Description of Organisational interventions

Social interventions at the organisational level (organisational interventions) aim to bring about change to the structure and context of organisations, in order to influence the health, wellbeing or welfare of individuals. Organisational interventions may target schools to influence the health and wellbeing of children, hospitals to enhance the quality of care to patients, or social services and voluntary organisations to optimise support to service-users. Social interventions at the organisational level may also target any public or private sector organisation to influence the health and wellbeing of employees. In this context, organisational interventions alter the psychosocial work environment by changing some aspect of the organisation, such as structures, policies, processes, culture, climate, programmes, roles, or tasks. They aim to improve the health and wellbeing of individuals, as well as influencing organisational outcomes such as sickness absence and staff turnover.

Murphy (1988) categorises interventions to reduce organisational stress as primary (e.g. structural/organisational interventions), secondary (e.g. stress management), and tertiary (e.g. employee assistance programmes; workplace counselling). Lamontagne *et al.* (2007) refer to primary interventions as preventive and proactive, secondary interventions as ameliorative, and tertiary interventions as reactive. Primary interventions, which are the focus of this study, aim to adapt the environment to fit individual staff members, while secondary and tertiary interventions are directed at individual-level changes in behaviours, attitudes, and practices. At the individual level, stress management and counselling interventions emphasize training in coping strategies in an effort

to alter physiological, emotional, and/or behavioural responses to potential stressors. At the organisational level, emphasis is placed on changing those aspects of the teacher's work environment that are potential sources of stress (Cecil and Forman, 1990a).

Organisational interventions are, by nature, organisational change interventions. The two main approaches to organisational change are planned change and emergent change (Burnes, 1996; Bamford and Forrester, 2003). The planned change approach views organisational change as a process that moves from one fixed state to another through a series of pre-planned steps. Planned change is concerned with the planning and implementation of change interventions in organisations, with a prescribed sequence and plan of action, affecting the whole organisation or a department within an organisation. Within the planned change approaches, Organisational Development has emerged as the dominant approach to organisational change across the Western world, and increasingly globally (Boje *et al.*, 2011). Organisational Development aims to build the capacity of individuals and groups, empowering them to engage with organisational problems. It is based on the methodology of Action Research and the imperative to clearly diagnose the needs of the organisation before making an intervention (Grieves, 2010). The emergent change approach views change as more of a continuous process, whereby organisations seek to align and re-align themselves to an unpredictable, many-faceted and rapidly changing environment (Burnes, 1996). Within this approach, organisational change is viewed as less dependent on detailed plans and projections than on reaching an actual understanding of the complexity of the issues involved and identifying the range of possible

options (Dawson, 1994). Emergent change thus focuses more on continuous development and organisational learning, in contrast to providing structured and time-bound intervention strategies. Due to the nature of organisational interventions as designed and planned change projects with specific objectives such as enhancing employee wellbeing, models within the planned change approach appear to be most applicable to such interventions. However, some of the tenets of the emergent change approach might prove value-adding in the diagnostic stages of intervention design, as well as in the endeavour of sustaining effective interventions.

The scope of organisational interventions to improve wellbeing and reduce work-related stress in teachers can be described within the three categories of organisational-level interventions proposed by (Newman and Beehr, 1979), as changing:

1. Organisational characteristics/conditions (e.g. school-level policy and governance; communication; school climate, culture, or ethos),
2. Role characteristics/conditions (e.g. senior management practice and culture; teacher autonomy and empowerment; role conflicts), or
3. Task characteristics/conditions (e.g. workload; work environment).

Organisational interventions may be mediated by factors such as organisational structure, organisational culture, physical environment, legal and regulatory confines, job insecurity, role of power, control, and resistance to change from stakeholders, role of the change agent, and institutional legitimacy of the

intervention. Individual characteristics such as personality factors, general state of physical and psychological health, and pressures outside work may also mediate the outcome of organisational interventions. Due to the complex nature of such interventions, the aforementioned factors can act as moderators as well as mediators. Moderators explain variation in impact of interventions, while mediators are factors in the causal pathway of interventions. For example, the differential impact of an intervention can depend on the structure of one organisation relative to another. However, organisational interventions need to work through elements of the organisational structure, and depending on the intervention, redesign the structure if needed. Other examples include organisational interventions such as installing social support mechanisms or systems of collaborative decision-making. Their impact can be dependent on the culture of the organisation, but they also work through adapting to certain elements and transforming other elements of the culture and norms of the organisation.

3.3 How Organisational interventions might work

Organisational interventions to improve wellbeing and reduce work-related stress may work by a) changing the organisation to have better communication, social support, or a culture of recognition; b) modifying the role of the teacher or their line managers to give teachers more control over their work, increase their decision latitude over their work environment, and reduce role conflicts; or by c) re-designing objective workload levels, or the work environment within which the teacher is situated.

Organisational interventions will be situated within an organisational change model, which would explain the *process* of change within the intervention. The *focus* of the intervention will be on organisational wellbeing concepts, such as organisational stress models. The two main organisational stress models are the 'demand-control-support model' (Karasek and Theorell, 1990) and the 'effort-reward imbalance model' (Siegrist, 1996). The demand-control-support model is based on the notion that high psychological demands placed on the working person, coupled with a low degree of control available to the person to perform the required tasks, and low levels of social support at work will lead to sustained stress reactions. The effort-reward imbalance model is based on the notion of reciprocity, and suggests that stress responses arise from the imbalance between the effort that the working person puts into work, and the rewards (whether in terms of esteem or monetary) that they obtain from work.

There are various organisational stress models developed in the fields of occupational health psychology, social epidemiology, sociology, and organisational sciences (Cooper, 1998). However, it is the aforementioned models of organisational stress that have a rigorous evidence base and have been tested with a range of longitudinal study designs, such as the well known Whitehall Studies (Bosma *et al.*, 1998; Theorell, 1998; Siegrist *et al.*, 2010). Therefore these two organisational stress models will be the focus for the systematic review and the pilot trial in the present study.

The mechanism of each approach to organisational interventions can be explained by utilising the two overarching models of organisational stress. Changing organisational characteristics such as improving communication of policy and management decisions will reduce role ambiguity and role conflict, and so aims to eliminate unwarranted demands by line managers and increase the decision latitude of the teacher. This will in turn lead to a better balance between the psychological demands of the work and the control that the teacher has over their work. Another example of changing organisational characteristics can be modifying the culture and installing structures for reward and recognition of hard work and achievements, which would reduce the high levels of effort-reward imbalance experienced by teachers. The second approach focuses on changing role characteristics and conditions, and by doing so aims to empower the teacher in relation to their direct responsibilities as well as to the school in which they work, resulting in increasing the teacher's decision latitude and enhancing their control over their work. Such interventions may also work along the effort-reward imbalance pathway, as greater involvement in organisational

decision-making may enhance self-esteem, as well as increasing the recognition of the teacher. In the third approach, interventions would aim to re-design the workload or the work environment of the teacher. This would lead to a more manageable workload, or a work environment that is more conducive to the psychosocial needs of the teacher. In turn, such interventions can increase teacher's control, and reduce excessive psychological demands and the resulting job strain associated with the teaching profession.

3.4 Drawing on theory and lower quality evidence for intervention development

Systematic Reviews that reveal effective interventions suggest replication of such evidence-based interventions in different settings, and their subsequent dissemination for incorporation into policy. Reviews with little or no high quality evidence, referred to as ‘empty reviews’, indicate a need for further primary research for intervention development. Since no high-quality evidence was found with scalability potential, it is necessary to draw on lower quality evidence (e.g. non-experimental studies), as well as theory-driven approaches, in order to develop and test an organisational intervention to improve teacher wellbeing.

In addressing the research question, a number of non-experimental studies from the systematic search were found to be of some value in helping to direct the intervention development focus. These include teacher empowerment initiatives (Porter, 1991; Kirika, 2011), collaborative professional development initiatives (Poekert, 2011), teacher participation in decision-making (Taylor, 1991; Kniewel, 1999), school based management (Dondero, 1993), organisational mapping strategy (Shapiro and Burley, 1994), Quality Circles (Sherman, 1986), Organisational Development (Kelman and Wolff, 1976), and Action Research (Blomquist, 1986; Kieffer, 1994; Saaranen *et al.*, 2012). The common theme in all these studies is the participatory nature of their intervention strategies, which can be of potential for increasing the decision latitude and recognition of teachers.

In their proposition of an ecological model for health promotion, McLeroy *et al.* (1988) assert that an essential component of ecological strategies is active involvement of the target population in problem definition, selection of targets of change and appropriate interventions, as well as implementation and evaluation strategies. The authors conclude that the process of using ecological strategies is essentially one of “consensus building”. In another influential work on applying Bronfenbrenner’s ecological theory to health promotion guidelines, Stokols (1996) also emphasizes the participatory action research orientation of ecological strategies to health promotion.

It is evident from the non-experimental studies as well as health promotion guidelines and theoretical models that approaches focused on involvement and participation, such as action research methods, are potential avenues for organisational interventions. These empowerment approaches can have a dual function of increasing the decision latitude and enhancing the recognition of teachers in the work environment. As such, they comply with our theory of change for how organisational interventions work to improve employee wellbeing.

3.5 Participative organisation change approaches

Many participative change approaches are based on the notion of researching and improving practice by involving the practitioners. They seem to have a framework of recognisable phases, but no consensus has been achieved on their clear methodology. This is particularly true about the range of approaches to action research (Lewin, 1946; Elliott, 1980; Carr and Kemmis, 1986; Reason, 1988; Reason and Bradbury, 2001) or organisation development (Bullock and Batten, 1985; Golembiewski *et al.*, 1987; Cummings and Huse, 1989; Kanter *et al.*, 1992; Kotter, 1996). They are mostly based on Lewin (1951) three-phase change model of 'unfreezing', 'moving', and 'refreezing', and contain the common guiding principles of: diagnosis phase; developing vision, consensus, and commitment for change; planning change; implementing, and evaluating the change initiative.

Participatory action research (Freire, 1972; Whyte, 1991; Koning and Martin, 1996; McIntyre, 2008) focus on empowering individuals by involving them in research, and subsequently experimenting with interventions and collectively reflecting on them to improve the community or organisation. Similar approaches such as organisation development interventions seem to have a stronger emphasis on the role of the 'change agent' in appropriately involving staff in an organisational improvement programme. Other participatory approaches such as participative management (Kim, 2002) and management by objectives (Drucker, 1954) focus on empowering employees to participate in organisational goal setting and decision-making.

One of the aims of this intervention development study is to identify an intervention with replication and scalability potential, and so it would not suffice to state adoption of 'action research' or 'organisation development' as the intervention of choice. It is thus necessary to identify and elaborate the particular approach adopted within this family of participative change methods. From an 'evidence-based policy' perspective, the literature is not adequate to allow judgement on the effectiveness of one approach in comparison to another. These approaches have not been applied to similar settings for comparative purposes, and have not been subject to rigorous evaluations. A methodological contribution of the present study was to test a participatory organisation change approach using an experimental design, and so provide a model for such evaluations to be conducted in the future.

3.6 Intervention theory and methodology of Activity Theory

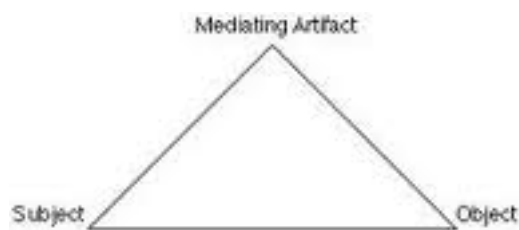
Within the family of participative change methods, the intervention methodology of Activity Theory, called the Change Laboratory, is a promising option as an organisational intervention to improve teacher wellbeing. It seems to utilise the advantages of the aforementioned approaches, by facilitating dialogue between different staff groups and management, and empowering people within the organisation to diagnose the causes of their problems, discuss and model solutions, experiment with them, and develop concrete system-level, context-specific interventions. The approach has a robust theoretical basis, with a coherent methodology that has been consistently applied in a range of settings (Engestrom, 2001; Sannino, 2011; Kajamaa, 2012; Virkkunen and Newnham, 2013; Hauge *et al.*, 2014).

Activity Theory is a theoretical framework rooted in developmental psychology, studying human actions in social settings. The discipline was developed in the 1920s and 1930s by Russian psychologists Lev Vygotsky (1896-1936) and Aleksei Leont'ev (1903-1979). The basic idea of Activity Theory is that socio-cultural, mental, and material resources for action are intertwined. In this perspective, change is never isolated from its historical context, but is socially and discursively constructed and materially and culturally mediated in object-oriented activity (Kajamaa, 2011).

Activity Theory has evolved through three generations of research (Engestrom, 1996). The first generation started with (Vygotsky, 1978) who created the idea

of ‘mediation’, and is characterised by the “mediated act” as the unit of analysis. The idea was that a human act is not just a response to a stimulus, but is mediated by a cultural component. This was an attempt by Vygotsky to provide a dialectical materialist view of human action, as a result of his reading of Marx (Sannino, 2011). The insertion of cultural artifacts (tools, signs, symbols) into human actions meant that the individual could no longer be understood without his or her cultural means, and the society could not be understood without the agency of individuals who use and produce artifacts (Engestrom, 2001). Vygotsky’s idea of cultural mediation of actions is commonly expressed as the triad of subject, object, and mediating artefact (Figure 3.2).

Figure 3.2: Model of mediating act (Engestrom, 2001)



The second generation of Activity Theory was developed by Leont’ev, who expanded the unit of analysis from ‘individual action’ to ‘collective activity’. He illustrated the distinction and complex relationship between the two units in his example of ‘primeval collective hunt’:

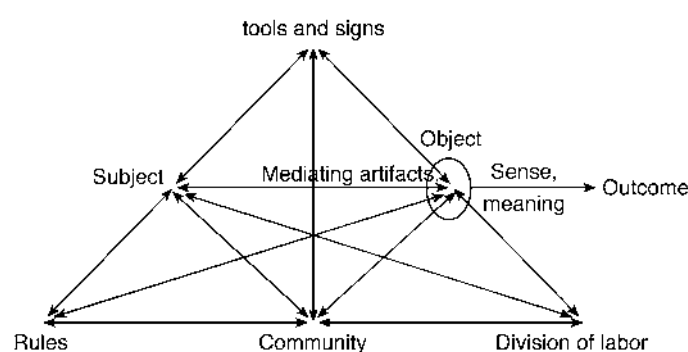
When members of a tribe are hunting, they individually have separate goals and they are in charge of diverse actions. Some are frightening a herd of animals towards other hunters who kill the game, and other members have other tasks. These actions have immediate goals, but the real motive is beyond hunting. Together these people aim at obtaining food and clothing—at staying alive. To understand why separate actions are

meaningful one needs to understand the motive behind the whole activity. Activity is guided by a motive (Leont'ev, 1981).

Leont'ev's conceptualisation of 'activity' and its motive (or object) fundamentally developed the discipline, as it turned the focus on complex interrelations between the individual subject and his or her community (Engestrom, 2001).

The third generation of Activity Theory was developed by Yrjo Engestrom, and illustrated a move from activity to the Activity System. Engestrom argued that earlier theories of activity did not give due attention to context. Activities do not happen in isolation, but as part of a broader system of meaningful relations among people (Engestrom, 1987). Contexts integrate the subject, object, and the mediator (tools, signs, symbols) into a unified whole: the Activity System. The system is continuously constructed by the activity of humans. The Activity System consists of a subject (or group of subjects), an object, mediating artifacts, rules, a community, and the division of labour (Figure 3.3). In organisations, Activity Systems exist in relation to neighbouring Activity Systems and their different objects of activity (Engestrom, 1987).

Figure 3.3: The Activity System model (Engestrom, 1987)



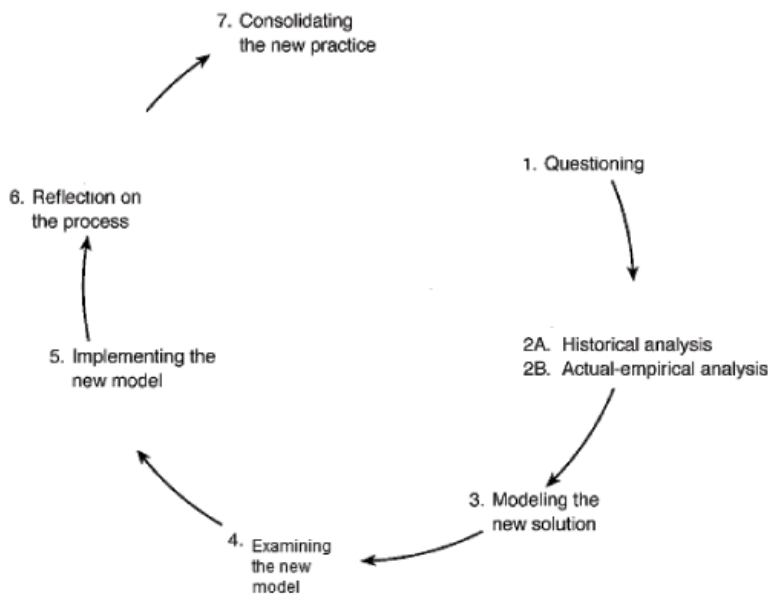
(Engestrom, 2001) characterises Activity Theory with five principles. The first principle is that the unit of analysis is the Activity System, defined as "object oriented, collective, and culturally mediated human activity" (Engestrom and Miettinen, 1999). The second principle is the multi-voicedness of Activity Systems. The different positions in the division of labour carry their own diverse history, and the Activity System itself carries multiple strands of history in its artifacts, rules and norms. The multivoicedness is multiplied in networks of interacting Activity Systems, and demands actions of translation and negotiation. The third principle is historicity, as Activity Systems take shape and transform over lengthy periods of time. The Activity System can only be analysed by studying the local history of the activity and its objects, and the history of the ideas and tools that have shaped the activity. The fourth principle is the central role of contradictions as sources of change and development. Contradictions are historically accumulated structural tensions within and between activity systems. When an Activity System adopts a new element from the outside (e.g. a new technology), it often leads to a contradiction whereby an old element (e.g. rules or the division of labour) collides with the new one. Such contradictions generate problems and tensions, but also innovative attempts to change the activity. The idea of internal contradictions as the driving force for change and development in Activity Systems is conceptualised by the philosopher Il'enkov (1982) in the following:

In reality it always happens that a phenomenon which later becomes universal originally emerges as an individual, particular, specific phenomenon, as an exception from the rule. It cannot actually emerge in any other way. Otherwise history would have a rather mysterious form. Thus, any new improvement of labour, every new mode of

man's action in production, before becoming generally accepted and recognised, first emerge as a certain deviation from previously accepted and codified norms. Having emerged as an *individual exception* from the rule in the labour of one or several men, the new form is then taken over by others, becoming in time a new *universal norm*.

The fifth principle is the idea of Expansive Learning, which is cyclical and is triggered by problems in the system, leading to surfacing of inner contradictions, and followed by deviations from established norms via innovative solutions. The transformation is expansive, as the introduction of a new element can lead to further contradictions with other current elements of the Activity System. This may eventually lead to the re-conceptualisation of the object of an activity and to the reorganisation of its structure (Kajamaa, 2012). The cycle of Expansive Learning (Figure 3.4) consists of the following stages: questioning the current practices; analyzing and modeling the collective work activity; modeling the new solution to solve the contradictions paralyzing the activity; examining and testing the new activity model in practice; implementing the new model; reflecting on the process; and consolidating and generalizing the new practice (Engestrom, 1987).

Figure 3.4 Expansive Learning Cycle (Engestrom, 1999)



Change Laboratory, the intervention methodology of Activity Theory, helps organisations to develop their collective work activity. The method is anchored in participative and democratic norms and so does not impose a top-down solution. It focuses on working with people in organisations to jointly produce new practices that can address tensions and contradictions emerging from the work context. Such tensions and contradictions could be manifest in phenomena such as stress, absence, illness etc. The approach privileges locally situated knowledge and how practices are imbued with motives and goals that need to be revealed and worked upon to generate new practices that can address the contradictions.

The Change Laboratory has been used successfully to co-design new work systems in areas such as finance, manufacturing, health and social care, and

other government areas. The method develops new work practices by the participants in dialogue and debate among themselves, with their management, clients, and facilitated by researchers. The idea is to utilise specific strategies and conceptual tools to facilitate the analysis, by the participants, of problems and contradictions within the work environment, and subsequently construct new models of organising the work. Around 10-15 representatives of the teaching and management teams within the school participate in the Change Laboratory sessions, who then negotiate, disseminate and implement the designed solutions in the work setting. Implementation is usually initiated in the form of pilot experiments, the progress of which is reported in subsequent sessions in order to fine-tune and enhance the intervention. The Change Laboratory typically requires 8-10 weekly sessions as well as follow-up sessions (Engstrom, 2011). It will culminate in an organisation-wide, context-specific solution that would increase school effectiveness as well as improving wellbeing and reducing work-related stress in teachers.

The Change Laboratory can be regarded as a process-oriented intervention, as the output (solutions) of the process will be relevant to the problems in that particular organisation. The intervention that can be replicated and transported to other settings is thus the process of the intervention and not its output.

3.7 Strengths and limitations of the Change Laboratory

Change Laboratory is more relevant to this intervention development project than typical action research and organisation development approaches in a number of ways. One of the critiques of action research methods is that they have more emphasis on involving practitioners in research than on achieving actual change, and many action research projects report little change (Coffey, 2004). This is in contrast to the Change Laboratory process, which sets out from the start the aim to target the Activity System, and its cycle ends with implementation and evaluation of the new system-level change.

In participatory research (e.g. action research), the idea is to involve a representative sample of the target population in the research process, which can include problem definition, specifying research questions, data collection, and evaluation criteria. In participative change endeavours, the focus is on achieving change and involvement of participants in the change process. In the latter, it isn't the research that is of primary concern to the actors, but rather conceptualising the problems and challenges at hand and subsequently addressing them. Therefore it is not necessarily a weakness of participative change endeavours to not involve participants in data collection or in the research evaluation criteria. The participants may define their own evaluation criteria for the impact of their change endeavours, which may be different to the outcomes sought by the academics observing the change process in question. In the present study, the evaluation criteria are defined with respect to the initial research problem of staff wellbeing. However, due to the organisational nature

of the intervention outputs, they may result in positive impact on organisational performance, which may emerge as more pertinent for participants to evaluate.

Proponents of Activity Theory have criticized action research for not specifying an explicit theoretical framework to guide the research processes and conceptual models to study the systems under focus (Kajamaa, 2012). In contrast, the Activity System and the other four principles of Activity Theory have an elaborate role in the intervention methodology, and give participants a systems-thinking perspective. Additionally, in utilising the theory of Expansive Learning, the approach aims to achieve 'concept-level change'- i.e. transforming the way members of the organisation conceptualise their work and the different elements in their Activity System, and so expanding the object of their activity and facilitating the formation of new models of working.

The 'unfreezing' stage in organisation development consists of a standard action research process of data collection, analysis, and feedback. Some critics argue that unfreezing needs to be much harsher for change to be possible, and there needs to be conflict (Johnson, 1990) and crisis (Clarke, 1994). Crisis is seen as an opportunity that forces awkward issues up the agenda (Ferlie and Bennett, 1993), and there is a need to destabilize people to detach them from the old order (Clarke, 1994). In the Change Laboratory, a 'need state' is established by giving the participants a shared ownership of the statement of problems and a collective realization of their severity. Qualitative data is collected by the researcher in an initial 'mirror data' phase. This is subsequently presented to the Change Laboratory group for discussion and analysis, utilising conceptual tools

and group exercises if required. Contentious issues are emphasized, and participants are encouraged to discuss them, also considering that the group consists of members across the organisational hierarchy. By presenting contentious issues in an anonymised form, participants find it easier to discuss them, as no one identifiable person is seen to have initiated the discussion on these sensitive topics. The researcher manages the discussion in such situations to avoid unhealthy tensions within the Change Laboratory group. This is achieved by constantly redirecting the discussion towards a focus on the 'object of their activity', and rather than blaming individuals, encouraging participants to locate the fault or weakness in the Activity System. Following this diagnostic process, the participants establish a state of crisis or a 'need state' by collectively identifying and confirming the problems and tensions on the surface, as well as analysing the underlying contradictions in the system. These issues are always in reference to the 'object of activity' and the future direction of the organisation. The participants thus both define and take ownership of the actual problems and underlying contradictions within the organisation, and the anecdotes from the initial 'mirror data' which were not collectively picked up by the participants are set aside. The statement of problems transforms from a state of anecdotal evidence collected by the researcher, to a shared consensual understanding of the depth of problems and contradictions within the organisation.

Organisation development has been promoted as a change model for coping with situations of soft complexity whereby goals and the means of achieving them are unclear. The approach is limited when change situations are constrained in the sense that goals and means of achieving them are predetermined, either by

management or by external constraints such as policy or regulations. In such scenarios the earlier stages of the action research model such as diagnosis, developing vision and consensus for change may not be applicable (Senior, 2002). In contrast, the initial stages of the Change Laboratory process applies even in a constrained situation, as it is essentially aiming to find a 'mediator'. The approach recognises the reality of constraints by structure, management, policy, etc. It asks participants to find a solution while considering these constraints, and identifies the contradictions between the realities of constraints, the values and desires of the practitioners, and the object of their activity, striving to find a middle ground to manage the situation. This middle ground, or mediator, can be in the form of a new tool, new rule, change in the division of labour, change in the community, or change in the object. While analysing each possibility, all the other elements of the Activity System are taken into account. The final solution will facilitate the implementation of change in the constrained scenario, by addressing the concerns of stakeholders and gaining commitment and participation.

A limitation of the Change Laboratory methodology is that it does not anticipate and account for individual characteristics within group dynamics. It aims to locate all the faults in the system, while some problems may inevitably be due to individual personalities and characteristics, such as authoritative leadership of a particular head-teacher. The Activity System model has been criticised for neglecting the "sensuous nature, emotive, identity-related, and the ethico-moral dimensions of human actions and activities", without which it would be difficult to capture the Activity System as a whole (Roth, 2009). Another limitation is the

over emphasis on finding major contradictions in the activity, in order for the dialectical perspective to be realised. This can potentially lead to misinterpretations of the situation by the researcher, presenting issues as 'crises' in instances where such over emphasis is not warranted.

Transportability across cultures is an important issue that may prove to be a limitation of the Change Laboratory, as it is the first time that it will be tested in the context of British schools. For example, 'object of activity' may be a difficult concept to grasp, which can be problematic considering that it is emphasized and used regularly in the Change Laboratory sessions. As another example, 'division of labour' may be a normal term to use in Finland when referring to an organisations hierarchy, but can have certain political and ideological connotations in the UK context. Therefore, transportability of this process-oriented intervention across different cultures and thus a need for adaptation of the intervention will need to be examined in this study.

Chapter 4- Pilot trial protocol

Overview

This chapter outlines the exploratory pilot trial of the Change Laboratory in four secondary schools in the UK. It includes study design, research ethics, school recruitment, participant recruitment, qualitative and quantitative data collection, outcome measures, and timeline. The chapter continues to detail data management, thematic analysis of the qualitative data using NVivo, and the analysis of survey data using Stata statistical package.

4.1 Pilot trial design

A pilot trial of the Change Laboratory method was conducted in four secondary schools (two intervention and two control schools), in the endeavour to develop a process-oriented organisational intervention to improve wellbeing and reduce work-related stress in teachers. Appendix 4.1 presents a table of the practical stages of the study along with the respective contributions of advisors and collaborators.

Secondary schools were chosen as they are larger, more hierarchical and complex organisations compared to primary schools. In terms of demands from the public and from policy, secondary schools are under more scrutiny in the contemporary results and performance-driven culture, with the major focus on Key Stage 4 (GCSE) results. These factors can suggest bigger employee stress and wellbeing challenges, although objective data have not been identified on the comparison in stress levels between primary and secondary school teachers in the UK.

The control schools were matched based on Free School Meals (FSM), Urban/Rural geographical position, and English As Additional Language (EAL). These variables can serve as crude indicators of socioeconomic position, which can be a basis for comparing schools. One arm had two urban schools (one intervention and one control) with high FSM and high EAL. The other arm had two rural schools with low FSM and low EAL. It can be argued that comparing schools based on their organisational culture may be more appropriate to this study. However, this is not easily measurable and would require qualitative

research in an uncertain number of schools, in order to find two schools with similar organisational culture. This is not feasible, especially considering issues of scalability of the developed intervention.

With respect to school recruitment, commitment from the senior leadership team for supporting the Change Laboratory and its output (proposed solutions) was sought prior to enrolling schools into the study. The schools were asked to agree to random allocation to intervention or control, although this was not a strict inclusion requirement. Recruiting schools for a study in such early stages of intervention development is challenging, especially one with organisational-level consequences. It was planned that in the case of a school not agreeing to random allocation, the study design will be a Controlled Before-After (CBA) trial instead of a Randomized Controlled Trial (RCT).

The design of this study is novel and provides some epistemological challenges, as we are encapsulating an interpretivist methodology into an experimental design study. In order not to contaminate the intervention, all the qualitative data collected at baseline was considered as part of the intervention, and the data collected at the three waves of quantitative data collection (baseline, post-intervention, and at follow up) was not used in the Change Laboratory sessions. First, the data collected in the 'mirror data' phase in the Change Laboratory were purposeful qualitative data, and analysis and presentation of baseline quantitative data would add little value to the depth of discussions expected in the Change Laboratory sessions. Secondly, in considering scalability of the intervention, collection and analysis of survey and organisational data will not be

components of the intervention, as they will make it more lengthy and costly while adding little value.

4.2 Research Ethics

4.2.1 Ethical Approval

Ethical approval for the pilot trial (Appendix 4.2) was obtained from the Departmental Research Ethics Committee (DREC) overseen by the Central University Research Ethics Committee (CUREC). This was a peer-reviewed process, including detailed reviews of the initial application by two academics, which required response and revisions for final approval by the Committee. The ESRC (Economic and Social Research Council) Framework for Research Ethics (ESRC, 2012) and the BERA (British Educational Research Association) Ethical Guidelines for Educational Research (BERA, 2011) were consulted for preparing the research ethics application pertaining to this pilot trial.

The ethical approval contains elaborate detail on the recruitment, consent, and consequences for participants, as well as detail on data collection, storage, and disposal. A participant Information sheet (Appendix 4.3) was devised to accompany the consent form in order to provide the means for informed consent of participating staff. In addition, an induction meeting was conducted with staff in the intervention schools to explain how the Change Laboratory works, and the importance of their participation in developing and implementing effective change initiatives. Finally, participation in data collection or in the Change Laboratory was on a voluntary basis, and there were no consequences for non-attendance or non-compliance with return of surveys.

The potential for harm to participants was prospectively considered. It was suggested that there may be a small possibility of distress as some of the survey and interview questions require the respondent to dwell on their work-related stress. The participant information sheet included a section referring to this potential detriment, aimed at reducing the likelihood of participants disclosing information which they would normally find uncomfortable sharing with other people. It was also deemed to enable individuals who would find such questions distressing or who do not wish to reveal such information to decide at an early stage not to participate.

The potential for distress was deemed possible in Change Laboratory sessions, when staff discuss causes of tensions and contradictions at work in the presence of their management. This concern was addressed by clarifying the purpose and grounding of the intervention in the induction meeting with school staff and management. Further, school management were asked to communicate to staff that there would be no adverse consequences for individuals who are vocal about grievances with management practices. This was reiterated in an agreement document signed with participating schools, which alongside the content of the participant information sheet, included detail on study characteristics, timeline, and deliverables. The participant information sheet also stated that the researcher will remain vigilant for signs of distress or discomfort and would sensitively reiterate the participant's right to decline to answer questions or continue participating in the interview or Change Laboratory session if these were noted. In addition to the aforementioned safeguards to mitigate potential harm, the Change Laboratory methodology has embedded

within it techniques by which the facilitator reduces interpersonal tensions. It advocates detaching individuals from the event in question, placing the 'blame' on the system and its interacting elements, analysing the historical antecedents to such practices, and refocusing the discussion on the 'object of activity' and alternative practices and procedures for similar events or processes in the future.

A data management strategy was detailed in the ethical approval application, which included information on confidentiality, data storage and disposal. All data was kept strictly confidential, and maintenance of confidentiality of information was subject to normal legal requirements. Names and other personal identifiers were replaced by identification codes on all study material, and University guidelines were followed for storing personal data. Paper copies of data were kept securely in locked filing cabinets. Electronic data was stored in secure password-protected computer folders. All personal data and personal identifiers were destroyed at the end of the study. Paper copies of personal data were securely shredded and disposed. Personal electronic data were erased from the secure computer folders and from the hard-drive. Anonymised audio and video files were planned to be destroyed following completion of analysis and discussion of the data within this study, and no later than 5 years after the end of the study.

4.2.2 Role of the researcher

The novel design of this research project as encapsulating an interpretivist methodology into an experimental design presents challenges for the researcher, who plays different roles at various stages of the study. The role is that of a researcher throughout the intervention development phase and pilot trial set up. It then transitions into the role of facilitator of the participative intervention, followed by the role of evaluator of the intervention throughout the data collection and analysis phases built into the pilot trial design.

It is widely reported that conflict of interest, such as developers of an intervention involved in its evaluation, can lead to biased reports of effect (Perlis *et al.*, 2005; Eisner, 2009). It is possible for a facilitator of an intervention to become personally and emotionally involved with the collective change endeavour, due to having gained insight into the burdens in the organisation. This can potentially result in the facilitator contravening their role in order to find a solution. Further, the transition of the facilitator to evaluator creates the potential to influence the reporting of the effectiveness of the intervention. Being conscious of the reality of publication bias in academic journals (Easterbrook *et al.*, 1991; Rothstein *et al.*, 2005) may pose a risk to study integrity, and a researcher may be motivated to aim for achieving beneficial effects in order to yield publication of results.

It is thus important for the researcher to reflexively establish the potential for conflict of interest in the present research considering the role transitions, and deduce the actions that need to be taken or the perspectives that need to be

nurtured to mitigate the potential for such bias. In some instances, it may be adequate to make the researchers motivations explicit, in order to rule out risks to integrity of the study.

In the Change Laboratory, the researcher is conceived and explicitly presented as a facilitator and not a subject/context consultant. It is made clear to participants from the outset that the facilitator will refrain from giving ideas or presenting solutions. The facilitators role is to invite the practitioners to face and analyse the dynamic contradictions in their practice (Kajamaa, 2012), and to collectively develop solutions, model them, and plan their implementation. This approach gives responsibility and ownership of the development of the solution to the participants, potentially facilitating its legitimisation, acceptance, and implementation. This is in contrast to action research and organisation development, where the change agent often has a defining role in identifying and negotiating solutions after a collective analysis of problems (Buchanan and Boddy, 1992).

With respect to the researcher and evaluator challenges, four protective factors are noted which can mitigate the aforementioned risks. Firstly, the researcher and the organisation to which he is affiliated have had no involvement in the development of the intervention, pursuing the perspective that it needs to be objectively evaluated. Secondly, the researcher espouses researcher ethics and integrity, grounded in his professional background and the ethical conduct that it entailed. Thirdly, the realisation that this pilot trial is not a powered study, and thus significantly positive effect sizes cannot be interpreted as effectiveness of

the intervention. Finally, the DPhil in Social Intervention nurtures the drive to discover and disseminate 'what works' in order to improve individual and/or social outcomes. While auditing the MSc Evidence-Based Social Intervention course, the researcher had come across various interventions developed with the best of intentions and appearing useful. However, evaluations had revealed that these interventions were not effective, and in some cases even harmful. This revelation had contributed to the objective perspective of the researcher, aiming to genuinely pursue 'what works' and probe beyond apparent rationality of the theory of change. Moreover, the course has a strong methodological focus, and a motivation is that the methodological insights derived from the study will potentially constitute a strong publication independent of the trial results. Other indicators of success for the course include a thorough grasp of the area of study, developing competence as an independent researcher, robust study design and process evaluation, and rigor in analysis, all of which are independent of outcome effects.

4.3 Recruitment of participants

Initially a general information sheet was distributed to participants describing the purpose of the research, articulated as finding solutions for teacher wellbeing by targeting the organisation. There was also a meeting with staff in the intervention schools to explain how the Change Laboratory works, and the importance of their participation in developing and implementing effective change initiatives.

Participants for quantitative data collection: In every school, participation in data collection was advertised at the time of introducing the project at the school staff meeting and/or the distributed general information sheet, and all employed teachers were eligible to volunteer to participate.

Participation for qualitative data collection: In every school, participation in interviews was advertised at the time of introducing the project in the school staff meeting and/or the distributed general information sheet, and all employed teachers could volunteer to participate. Interviews were planned with teachers and management on an individual basis.

Participants for Change Laboratory sessions: These included representatives from the school management team and from the teaching staff. The teachers who were interested to take part were able to volunteer. The school was asked to encourage all departments to try and have at least one representative in the

Change Laboratory sessions (although the principle of voluntary informed consent was maintained). Representatives from the management team were self-selected by the management. There was also space in the Change Laboratory for a volunteer from the teaching assistants and a volunteer from the administrative team.

For every survey completed by teachers, they received a £5 gift voucher. For interviews they received a £15 gift voucher- per person per session. The gift vouchers were from a recognised 'high street' retailer. School-level data including teacher turnover and sickness absence were planned to be collected when possible from the school administration team. It was planned for the personal data (turnover, sickness absence, and performance data) from teachers who did not sign the study consent form to be anonymised by the school and so not traceable by the researcher.

4.4 Data Collection

Quantitative and qualitative data were collected in the four schools. There were three waves of data collection: baseline, end-of-intervention (5 months post-intervention), and follow-up (9 months post-intervention).

1- Qualitative data

Interviews were conducted with teachers and management to identify their perceptions of the causes of work-related stress, contradictions and disturbances within the work environment, the interaction of individual factors, relationship between their stress response/health status and individual and organisational characteristics, and their solutions for targeting stressors in the school organisation.

The number of interviews in the control schools were planned to be less than those in the intervention schools, as the main purpose in the former was to understand the organisation climate and temporal changes. This contextual understanding was thought to be helpful in comparing and contrasting the quantitative data of the control schools with those of the intervention schools. Appendix 4.4 presents interview cues for the researcher, noting that the interviews for the Change Laboratory should be more 'relaxed' than a normal semi-structured interview with a typically strict interview schedule. A benefit of this approach in the Change Laboratory research design was to capture the perspectives and priorities of the interviewees, without a prospective judgement by the researcher of the important issues to be discussed. However, the

researcher planned to ensure that all elements of the Activity System were covered during the interview.

The interviews ('mirror data') were planned to be audio and video-recorded, in case which participants consented to this. Video-recording was limited to intervention schools, as excerpts of the sessions needed to be broadcast in the Change Laboratory sessions to facilitate the discussions. The 'mirror data' collected from the intervention schools were needed for preliminary analysis to feed into the Change Laboratory sessions. The analysis at this level was not for purposes of writing-up/discussion, but enough to illustrate the issues within the organisation, in order to facilitate discussion about the diagnosis of root causes of organisational problems by participants. A thematic analysis was conducted on the transcripts of the interviews. This identified the common themes in each transcript relevant to the initial diagnostic stage of the Change Laboratory process. A document was subsequently prepared, which was distributed to the Change Laboratory participants in the first session. This document contained anonymous excerpts of the transcripts under each identified theme. The researchers did not present their analysis of the problems and challenges, but rather direct anonymous quotes from members of the organisation. This is in line with the idea of the role of the researcher as a facilitator rather than a consultant. The anonymous excerpts were also an advantage in initiating discussions on sensitive and contentious issues, whereby individuals prefer not to be seen to have initiated discussion on such topics.

The qualitative data at baseline thus served as the ‘mirror data’, which feeds into the initial diagnostic stages of the Change Laboratory sessions. Further interviews conducted at end-of-intervention and at follow-up were utilised for evaluation of organisational impact and the process evaluation of the study.

2- Quantitative organisational level data

Organisational-level data was collected where possible from all four schools at each wave of data collection. This included data at the individual teacher level (including sickness absence and teacher performance indicators) and school level (including teacher turnover, 5 A-Cs, value added score).

3- Quantitative survey data

Survey data was collected from individual teachers in all four schools at each wave of data collection. This was in the form of online surveys sent to teachers via email. The systematic review outlined a number of measures that can be used to assess organisational interventions for teacher wellbeing. Within these instruments, a battery of measures was sought that contained individual and organisational components. The following survey instruments have been selected which have individual (Teacher Stress Inventory; Maslach Burnout Inventory) and organisational (Organisational Health Inventory; Collective Efficacy Scale) components. The psychosocial work environment is central to organisational stress and wellbeing, and so perceptions of group-level climate and performance are as significant as individual stress and wellbeing responses. As outlined earlier, teacher occupational wellbeing has been defined as a positive emotional state resulting from harmony between the sum of specific

environmental factors on the one hand, and personal needs and expectations of teachers on the other (Aelterman *et al.*, 2007).

Teacher Stress Inventory (TSI)

This widely used inventory has 49 stress-related items and measures the strength of occupational stress in teachers. The survey also includes 13 demographic items. Factor analysis results in ten discrete factors, each of which are internally consistent and significantly related to the others. These are: Time Management, Work-related Stressors, Professional Distress, Discipline and Motivation, Professional Investment, Emotional Manifestations, Fatigue Manifestations, Cardiovascular Manifestations, Gastronomical Manifestations, and Behavioral Manifestations. The first five factors are stress sources (stressors); the second five, stress responses. These dimensions of teacher stress are in line with the literature review outlining the causes and consequences of teacher stress and burnout.

The scoring of the TSI results in a score for each of the sub-scales and an overall stress score. In a re-analysis of aggregate data collected on the TSI since 1980 (Fimian and Fastenau, 1990), the inventory demonstrated a high internal consistency, with a whole-scale Cronbach's alpha score of 0.93, and with all of the sub-scale alpha's exceeding 0.75.

Maslach Burnout Inventory- Educators Survey (MBI-ES)

This is a 22-item measure, and is the most widely used instrument for measuring occupational burnout. Teacher burnout has been defined as a state of emotional,

attitudinal and physical exhaustion that follows from a prolonged exposure to chronic stress (Vandenberghe and Huberman, 1999). The inventory measures three burnout factors identified by Maslach as Emotional Exhaustion, Depersonalisation, and Personal Accomplishment. These dimensions are related to the demand-control-support model and the effort-reward imbalance models of organisational stress. The instrument is nearly identical to the original Maslach Burnout Inventory, whereby the word 'student' has replaced 'recipient'.

Two studies have been cited by Maslach *et al.* (1996a) to substantiate the validity and reliability of the MBI-ES. Iwanicki and Schwab (1981) initially reported Cronbach alpha estimates of 0.90 for Emotional Exhaustion, 0.76 for Depersonalization, and 0.76 for Personal Accomplishment. Gold (1984) further examined the reliability of the MBI-ES, reporting Cronbach alpha estimates of 0.88 for Emotional Exhaustion, 0.74 for Depersonalization, and 0.72 for Personal Accomplishment. Moreover, factor analysis in both studies support the three factor structure of the MBI-ES. The inventory gives scores for each factor, with score ranges corresponding to a 'low burnout', 'moderate burnout', or 'high burnout' score for each participant.

Organisational Health Inventory- Secondary Schools (OHI-S)

This 44-item instrument measures the organisational health of secondary schools along seven dimensions. At the technical level, the faculty morale and the academic press of the school are seen as critical ingredients of good school health. At the managerial level, the leadership and support of the principal in terms of consideration, initiating structure, influence with superiors, and

resource support are key elements. Finally, healthy schools have institutional integrity; they cope with disruptive external forces and direct their energies toward the educational mission (Hoy *et al.*, 1991). As outlined earlier, the psychosocial work environment is central to organisational stress and wellbeing, and so perceptions of group-level climate and performance are as significant as individual stress and wellbeing responses.

Factor analysis of the instrument results in seven discrete factors, reported below with their Cronbach's alpha scores in brackets: Institutional Integrity (0.91), Initiating Structure (0.89), Consideration (0.90), Principal Influence (0.87), Resource Support (0.95), Morale (0.92), and Academic Emphasis (0.93). The scoring of the instrument results in standardised scores for each sub-scale as well as an overall 'Health Index', which represents the health profile of the school (Hoy *et al.*, 1991).

Collective Efficacy Scale- Short Form

This is a 12-item scale that measures the collective efficacy of a school. Collective efficacy is based on the notion of self-efficacy, which has been defined as the belief a person has in his or her ability to accomplish tasks (Bandura, 1985). Collective efficacy refers to the perceptions of teachers in a school that the efforts of the faculty as a whole will have positive effects on students (Goddard, 2002). As such, it is related to the demand-control-support model of organisational stress. The Collective Efficacy Scale was preferred to the Teacher Sense of Efficacy Scale, which measures perceptions of individual self-efficacy of teachers. It is noteworthy that individual self-efficacy is deemed an important

dimension of wellbeing, and will be accounted for in the 'personal accomplishment' sub-scale of the Maslach Burnout Inventory. Just as self-efficacy is a predictor of individual success of teachers, collective efficacy is an important predictor of the differences between schools in student achievement (Goddard *et al.*, 2000). Further, all items of the Collective Efficacy Scale are directed at the group and not the individual level (e.g. "Teachers in the school are able to get through to the most difficult students").

The 12-item scale gives a standardised Collective Efficacy Score for each school. It is more theoretically pure and parsimonious than the 21-item long form, with a strong correlation between these scales ($r=0.983$). The short form has a high internal consistency with a Cronbach's alpha score of 0.94 (Goddard, 2002).

4.5 Data management

The type of data to be managed included quantitative survey data, school-level data on individual and organisational characteristics, qualitative interview data, and records of the Change Laboratory sessions.

Survey data including individual information was restricted to teachers' name, age, gender, and position in school/department. Surveys ask about a range of physical, psychological, and social outcomes. Names were anonymised by replacing with identification codes, and the database of corresponding names and identification codes were stored separately and securely.

School-level data including teacher turnover and sickness absence were collected from the school administration team. The personal data (turnover and sickness absence) from teachers who did not sign the study consent form were anonymised by the school and so not traceable by the researchers.

Individual interviews were audio and video-recorded (the latter was desirable but not essential, and implemented when consent was granted). They were subsequently transcribed, at which stage no information regarding the identity of participants were recorded with the exception of participants age, gender, and whether teaching or management staff. References to names of individuals in the transcripts were anonymised by changing names to pseudonyms.

Change Laboratory sessions were video-recorded and transcribed at which stage no information regarding the identity of participants were recorded, with the

exception of participants age, gender, and whether teaching or management staff.

The following were kept in a password-protected electronic folder on a password-protected computer: audio and video files (both recorded digitally), transcripts, online survey responses, and organisational data. The database of corresponding names and identification codes were stored in a separate password-protected folder.

The following were kept in a locked cabinet: consent forms with direct identifiers, and survey forms in the case that they were conducted by paper. The two were kept in separate locked cabinets, as the survey forms only contained the identification codes. The researcher controlled and had access to both types of folders.

Guidance from the Wellcome Trust, as referenced in the CUREC Guidelines state that: "Data generated in the course of research should be kept securely in paper or electronic format, as appropriate. The Trust considers a minimum of ten years to be an appropriate period, however, research based on clinical samples or relating to public health might require longer storage to allow for long-term follow-up to occur". However, all data containing direct identifiers (personal information) were planned to be destroyed by the researchers at the end of the study. The audio and video files will be destroyed following completion of analysis and discussion of the data within this study, but no later than 5 years

after the end of the study. The electronic data will be erased from the hard drive and data on paper will be securely shredded and disposed.

In reporting the findings of this study, individual names and the name of schools will be omitted, and only background information such as the regional location (i.e. South East England), type of school by size and free school meals of children, deprivation level of the area, and general performance level of the school will be reported.

4.6 Analysis strategy

The quantitative data was analysed using the Stata statistical software package. Statistical procedures included descriptive analysis, independent-sample t tests, chi squared tests, Wilcoxon rank-sum (Mann-Whitney) test, and regression analysis. Missing data was addressed by Multiple Imputation. A range of reliability tests were also conducted, including Cronbach's alpha, Little's MCAR test, Monte Carlo error, and comparison of results with complete-case analysis, mean Imputation, and LOCF models. Data was presented as mean difference (Beta coefficients from bivariate regression) with standard errors, with a $p < 0.05$ or lower considered as statistically significant.

For purposes of outcome evaluation and process evaluation, the qualitative data was analysed using Thematic analysis (Braun and Clarke, 2006), which is a qualitative analytic method for identifying, analysing, and reporting patterns (themes) within the data (ibid, pp. 79). A theme captures something important about the data in relation to the research question and represents some level of patterned response or meaning within the data set (pp. 82). Themes must be coherent, consistent and distinctive. The method follows a process of becoming familiar with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report.

An advantage of the version of Thematic analysis advocated by Braun and Clarke (2006) is that it is theoretically flexible, and claimed to be an analytic method rather than a methodology. Clarke and Braun (2013) assert that the search for, and examination of patterning across language does not require adherence to

any particular theory of language, or explanatory meaning framework for human beings, experiences or practices. Thematic analysis can thus be applied within a range of theoretical perspectives, and would not require the theoretical commitment of e.g. Grounded Theory. The main purpose of qualitative analysis in the present study was to extract patterns from the qualitative data for themes that are more consistently raised as causes of frustration and stress, important challenges in the organisation, impact of the intervention, and process challenges of the study. Furthermore, a theoretically flexible analytic method would be more suitable for the qualitative data in this study which is being analysed with an Activity Theory lens. The focus of the latter is on capturing the qualitative transformation of work, considering all elements of the Activity System and also utilising a historical perspective. The qualitative data analysis software NVivo was utilised to organise and analyse the interview transcripts. The codes and themes were independently deduced by two researchers and subsequently reconciled, which demonstrated no significant variation in identified themes.

4.7 Timeline

Stage 1- December 2012 to February 2013

Change Laboratory training; School recruitment

1- Activity Theory and Change Laboratory training – The researcher requires a degree of proficiency in conducting the Change Laboratory sessions, especially that the methodology is conceptually rooted and needs a thorough understanding of Activity Theory and the works of Vygotsky, Leont'ev, and Engestrom. The training was arranged for 4 weeks at the University of Helsinki with Professor Yrjo Engestrom and his team- the pioneers of the Change Laboratory methodology.

2- Meeting with a number of school senior management in order to recruit 4 state-maintained, mainstream secondary schools for the pilot study. It was requested for the schools to agree to being chosen at random for allocation to intervention or control school, although it was concede that the benefits of random assignment will not be fully realised with such a small sample size.

Stage 2- March 2013 to April 2013

Baseline Data collection

Qualitative and Quantitative data was collected in the four schools.

The data collected included:

1- 'Mirror data'- Interviews were conducted with teachers and management.

2- Organisational level data including sickness absence, teacher turnover, and performance indicators

3- Survey data- the battery of measures included individual (Maslach Burnout Inventory-Educator Survey; Teacher Stress Inventory) and organisational (Collective Efficacy Scale; Organisational Health Inventory-Secondary Schools) components.

The Organisational-level and survey data were planned to be collected in all four schools and all teachers employed in the schools were asked to complete the surveys on a voluntary basis.

Stage 3- May 2013 to July 2013

Change Laboratory Cycle

A Change Laboratory was set up in each intervention school, which could be a free classroom or the staff coffee room. 7 weekly Change Laboratory sessions were held. The sessions were video-recorded, and excerpts of the videos were shown in subsequent sessions to facilitate discussion, highlight collective learning, and emphasize areas requiring further analysis. The cycle included analysis of tensions and contradictions within work systems, designing new work practices, and refinement, modelling, and planning for the implementation of the new solutions. The planning took place in the final Change Laboratory sessions, which correspond to the end of the school year, and the proposed solutions were implemented from September 2013 (start of the new school year).

Stage 4- December 2013 & April 2014

Follow-up data collection

Collection of survey and organisational data (same data as baseline) was undertaken in December 2013 (Phase 2; 5 months post-intervention), and in April 2014 (Phase 3; 9 months post-intervention). The third phase of data collection temporally corresponded to the baseline measure (i.e. both baseline and follow-up measure occurred in the same month of year, to account for seasonal/other time-related effects). The follow-up data collections also included interviews in both intervention and control schools.

Chapter 5- Qualitative Findings

Overview

This chapter starts with an outline of the qualitative data analysis approach adopted for this study. It continues with a general description of the context of each intervention school. Some areas such as management and culture will be further elaborated in the subsequent sections where organisational challenges are analysed in depth. This is followed by presentation of the problems identified by the Change Laboratory group in each intervention school as a result of discussing and analysing the qualitative 'mirror' data. The identified problem areas are the precursors for proposed solutions by the participants, elaborated as the outputs of the Change Laboratory in each intervention school. Subsequently, the organisational impact of the intervention is discussed under the following sub-sections: structural/cultural impact; impact on leadership; and diffusion into other initiatives/structures. In the final section of the chapter, the qualitative findings are analysed and discussed. This chapter addresses the following two Research Questions:

What are the mechanisms of impact of this participative organisational change intervention on work-related stress and wellbeing?

Can the wider structural stressors be tackled by this participative organisational change intervention?

5.1 Qualitative data analysis

In-depth, semi-structured interviews were conducted with teachers in all four schools. Confidentiality, anonymity, and issues of data management were explained in line with the ethical protocol of this study, and signed consent was obtained prior to commencing interviews. The number of interviews conducted at control schools were considerably less than those conducted at intervention schools. The main purpose of interviews in control schools was to identify any potential temporal changes in those schools, which could have had an impact on the quantitative outcome measures.

In total, 112 interviews were conducted in the four schools across 3 data collection phases:

- Baseline (March-April 2013)- 10 interviews at Rural school, 12 interviews at Urban school, and 13 interviews across the two control schools
- Phase 2 (November-December 2013)- 13 interviews at Rural school, 14 interviews at Urban school, and 12 interviews across the two control schools
- Phase 3 (April-May 2014)- 10 interviews at Rural school, 13 interviews at Urban school, and 15 interviews across the two control schools

The first stage of analysis of the interview data was intended for feeding into the initial Change Laboratory sessions as 'mirror data'. This stage only involved Baseline data from the two intervention schools. Since this rapid analysis was

required in a timely fashion, it was conducted directly from the audio recordings. This stage involved identifying and transcribing all the excerpts from interviews that highlighted causes of stress and organisational challenges. Subsequently, themes were deduced from these excerpts, and indicative excerpts under each theme were collated for presenting to the Change Laboratory groups as mirror data.

Following the completion of fieldwork and at the analysis stage of the study, the interview audio files were transcribed. Names of interviewees and names of their colleagues/managers whom they refer to during the interview were replaced with pseudonyms. Every effort has been made to exclude details that may enable identification of interviewees where excerpts of interviews are used in the analysis in this thesis.

Thematic Analysis (Braun and Clarke, 2006) was utilised for a comprehensive analysis of the qualitative data. Instead of a grounded theory approach of 'pattern searching' (Gibbs, 2002: 141) and inductively transforming raw data into abstract theoretical categories, a more deductive analysis path was undertaken. The interview data was approached with an iterative immersion process of extracting evidence for four prospectively defined types of information:

- 1- Description of context: culture, community, management
- 2- Identification of the causes of stress as experienced by interviewees, including problems and challenges in the organisation of the school

3- Identification of impact of Change Laboratory outputs

4- Data on process evaluation

NVivo was utilised to extract data from the interview transcripts under these initial codes. Upon piloting the codes with a number of transcripts, it transpired that more specific themes were required for adequately capturing the necessary data. For example, the organisational impact code was transformed into the following themes: 'Structural/cultural impact'. 'Impact on leadership', and 'Diffusion into other initiatives/structures'.

A number of steps were taken to ensure credibility and reliability of the analysis (Lincoln and Guba, 1985; Miles and Huberman, 1994). The initial codes were piloted independently by two researchers, and the findings reconciled and discussed in order to finalise the themes for data analysis. The researcher had no affiliation with the host organisations and had also not been a teacher in the past, which reduces the possibility of professional bias and controls subjectivity in interpretation of data (Bogdan and Biklen, 2003). Further, a reflective awareness of the researchers personal values and preconceptions were retained throughout analysis. Credibility and consistency (Lincoln and Guba, 1985) was maintained by cross-checking recurrent patterns under each theme with data from different phases of the data collection, as well as with field observations and data from Change Laboratory sessions.

5.2 Rural school

5.2.1 Rural school outline

Rural school is situated in a rural town in the South East of England with around 15,000 residents. Whilst the area does not suffer from intense deprivation, it is not considered to be affluent relative to the surrounding villages. Rural School is a smaller than average secondary school with around 550 pupils and 50 full time equivalent teachers. There is a military base nearby, and many of the towns residents work at the base. It is also a career destination for many of the local school leavers. This is one of the reasons cited by teachers for low motivation of children in this area, as they feel they can find a job at the base once they have finished school. A lower proportion than average of the residents (23%) are educated to degree level.

The school has experienced positive results in the past few years. The latest school inspection (Ofsted) rating for the school is “good”, and the school is striving to move to ‘Outstanding’ (the ratings are “outstanding”, “good”, “requires improvement”, and “inadequate”):

We've had a real turbulent time with a lot of changes when David (head-teacher) came... We've, by hook or by crook got these great results, through a lot of knee-jerk reactions (Mandy, Phase 3)

The former head-teacher, who left the school six months after the implementation of the outputs of the Change Laboratory, has turned the school

around and significantly improved its results during his tenure. Excerpt below from one of the teachers explains some of the features of his approach:

David used to run this place like a football club. Can't deny it, it absolutely worked, it was a favour here and a favour there. And he had to do that... Because we had a very very short time to get outstanding results and we had to do whatever it took. I remember saying to David, "stop taking kids out of my lessons," and he said, "Mandy, we have to, because if we don't get English and Maths up we are not going to get money. If we're not getting money we're going to make redundancies. If we make redundancies we're not going to have a school...". And so it was just in chaos. It was well-structured chaos. It was like, we got to get a policy out because Ofsted are coming, boom, there it is! We need this teacher in this place, boom! We've got to get those kids grade C's, we'll take them out of that subject and we'll do that now. And so it was an absolute major reaction to get the result, and he had to because he had no time. And I totally understand that (Mandy, Phase 3).

Constant radical changes in policies and rules were often cited as a major cause of stress and exhaustion in Rural school:

Change is now invisible because it's all the time, so you don't even notice it, nobody takes on board anything... When you knee-jerk react all the time, when you put something into a panic mode, you can only panic for so long (Rebecca, Phase 3).

The change efforts were generally reported to be ill-conceived, which led to other organisational problems and inconsistencies. The excerpt below is referring to a typical scenario in which a policy would be revised by a member of the leadership team:

...[Such change] is quite stressful for everybody involved because a change like that needs training with the children, it needs training with the staff, and there would've been very little of any of that. There wouldn't have been much buy in and it would've gone a bit pear shaped (Sarah, Phase 3)

The middle management (heads of department) are in an interesting position in Rural School. They are not in the leadership team and so not privy to strategic information and conversations. In teachers' judgements of the management of the school, the middle managers were perceived to be "on the teachers side". Excerpt below from one of the teachers in middle management explains the position:

I'm head of a department. So, I've got a fine balance between not being at the top of the school in the sense of a hierarchy, but also being well established enough to command the respect needed for somebody to lead something (Emily, Phase 3)

The middle management reiterated the stress that they undergo within the demand-control framework. Their perception was that senior leadership have a lot of control to counter the demands on them, and main-scale teachers only need to look after themselves and their classes. But the middle managers "have a lot of demand, a huge amount of pressure, and limited control":

We get more demand and less control than anybody. I really believe that because as a head of department, I have got to make sure that my results are happening. But I have very little control over how that is done, so I personally control it by really pinning down my staff, really doing lots of rigorous paperwork, making sure that I know everything that's going on in my team, that I know exactly what's

going on with all students in my department... and that takes a lot of time, and it's very stressful. So from my point of view I think the heads of departments have an enormous amount of stress put on them (Mandy, Phase 3).

The senior leadership team consists of the head teacher and three deputy/assistant head teachers. However, it seems that many strategic decisions are made exclusively by the head teacher, as he seems to have sole accountability for such decisions to the school governors. Some of the members of the leadership team were unclear of the origins of certain decisions:

There is a lot of things even at the leadership level that you don't get to be privy to (Kevin, member of Senior Leadership Team, Phase 2)

The management culture is described by a number of teachers as top-down. This is accompanied by inadequate involvement in decision-making, and inadequate communication of change to staff before it is launched to students and parents.

As one of the teachers asserts:

Management will launch an initiative, and it goes out to parents, it goes out to kids, and the staff are just totally not involved, so we have to change that culture. And that comes from the top (Kate, Phase 2)

The staff body in Rural school is relatively small and so the head teacher and the senior leadership team have an informal presence with staff. Interviews with teachers and leadership team suggests that such conduct has sometimes caused confusions on both sides. The leadership team can perceive such relationship to suggest a “real community” and a “flat management structure” in the school.

Conversely, some teachers can become overfamiliar with the leadership team within their professional capacity:

We are very supportive and it has drawbacks, some people are a bit overfamiliar. This week I need to have a conversation with somebody to say you know you can't speak to me like that in front of parents (Kevin, Phase 3)

A number of interviewees suggested a misjudgement by the senior leadership at Rural school of teachers' workloads. As highlighted in the excerpt below, the burgeoning demand is synonymous with a lack of recognition by the senior leadership of the time constraints faced by teachers:

Getting leadership to give you time to do a job is like banging your head against a brick wall. It's like they think we've got lots of time, but we've got lots of jobs to do, and none of us are sitting around at lunchtime with our feet up. Every single one of us is working through lunch (Claire, Phase 3).

5.2.2 Organisational problems identified in Change Laboratory sessions

Mirror data was collected at Rural school by conducting interviews with teaching and non-teaching staff, middle managers, and senior leadership team. The mirror data reflected the following recurring themes: Community; Consistency in policy implementation; Decision-making & change; Communication; Teaching for exams; Support; and Attendance. Mirror data was presented to the Change Laboratory group as anonymous quotes collated under these themes. Video clips was also shown of the interviews in relation to each respective theme in cases where permission had been sought from the interviewee. The Change

Laboratory group were subsequently asked to consider each theme with respect to the Activity System model. The group were encouraged to discuss them and deduce whether the theme was in fact a pertinent challenge that needed to be taken forward. The Change Laboratory group subsequently distilled their problems and challenges into three major areas: Community, Consistency, and Teaching for exams. It is worth noting that the label for each theme and the range of issues discussed under each label was the collective decision of the group.

Community

The diminishing sense of community at Rural school was raised as a major concern by many interviewees. Some staff complained of low morale and cohesion, and reminisced the days when the school had a “larger friendly staff” and a “packed staff room”. The “staff room had become much quieter”, and the “general chat there always comes round to moaning”:

The staff I think, have become very departmental focused. I think that is due to the pressure of work. So we don't tend to meet in the staff room very often. When you go for lunch it is only a handful of people there (Kate, Phase 1).

With the national policy transition to more monitoring and performance-related recognition and pay, teachers had become more department-focused, and departments had developed their own spaces for breaks and meetings. As one teacher notes:

There's nothing really done to bring everyone together in the school (Rebecca, Phase 1).

The contemporary results-driven culture has other consequences for the school community, namely competition and low recognition. Both issues had adversely affected the notion of community within the school, and isolated teachers within their departments:

On a professional front, the communities are within the departments. I think there is a sense of competition between the departments, e.g. whether science have better results than English etc...

Researcher: What's the incentive or motivation for this competition?

I don't know what the motivation is...just to know that you're a better department. I guess it boils down to all the results, and you have Inset days in September and results go up about which department has got what grades and which department hasn't succeeded so well. I guess that then brings in the competition to try and do better.....yet there is no recognition for being better in this school....there's so much pressure in getting the results....if you do well in your subject, there is no recognition. There's always somebody telling you that you can do better.....so it doesn't matter how well you do or what class you've got (Emily, Phase 1).

The fragmented school community had led to the disengagement of staff with school leadership, which can be linked to perceptions of low levels of collective efficacy, involvement, and trust. Another issue raised was the ineffective and superficial process of staff consultation, which can be a cause and a consequence of staff disengagement, as highlighted by a teacher below:

What annoys me is when senior management says we want to do this can you let us know your thoughts, and people don't say anything...I have seen a few examples

when the senior management has said this is our draft, put your ideas down, and then they say here's the final draft and its exactly the same as the first draft...So people have said if your not going to listen to us don't ask us (Rob, Phase 1)

There was consensus in the Change Laboratory group that the “pressure” from senior leadership that “everyone can always do better” was not helpful. This isolating pressure to improve results meant that “we do not learn from some team’s strengths/strategies”. They suggested that “maybe we need to get all our Usain Bolts together and share successes”.

Consistency

Consistency was highlighted in numerous interviews and discussed extensively during the Change Laboratory sessions. Inconsistency in implementation of rules seems to follow a negative feedback loop. Some deviate from applying the rules without punitive consequence, and those who adhere to the rules start to question why they should continue being consistent, leading to their frustration and eventual indifference to consistent application of the rule:

Consistency is a major problem; all staff doing what they are meant to be doing, and there's a consequence for not doing it. I know in my department they get incredibly frustrated, they will do what is asked of them, and they believe that other people don't do it and nothing happens to them...so then there is the attitude of why should I do it (Hannah, Phase 1).

The inconsistency by staff as well as senior leadership was found to be visible to children in Rural school, which consequently affected their perspective and behaviour:

Many staff felt frustrated because they did not feel that policies were always well modelled by senior staff and senior leadership team. Uniform was a subject that came up and staff said that they found it hard to 'battle' with students who had been allowed to 'keep it on' in a previous lesson... Teachers thought that sometimes, the kids were able to 'play off' teachers against each other, because they know that we are not being consistent (Change Laboratory session minutes, prepared by participating teacher).

A number of anecdotes were cited in relation to the senior leadership 'bending the rules' for certain disruptive students and making decisions that contradicted the judgment of the teacher involved. This was perceived as degrading for teachers, and adversely affecting the behaviour of other students. The following demonstrates one of the consequences of this inconsistency:

Pupils will say if Joe Blogs doesn't do it, if they get to go out to play football and their disruptive, and I'm here doing a theory lesson, why should I behave well...so I'm not going to have a massive disruptive behaviour, but I'm going to talk to my friends (Rob, Phase 1).

Analysis of the interviews unveiled a strong association between the themes of consistency, communication, decision-making and change. Some policies were sudden changes and not adequately considered:

I suppose another thing that is difficult is somewhat the reactive nature of things that can happen here, sometimes in the very last minute (Hannah, Phase 1).

The decision-making culture is coupled with communication challenges:

The culture here is “top-out”, not even top-down! Decisions are made and things go straight out without going to teachers first (Mary, Phase 1).

As well as leading to inconsistencies, poor communication of decisions result in frustration among teachers. It can undermine the authority and respect of teachers in the classroom, as demonstrated in the following excerpt:

Kids arrived to my tutor group with new white polo shirts last Monday. I knew nothing about the summer uniform. The kids knew about it, apparently the parents knew about it. As a tutor I knew absolutely nothing about it. About some changes they just forget to tell you (Tina, Phase 1).

Perception of ‘relevance’ is another antecedent to the consistent application of rules. Some rules and policies were perceived as not relevant to certain departments or teachers, which results in indifference and subsequently inconsistency in their application:

You are supposed to put “SP” next to a spelling to show that it is a spelling mistake, rather than crossing it out as I have always done. I am now putting SP in the margin. That’s one of the things I can’t see the point which means I struggle with it because I can’t see the point. If I saw the point, I would do it. But when I don’t see the point, I don’t see it makes any difference to kids (Sue, Phase 1).

Relevance of policies was seen to be partly associated with how well the basis and intentions underlying the policies were understood and accepted. The Change Laboratory group highlighted that the intentions, objectives, justifications, and expected outcomes of policy change needs to be adequately communicated, if there was expectation for staff to consistently adhere to these changes:

I think a lot of times it is just: this is the change that is happening, rather than we make this change because of this and we think that in the future we are getting these results from it. Rather than just being told the change, it would be nice to know what the big picture is (Emma, Phase 1).

The Change Laboratory group were in agreement that the issue of inconsistencies in policy implementation, as well as other inter-related themes such as communication, decision-making, and change, need to be addressed in a systemic manner.

Teaching for exams

Teaching for exams was raised as a major barrier for imparting knowledge and skills that are relevant to children's lives, largely due to the contemporary results-driven culture:

I used to do a lot of lessons just for fun...they would be academic-based and have an outcome and a skill... I feel now there is less time for these things because I am driven by the curriculum and we are working for exams because you are judged on that (Sue, Phase 1).

The drive for results has led to students being taken out of lessons such as History or Geography for extra lessons in Maths, English or Science. The Change Laboratory group agreed that “this disrupts other subjects, resulting in poor results in other subjects and more pressure”. The excerpt below demonstrates the external pressure on the school leadership to follow this agenda:

I remember saying to Neil [head-teacher]: "Stop taking kids out of my lessons," and he said: "Mary, we have to, because if we don't get English and Maths up we are not going to get money. If we're not getting money we're going to make redundancies. If we make redundancies we're not going to have a school, etc" (Mary, Phase 3).

The Change Laboratory group also discussed the difficulty of “getting students to have a passion for the subject as there are time pressures towards the exam”. It was raised that “50% of passing the exam is knowing the information, and 50% is knowing how to do that exam paper”:

As a teacher you want to teach the children to achieve the best, but you have to 'play the game': making sure that you get a certain percentage of your students up to that C level, and at times that means teaching them how to do the exam rather than teaching them skills and problem solving (Rob, Phase 1).

The Change Laboratory participants were asked to request from their students a short anonymous essay on the sources of their positive and frustrating experiences at Rural school. One of the recurring themes from the student feedback exercise was that teaching contained too many Powerpoints and not enough “active lessons”. The Change Laboratory group associated this issue with

the theme of “teaching for exams”. The group regarded this theme as an important issue to address, and to develop sustainable and pragmatic solutions considering the constraints. They complained of “not enough successful collaboration”, and highlighted the need for fostering transferable skills and making cross-curricular links. Suggestions at this stage included cross-curricular projects and “suspended timetable days/Deep Learning Days”. However, the Change Laboratory group conceded that “we are limited to the extent to which we can influence this issue”:

If you're looking at the system of teaching and why do people teach the way they do, people feel disempowered, because there are so much external forces (Ed, Phase 3).

5.2.3 Outputs of Change Laboratory

Utilising conceptual Activity-theoretical models, the Change Laboratory group at Rural school subsequently explored potential avenues to address the identified problems in the Activity system, and devised three broad solutions:

- 1- Curriculum review
- 2- Staff cohesion initiatives
- 3- Collaborative management system

Curriculum review

The Change Laboratory group discussed the prospects of a collaborative curriculum review, and considered that the exam-related stress at KS4 could be

due to an “ineffective KS3”. However, the proposal for a curriculum review was introduced with reservations. Although the group were in favour of a fundamental change to the curriculum in order to address the contradiction between “teaching for exams” and “make learning relevant to student’s lives”, this was generally perceived as unrealistic. The participants had little hope that such reform is achievable, given the structural constraints on teachers coupled with the predominant results-driven national education policy. They could not envision the implementation of this initiative in line with their ideal, and adopted a pragmatic approach to ‘park’ it as a long-term goal.

Staff cohesion initiatives

As a result of the reflective and historical elements of the Change Laboratory, the group acknowledged the significance of ‘community’, and the need to build social capital and staff cohesion in the school. The reflective elements had a profound impact on a number of participants, who were motivated to stay behind after the Change Laboratory sessions, and to discuss possibilities to develop the school community and enhance staff cohesion.

The output has been multiple avenues to address staff morale and wellbeing. The school previously had a ‘Social Committee’, which teachers described as traditionally run by one or two of the more senior staff and limited to buying gifts for leavers and teachers on maternity leave. The Change Laboratory group decided to revitalise the Social Committee by involving more people, and nurturing the participation of staff in decisions about social activities. For example in organising the Christmas event, the Social Committee strived to

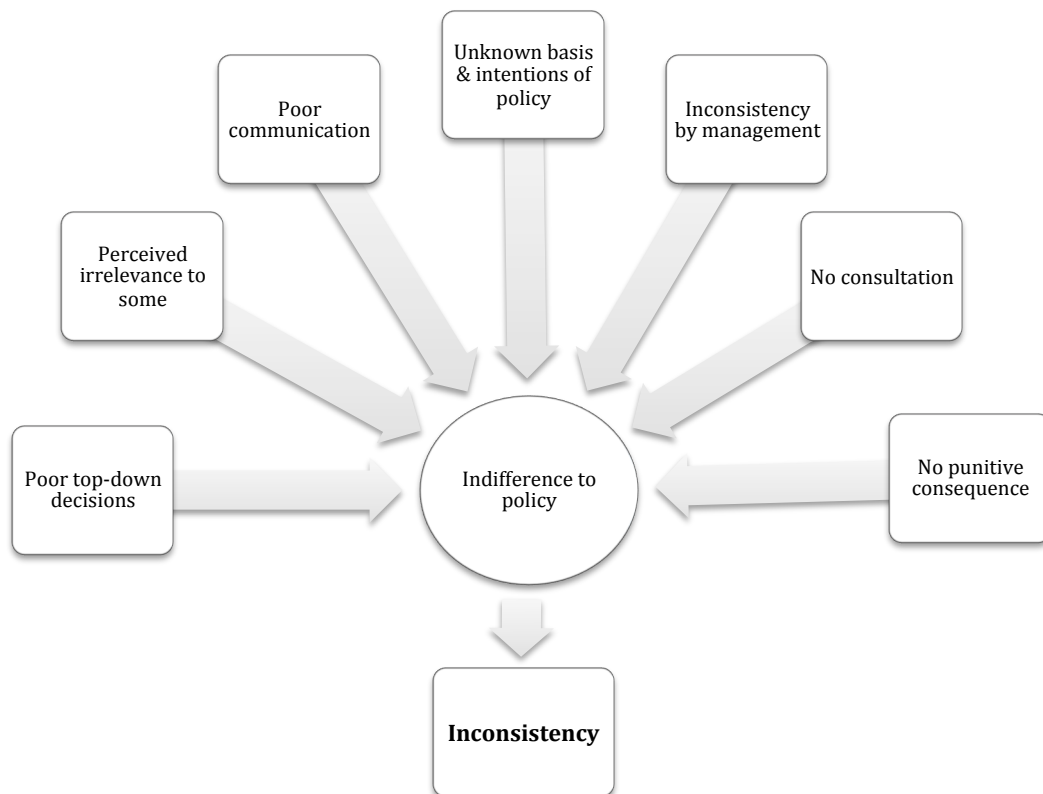
achieve consensus for the theme and venue, rather than the norm of arranging the event and subsequently informing staff. The Committee devised near-term, medium-term, and long-term goals, and arranged a number of activities such as staff lunch days, an end-of-year hog roast in the school fields which was widely attended, a Christmas party with majority attendance compared to previous years, and other such activities. Teacher interviewees report that the staff room is now used by a significantly larger number of people on a regular basis. The Educational Visits Co-ordinator, who was a Change Lab participant, planned more 'staff-oriented' activities, including a staff canoeing weekend, hiking for staff, and organising an outdoor activities club as a platform for such activities to continue. The surge in attention to social and collective aspects in the school also resulted in action by the senior leadership. For example, the Head of Personnel allocated a budget for initiatives for staff wellbeing such as a free massage service. The social cohesion initiatives and their impact were summarised by one of the senior leadership as follows:

We have around 40-50 staff [teachers] here and we have 32 going on the canoe trip which is a really really good result and we have people I would never ever see in a canoe. We have everybody from the cover supervisor to the assistant head, to NQTs, to guys who have been here 10-15 years... Christmas dinner was great, best one we've had for years, and staff room is more packed... We also did a big hog roast and a band at the school at the end of the year instead of disappearing at the last minute. We were dancing, it was really good fun actually. This came about at the end of last year for the first time as the results of Change Lab, and we are going to keep that going year on year. So I think the staff welfare thing has been really successful (Kevin, senior leadership team, Phase 3).

Collaborative management system

The Change Laboratory group discussed the issue of consistency extensively, analysing it by considering each element of the activity system. Figure 5.1 demonstrates the antecedents to inconsistency as revealed from the data in Rural School.

Figure 5.1 Antecedents to inconsistency in application of policies



To overcome the multi-faceted problem of inconsistency, the Change Laboratory group stressed the need for accountability. However, participants were cautious

for this not to be misinterpreted as more monitoring and “strict” leadership, as this was not seen to be desirable or sustainable. It followed that achieving real accountability requires teachers to have ownership of the policies and rules, and that a “feeling of ownership” and a “sense of accountability” leads to consistency. Further delving into the issue of consistency resulted in a consensus that real involvement of all stakeholders and specifically staff in devising and revising school policies will achieve ownership and accountability. The new system for policy review and implementation was a result of this discovery.

Best-case and worse-case scenarios were subsequently introduced, in order to facilitate the group to unravel the specifics for the proposed system. This is in line with other studies that suggest contemplation of worse-case scenarios can help articulate functions within the intervention change processes (Hawe, 2015). During this process, one of the Change Laboratory participants took the initiative to devised an outline process map in her own time (Appendix 5.1) and brought it into the subsequent Change Laboratory session in order to facilitate the process of finalising the new system design. The exercise resulted in a number of iterations of the process map for the new system. The group then made plans to pilot the new system and disseminate this systems-thinking approach across the school. They initially presented to the head-teacher, who was encouraging and supportive of the group with piloting the new system. The group then planned training sessions and announcements in staff meetings and whole-school training days. Further, they planned an informal dissemination approach, appointing group members to be responsible with speaking to specific departments about the new way of working.

Piloting the new system

The Change Laboratory group planned two “mini-pilots”, trialling the new system by group members on two department-level policies, in order to further fine-tune it. The group subsequently planned to pilot the new collaborative management system with a whole-school policy (Marking Policy). The choice of marking was topical, as this was raised as a weakness in the schools latest Ofsted (government inspection) report.

Marking policy review started in the new academic year (September). The policy essentially consists of a marking template, called the ‘blue form’, attached to pupil’s workbooks, and instructions on how the marking was to be conducted uniformly across the whole school. The policy had been running for four months in the previous academic year (2012/2013), and reviewing it was seen as a suitable pilot for this new system. As one of the teachers described:

They had become a thing that everybody needed to do as like a sort of a modus operandi, and then we kind of lost the reason why (Susan, Phase 3).

Data collection for the policy review was conducted by Change Laboratory participants before the end of academic year 2012/2013, which included reviewing workbooks and asking for feedback from other teachers. The data collection exercise was repeated at the beginning of the new academic year to gather more comprehensive data, and to follow the collaborative reviewing steps in the new system. The group subsequently analysed this information and the result at the end of the collaborative process was recommendations for small

changes to the policy, rather than dismissing it and devising a new policy. The changes included a flexibility to adapt certain elements of the marking pro-forma to better suit individual departments:

The summary decision was that we could let people adapt things within their departments... They more sort of selected things that worked for themselves which is quite refreshing because previously somebody would've said, "I wonder if we still need these," and then we would've ended up with a new pro-forma and everybody doing that pro-forma and no real rationale about why (Sarah, Phase 3).

This approach reflected earlier concerns by staff that policies must be relevant to them, and that this is best achieved with their involvement and participation in devising policies relevant to them:

...I think staff quite appreciated that they were consulted with, it was just a case of, here's what we found, but we found it together. So there was no kick against it in the [announcement] meeting. It was quite acceptable, whereas in another situation, without the way that it was done this time, people would've walked out of the meeting and said: "brilliant, another sheet, I wonder why we've got to do that?" (Claire, Phase 3).

The result of the pilot also reflected teachers' disapproval of constant radical change. The excerpt below reflects the individual and organisational consequences of that status quo:

...[constant change] is quite stressful for everybody involved because a change like that needs training with the children, it needs training with the staff, and there

would've been very little of any of that. There wouldn't have been much buy-in and it would've gone a bit pear shaped (Harriet, Phase 3).

Embedding the new system

Although the senior leadership team embraced the results of the pilot, they were critical of the length of time taken to implement the new system. Policy review would have typically taken 1 or 2 weeks by a member of the senior leadership team, while the pilot took nearly four months. The Change Laboratory participants acknowledged that there were a number of lag periods between the different steps of the process, and that it could have been implemented more efficiently. They subsequently gave responsibility of 'facilitator' to a young middle-management teacher who was able to devote more time on embedding the new way of working. However, the Change Lab group stressed the need to effectively communicate to the senior leadership team that the process of policy review must be collaborative, an implication of which is that it will take longer than the traditional approach:

If you're looking at the long-term, sustainability and effectiveness of a project, it has to take time... I think it's a fault of all educators. They don't understand time. They think that we can knock these things together and push something out, because that's the way we're used to doing it (Mandy, Phase 3).

The new policy review approach was perceived as a significant transformation. It was seen as a departure from quick and unsustainable decision-making and dealing with change, and instead a considered approach to analyse problems, involve staff, and generate consensual and sustainable solutions. The new

approach also served to give legitimacy to the policy, as teachers were involved in the process.

Considering the critical reaction of the senior leadership to the implementation of the pilot, the head-teacher appeared to the new 'facilitator' to be supportive of the approach:

I was surprised by some of his comments, in the sense that I didn't realize how for Change Lab he was. I was surprised that he was so positive about it. And that's only because I haven't had any dealings with him before about it.... (Emily, Phase 3).

Parallel to the piloting of the new system, the Change Lab group decided to inform staff of the issues raised in the Change Laboratory sessions in the form of a survey. These included staff welfare and development, teaching for exams, time management, and other school policy areas. As the facilitator asserted:

We're trying to increase staff buy-in and input to Change Lab (Emily, Phase 3)

The idea was to ask staff for their priorities to address with the new policy review system. The group facilitator subsequently met with the head-teacher to discuss these priorities, who identified the items which "can't change due to either government issues or external factors". The Change Lab group had a pragmatic perspective in conceding that "some decisions still need to be made at the top". Thus there was a remaining list of priorities from the staff feedback which the Change Laboratory group considered, in order to focus on the next steps with embedding the new collaborative management system. In line with

increasing involvement of staff in this process, the group requested for a member of each department to attend subsequent meetings.

5.2.4 Organisational impact

Structural/cultural impact

The Change Laboratory intervention and its outputs at Rural school have affected the organisation in a number of ways. Teachers regarded Rural school as being more friendly and cohesive compared to the recent past:

I think we've got a much more cohesive staff. I think everyone that's here wants to be here, and I think we're all kind of looking forward... I find that you walk along the corridors now and people smile and say Hi. That didn't probably happen a couple of years ago (Rebecca, Phase 2)

The 'multi-voiced' dimension of the Change Laboratory intervention has nurtured a culture of dialogue and participation in Rural school, as highlighted by a teacher in the following excerpt:

Consultation got much better. People started to actually meet and talk, which actually used to be a little bit of a swear word; Talking in a group was a bit like somebody was wasting time (Sarah, Phase 2)

Teachers cited an increased recognition of staff efforts as a new trend in Rural school:

I don't know if David [head-teacher] is doing this deliberately. I hope he is, but you know, we're getting a lot more treats. I know that sounds silly, but it's things like: we did a workbook review, so everybody was under quite a lot of pressure to get books in and get the book review done. And we all had bacon sandwiches the following morning, and we've all just had [free] lunch today... so there's a lot more treats going on. We feel like we've been a bit more rewarded, which is good because if somebody acknowledges that you're working hard, it's a big boost, isn't it?
(Mandy, Phase 2)

Continuation of the Change Laboratory approach in the form of the 'Change Lab group', and its establishment within the school structure suggests a concerted effort to embed the principles of this approach within the organisation. Organisational learning and development is apparent in the Change Lab group's decision to nominate a 'facilitator' to optimise its activities, and efforts to expand the group and attract more teachers to participate in achieving its school improvement objectives. Further, the group has planned subsequent policy reviews by consulting the staff body on priority policy targets. The systems-thinking approach that has been pursued by the Change Lab group involves collective learning, striving for maximum participation of staff, and considered reflection on the processes of change. This organisational impact is apparent in the following excerpt by one of the teachers who is also a Change Lab participant:

We've had a few meetings where we've been looking at how we can take forward the strategies that we talked about in the previous [Change Laboratory] meetings where we were learning, and now, I think we're still learning, but we're trying to

sort of apply things to situations that are coming up within school and I think it's been quite successful. Rather than just saying, "let's just do it like this," we've kind of thought through how we're going to do things (Susan, Phase 3)

Impact on leadership

Staff morale and organisational climate has become more topical in Rural school after the intervention. As a member of the leadership team reflected: *"We have to ensure that our staff is a happy staff"*. He continued to elaborate on the emphasis that is now given to staff morale by the leadership team:

Staff morale is discussed at Change Lab, its discussed at the Leadership team- we have a staffing item as a standard agenda on the Leadership team meetings. If staff are feeling a bit brassed off, anecdotally, then we'll discuss that, if there is individuals having issues we'll discuss that... (Kevin, senior leadership team, Phase 3)

The Change Laboratory seems to have had an impact on leadership thinking, attitude and conduct in a number of ways. The following excerpt demonstrates the impact of the new policy review system on the leadership's approach to decision-making:

Before, he (head-teacher) was saying to people: "you need to do this and change it" and the sort of brief was "we have this problem, go and fix it". Whereas now, it seems as if leadership is beginning to say: "could somebody look at this".... and it wasn't necessarily expected that you had to change something, or something had to be done within two weeks (Sarah, Phase 3).

Although it seems that the head-teacher had subscribed to the principles of considered and participatory decision-making in the new system, it was acknowledged by a number of teachers that some decisions “still need to be made from the top”. This was also evident from the aforementioned excerpt of the meeting between the Change Lab group facilitator and the head-teacher, in which a number of proposed areas to be addressed by the new policy review system was ruled out by the head-teacher as unchangeable due to what he stated as external factors. In analysis of the Change Laboratory intervention in Rural school, the central contradiction was found to be between the macro perspective, priorities and agendas of the senior leadership that shape organisational policies and processes, and the micro perspective of those having to enact and comply with the decisions made by senior leaders. This meeting suggested the persistence of this contradiction, albeit to a lesser degree.

In the baseline interviews, a member of the senior leadership team discussed the new performance management agenda, which includes rigorous teacher assessment and classroom observations that will be directly related to moving up as well as down the pay scale. Underperforming teachers were discussed who would receive extra support and a “heavier regime” of classroom observations. It was acknowledged that teachers were unhappy with these observations, but argued that the school leadership should not be blamed for this and teachers know that it is a government agenda. There was also a perception that “most people think its fair while its not loved”, and teachers have found that they ‘have to get used to it’.

In the follow-up interview at Phase 3, leadership attitude on this issue had transformed into one of striving to alleviate the pressure on teachers as a result of rigorous classroom observations:

We have recently looked at changing the way we monitor lessons to make sure staff don't feel, hang on, you're doing this too much, you need to back off, rather than react to a Union call saying that you are going into lessons too much (Kevin, senior leadership team, Phase 3).

During the same period of conducting the Change Laboratory sessions, there was a transformation in the school leadership structure. The core leadership team of four had expanded to include a number of middle managers (heads of departments) to be members of the 'Extended Leadership Team'. It emerged that a number of Change Laboratory participants were those who were placed on the Extended Leadership Team. These appointments or the prospects for their expected roles and responsibilities may have been a motivation for these teachers to participate in Change Laboratory. Thus implementation of Change Laboratory outputs effectively coincided with a greater influence of proponents of the Change Laboratory approach within the school leadership. Further, these new members of the leadership structure in Rural school are champions of the Change Laboratory, and so its principles and practices can have more influence in shaping the organisation in the medium and long term. It was however pointed out by other teachers that influence of new members of the leadership structure was limited:

Half of the people on the senior leadership team are in the Change Lab group. But that's not your deputy head and that's not your head (Emily, Phase 3).

Many decisions are made exclusively by the head teacher in Rural School. Further, the teachers perceived other strategic decisions to be made by the 'core leadership team', consisting of the original leadership prior to the Extended Leadership Team. It thus seems crucial that the head-teacher and core leadership team had trust in, and were committed to the Change Lab effort:

Part of the reason why I don't think Change Lab has been embedded as successfully as it could be, is because there is still a difference in perspective between leadership team and Change Lab... We as a Change Lab group, haven't sought out their opinions or we haven't gone to them with stuff, or we haven't included them in things, and I think that they haven't bought into it, really (Emma, Phase 3)

There seems to be contrasting views in the school on whether the core school leadership have bought into the Change Laboratory approach or not. As the Change Lab facilitator pointed out in an aforementioned excerpt, her impression was that the head-teacher had not bought into the approach until she spoke to him about it and saw his support. In line with this view, another teacher stated:

I think the head-teacher bought into the idea when he came to the Change Lab team, when he visited us (final Change Lab session). He seemed really interested and he has allowed people to take projects in that direction (Sarah, Phase 3)

At the time of the final phase of data collection, the head-teacher had left Rural school and an acting head-teacher who was previously deputy head-teacher at

Rural school was appointed. The head-teacher is perceived to have a defining authority on the direction of the school and in abolishing and installing school programmes and policies. Thus a change of head-teacher was cited by teachers at Rural school to cause profound insecurity and uncertainty. Teachers were made aware of the plan for the departure of the head-teacher in the period between Phase 2 and Phase 3 of data collection, and the uncertainty surrounding potential changes included the implementation of the Change Laboratory outputs and the continued existence of the Change Lab group. Despite this apprehension, the acting head-teacher had outlined five school strategies, emphasised as “non-negotiables”. One of such strategies was to “Embed Change Lab” (Appendix 5.2), demonstrating the impact of the Change Laboratory intervention on the core leadership structure within Rural school.

Diffusion into other initiatives/structures

The leadership, cultural, and structural impact of the Change Laboratory intervention on Rural school has resulted in the diffusion of its principles and methods into other organisational initiatives. Prior to the piloting and implementation of the outputs of the Change laboratory cycle in Rural school, the senior leadership team had assigned responsibility of reviewing the Homework policy to a middle-manager (head of department). She was a Change Laboratory participant and thus decided to utilise the principles of this approach, as well as the process of the new policy review system to facilitate the policy review. The outcome of the policy review was not finalised and not released to the research team. However, teachers cited this review as having a collaborative nature and

being different to the traditional policy change approach in Rural school, although they were critical of the initiative in retrospect for being assigned to one person rather than a team of people such as in the Change Lab structure:

She was asked by the senior leadership to do a homework policy review, so she would be following the Change Lab process, and she did ask staff and she asked students...But she has been fairly unwell and it hasn't really moved forward, if there was a team of people doing it, somebody else could have picked that up... (Mary, Phase 3).

Rural school is planning to apply for Academy status, which is the preferred route by the current government for schools. Academies have freedom from local authority control, with autonomy over how teaching is delivered and more control over admissions and student numbers. Only schools with an 'Outstanding' or 'Good with Outstanding features' Ofsted rating can apply for academy status, and they must commit to supporting other school(s) to raise their standards.

Two local primary schools, which serve as feeder schools to Rural School have gone into 'special measures'. This is a status applied by regulators (Ofsted) to schools who fall short of acceptable standards. Rural school is planning to incorporate these two schools into their academy bid. These schools have problems with their teaching and learning, and so the (acting) head-teacher has decided to form a 'Teaching Alliance'. This initiative includes appointment of five members of staff to work on "changing teaching and learning", not just for the two primary schools but also to transform teaching and learning in Rural school.

The Teaching Alliance group will have one day a week off-timetable to focus on this initiative. The (acting) head-teacher has instructed the Teaching Alliance team to “work to a Change Lab approach as one of the non-negotiables”. Two members of the Teaching Alliance are also Change Lab group members:

Mandy and I are on that team and we are very big fans of it [Change Lab], and we know the only way you're going to keep staff with you is by having this system of reviewing, taking peoples opinions, building them into what we do from the ground up. (Kevin, senior leadership team, Phase 3)

Another member of the Teaching Alliance stressed the significance of following the Change Laboratory approach in order to achieve objectives:

We have to do it properly. We can't just throw something together and get it out there. We have to go through, essentially, the Change Lab process which is asking people what they want, talking to the primary schools, think creatively about how we're going to do things, but not just knee-jerk react and put it out there (Mandy, Phase 3).

It was interesting that the Change Lab members of the Teaching Alliance strived to address some of the tensions and challenges that were left unattended in the generated solutions of the Change Laboratory. As one of the teachers explained:

One of our hopes with the Teaching Alliance is that we change the ethos of how we work. We have to change this culture that we are able to do fantastic things in no time at all, and that is something that is very important, I think (Claire, Phase 3).

There has also been more fundamental discussions on the definition of a “good teacher” in the Change Lab meetings which will also be transferred into the Teaching Alliance meetings. The excerpt below demonstrates this search for meaning and purpose for teaching professionals:

We don't know what is a good teacher. Is it someone with two outstanding lessons? Is it somebody who's got fantastic results? Is it somebody that contributes to the whole school, wellbeing of the students around the school. What is a good teacher? So we need to really unpick that and find out what a good teacher is and how we can really assess whether the teaching and learning is good (Mandy, Phase 3).

5.3 Urban school

5.3.1 Urban school outline

Urban school is situated in a city with a population of around 150,000 in the South East of England. The school is in an area of the city with high relative deprivation and home to a number of ethnic minorities. Some parts of the school's catchment area are among the 20% most deprived areas in England, experiencing multiple levels of deprivation such as low skills, low income, and relatively high levels of crime.

Urban school is a large secondary school with around 1200 students and 80 full time equivalent teachers. It is a Catholic school with around 40% of its student population with English not as first language. The school has been struggling with results, student behaviour, teaching and learning, and general management and organisation in the past few years. The latest school inspection (Ofsted) rating for the school is "requires improvement" (the ratings are "outstanding", "good", "requires improvement", and "inadequate").

Many interviewees raised the challenge of low aspirations of students at Urban school, and relate this to student backgrounds, parental education, and the surrounding community. Low student aspirations was linked with the results driven culture within contemporary education, and teachers viewed this as a key cause of stress and frustration at Urban school:

The results that you have to be accountable for- the different markers that you need to meet x percent, and x percent of your students needing to meet their

predicted grades... but despite what you input as a teacher, you have no control over students doing their homework or there's no follow up on their part, but I would say the pressure, the blame is still on you.... You have a lot of demand from school- often parents, students, colleagues but then you have control of the student for that hour and then somehow outside of that hour you're hoping that they are following up or revising... Even though you call her and you meet her parents in the evening and you set up homework and you teach lessons, if the student doesn't do well then that falls on your head (David, Phase 1)

The staff body at Urban school have been described as a fragmented community, partly due to the architecture of the school and the dispersed nature of the buildings and the different faculties:

We are quite a fragmented staff, just by the nature of our building. I never come over to this main staff room because I teach over in the xxx. building- we have our own little staff room over there where people from that area go to, and I don't get to mix with a huge amount of staff (Helen, Phase 1).

The core senior leadership team is the head-teacher along with three deputy/assistant head-teachers. Decision-making in Urban school was generally described during baseline interviews as top-down, as evident in the following excerpt:

Policies are discussed at senior leadership meetings and it gets mentioned to us at briefings and a document could get emailed around. We have briefings three times a week.... We would voice our problems to our head of department and go through that route (Michael, Phase 1)

Teachers generally spoke highly of the head-teacher at a personal level, finding him supportive and approachable:

We're really well supported in other things- the Head-teacher is really good in making us feel valued, and he is really understanding of situations and he does everything he can do to help, and he is approachable (Katie, Phase 1)

The head-teachers had a generally positive attitude towards new ideas and initiatives. As noted by one of the teachers:

There's so much going on...the school is like someone carrying a lot of things, welcoming, trying to embrace a lot (Elizabeth, Phase 1)

This characteristic had also led to challenges in the school, namely the approval of many suggested initiatives, which had resulted in a lot of duplication, miscommunication, and generally disorganised atmosphere relayed by interviewees. The excerpt below demonstrates the consequence of taking on many initiatives and projects at Urban school:

The organisation is disorganised! There is a lot of ambiguity and people don't know whose role is what and who is responsible for what (Catherine, Phase 1)

Shortly before the start of the Change Laboratory intervention, there was an expansion to the senior leadership team, promoting around 10 middle managers to form an 'Extended Senior Leadership Team'. There was uncertainty and ambiguity with respect to the roles and authority of the new members of the

extended leadership team. Further, a few teachers raised a sense of dissatisfaction with the circumstances of recruitment of the extended team:

We don't really know what they do. And I think that the way it was done was quite, I want to say backhanded but I want a better word. It was all done very under the radar. People were promoted but the jobs weren't necessarily advertised. So you don't really know how they came to be in those positions. People suddenly got titles like assistant principle and you think, well where did that come from? Nobody really knows! So its causing a definite level of unease amongst people (Jenny, Phase 2).

Another teacher expanded on the uneasiness caused by the recruitment of the extended leadership team:

I don't really know how to talk to some of these people anymore because you used to be friends with some of them and you talk quite candidly about things but now they're in a leadership role, you end up talking to them slightly differently, because you don't necessarily want all of your conversations to go back to leadership (Karen, Phase 2)

There are restructuring plans for Urban school to intake children from as young as 4 years old, and provide a thorough education from 4 to 19 years of age. This entails major construction work at the school site, as well as uncertainties raised by teachers relating to integrating young children with teenagers in the playground and the wider school community.

5.3.2 Organisational problems identified in Change Laboratory sessions

Mirror data was collected at Urban school by conducting interviews with teaching and non-teaching staff, middle managers, and senior leadership team. The mirror data reflected the following recurring themes: Students learning; Organization, responsibilities and support; Behaviour, consistency, and accountability; Community; and Communication. Mirror data was presented to the Change Laboratory group as anonymous quotes collated under these themes. Video clips were also shown of the interviews in relation to each respective theme in cases where permission had been sought from the interviewee. The Change Laboratory group were subsequently asked to consider each theme with respect to the Activity System model. The group were encouraged to discuss them and deduce whether the theme was in fact a pertinent challenge that needed to be taken forward. The Change Laboratory group subsequently distilled their problems and challenges into four major areas: Student's learning; Behaviour and consistency; Organisation and communication; and Community. It is worth noting that the label for each theme and the range of issues discussed under each label was the collective decision of the group.

Student's learning

Student's learning was raised as an important concern, as teachers felt that students had low aspirations at Urban school:

Some students are so engaged and motivated; on the other hand there is a big section of our students here who seem to think that school is just something you do; they don't necessarily see its purpose and that it's a stepping stone for the future;

they are here because they have to be here, and I think we can do more to educate people about education...I don't know if it's a catchment thing! (Rachel, Phase 1)

There were contentious suggestions by some teachers that the challenges of student learning at Urban School may be related to the type of students at the school, their background, and the wider community. For example, inadequate parent engagement was cited as one such antecedent to the challenges of student learning:

We don't get the parental support that other schools do, possibly due to the catchment area (Mary, Phase 1)

Teachers consistently referred to a concern for targeting the full spectrum of children in the school, and avoiding the possibility of missing certain groups. The phrase "every child matters" was used regularly when relating to this phenomenon:

My passion is that every child matters and we have to provide every child with an education which allows them to progress to the future (Clare, Phase 1)

There were different viewpoints on which group was at risk of exclusion or otherwise less attention, with some teachers arguing that the least achieving students fit this criteria:

The top end and the middle set look after themselves and go through- we don't need too much intervention with them...In this school we have quite a big bottom end. We have those that come to us with quite bad learning difficulties; also lots of

children with huge emotional and behavioural difficulties. Some with absolutely zero parental input (Kate, Phase 1)

Conversely, other teachers were of the opinion that the middle group receive less attention:

I worry, not about the really gifted and talented, or the really naughty or disaffected, but about the middle, I think we're missing the middle...there are kids who are always here, always on time, always wearing their uniform- what can we do for them, to help them, to aim a little bit higher? (Natalie, Phase 1)

The Change Laboratory participants were asked to request anonymised essays from their students on the positive and negative aspects of their experience at Urban School. A common learning-related complaint raised by students in this exercise was the over-utilisation of Powerpoint in teaching and learning. Teachers were also concerned that students prioritised peripheral issues over learning matters: e.g. canteen food, timetables, queues, toilet cleanliness, and uniform. This was related to the problem of low aspirations and inadequate relevance of learning to all students.

It was highlighted that the contemporary education model of teaching to exams doesn't suit many students at Urban School:

The current results culture doesn't suit a lot of children- there's quite a few kids who just find exams difficult. For example one of the boys in my tutor group, I've spoken to his science teacher, and he is amazingly good at practicals. When given the test paper, he's getting really poor marks, his literacy is low, he doesn't know

how to express himself on paper. Other people in his class can't necessarily follow instructions as he can with experiments, and they are not as dextrous as him, and that is not shown in any way in any of his results, which is a shame (Annie, Phase 1)

Another aspect of low aspirations that was highlighted was the perception around the school that academic achievement is not 'fashionable' or 'cool', and students were subject to peer pressure to disengage:

I was talking to a year 11 student the other day, I said are you doing your revision and they said no. When I dug a little deeper they were actually doing it. They just didn't want to say it in front of their peers. So there are some issues about motivation as they don't want to be seen as hard working (Karen, Phase 1)

To address the myriad of factors associated with the challenge of student's learning, the common desire among the teachers was to strive for the vision of "individualising learning". They hoped to see structures in place to individualise learning, in order to address the concern of 'every child matters' and to instil dreams and aspirations in students.

Behaviour and consistency

Student behaviour was raised as a significant challenge to teachers in Urban school. The interviews demonstrated a number of factors associated with this problem, including questioning of the structures in place for behaviour management, communication for behaviour management, and consistency and support for implementation of behaviour policy.

Urban School has a division with pastoral and behaviour management duties, which is widely regarded as the 'Behaviour Base' in the school. In the case of disruptive students, the procedures for behaviour management instruct teachers to contact the Base, who will then send a member of staff to the classroom to take the child to the Behaviour Base. However, they are not adequately staffed, which is one of the reasons for the system to regularly breaks down. Communication with the Base was also raised to be problematic and inefficient. There are three lines of communication: electronic log of behaviour, email, and phone calls, and teachers state that it is often unclear as to which one should be utilised. The excerpt below demonstrates the inadequate planning of this system including the communication problems, and further points to some of the consequences for teachers including anxiety and perceptions of lack of support:

Behaviour is not always dealt with adequately here, but I don't think that's through lack of trying on behalf of the staff in the Base. The system for picking up kids is all wrong, as somehow you have to leave your classroom to phone them and obviously if you have something going on in your classroom you can't leave it and you are just on your own. So you somehow phone the Base and hope someone answers, and then hope that they have someone to send to pick up the child- there is a lot of hoping! When they do come they are brilliant, I can't fault what they do, they take the kids away and come to some sort of resolution with them in disputes, but there is a big school for them to get around; there's not enough of them, and it only takes one person to be off for it all to fall apart- there seems to be no back up (Mark, Phase 1).

The Base seems to be effective at solving acute disruptive problems when they are fully staffed, but teachers raised other concerns leading to the Base being ineffective at improving behaviour in the long run. Some stated that the Base is actually “too nice” and “a treat” to misbehaved students, as they get to spend time on the computers or play games, and so “associate bad behaviour with reward”:

Kids like being there, and they shouldn't like being there! they think it's a bit of a chill-out to get out of their lesson, they probably meet their friends down there (Jenny, Phase 1)

Furthermore, teachers raised a legitimacy concern with respect to staff members of the Behaviour base:

You have to bear in mind that they are non-teachers, and they have the problem with the kids telling them that: “you're not a real teacher” (Michael, Phase 1)

The enduring challenge of behaviour management at Urban school was associated with low levels of accountability by teachers to deal with this problem:

There doesn't seem to be a huge amount of accountability- a teacher can just throw a child out and say I'm not teaching you because of x & y; but they don't tend to follow it up. I think because we have the Base, they think if I throw them off to there they will deal with it. There is a bit of a 'somebody else will deal with it culture' (Catherine, Phase 1)

Interviewees were critical of some teachers for 'not caring' and feeling accountable to deal with behaviour more upstream and addressing underlying values:

I think we need to educate our students about values: the way they speak, the way they swear, the way they think about themselves is poor; its not a behaviour thing, its an esteem thing! Some teachers will just walk past students swearing at each other and will just raise an eyebrow, instead of saying: "don't speak like that". So we almost give them a signal that I know this is what you do these days and its fine (Claire, Phase 1)

Some teachers felt more responsible to deal with this issue, which lead to their frustration and burnout as they are not supported by the majority of teachers: *Sometimes some teachers are not fully accountable for their actions or their lack of action, and sometimes I will then push myself to pick up those pieces, and I will burn out and get frustrated (Karen, Phase 1)*

Alongside accountability impediments, inconsistency in implementing behaviour-related rules was also raised as an important factor in reinforcing the poor state of behaviour in Urban school:

Teachers are not consistent with behaviour policy. The students perceive that we're not really bothered, we say it one day and there is no follow up. There was a girl in school today with bright pink hair and mini skirt, and I heard a member of staff say to her: "you're being sent home in a minute". I saw her in school two hours later, and I said I thought you're going home, and one of her friends said: "oh no, she'll

get away with it". If the students think that, they will tell their friends, and the lower cohorts see the older cohorts getting away with it (Margaret, Phase 1)

However, the teacher continued by outlining the dilemma of the adverse consequence of following the rules:

We're talking about a small group and not the whole school; a lot of these kids are from broken homes, poor background... so if we do send them home, the likelihood is that they will stand around at a street corner and so its better for them to be in school- even if they have pink hair! Our vision is to care for every child (Margaret, Phase 1)

Teachers voiced a challenge of striking a balance between "compassion" and consistency, as demonstrated in the excerpt below:

At the heart of this place, it is all encompassing; No matter who you are, you are welcome and you can achieve, and that is what's unique about us, and that's probably why we have challenges, because we have compassion instead of a hard and fast, 'three strikes and your out' rule. But I think we can be better at being all encompassing, but making sure that what goes on is stronger and more consistent (Anita, Phase 1)

Therefore there seems to be a deep and unresolved contradiction with respect to behaviour policy, which is at the core of this school-wide challenge and has not been adequately addressed. The decision-making structure for the behaviour policy was brought into question by some teachers, who saw the behaviour

challenge as a problem of weak rules which lead them to being implemented inconsistently:

We have had quite a few changes in our behavior policy over the last two years. And I think we haven't quite got it right yet. And that's why we have some difficulties. It is not necessarily applied with consistency. Not just by teaching staff but from the top as well. Also if you follow the behavior policy and someone overrules you, that makes you feel you are wrong (Katie, Phase 1)

Teachers observed that the senior leadership team were also inconsistent with implementing behaviour management rules, which reinforced inconsistency across the school, and caused frustration in teachers who felt more responsible in tackling bad behaviour:

Consistency is a big frustration here. Today in the exam, all students were told they must be in uniform; and there was only one boy there from 180 students sat with his hoodie on, and no one challenged him. The head, deputy, and head of year were in the room, and I thought I can't undermine all these senior people by saying: take the hoodie off! If we're going to have a common standard, it shouldn't be mostly, it should be always (Jenny, Phase 1).

The student essay exercise revealed that students were also concerned about poor classroom and corridor behaviour, and stated that this impedes their learning. They pointed to crowded corridors as a trigger for poor student behaviour. This was corroborated by teachers, who complained of inadequate structures in place for dealing with corridor behaviour:

Dealing with corridor behaviour can take 20 minutes of your time, in the case of pupils whom you don't teach (Andy, Phase 1)

Some of the student comments also pointed to the weakness of the behaviour policy, as they were concerned that teachers exercise poor behaviour management and were “not issuing correct punishment”. The Change Laboratory group had a consensus that adverse behaviour needs to be dealt with in a fundamental manner, targeting the antecedents such as values and self-esteem. They also stressed for action to be taken collectively for corridor behaviour, which is not adequately addressed in behaviour policy, and saw the need to provide specific support for teachers who struggle with classroom behaviour management strategies.

Organisation and communication

The reported causes of stress at Urban school revolved around organisational issues such as communication, inconsistency, accountability, and pupil behaviour:

A lack of communication has to be the top one; Pupil behaviour and the fact that nothing is done about it; Inconsistency in approach; and complete lack of leadership (Karen, Phase 3)

Much of the interviews and discussions in the Change Laboratory group meetings were dominated by concerns regarding organisational and

management shortcomings. Teachers described the school as disorganised with constant changes taking place:

This organisation is “Mr Messy”, its got so many good points to it, the shape of it is alright, but its just what’s going on inside, it just needs a bit of organisation (Ruth, Phase 1)

Teachers complained of the lack of visibility of the senior leadership around the school, reinforcing the major challenge of behaviour in Urban school:

There is a lack of visibility of senior leadership when it comes to behaviour, them just not being around, even generally when your walking around the school. In my last school my head used to take a couple of walks a day and poke his head in. Here the senior leadership have all their offices in one place, in my last school they spread them out around the school, they were always visible. Sometimes we need them for help and support. I think as well its good for the kids to know them, they shouldn’t be saying: “Oh I don’t know who that is”, and it’s the Deputy Head! (Rebecca, Phase 1)

Discussions on the organisation revolved around the key themes of poor communication and ambiguity of roles. Poor communication was seen as an antecedent to anxiety and mistrust coupled with concerns of transparency, and consequently a perception of exclusion from decision-making related to the work of teachers. The following excerpt summarises such relationship:

Communication is a massive problem, communication of everything that’s going on. There’s no true transparency; people are always guessing and second-guessing what’s happening, why is it happening, and that brings a level of uneasiness and

mistrust. When you don't feel you have been involved in something, you somewhat mistrust it (Jane, Phase 1)

Last minute communication of poor decision-making was highlighted as a major cause of stress and frustration to teachers. It was also raised that communication must not be limited to the email system, which was seen to be “unreliable” and adversely affecting communication, consistency, and workload:

I don't think we are brilliant in communication as an organization. Yes, everybody emails each others, but don't always have time to read them. We are a little last minute with planning and that puts stress on you. If you find out 10 minutes earlier about something that is not very helpful! It should be a couple of days before hand to give people chance to plan and prepare and then a reminder. Not that this is happening- that is very stressful (Michael, Phase 1)

Teachers went further to identify poor decision-making as a cause and consequence of the problem of poor communication. They related such challenges to the need for involvement in order for better designed and implemented policies. The excerpt below describes poor organisation and decision-making with reference to behaviour policy, and the need for involvement of staff in the process:

There's been a lot of restructure; not clear who is in charge of behaviour as it gets passed around- it's a real issue! People in charge of behaviour should look at the whole school, communicate effectively with departments, find out what the real problems are in each department, and then get everybody on board and facilitate with their colleagues a strategy of how to manage behaviour; but what happens

now is very reactive, there's no forward planning, there is no proper strategy in place for the behaviour policy, and there's no communication (Claire, Phase 1)

Poor communication was also viewed as a barrier to reward and recognition. Teachers emphasized that there was a lack of communication of good work and successes, which has additional consequences such as impeding the sharing of good practices:

Good practice happens in pockets, but I can't name a whole project for the school that we are really good at, in order to raise aspirations (Katie, Phase 1)

A number of teachers related the challenge of poor communication with the problem of role ambiguities in Urban school. They suggested that teachers are not aware of the roles, responsibilities and day-to-day job of the senior leadership team, and this impedes unity of the school around the same vision and in moving in a unified direction:

Communication between each other and between SLT and teaching staff are a key frustration. Being in SLT opened my eyes to the amount of work that management does here, but when your not part of it, you have this impression that they are in their nice offices and they only have 8 hours a week to teach and people are unaware of the bigger vision of the school. I think if teachers had a better understanding of what the SLT did with their time, there wouldn't be so much resistance. However I think the SLT could be better at communicating vision and expectation more frequently (Claire, Phase 1)

The ambiguity in roles was regarded as a significant challenge and cause of stress and frustration at Urban school, leading to complications and potentially duplication of work:

The organisation is disorganised! There is a lot of ambiguity and people don't know whose role is what and who is responsible for what. We all have line managers- if I have any concerns or problems I go to the same member of the senior leadership team who is supportive of me- I'm not sure whether I should- but I just go straight to him, and a lot of people do that. You will go to somebody who might do something about it, and that is not necessarily who you are supposed to go to (Catherine, Phase 1)

In the excerpt below by a middle manager (head of department), an additional consequence of role ambiguities is noted as increased workload:

I report to James (assistant head-teacher) mainly, but that's because I've decided to report to him! So when I am off (works part-time) my teachers would try and find James, but James is very elusive. And they end up trying to go to David (another core senior leadership) but then some of the things they try to go to David with, David doesn't want to know about. So I get a phone call home (Kate, Phase 1)

The Change Laboratory group recognised the need for clarity of line management systems and accountability structures, as “lack of accountability of one person has a domino effect on other staff”. They saw a relationship between accountability, communication, and consistency, and outlined a “vicious circle” whereby inadequate communication of change leads to the lack of confidence in applying policies, and due to them not being rigorously thought through, they

will not be fully embedded and practiced. The group stressed that decisions about particular departments must involve members of those departments, and although there are common understanding of many problems, but they do not have enough discussion on what the school should prioritise and which strengths and good practices to share.

Community

The desire for a sense of community among staff at Urban school was echoed by many interviewees. Teachers manifestly expressed their dismay at the dissipation of the sense of cohesion and community at Urban school. Various factors were stated as causes of this contemporary trend, including relationship between senior leadership and teachers, relationship between teachers and support staff, the introduction of departmental staff rooms, and battle between departments as a result of the contemporary results-driven culture.

The interviews revealed that main-scale teachers and middle managers related to each other socially and outside work. However, teachers complained that there was little social interaction between senior leadership and staff, leading to them being isolated from each other:

With staff, heads of department and heads of year, everyone gets on. When it gets anywhere above head of house/head of department, they don't join us with anything, they will sit together (Kate, Phase 1)

Teachers stressed that in order to achieve the school vision, it was important for all staff to feel equal, respected, and have recognition for their efforts. The relationship between teachers and support staff was raised as a challenge in this regard:

I think teaching staff get on very well, support each other a lot. If someone is upset, has had a bad day, there is always someone who listens to you and supports you with that. In terms of support staff relationships with teaching staff, there is some work to do there. Support staff don't see themselves as equals to teaching staff, which isn't very helpful. They feel that they are not valued (Claire, Phase 1)

The contemporary results-driven culture has put more pressure on teachers, increased their workload leading to them finding less time for breaks as well as cross-curricular activities and projects, given more significance to certain subjects over others, and consequently led to a de-facto competition between departments. As one teacher stated:

We are pulling pupils in different directions, a fight for revision slots. There is a lack of team-play and working together due to the results-driven environment (Michael, Phase 1)

As a consequence of this trend, teachers spend more time in their departments, which has led to the evolution of departmental staff rooms. Teachers referred to the central staff room being the catalyst for bringing staff together and providing the means for cohesion and support in the past:

We were in 2 sites in the past, it was absolutely lovely. We had naughty children, but the staff were just so cohesive and everybody came from all the different

faculties to the staff room, we were all there in the morning, it was a real kind of collegiate atmosphere, we were there for each other, and that disbanded when we came to one site, and it was decided for each faculty to have their own base in a divide and conquer kind of way (Sarah, Phase 1)

The central staff room has become less significant to the school organisation over time, which has led to the decision to give access to sixth form students to use this facility:

There is community among some staff, but its not how it used to be. When I first worked here you used to love being in the staff room, but our staff room has been taken away and sixth form now go in there (Jane, Phase 1)

A number of teachers spoke of their conscious choice to disengage with the whole school. The various reasons provided for this decision include a strong community within their department, the constant change and top-down nature of organisational decisions, and ambiguity of policies and activities around the school:

I don't want to be involved with what's going on, I kind of keep myself to myself in my department (Kate, Phase 1)

The Change Laboratory group were generally disappointed by such attitudes to actively disengage, and stressed the importance of developing the community feeling among staff. They emphasized the revival of the central staff room as the “only opportunity to communicate and share good ideas” and as a “formal structure for cross-curricular links”. They also highlighted the need for better

regulation of sixth form students, referring to the inadequate rules for sixth form conduct in the staff room. The group also suggested considering rooming options for sixth form students, in order to provide space for teachers to rest, socialise, and work. It was raised that two older members of staff who acted as “social leaders” were shortly leaving Urban school. The Change Laboratory group were concerned that their departure may separate the school further, and saw the need for structures in place for the social aspects to be coordinated more systematically.

5.3.3 Outputs of Change Laboratory

As a result of the Change Laboratory cycle and utilising conceptual Activity-theoretical models, Urban school decided on a new structure in the school entitled “Action Groups”. All identified organisational problems in the Change Laboratory sessions were considered to be addressed under this structural transformation initiative.

Action Group overview

Action Groups are a collaborative organisational system with the responsibility to identify major challenges and potential solutions within respective problem areas, and to plan short-term, medium-term, and long-term actions to address these challenges. Six Action Groups were formed to tackle the tensions and contradictions underlying the problems and challenges that surfaced at Urban school. They were perceived by the Change Laboratory group as “a tool for collaborative policy-making”, “a method to consult with and involve staff”, “help

to implement and review policies”, “address consistency, accountability, and shared ownership”, and “help all staff find out what is happening in different areas of the school and departments”. Interestingly, the management and dynamics of Action Groups were modelled on the Change Laboratory, during planning sessions after the end of intervention (i.e. without involvement of the researcher for the present study).

Action Groups were planned to convene eight times throughout each school year, during directed time (paid time) after school hours, devolved from Urban school’s teacher CPD (Continuing Professional Development) programme. Each teacher was to choose which Action Group to join, and each subject department was directed to ensure it was represented on all Action Groups. Non-teaching staff were encouraged to join the Action Groups, with the incentive to be paid overtime. A member of the senior leadership team was assigned to each Action Group. The Group Facilitators had to ensure all members fully engaged throughout the year. Facilitators were initially selected from among the Change Laboratory participants to “convey the new systems thinking approach”, with future plans for them to be elected by each respective Action Group.

Action Group development

Discussions of the different organisational challenges with respect to the inter-related elements of the Activity System often converged to weakness of rules and processes, and the need for the involvement of teachers in decisions about departments and whole school policies. Following the diagnostic stage of the Change Laboratory and at the point of analysis and identification of solutions as

a result of surfacing systemic contradictions, there were suggestions that forums may help in bringing people together and facilitate discussions on pertinent issues and challenges with a view to generating and developing new ideas and models of practice. This was regarded by Change Laboratory participants as a form of “horizontal division of work”, especially if it was integrated into the school decision-making structure and was “more than just a talking shop”. It was also seen as a platform with which the identified problems in the preceding Change Laboratory sessions could be addressed in a fundamental and whole-school manner.

The conceptual tools and systems thinking that was encouraged throughout the Change Laboratory process aided the systematic examination of the new proposed solution by the group. They were encouraged to spend time discussing the inter-related elements of the Activity System with respect to the proposed structural transformation. This led to a rich discussion to outline specifically the different aspects of the identity, design, processes, remit, dissemination, and implementation of the new system.

The Change Laboratory group had an extensive discussion on the authority and decision-making powers required for these groups. Initial discussions started with idealistic arguments about transforming power structures to give final decision-making to these groups. However, the discussions became more pragmatic to suggest clear structures and processes for such forums, assign senior leadership, middle management, and departmental representatives to each group, and to seek final approval from the senior leadership for the outputs

of each respective group. However, there were encouragements by senior leadership members that the outputs of the groups will be regarded as much more than mere suggestions and ideas, and every effort would be made to approve and implement them.

There were suggestions to propose to the senior leadership to consider timetabling these forums during directed time (mandatory paid time), rather than the status quo for school improvement initiatives to take place in non-paid time and be attended voluntarily. It was stressed that this will show senior leadership investment in and commitment to this collaborative system. There were also counter-arguments, suggesting that volunteering would mean commitment and passion to the cause of the Action Groups. An idea put forward was for these forums to be a part of the CPD calendar, which meant that although they took place after school hours, they were mandatory to attend and were within paid time. The senior leadership members present in the Change Laboratory group discussed this with the senior leadership team, and informed the Change Laboratory group in the subsequent session that it was agreed to incorporate Action Groups into paid time. The senior leadership team went a step further, proposing that support staff will also be paid over-time if they attended the Action Groups, further demonstrating the support and commitment of the senior leadership team to this initiative.

The Change Laboratory group had further discussions on how to achieve maximum buy-in from staff in order for this new system to have legitimacy and function effectively. The following points emerged from this discussion to ensure

better design of this initiative (It is worth noting that in these early stages of the discussions, the Action Groups were referred to as ‘forums’, and the consensus for the final title of “Action Groups” was achieved in the subsequent session):

- *Clarify roles and accountability*
- *Agree how ideas will be agreed and implemented*
- *Have a clear structure for forums*
- *Decide how often the forum meetings would be*
- *Ask staff to submit ideas for discussion to their forum*
- *Consider how to communicate ideas to the rest of the staff*
- *Monitor ideas from forums (or groups/taskforce)*
- *Make clear to staff the idea of the forums is to have a clean slate*
- *Recommend each member of staff is a member of one of these forums*
- *Assign a member of Senior Leadership Team (SLT) to each forum, although the forums should not be led by them*
- *The forums needs to have success fairly quickly, so staff believe in the process and know they will be listened to*
- *Ensure this is not a hobby horse for vocal members of the forum*
- *Reassure staff this is a culture change where everyone is entitled to speak and give ideas/opinions and ask questions, without fear of being judged by senior staff or other members of staff*

(Rural school Change Laboratory minutes, Session 5)

In addition to the factors above, other aspects were raised as important to consider for the better design and implementation of this new system. These included an emphasis to ensure support staff, students, and parents have an

input into the Action Groups. Participants also stressed that members of the Change Laboratory group must be dispersed in all Action Groups in order for this new systems perspective to be shared with others. It was raised that a process was needed for Action Groups to communicate with each other to avoid duplication of work or conflicting plans and projects. Further, each group “should not get bogged down with processing too many initiatives”, warning of the norm at Urban school for many initiatives to be running simultaneously without a measure of impact, evaluation, and assessment of relationship with other initiatives and programmes.

The Action Groups were planned to follow the format of the Change Laboratory sessions. The general working process of the Action Groups, entitled “The Improvement Cycle”, was designed as follows:

1. Summary of the School Review and the Change Laboratory Summary of Problems documents distributed in the first session of each Action Group.
2. Each group to determine broad aims based on the school vision and mission.
3. To focus on priority issues, but start with quick wins to boost involvement and ownership
4. Consider only one issue at a time, which may have several elements
5. Consult with stakeholders (staff, students, parents, governors), including visiting other schools if necessary
6. Review data and develop proposal- check it fits with mission statement.
Also have an impact statement (clear impact on pupil outcomes, including

- review date, and how to measure and evaluate); ensure consistency for application to all departments
7. Involve and communicate with senior leadership team and other Action Groups
 8. Pilot the initiative and evaluate
 9. Present results of pilot, as well as proposal for school-level implementation (including training for staff if required) to other working groups for final consultation; parents and students where appropriate; and senior leadership team for approval
 10. Implement, evaluate and review- share success and celebrate with staff, students and parents

Action Group composition

- *Action Group Facilitators*- It was decided for Change Laboratory participants to assume the role of facilitator for the first year of implementation of the Action Groups initiative. They were thought to be familiar with the principles, format and working processes, and able to “convey the new systems thinking approach” to other members of staff. They were in charge of co-ordinating and facilitating each session, ensuring that the group’s work is “true to the Mission Virtues and Catholic ethos of the school”, the work is within the group’s remit and derived from agreed improvement priorities, “uses the Change Lab principles and format”, the “Improvement Cycle” is adhered to, and regular liaison is maintained with the senior leadership team. A checklist was devised by

the deputy head-teacher to help facilitators prepare for each Action group meeting. Further, it was stressed that facilitators must be elected by each respective Action Group in subsequent academic years.

- *Subject representatives(s)*- Each department will nominate at least one teacher to represent them in each Action Group. These subject representatives will ensure that their departments are working on agreed improvement priorities in line with each respective Action Group.
- *Senior leadership representative*- The senior leadership team had recently expanded to include a number of new positions. This meant that the senior leadership was able to nominate one member to each of the Action Groups, in order to relay the leadership perspectives and concerns in the discussions of each respective group.

In addition to the above roles determined prior to the start of the Action Group initiative, the following roles were planned to be assigned in the first meeting for each respective Action Group:

- *Action Group Ambassador(s)*- to liaise with other Action Groups in order to: communicate the work of the group, feedback information on the work and progress of other Action Groups to their own group, and liaise with their counterparts in other groups to avoid conflict and duplication of work. Further, this communication will avoid certain departments being overloaded with several simultaneous pilots.

- *Learning to Lead Ambassador(s)*- to liaise with students on the work of the Action Group in order to ensure the views of students are “fully represented” in the improvement process. As suggested by a member of the senior leadership team, this may involve “liaison with a parallel student Action Group”. This would entail involvement of students in decision-making via student Action Groups, although the idea was not fully developed.
- *Parent Ambassador(s)*- in order to ensure the views of parents and carers are “fully represented” in the improvement process.

At each Action Group meeting, in line with the Change Laboratory format, the following roles will be assigned on a rotation basis:

- *Scribe*- to capture the thinking of the group on a whiteboard during the meeting and photograph the final version for use by the group in subsequent sessions.
- *Recorder*- to record and circulate action points from the meeting.

Action Group themes

Action Groups were discussed and planned in detail during the Change Laboratory sessions. The initiative was subsequently presented to the whole

school at the annual 'School Review meeting' shortly after the Change Laboratory cycle. The result was the formation of six Action Groups as follows:

- ***Expansive Curriculum-*** *Incorporating wider objectives into the curriculum: Mission Virtues, moral development, learning to learn, creativity and a growth mind-set*
- ***Everyone Achieves-*** *ensuring that all pupils achieve, focusing especially on those groups who make less progress: School Action Plus and vulnerable learners*
- ***Teaching & Learning-*** *Devolved professional development enabling colleagues to research, develop, improve and share collaborative teaching and learning initiatives*
- ***Relationships-*** *Building positive relationships among students, staff and families within a community of shared virtues and aspirations*
- ***Resources-*** *Providing the best tools and resources, including IT infrastructure and resources, and working practices to support learning*
- ***Learning to Lead-*** *Student-led projects developing virtues, confidence and self esteem through taking responsibility for areas of school improvement*

(Action Group Facilitator Handbook, September 2013)

The identified organisational problems of 'Communication', 'Consistency', and 'Clarity of roles' were seen as cross-cutting issues which needed to be addressed in all areas, policies, and processes. It was thus not deemed adequate to have Action Groups specifically dedicated to these themes, and so they were built into the objectives, content and processes of all the Action Groups.

The 'Students learning' challenge was addressed with the Everyone Achieves Action Group. This group aims to find solutions to raise student aspirations, focusing on those who make less progress to address the concern of 'every child matters'. The Resources Action Group was also thought to address the 'Students learning' challenge, by sharing, co-creating and signposting teaching resources and learning tools relevant for the spectrum of students at Urban school.

The identified problem of 'Behaviour' was addressed with the Expansive Curriculum Action Group and the Learning to Lead Action Group. Instead of duplication of work with present structures and policies at Urban school to tackle behaviour, these groups aimed to deal with behaviour more upstream by focusing on values, self-esteem of students, and feeling of belonging and responsibility to the school. The Expansive Curriculum Action Group aimed to address the antecedents to adverse behaviour with focusing on moral development, mission virtues, and inspiring growth mind-sets. The antecedents to adverse behaviour is also addressed in the Learning to Lead Action Group, devising student-led projects to develop virtues, confidence and self-esteem, giving students responsibility for school improvement and instilling a sense of belonging and accountability to the school.

The erosion of the sense of 'Community' and cohesion at Urban school among staff was addressed in the Relationships Action Group and the Teaching & Learning Action Group. The Relationships Action Group was tasked with building positive relationships among different staff groups and with students and parents, improving the recognition of efforts and celebration of successes, and

co-ordinating social functions. The Teaching and Learning Action Group has a focus on collaborative teaching and learning initiatives, in order to foster cross-curricular links and tackle the isolating pressure imposed by high workloads and the dominant results-driven culture. Appendix 5.3 demonstrates the outputs of one of the Action Groups as an example.

5.3.4 Organisational impact

Structural/cultural impact

The Action Groups at Urban school have provided the means for organisational learning with respect to an alternative mode of working, collaborating, and decision making. A number of staff members acknowledged the Action Groups as a desirable decision-making mechanism at Urban school compared to the situation before:

I think people needed something. Before there was a sense that things cannot stay as they are, morale was probably pretty low... I'm not saying now it's absolutely, it's not perfect by any means. But I feel that there is a mechanism in place for pretty successful change to be managed if people use it (Karen, Phase 3)

The embedding of the Action Group structure within Urban school seemed to organise the many existing and prospective initiatives and programmes, and alleviate the ambiguities in this area:

I certainly think people would now know exactly where to go with an initiative to make it work- they would go to the Action Group that's most relevant (Kate, Phase 3)

The following is an example of the development of an output by one of the Action Groups. It demonstrates the value of a forum for cross-curricular communication, as well as the knowledge and expertise that are generated which can feed into other school structures to add value. The Learning to Lead Action Group discussed the issue of student homework as an area that needed improvement and affected student outcomes, with the potential to serve as a target for student-led projects. The solution to be tested was for students to set their own homework- an idea which stemmed from an art teacher in the group who shared his positive experience with this practice. He found that when students were given choice and freedom of what to draw, they would be better motivated, work harder at the task, and demonstrate better results. After discussing the solution and following the “Improvement cycle” process, teachers in Maths, French and English volunteered to pilot this initiative in their respective departments, and to feed back the results in the subsequent Action Group meeting. Due to having extensively discussed homework and conducted pilots of new ways forward, the members of this Action Group felt that they “have something to offer” to the upcoming Urban school homework policy review, and had communicated this to the senior leadership team.

The Action Groups have further served as a vehicle to build better relationships between teaching and support staff, which was raised as a challenge in the

diagnostic stage of the Change Laboratory intervention. The excerpt below is from one of the support staff, which demonstrates the impact of the Action Groups on communication, collaboration, and self-reflections on relationships between different staff groups:

I think communication is a lot better between staff and these groups are facilitated as a different type of communication. I never would have worked with any of the people in the group really in any sort of professional manner other than me asking them to do stuff relating to the faith life of the school. I've got to know that often my engagements with people are- because I often talk in a foreign language, the faith language of the school, to a school that the majority aren't Catholic and certainly the majority of staff aren't Catholic- often people aren't able to engage. They sort of clam up and they just say yes we'll do that, just please tell me exactly what I need to do! There's no real dialogue... But now there is a lot more collaborative work... I've seen them in their comfort zone and I rarely see people in their comfort zone, it's a variety for teachers working with me to be in their comfort zone! Because I wouldn't be in their classrooms and now I know a lot about their passion for teaching, I never would have known those sorts of things, you know what they're good at... (Helen, Phase 3)

The Change Laboratory participants appeared to be champions of this systems thinking and transformed mode of practice at Urban school and in taking the Action Groups forward. A number of the participants highlighted that the process gave them a realisation of the significance of reflection in planning, while suggesting that non-Change Laboratory Action Group participants didn't seem to perceive this at the start of the initiative:

I just think the more reflecting you do and practice, the better the outcomes could be. And I think people didn't have time or didn't have the inclination or didn't have the experience that that is a worthwhile activity (Margaret, Phase 3)

Impact on leadership

The deputy head-teacher devised an "Action Group Facilitator Handbook" (Appendix 5.4) at the beginning of the new school year following the Change Laboratory cycle. It is evident that he had spent considerable time on this handbook, as he had carefully gone through the Change Laboratory minutes and following the decisions, outlined roles and responsibilities, relation of the Action Group to the school structure and the senior leadership team, and designed an "Action Group Meeting Checklist" to aid the co-ordination of the Action Group sessions by the facilitators. The handbook also contains three diagrams: an Activity System diagram re-drawn by the deputy head-teacher and slightly adapted with a brief description of the Change Laboratory as the format of the sessions; a mapping diagram to illustrate the linkage between each Action Group and leadership structures; and an "Improvement Cycle", which is effectively a process map of the decision-making system that was devised by the Change Laboratory group to serve as the new mode of practice, to be utilised in the Action Groups. Such efforts demonstrate strong commitment of the senior leadership to the Change Laboratory intervention and its principles.

Considering a major focus on role ambiguities during and after the Change Laboratory sessions, an improvement in this area may be expected after the intervention. However, the concern of staff about the role of the extended SLT

persisted in the final phase of the interviews. This may also be due to the wider unsettling effect of the head-teacher leaving. As one teacher described:

They have gained promotions but you don't really know what they do...You've got all this people who are now assistant principles, associate principles, nobody really knows what that means (Mark, Phase 3)

It was suggested that after the Change Laboratory intervention, the head-teacher had become more conscious of asking staff for their opinion on school matters:

I suppose the head-teacher does a bit more actually, he asks for your ideas and opinions, and for like the new development he's getting us all to put ideas down and things like that which is more open than he would have been normally (Kate, Phase 2)

Participating in the Action Groups and the element of “multi-voicedness” in the group dynamics seems to have had an impact on the core senior leadership’s engagement with the staff body. Members of one of the Action Groups relayed that the senior leadership present in their group “felt uncomfortable not being in control” at the start, but this had improved over time. The excerpt below refers to another Action Group in which the senior leadership member has been very supportive and compliant with the new way of working in Action Groups:

I have to say, we are very lucky in the member of senior leadership we have in our group, he is very positive and very much for change for the better. He has got very much involved in what we're doing and offers us guidance and support and if we need data on students, he's got it for us so he's definitely working with us, and if he thinks we're talking rubbish, he will say, well actually from my point of view I think

this is more important than... kind of guides the conversation a little bit without being forceful- he doesn't dominate the conversations at all. So if he thinks what he's saying is worthwhile, and relevant, he will say it, but he certainly doesn't guide the conversation or start conversations, which is really positive (Sarah, Phase 3)

However, a number of staff members felt that the senior leadership team have not adopted the new way of working in their general management conduct, and that such “big culture change” has not yet been realised:

I still don't think or don't see the SLT in their decisions adopting the Change Lab process even though there are many people on SLT that were a part of the process. I don't know why so until that happens I think it's a very difficult thing to have a big culture change (Michael, Phase 3)

A number of Action Group facilitators have been younger members of staff who participated in the Change Laboratory sessions. A member of the extended senior leadership team suggested that this role has been good management training and experience for these younger members of staff:

It's been quite good, the younger members of staff who don't have a lot of responsibility have been given responsibility and some project management.... So its quite good to give them something to dig their teeth into (Susan, Phase 3)

Diffusion into other initiatives/structures

As well as generating new ideas and solutions to outstanding organisational problems, the Action Group initiative has served as a structure to collate and

organise the many existing and planned initiatives and projects at Urban school. As such, it has influenced many initiatives, since they have either been allocated to and subsequently been overseen by an Action Group, or their planning and implementation process has followed the Action Group's "Improvement cycle" process. The following excerpt demonstrates an example:

At the start we wanted a quick win, and there was something that was already starting with a group of skateboarders in school. They'd written to the head and said we think we should be allowed to skateboard in the playground and laid out what they wanted, and a member of the senior leadership was starting to work with them to meet the health and safety needs of the school and ensure that they were supervised, and trying to sort out the process. And because that had already started, it appeared initially that it would be a really good quick win because it was something already there... (Claire, Phase 2)

A School Review Discussion day was conducted with all staff at Urban school in between the Change Laboratory sessions, in order to discuss issues and plan for the direction of the school more generally. It is evident from references to the School Review in the interviews as well as the summary document of the School Review, that the analyses in the diagnostic stage of the Change Laboratory have influenced these discussions. Overlapping issues include linking inconsistency with communication and accountability, cross-curricular collaboration, building confidence and aspirations through responsibility and ownership, and emphasis on developing the school community.

One of the Change Laboratory participants was responsible for a big project at Urban school to arrange for 200 students to go to Poland for World Youth Day. She had decided to employ the “Change Lab process” and utilise the “Improvement cycle” derived from the Change Laboratory sessions as a guiding structure for arranging this initiative:

This is an ideal thing to go through a Change Lab process that we developed. Because I think it's very robust, that's certainly my opinion. We haven't had our first meeting yet but I think the idea would be to form an initial planning group and I'll strongly be proposing that we follow that structure (Margaret, Phase 3)

5.4 Analysis

This analysis addresses the following 2 Research Questions:

What are the mechanisms of impact of this participative organisational change intervention on work-related stress and wellbeing?

Can the wider structural stressors be tackled by this participative organisational change intervention?

5.4.1 Change Laboratory as a vehicle for participative change

In their seminal work on proposing an ecological model for health promotion, McLeroy *et al.* (1988) assert that active involvement of the target population in problem definition, selection of targets of change and appropriate interventions, as well as implementation and evaluation strategies is essential. The Change Laboratory was targeted for this intervention development endeavour for possessing such qualities. However, these characteristics are paralleled in other organisational development approaches. The Change Laboratory process has similarities with other change management and organisational development strategies, such as models by Bullock and Batten (1985), Golembiewski *et al.* (1987), Cummings and Huse (1989), Kanter *et al.* (1992) and Kotter (1996). They originate in the Lewinian change model of unfreeze, change, and refreeze (Lewin, 1947). The similarities between the approaches can be characterised in the definition of Organization Development provided by (French and Bell, 1973),

as a "top management supported, long-range effort to improve an organization's problem-solving and renewal processes, particularly through a more effective and collaborative diagnosis and management of organization culture- with special emphasis on formal work team, temporary team, and intergroup culture- with the assistance of a consultant-facilitator and the use of the theory and technology of applied behavioural science, including action research".

The initial diagnostic phase of the Change Laboratory can be compared to the notion of organisational readiness (Armenakis *et al.*, 1993; Weiner, 2009). Organisational readiness is a multi-faceted construct focused on creating motivation for change and targeting the 'unfreezing' stage of Lewin (1947) model of change. The strategies utilised for organisational readiness resonate closely with those of Change Laboratory. These include highlighting the discrepancy between current and desired performance levels, fomenting dissatisfaction with the status quo, creating an appealing vision of a future state of affairs, and fostering confidence that this future state can be achieved (Weiner, 2009). During the phase of developing solutions, best-case and worse-case scenarios were introduced to participants in order to facilitate each respective group to unravel the specific detail for their proposed system. This is found to be in line with other studies that suggest contemplation of worse-case scenarios can help articulate functions within the intervention change processes (Hawe, 2015).

It was interesting to also find parallels in the literature with some of the outputs of the Change Laboratory. Action Groups in Urban school were designed by Change Laboratory participants with the responsibility to identify major

challenges and potential solutions within respective problem areas, and to plan short-term, medium-term, and long-term actions to address these challenges. The short-term actions were emphasized by the Change Laboratory group to achieve “quick wins to boost involvement and ownership”. This is paralleled in the literature (Kotter, 1995; Fernandez and Rainey, 2006), whereby ‘short-term wins’ are seen to strengthen support and reduce resistance to the change initiative. At Rural school, the majority of Change Laboratory participants persevered as a group at the post-intervention stage in order to facilitate the implementation of intervention outputs. They were concerned with establishing their group within the school structure in order to oversee the deployment of the new Collaborative Management System. This imperative is in line with calls in the literature for participatory and wellbeing initiatives to be institutionalized and directly linked to core business operations in order to achieve sustainability (Fernandez and Rainey, 2006; DeJoy *et al.*, 2010). Notwithstanding the similarities and overlaps with other approaches within the literature, it has been argued that the Change Laboratory has a robust theoretical basis and a coherent methodology, in contrast to other organisation development and action research approaches which have weaker specification of a unified and explicit theoretical framework to guide the research processes and conceptual models to study the systems under focus (Kajamaa, 2012).

One of the central tenets of the intervention theory of Change Laboratory is the concept of ‘expansive learning’. The solutions of the Change Laboratory are realised as a result of surfacing and analysing the contradictions between interacting elements of the Activity System. The transformation is expansive, as

the introduction of a new element can lead to further contradictions with other current elements of the Activity System. This may eventually lead to the re-conceptualisation of the object of an activity and to the re-organisation of its structure (Kajamaa, 2012). At Rural school, one of the solutions developed by the Change Laboratory group was a collaborative system of policy review and implementation. From the perspective of Activity Theory, the object of decision-making was re-conceptualised to include more levels of the hierarchy in the process. This expansive learning led to the unfolding of more developments. The Change Laboratory participants strived to establish their group within the school structure to ensure sustainability and institutionalisation of this new way of working. Their pilot of the new policy review system was faced with criticism due to taking longer time than expected, which led to a re-organisation and appointing a 'facilitator' within their group to have direct responsibility with respect to the new system. They also planned to attract more teachers to their group to facilitate involvement, gain legitimacy, and further help the institutional embedding of the new structure and system within the organisation. This pattern is aligned with diverse forms of expansive learning within the literature (Engestrom, 2001; Kajamaa, 2012; Virkkunen and Newnham, 2013)

The central contradiction was found to be between the macro perspective and priorities and agendas of the senior leadership that shape policies and processes, and the micro perspective of those having to enact and comply with the decisions made by senior leaders. The Collaborative Management System in Rural school and the Action Groups in Urban school can be seen as mediators synthesized from this contradiction. Implicit within the discursive process of

generating a mediator was building the capacity of the main-scale teacher to make meaningful and appropriate contribution to organisational decision-making (Elo *et al.*, 2008), and providing the senior leadership insight into the every day challenges of the main-scale teacher. Following the intervention impact longitudinally also demonstrates a developing and evolving reconceptualization of pedagogy, which is more central to teachers' object of activity and their professional identity. This latter focus is embodied in the Teaching Alliance initiative at Rural school, and in four of six Action Groups at Urban school which specifically target the different aspects of teaching and learning. This finding suggests that the Change Laboratory group initially embarked on a re-conceptualisation of decision-making, and utilised the new systems and way of working as a means to address teaching and learning which is more central to their object of activity.

5.4.2 Mitigating adverse effects of new public management

One of the principles of Activity Theory is Historicity. The Activity System can only be analysed by studying the local history of the activity and its objects, and the history of the ideas and tools that have shaped the activity (Engestrom, 2001). Activity System carries multiple strands of history in its artifacts, rules and norms, and the different positions in the division of labour carry their own diverse history. In this perspective, contradictions are thought of as historically accumulated structural tensions within and between activity systems (Kajamaa, 2011). The process of the Change Laboratory demonstrated that historical analysis was helpful in making sense of culture and context, as well as

unearthing contradictions between the different elements of the Activity System. However, the contemporary state of the activity of teachers is more fundamentally shaped by the predominant political ideology and the policies that emanate from it. Proponents of Activity Theory and the Change Laboratory may argue that historicity accounts for this, but studying the effects of the contemporary political agenda in education alongside historicity can yield a more rigorous analysis.

Of particular importance is the effects of new public management (Hood, 1991) on the transformation of the work of teachers. Deployment of the new public management agenda in schools has led to the isolation of teachers, their alienation and disengagement with the national policy agenda and in turn with the resulting performative and managerialist approaches within the school organisation (Mahony and Hextall, 2000; Ball, 2003; Hall *et al.*, 2012). The managerialist scheme of departmentalisation and individualisation has undermined the identification teachers have with peers in the school. Teachers reminisced the earlier community in their respective school and how this provided a space for dialogue and support on pedagogic development, for making sense of new policies and practices, and for its function as a source of social support. The contemporary managerial change approach, which is anchored in a top-down and 'command and control' model of change (Parker and Williams, 2001), served to alienate teachers from the policy objectives and undermined their commitment. In turn, this ineffective management approach challenged the school organisation, with the senior leadership in a constant struggle to change and modify failing policies and processes.

The community-building initiatives resulting from the Change Laboratory intervention in both schools achieved considerable success with engaging staff in cross-curricular team-work, social events and building staff cohesion. The perceived significance of developing staff cohesion and the school community by the Change Laboratory groups had three main drivers. First, the nostalgia of “larger friendly staff” and “packed staff room” was a strong motivation for participants. This was perceived to enhance a sense of belonging to the organisation, make the work more meaningful, and help with the feeling of ownership and sense of accountability that was a central antecedent to other organisational challenges. Secondly, the need to “share successes” and make “cross-curricular links”, and learn good practices and strategies from successful individuals and teams was perceived to attenuate the pressure on teachers, and improve school results. Finally, the Change Laboratory group associated staff disengagement with a significant adverse effect on efforts to retain consistency within the respective organisation. The perceived consequences of staff disengagement and alienation included inadequate staff involvement in decision-making, barriers to communication of decisions, and thus hindering the group-identified drivers of consistency: ownership and accountability.

Tummers *et al.* (2009) developed the concept of ‘policy alienation’ to describe the reaction of front-line public professionals to the performative agenda of new public management. Under NPM, teachers are considered to be part of the implementation process of centralised policy, followed by performance management and often generated by narrow notions of ‘best practice’. Building

on the work of Blauner (1964), Tummers and colleagues argue that the successful deployment of policy requires commitment from professionals and their identification with the reform agenda. Their research in the Netherlands and the UK found five dimensions of resistance or lack of engagement of professionals with the policy agenda, which is developed from Blauner's two core concepts of 'powerlessness' and 'meaninglessness'. The five dimensions are: (1) strategic powerlessness, where professionals have no influence over the design of high level policy, for example through their representative bodies; (2) tactical powerlessness, where there is little or no involvement of professionals in the translation of policy into organisational level practice; (3) operational powerlessness, where professionals have no discretion over the day to day implementation of new policies; (4) societal meaninglessness, where professionals cannot see the relevance of the policy to a larger societal purpose; and (5) client meaninglessness, which is the perceived lack of added value that the policy has for their clients.

The collaborative endeavour of the Change Laboratory intervention resulted in specific solutions and a wider organisational impact that helped mitigate some of the contradictions within the 'policy alienation' dimensions. The 'client meaninglessness' dimension is represented by student complaints regarding the pedagogical status quo of "too many Powerpoints" and "not enough active lessons", as well as the general consensus among teachers of low levels of aspiration among students. The Change Laboratory groups' extensive discussions on "teaching for exams" versus "making learning relevant to student's lives" and "teaching them life skills", and concerns about the "current

results culture” not suiting highly dextrous but low-literate students, represented the ‘societal meaninglessness’ dimension.

In addressing these dimensions, the Change Laboratory group in Rural school discussed the prospects of collaborative teaching and cross-curricular links as part of a collaborative curriculum review, but resisted specific planning for this initiative. They saw the “results-driven culture” as a national policy agenda, with little agency on their behalf to effect meaningful change. However, the leadership, cultural, and structural impact of the Change Laboratory intervention resulted in the diffusion of its principles and methods into other organisational initiatives. In particular, the Teaching Alliance initiative was set-up to transform teaching and learning, and the Teaching Alliance team were instructed by the head-teacher to “work to a Change Lab approach”. This would effectively mean a collaborative endeavour to target “teaching for exams”, addressing of which had initially seemed unrealistic. At Urban school, the Change Laboratory group discussed the challenges of low aspirations and students learning extensively. The rich discussions to unravel the problem and surface contradictions resulted in these challenges being targeted from multiple angles via the different Action groups. Everyone Achieves Action group focused on vulnerable learners to ensure all pupils achieve; Teaching and Learning Action group focused on devolved professional development to nurture collaborative teaching initiatives; Learning to Lead Action group involved devising student-led projects aimed at giving students responsibility and developing their confidence and self-esteem; and Expansive Curriculum Action group aimed to incorporate wider objectives such as mission virtues, moral development, and nurturing creativity into the

curriculum. It can be argued that the issue of teaching and learning, which is at the core of the client meaninglessness and the societal meaninglessness dimensions, is targeted in a fundamental manner by the aforementioned collection of efforts.

The Action Groups along with their working process map entitled the “Improvement Cycle” at Urban school, and the Collaborative Management System at Rural school can both be seen as Change Laboratory outputs targeting the dimension of ‘operational powerlessness’. Both systems have a detailed process that aims for a “horizontal division of work” and serves as “a tool for collaborative policy-making”, involving all stakeholders and specifically staff in the decision-making process. The Action Groups were in part perceived as a collaborative structure to collate and organise the many existing and planned initiatives and projects at Urban school, giving control to teachers for managing this organisational challenge as well as providing a structure for their involvement in prospective decision-making. As such, this new system has influenced many initiatives, since they have either been allocated to and subsequently been overseen by an Action Group, or their planning and implementation process has followed the Action Group’s “Improvement cycle”. At Rural school the new Collaborative Management System was piloted by reviewing a current policy, and the outcome was a need for small changes to the policy. Traditionally, complaints and problems with policies would lead to them being reviewed by one person (normally a member of the senior leadership team), who would then typically devise a new policy. The result of this decision-making culture was a constant stream of change that teachers perceived as a

burden on their workload and a major cause of stress. Some staff didn't agree with particular changes to policies, and others did not find them relevant to their subject or department. This contributed to inconsistencies, which was one of the major problems identified by the Change Laboratory group. In such context, the collaborative process of the policy review, and its outcome to make modest changes rather than an overhaul of the policy was seen as a significant revelation. It advocated a considered and collaborative approach to organisational decisions, rather than sudden and radical responses to problems and challenges. The Change Laboratory group suggested that the new collaborative way of working would lead to a feeling of ownership and therefore a sense of accountability, making the policies more relevant to teachers, improving the working environment for them and finally leading to enhanced consistency.

The Change Laboratory sessions can be seen as a form of 'relational space' (Kellogg, 2009), whereby senior leadership, middle managers and main-scale teachers interact as equals, bringing into question the status quo, surface tensions and contradictions within the Activity System, and plan, pilot and manage the implementation of reform initiatives. In analysis of the Change Laboratory intervention in both schools, the central contradiction was found to be between the macro perspective, priorities and agendas of the senior leadership that shape organisational policies and processes, and the micro perspective of teachers who are obliged to enact and comply with the decisions made by senior leaders. Introduction of Action Groups within the organisational structure at Urban school and the collaborative management system at Rural

School can be seen as mediators synthesized from surfacing and analysing these contradictions. The new systems would target the 'tactical powerlessness' dimension, providing more voice and influence to teaching professionals in shaping organisational practices and the work environment. Another development that targets 'tactical powerlessness' is the transformation in the leadership structure in both schools during the same period of conducting the Change Laboratory sessions. The core senior leadership team of four in both schools had expanded to include a number of middle managers (heads of departments) to be members of the 'Extended Leadership Team'. It emerged that a number of Change Laboratory participants were those appointed to the Extended Leadership Team. These appointments or the prospects for their expected roles and responsibilities may have been motivations for these teachers to participate in the Change Laboratory. Thus implementation of Change Laboratory outputs effectively coincided with a greater influence of proponents of the Change Laboratory approach within the school leadership. Furthermore, these new members of the leadership structure in both intervention schools were champions of the Change Laboratory, regularly referring to the notion of "Change Lab thinking" in leadership meetings. Thus the principles and practices of the Change Laboratory intervention in shifting organisational focus on the teaching professionals can provide more influence and recognition to teachers in shaping the organisation in the medium and long term. Furthermore, the Teaching Alliance initiative is another example of an influential body within Rural school structure driven by a professional ethos, with a mandated remit to transform teaching and learning.

Addressing strategic powerlessness was found to be outside the scope of this participative organisational change endeavour, as it would require change at the political level in re-positioning teaching professionals to the centre of education policy (Ball, 2012). Moreover, it was widely recognised by teachers, including Change Laboratory group members, that some decisions “still need to be made from the top” due to external constraints and the prevailing new public management environment. In summary, the policy alienation framework (Tummers *et al.*, 2009) demonstrates that the resulting actions from the Change Laboratory intervention provided teachers with organisational resources to mitigate the adverse experiences of the contemporary managerialist and performative culture. The two concepts of powerlessness and meaninglessness (Blauner, 1964) have been fundamentally targeted through the Change Laboratory intervention and the resulting outputs in each respective school. The outputs aimed to involve teachers in organisational decisions and provide them with more control over their work environment. These efforts were paralleled with the drive by participants to develop the school community and enhance staff cohesion, which were seen as a necessary prerequisite for enhancing support, belonging, engagement and commitment.

5.4.3 Professional identity: a new dimension to organisational stress

Utilising the Activity System model as a conceptual aid, Change Laboratory participants in both schools were able to move beyond situating teacher stress and wellbeing at an individual and superficial level, to identifying the historically accumulated systemic factors that were adversely affecting their psychological

wellbeing. The proposed system-level changes were found to be in line with the core theories of work-related stress: demand-control-support model (Karasek and Theorell, 1990) and effort-reward imbalance model (Siegrist, 1996). The Change Laboratory intervention worked along several specific pathways identified in these models. At one level, the new Collaborative Management System at Rural school and the Action Groups at Urban school empower teachers with respect to their direct responsibilities and the wider school organisation, resulting in increasing the teacher's decision latitude and enhancing control over their job and the work environment. These new systems also provide support mechanisms for teachers with respect to enriching their daily work as well as dealing with problems and challenges. The effects of the new systems can further be explained via the effort-reward imbalance pathway, as greater involvement in organisational decision-making enhances self-esteem and a sense of belonging. The wider impact on organisational culture and leadership, including the number of proponents of Change Laboratory in the new leadership structure in each respective school, and its influence on other initiatives such as the Teaching Alliance at Rural school, can also increase recognition of teachers. Moreover, the activities and initiatives that enhanced staff cohesion in both schools nurture social support and further provide recognition and reward for staff.

Although findings are in line with the core work-related stress models, they suggest more forces to be at play. The qualitative data demonstrates a number of causes of stress and frustration reported by teachers that do not seem to be directly explained by the core work-related stress models. The common themes in these causal factors expressed by teachers was their origin in the state of

contemporary education policy and new public management, and their role in undermining the professional identity of teachers. The interviews and Change Laboratory sessions had numerous instances of extensive and passionate discussions about teaching and learning, which is at the core of a teacher's object of activity and hence their professional identity. These discussions highlight the contradiction teachers face between the reality of teaching for exams and the ideal of imparting knowledge and skills relevant to students' lives. Teacher performance is assessed by targets set by the school management, for their students to achieve predicted grades or for a certain percentage of their students to achieve A-Cs in their GCSEs. Teachers explained frustration with their control being limited to the lesson time that they have with students, and no input over students completing their homework or revisions which are crucial to exam performance. Teachers' questioning of the performance of their students as an indicator of their own performance can be explained via the demand-control-support model (Karasek and Theorell, 1990), as the demand on teachers is not proportional to the control they have over students to achieve the expected grades.

However, other aspects of the concerns over teaching and learning could not be explained using the work-related stress models. Teachers' frustration with teaching for exams and the "current results culture" not suiting highly dextrous but low-literate students amplified to a conception that they are failing such students. The stress and frustration was relayed as relating more to questioning their professional identity and meaningfulness of their work as teachers, rather than control-demand or effort-reward imbalances. Teachers described

frustrations with classroom observations by management and Ofsted, perceiving this as questioning their professional integrity (Kelchtermans, 1996), using phrases such as 'scared', 'anxious', 'apprehensive', 'pressure', and 'stress'. These experiences are paralleled in the literature (Woods and Jeffrey, 2002), whereby they are associated with 'dehumanisation' and 'deprofessionalism'. However, some of the more experienced teachers explained their desensitisation to classroom observations. Furthermore, a number of teachers in management positions regarded classroom observations as elevating professional standards, demonstrating the impact of NPM-related policies in shifting understandings of 'being professional' (Mahony and Hextall, 2000). Other teachers discussed their frustration with having to 'play the game' in order to achieve their targets, while their professional ethos dictated that they 'teach the children to achieve the best'. Playing the game referred to ensuring certain percentage of students achieving at least a C grade in exams. It resulted in teachers focusing on certain students at the expense of others, and "teaching them how to do the exam rather than teaching them skills and problem solving". This practice was deemed inevitable due to the prevailing performative culture, whereby professionals are 'instrumentalised' and encouraged to live 'an existence of calculation' (Rose, 1989). Yet it was perceived by teachers as a disturbing norm which they felt compelled to comply with, as it violated their professional ethos. These findings corroborate warnings in the literature that NPM is changing teacher identities (Mahony and Hextall, 2000; Ball, 2003; Sunley and Locke, 2010; Ball, 2012; Hall *et al.*, 2012).

The NPM-related causes of stress are thus found to be associated with the questioning of teachers' values and purpose, and their professional identity. They are 'identity-relevant stressors' (Thoits, 1991), which are related to the individual's conceptions of themselves in terms of the social roles that they enact. Thoits (1991) asserts that such stressors are involved in the aetiology of psychological disorder, and Siegrist and Marmot (2004) draw on the biomedical literature to outline the psychobiological pathway for these mechanisms. These identity-relevant stressors have parallels with the notion of 'work-identity integrity violations' (Pratt *et al.*, 2006), which result in a struggle by the individuals to reconcile their professional self-conceptualizations with the reality of the work that they do. The aforementioned notion of 'playing the game' can be seen as a prominent example of a work-identity integrity violation. Moreover, identity-relevant stressors can also be associated with Tummers *et al.* (2009) notion of 'societal meaninglessness', as teachers reported the belief that their work had little value for specific groups of students.

Professional identity can thus be conceptualised as a crucial dimension of wellbeing at work in tandem with the core theories of work-related stress. This understanding is also aligned with Siegrist and Marmot (2004) definition of the psychosocial work environment, as "the socio-structural range of opportunities that is available to an individual person to meet his or her needs of wellbeing, productivity and positive self-experience". The authors further elaborate two aspects of positive self-experience that are of significance to health and wellbeing as self-efficacy and self-esteem. They associate self-efficacy with the demand-control-support model (Karasek and Theorell, 1990), and self-esteem

with the effort-reward imbalance model (Siegrist, 1996). A social environment conducive to self-efficacy provides individuals with a sense of mastery and control (Bandura, 1985). Nurturing self-esteem strengthens feelings of belonging, approval and success, and allows individuals to connect themselves with significant others and to receive appropriate feedback for well accomplished tasks (Siegrist and Marmot, 2004). In their conceptualisation of self-esteem, the authors are more concerned with proving the link between the effort-reward imbalance model and the psychosocial work environment, and thus focus on the association with feelings of belonging, recognition, and reward. However, self-esteem has implicit within it the notion of self-concept and self-worth (Smith and Mackie, 2007; Hewitt, 2009), which are synonymous with the concept of identity. Thus the finding herein of the significance of professional identity to wellbeing at work enriches Siegrist and Marmot (2004) conceptualisation of the psychosocial work environment and the need for positive self-experience. It highlights the necessity of experiencing a positive self-concept at work along with a sense of control, belonging, recognition, and reward.

The significance of professional identity can further be traced in the solutions developed as a result of the Change Laboratory intervention in both schools. A review of the process, from conducting the Change Laboratory sessions, to development of outputs, organisational actions taken, and impact of the outputs in each respective school demonstrate a struggle by teachers to rebuild their professional identity. Three stages have been identified in the endeavour to rebuild professional identity by teachers in the intervention schools. Firstly,

rediscovery of the teachers' professional identity during the Change Laboratory sessions entailed a fundamental questioning of their object of activity, the purpose and meaningfulness of their work, and the organising culture governing their work environment. It focused on the surfacing of identity-relevant stressors (Thoits, 1991) and work-identity integrity violations (Pratt *et al.*, 2006). Teachers surfaced and analysed a major contradiction between the NPM imposed obligation to teach for exams and their professional commitment to imparting knowledge relevant to children's lives and teaching them life skills. The Change Laboratory intervention can be seen as a response to calls for teachers to create dialogic spaces where identity work can be undertaken and values made explicit and refined in practice (Sunley and Locke, 2010).

The second stage was the *reanimation* of the teachers' professional identity with exercising the new found influence and voice as a result of the Change Laboratory intervention, in order to shape their work environment. Their focus in this stage was on organisational decision-making (Hage and Aiken, 1967; McMahon, 1976; Sachs, 2001; Huang *et al.*, 2010) rather than teaching. The Action Groups at Urban school and the new Collaborative Management System at Rural school provided voice and influence to teaching professionals in shaping the policies and rules which they would be obliged to enact. Furthermore, the impact of the Change Laboratory intervention on leadership perspective and conduct, and diffusion of its principles of involvement and collaboration into the design and development of new organisational initiatives, served to aid the longer-term transformation of the school administration from a managerial to a professional ethos. Another focus in this stage was on the relational resource of

community (Burt, 1992; Uzzi, 1996; Tsai and Ghoshal, 1998; O'Mahony and Lakhani, 2011; Adler, 2015). The sense of community was perceived to have dissipated in tandem with the NPM-influenced focus on individual and departmental results and a de facto competition culture among departments for better recognition. The teachers embarked on an endeavour to foster social cohesion and sense of belonging to the organisation with a variety of popular social events and a focus on cross-curricular links. These efforts included encouragements to share success, learn from and support other colleagues in a professional capacity, and nurture a culture of recognition and reward, in order to attenuate the pressure from the performative regime imposed on their profession.

Finally, teachers embarked on the *regeneration* of their professional identity notwithstanding the reality of the prevailing NPM environment. At Rural school, teachers considered the prospects of a collaborative curriculum review, but also recognised their agentic limitations in the contemporary results-driven culture. However, this rediscovery was materialised in a subsequent organisational level initiative, the Teaching Alliance, which was set-up to collaboratively transform teaching and learning and "change the ethos of how we work". It was influenced by the systemic impact and emerging institutionalisation of the Change Laboratory approach. At Urban school, teachers devised a multi-faceted approach to tackling teaching and learning. This led to four of the six Action Groups being directly related to an aspect of teaching and learning. The four distinct areas were: devising student-led projects to nurture responsibility, confidence and self-esteem in students; developing systems to nurture

collaborative teaching; specific targeting of vulnerable learners; and transforming the curriculum to nurture creativity and moral development in students. Teachers used the dialogic space (Sunley and Locke, 2010) provided by the Change Laboratory-inspired Action Groups (Urban school) and Teaching Alliance (Rural school) to discuss and take action for fundamental issues such as the need to “unpick what a good teacher is” and “how we can really assess teaching”, and cross-curricular links, in order to transform teaching and learning which is at the core of their professional identity.

This analysis demonstrates clear indications of the questioning of the purpose and values of teaching and the professional identity of teachers as a dimension of work-related stress. It asserts that as well as a need for a feeling of control, belonging, recognition, and reward, individuals need a sense of positive self-concept in order to experience a positive psychosocial work environment. The latter understanding has not been delineated in prior evidence-based literature, which has mainly focused on the demand-control-support and the effort-reward imbalance models of work-related stress. Positive self-concept at work requires a reflexive organisational resource (Kellogg, 2009; Sunley and Locke, 2010) for analysing professional identity, in order to help reduce the gap between the self-conceptualisation of a professional and the reality of the work they do (Pratt *et al.*, 2006). The qualitative findings in this study suggests that the Change Laboratory intervention aids teachers to nurture a positive self-concept through the three stages of rediscovery, reanimation, and regeneration of their professional identity. These dynamics add a new level of understanding of the drivers of work-related stress developed by Karasek and Theorell (1990) and

Siegrist (1996), which focus primarily on job-level factors without considering the wider socio-cultural context within which work stress has emerged. It can thus be suggested that a more holistic conceptualisation of 'organisational stress' would incorporate a unified construct of identity-relevant stressors and work-identity integrity violations with the demand-control-support and the effort-reward imbalance models of work stress. Such conceptualisation would account for the significant (adverse) effects of the organisational-level operationalization of national policy and its ideological principles.

Chapter 6- Process Evaluation

Overview

This chapter starts with outlining a framework for assessing intervention implementation of complex structural interventions. The model will subsequently be used to elaborate implementation of the Change Laboratory in the intervention schools. The chapter subsequently elaborates on issues and challenges identified from the qualitative data collection that are relevant to process evaluation. It aims to address the question of how this intervention can be replicated in other contexts. Data are collated on the intervention and implementation challenges relating to trial methods, intervention content, uptake and reach, adaptation and transportability, temporal changes in context that can affect implementation and outcomes, and participant perspectives on the study. The chapter culminates in an analysis of the identified challenges, also utilising data from the Qualitative findings chapter, and outlines the various aspects to scaling up of the Change Laboratory intervention for UK schools. The final proposed amendments/extensions to the intervention as a result of process evaluation are cross-examined with the implementation framework proposed at the start of the chapter.

This chapter addresses the following 2 Research Questions:

Is the participative organisational intervention feasible and acceptable for implementation in UK schools?

Assuming the intervention is feasible, acceptable, and demonstrates potential for impact and effect, how can it be scaled-up for a well-powered evaluation, in line with the MRC Complex Interventions framework?

6.1 Proposed framework for assessing intervention implementation

The Change Laboratory intervention is grounded in Activity Theory, which is of an interpretivist tradition and so does not seem to lend itself to evidence-based inquiry at first sight. The proponents of the method have only used it in qualitative exploratory studies which have been context-specific in their objectives and outcomes. The ambitious aim of the present study was to develop and trial the Change Laboratory as a participative organisational change intervention for work-related wellbeing outcomes in the UK context. The objective was, as in other evidence-based research endeavours, to develop a structural intervention that is generalizable to other teachers and schools in the first instance, and ultimately to other occupations and organisations nationally and internationally.

In light of the objectives, a commitment to specify the intervention process and mechanisms is required, despite the intervention not being in congruence with other well-specified and manualised interventions and intervention packages encountered in evidence-based research. Furthermore, it is a prime example of a complex social intervention (Craig *et al.*, 2008) in its entirety, with respect to components, delivery, adaptation, targeting, outcomes, and impact. Integrity of the intervention and the objectives of replicability and generalizability for an evidence-based intervention implies a need for standardisation. However, standardising of components proves challenging for implementation of complex interventions in different contexts, which has led to an extensive fidelity/adaptation debate in the literature (Dane and Schneider, 1998; Mihalic, 2004; Riley *et al.*, 2005; Durlak and DuPre, 2008). Within the extant body of research, the ‘integrity of functions’ approach advocated by Hawe *et al.* (2004) is found to be of value in assessing the implementation of this complex structural intervention: “Rather than defining the components of the intervention as standard- for example, the information kit, the counselling intervention, the workshops- what should be defined as standard are the steps in the change process that the elements are purporting to facilitate or the key functions that they are meant to have. For example, ‘workshops for general practitioners’ are better regarded as mechanisms to engage general practitioners in organisational change or train them in a particular skill. These mechanisms could then take on different forms according to local context, while achieving the same objective”. Hawe *et al.* (2004) emphasize that intervention integrity should be defined functionally rather than compositionally, requiring evidence of fit with the

theory or principles of the hypothesized change process. The Change Laboratory intervention generates its effect on the outcomes of interest via a number of mediating elements. In the first instance, the intervention only leads to a 'plan of action' devised by a group who are representative of the organisation, facilitated by the researcher. Thus the apparent output of the intervention has no direct intrinsic value for the outcomes of interest for the whole school, although it can be plausibly theorised that it can improve stress indicators among the Change Laboratory participants. The plan of action will then need to be implemented post-intervention, without involvement of the researcher. Subsequently, the resulting changes will need to be embedded in order to have structural, cultural, behavioural and/or cognitive impact on the whole organisation and its members. It is from this impact that the implementation of the plan of action can effect outcomes of interest. Such complex pathway (Figure 6.1) suggests that the conceptual principles and functions of the intervention are of primary value in assessing intervention integrity. Further, as highlighted by Hawe (2015), fidelity resides in the theory of the change process, rather than in any particular intervention component or delivery channel.

Another helpful perspective in the literature is the call for examining how complex interventions interact with context (Weiss, 1995), as such interventions usually exert their effects via extended causal pathways, which play out differently in different settings (Bonell *et al.*, 2012). Realist evaluation (Pawson and Tilley, 1997) aims to uncover context-mechanism-outcome configurations, in order to understand "what works, for whom, under what circumstances". The Change Laboratory is ultimately a forum and a 'relational space' (Kellogg, 2009)

for dialogue amongst different actors in the organisation. It is a formative intervention that privileged locally situated knowledge, and focuses on working with people as active agents in organisations to jointly produce new practices that can address tensions and contradictions emerging from the work context. Its bottom-up and democratic standpoint is thus in contradiction with a rigid set of prescribed tasks to be adhered to by participants. Moreover, designers of the intervention advocate a central role for context-specific influences on intervention components (Virkkunen and Newnham, 2013). The conceptual tools and range of tasks that are enacted during the course of a Change Laboratory cycle need to be relevant and acceptable to local culture and context. Furthermore, 'what' is discussed in the Change Laboratory sessions is wholly contingent on the context and the identified priorities of organisational members, and the intervention facilitates 'how' the discussion takes place in order to surface contradictions and develop solutions. This is in stark contrast to educational interventions with a syllabus to be delivered, even supposing flexible and culturally adaptable programmes. Realist evaluations are rooted in critical realist philosophy and have been opposed to experimental methods and in particular to randomization. Due to their valuable insights for evidence-based research, scholarly attempts have been made to reconcile them with RCT's (Blackwood *et al.*, 2010; Bonell *et al.*, 2012). In outlining Realist RCT's, Bonell *et al.* (2012) suggest that it would be up to those using the programme theories to develop the intervention components, to involve stakeholders in moving from theory to intervention and pilot these interventions to establish if they are locally feasible and acceptable.

In order to elaborate implementation in this intervention development endeavour, four distinct domains have been identified: *Overarching intervention pathway*; *Conceptual components*; *Functional components*; and *Intervention components*. The overarching intervention pathway illustrates the specific mechanisms that mediate the intervention and the outcomes of interest, namely: the *output* of the intervention, *action* taken to implement the output, and the resulting contextual *impact* of the output. Conceptual components refer to the distinct principles that characterise the programme theory. Strict fidelity to all the principles is necessary for intervention integrity. Functional components refer to the intermediate operationalization of conceptual components. They denote the specific functions that need to be operationalized in order to adhere to all the principles of the programme theory. For example, the requirement for a forum that facilitates unreserved discussion of problems is the functional operationalization of the principle of *multi-voicedness*. Albeit other functional components may serve multiple programme theory principles. Intervention components are the context-sensitive activities and processes that represent the functional components of the intervention. Using the example of the function of the forum, it is proposed that the *form* can be context-specific. The structure and style of the meeting, the composition and location of the meeting, and the timing and number of meetings required are context-specific decisions. The final form needs to satisfy the objectives of the overarching functions, and ensure that it is in line with the conceptual components of the intervention. For example, the flexibility for context-specific adaptation of the form of the intervention does not mean that the meetings can be held at a time and place unfeasible for the full hierarchy of the organisational members who are intended to attend, or in the

head-teachers office, both of which can jeopardise the conceptual component of multi-voicedness. Therefore the principle of multi-voicedness is translated into the function of a forum with specified objectives, which can take multiple forms with respect to particular contexts. Intervention integrity with respect to this conceptual component can be satisfied upon confirmation, via process evaluation, that intervention components correspond to the establishment of a forum that facilitates unreserved discussion of all relevant individually-raised problems. In considering each respective intervention component, the default will be to utilise intervention components from previous research of the intervention in other contexts, but to remain open to context-sensitive adaptations, augmentations, and omissions. Subsequently, over time and with replication studies of the transportation of the intervention across cultures and contexts, the intervention components may converge to an analogous set of activities and processes. This relationship is thought of as analogous rather than homogenous, considering that the intervention components must correspond in function, but not necessarily in origin.

The proposed model for elaborating intervention implementation addresses a shortcoming of the proposal for 'integrity of functions' (Hawe *et al.*, 2004), namely the insubstantial specification of intervention functions, and narrow association of programme theory with functions. As an example from the paper by Hawe and colleagues, the intervention principle: 'to educate patients about depression' was translated to the function: 'all sites devise ways to distribute information tailored to local literacy, language, culture, and learning styles'. This function was recommended in place of the prescribed form of 'all sites distribute

the same written patient information kit'. Both the traditionally prescribed *form* and the alternative suggested *function* demonstrate weak application of programme theory, if not also a deficiency in the depth and breadth of programme theory itself. The authors seem to take 'education' to be synonymous only with 'information distribution'. Furthermore, the suggested function does not sufficiently serve as a theoretically-informed and specified intermediate operationalization of the principle to 'educate patients', although it seems to adequately address contextual tailoring. The four outlined domains in the proposed model contribute to the integrity of functions perspective by providing a more coherent specification of the functional components and situating them organically within the conceptual principles of the intervention.

The proposal by Bonell *et al.* (2012) for Realist RCT's contributes to the quality and relevance of evidence-based evaluations of complex social interventions, by emphasizing the interaction of intervention with context. However, some of their propositions are equivocal and not adequately specified, which can have implications for intervention integrity. Two specific excerpts from the paper illustrates this concern. Namely, the recommendation for "those using programme theories to develop the intervention components, [and] to involve stakeholders in moving from theory to intervention", and assertion for "a need to develop a clear sense of the mechanisms of change through which effects occur, which specific intervention components and combinations are likely to be most (and least) effective, and in what contexts and with whom such effects will potentially be replicable". Although highlighting context-sensitivity is an important advance in the design and selection of intervention components, these

nebulous propositions open up the possibility to a myriad of component combinations, which may even lead to compromising intervention integrity.

Furthermore, the suggestion to assess effects by unpicking and synthesizing intervention components with respect to context does not apply to all complex structural interventions. Some structural interventions are ‘multi-component’ interventions, constituted by a number of distinct interventions (e.g. peer-support plus group action plus an educational intervention), and so may be amenable to individual assessment. However, the Change Laboratory is an example of an indivisible and intrinsically complex structural intervention. It is difficult to directly assign merit to or discount specific intervention components, as the Change Laboratory in its entirety leads to effects so distal from the actual intervention that they cannot be plausibly traceable to any individual component of the intervention. This is not a unique characteristic of the Change Laboratory, and many complex structural interventions operate via such extended causal pathways in which core components cannot be unpicked (Elliott and Mihalic, 2004). However, the proposed model herein takes a ‘programme theory’ and ‘integrity of functions’ perspective along with a focus on the interaction of the intervention with context, and provides the means for the intervention components to be cross-examined with the functional components and subsequently the intervention’s conceptual grounding. This may lead to more rigorous suggestions for optimisation of the intervention components applied to particular contexts, in order to increase their feasibility, cost-effectiveness, and uptake. Moreover, the approach is congruous with the principles of Realist RCT’s, as intervention components will be context-sensitive, with the advantage that

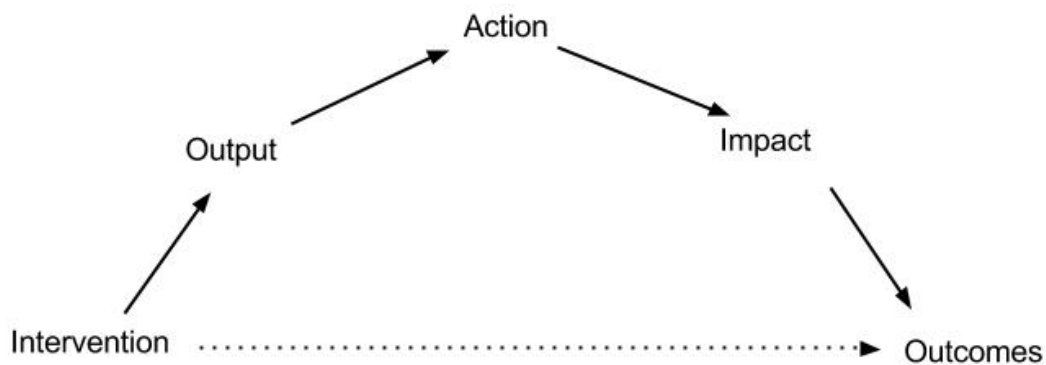
the model provides better direction and rigour for shaping intervention components.

Considering that one of the central aims of the present study is intervention development, evaluation of the mechanisms of change may even result in suggestions for optimisation of the 'functional components' of the intervention. Intervention development can refer to generating a new intervention inductively, which would include identifying and developing theory, and modelling processes and outcomes (Craig *et al.*, 2008). An alternative mode of intervention development, adopted herein, can be the 'adoption' of an existing intervention from a different discipline or sector. In the latter case, intervention integrity would be satisfied with high fidelity to the conceptual components of the underlying intervention. However, it is postulated that modifying the functional as well as the intervention components is possible, as the intervention is being transported to a new context and a new target population (teachers in the UK context). Once the intervention has passed the feasibility and piloting phases with the resulting evidence-based optimisations applied, intervention integrity would mean high fidelity to the conceptual *and* the functional components. Furthermore, in line with Hawe *et al.* (2004) and Bonell *et al.* (2012), adaptation of intervention components with respect to contextual circumstances will remain acceptable, and will not compromise intervention integrity. In the following sections, intervention implementation will be elaborated with respect to the four domains of Overarching intervention pathway, Conceptual components, Functional components, and Intervention components.

6.1.1 Overarching intervention pathway

The mechanisms of change of the Change Laboratory demonstrate a number of intermediary elements that mediate intervention implementation and outcomes of interest:

Figure 6.1 Intervention Pathway



Intervention: A series of Change Laboratory sessions. The end of intervention point is thus the final Change Laboratory session.

Output: Plan of action developed by Change Laboratory participants. Broadly speaking, this includes planning for further development of the proposed solutions using ‘mini-pilots’, piloting of the proposed solutions, and plans for dissemination across the organisation.

Action: Implementation of the proposed solutions

Impact: Assessment of embedding of the proposed solutions within the organisation, and impact of the implemented solutions and the dissemination

efforts on organisational structure and culture, leadership attitude and conduct, wellbeing perceptions, and diffusion into other initiatives and structures.

Outcomes: individual (stress and burnout) and organisational (organisational climate and collective efficacy) quantitative outcomes measured in the trial.

Theory of change: The intervention targets the causes of stress, which will be tackled with the solutions of the intervention. Once implemented and embedded within the work environment, the solutions of the intervention work via the two core organisational stress theories [demand-control-support model (Karasek and Theorell, 1990) and effort-reward imbalance model (Siegrist, 1996)] to reduce stress and improve wellbeing amongst teachers.

6.1.2 Conceptual components

(Engestrom, 2001) characterises Activity Theory- which is the theoretical basis for Change Laboratory- with five principles:

- 1- **Activity System-** The unit of analysis is the Activity System, defined as "object oriented, collective, and culturally mediated human activity" (Engestrom and Miettinen, 1999).
- 2- **Multi-voicedness of Activity Systems-** The different positions in the division of labour carry their own diverse history, and the Activity System itself carries multiple strands of history in its artifacts, rules and norms. Multi-voicedness is multiplied in networks of interacting Activity Systems, and demands actions of translation and negotiation.

- 3- **Historicity**- Activity Systems take shape and transform over lengthy periods of time. The Activity System can only be analysed by studying the local history of the activity and its objects, and the history of the ideas and tools that have shaped the activity.
- 4- **Contradictions**- Central role of contradictions as sources of change and development. Contradictions are historically accumulated structural tensions within and between activity systems. When an Activity System adopts a new element from the outside (e.g. a new technology), it often leads to a contradiction whereby an old element (e.g. rules or the division of labour) collides with the new one. Such contradictions generate problems and tensions, but also innovative attempts to change the activity.
- 5- **Expansive Learning**- Learning cycle triggered by problems in the system, leading to surfacing of inner contradictions, and followed by deviations from established norms via innovative solutions. The transformation is expansive, as the introduction of a new element can lead to further contradictions with other current elements of the Activity System. This may eventually lead to the re-conceptualisation of the object of an activity and to the reorganization of its structure (Kajamaa, 2012).

6.1.3 Functional components

Bonell *et al.* (2012) extend Hawe *et al.* (2004) notion of 'function' to define it in terms of programme theories that spell out the mechanisms of change of intervention components. The following functions and processes seem to be the key ingredients in ensuring the effective enactment of the conceptual

components of the Change Laboratory. They have been derived from studying the common intervention components of the Change Laboratory as implemented in previous studies, as well as its implementation in the present pilot trial, distilling their functions relative to the conceptual components of the intervention:

- ***Training of researcher/facilitator*** in order to understand the conceptual bases of the intervention (Activity Theory) and how this is enacted in Change Laboratory interventions, also utilising skills for managing group dynamic
- ***Gathering organisational data*** with a focus on identifying problems and contradictions within the teachers work and their work environment
- ***Provision of a 'relational space'*** (Kellogg, 2009) where representatives across the organisational hierarchy can bring into question the prevailing status quo, raise concerns, and surface problems. Facilitating the Change Laboratory sessions as a forum for unreserved and critical discussions of problems, in order to enact the conceptual component of 'multi-voicedness'.
- ***Developing conceptual understanding-*** Ensuring a common understanding of the Activity System by the participants, and utilising relevant conceptual tools and methods to develop collective learning and nurture systems-thinking
- ***Historical analysis*** of the Activity System by the participants of the Change Laboratory and facilitated by the researcher
- ***Surfacing contradictions*** in the Activity System leading to potential mediators (solutions)

- ***Developing solutions-*** Facilitating the development of solutions and elaboration of their content and process
- ***Planning for action-*** Planning for piloting, implementation, and dissemination of solutions

6.1.4 Intervention components

The Change Laboratory cycle in each intervention school consisted of 7 sessions of 90 minutes duration. The research team consisted of one researcher/facilitator, and an assistant to help with video recording of the sessions. The activities and tasks for each session were planned in advance with advice from the intervention developers. The sessions were guided with a timetable in order to complete each element of the session within the 90 minutes duration.

Each Change Laboratory session started with requesting two volunteers from the participants: one to act as a scribe to capture important issues from the discussion on a whiteboard, and another to take minutes. Subsequently, the agenda and outline for the session was explained, and participants were asked to read the minutes from the previous session and spend a few moments to discuss and ensure general agreement on the produced text. Video excerpts of previous Change Laboratory sessions were broadcast when necessary as a tool to remind participants of topical issues and aid further analysis. The specific content for each session is detailed below:

Session 1

- Introduction of participants and researcher
- Overview of the Change Laboratory sessions and the different phases
- Introduction to the Change Laboratory principles, method, and conceptual tools utilised throughout the sessions to aid analysis
- Presentation of the problems and challenges from the mirror data to the group as anonymous quotes, and video clips of the interviews where appropriate in cases which we had permission from the interviewee
- Discussion to determine common agreed themes to take forward for further analysis and action, using the mirror data to encourage discussion on sensitive topics
- Utilising diagrams of the Activity System and other conceptual tools and matrices to help the group analyse each theme from the mirror data and give appropriate priority to them
- Assignment for next session: each individual teacher to ask their students to write a short anonymised essay on the topic: "What is positive about studying at this school, and what is frustrating?"

Session 2

- Continuing and completing the discussion on the problems and challenges themes from mirror data
- In small groups, collectively assessing the positive and negative aspects of the school raised in the anonymised student feedback exercise
- Summarising the important problem areas to work on in subsequent sessions, distilled from the mirror data and student feedback

- Assignment for next session: exercise for each participant to complete an Activity System triangle for their work activity, in order to further familiarise participants with utilising the conceptual model

Session 3

- Historical and systemic analysis of causes of the identified problem areas
- Utilising a historical timeline drawn on the whiteboard, and conceptual tools in order to aid the analysis
- Work in small groups to identify interacting elements of the Activity System and draw Activity System model considering the analysis so far

Session 4

- Taking each of the identified problems, considering the historical perspective, and utilising the Activity System model to unpick and analyse each element of the Activity System relative to the other elements. This surfaces contradictions between elements and identifies areas for action
- Further group discussion on areas that can be addressed and modified, with a view to new models and solutions
- Work in small groups to identify a vision of the school in 5 years time, specify Activity System elements of the vision, and draw an Activity System model based on this vision (Appendices 6.1 and 6.2)
- End session with an outline of potential solutions to the surfaced contradictions

Session 5

- Work in small groups to further consider and elaborate the solutions in terms of the Activity System model and aligning with the school vision, and feedback to the whole group
- Scenario exercise- Divided into 2 groups, each provided with a positive or negative scenario of the mid-term impact (2-3 years) of one of the proposed solutions. The researcher designed the scenarios to refer to the solution and elaborate on a fictional organisational impact. The task of the group was to explain the factors and processes leading to the respective success or failure, with a view to consider the whole school system and develop a more comprehensive design of the proposed solution.

Session 6

- Detailed specification of the components and process map where applicable for each solution
- Planning for further development of the proposed solutions using 'mini-pilots', piloting of the proposed solutions and implementation, and plans for dissemination across the organisation

Session 7

- Planning session- including a timetable, to-do list, and allocation of tasks to participants
- Presentation to the head-teacher, and subsequently discussing the feedback in order to finalise the solutions

6.2 Trial methods evaluation

6.2.1 School recruitment

In order to minimise geographical differences and possible local policy variations that this can entail, it was decided to approach schools within the same local authority. Furthermore, for practical reasons of conducting fieldwork, the pool of potential schools was limited to a 20 mile radius. Within these criteria, 17 secondary schools were identified as potential targets for this pilot trial.

Recruitment of school organisations to participate in this study was met with multiple challenges. One of the barriers to access was found to be the administration staff. Initial efforts entailed making contact with schools to identify the appropriate person within the management team to approach with the study proposal. In some schools, the administration staff did not allow the research team to proceed to the stage of making such contact, with comments such as: “we don’t do research”. In cases which contact was made with management, it was interesting to note that all schools indicated initial interest to participate in the project. However, in part due to the time constraints with which the research needed to proceed, some schools had to decline as they required more time to timetable the project.

An observation during the initial encounters with school management at the recruitment stage was that focusing on staff wellbeing did not seem adequate to secure their agreement to participate in this organisational intervention. They

referred to the individual-level efforts such as workplace counselling or annual staff wellbeing surveys that they have conducted, at times downplaying the significance of teacher stress and wellbeing. This observation is paralleled in the literature, which suggest that organisations prefer individual-level interventions as there are more data on the cost-benefit analysis of these programmes, they are primarily concerned with changing individuals rather than changing organisations, and such programmes present a high profile means by which organisations can 'be seen to be doing something about stress' (Cooper and Cartwright, 1997; Chandola, 2010). The school management had particular interest in potential organisational development effects of the intervention. The argument that satisfied and happier teachers will work more effectively seemed too distal, and was not found to be adequate to secure their participation. As a result, for meetings with subsequent schools, the research team strengthened the argument that the intervention potentially aligns teacher wellbeing with organisational development, leading to a possible two fold outcome of enhanced staff wellbeing and improved work environment.

From the pool of 17 schools, initially 6 schools agreed to participate. One school subsequently withdrew due to more pressing internal issues, but stated that they were very interested in participating the following year if the opportunity was available to them. Due to this withdrawal, the research team had to also withdraw the school that was similar and could serve as a matched pair to the aforementioned school. The pilot trial was thus conducted with 4 participating schools.

6.2.2 Randomization

From the four schools included in the pilot trial, two agreed to randomization, while two schools were not ready for the intervention to be carried out in the 2012-2013 school year. They agreed to participation on the condition that they served as control groups, while asserting that they were interested in receiving the intervention in the subsequent school year. The two intervention and control groups were representative and balanced with respect to performance, size, and socioeconomic indicators, and so a trend cannot be identified in the schools who accepted randomization compared to those who declined. Moreover, this has not jeopardised the quality of the study, since the benefits of randomization to account for baseline differences would not have been realised due to the small sample size. The purpose of attempting randomization was to deduce whether UK schools were amenable to randomization of this organisational change intervention. The pilot trial thus demonstrates that randomization is possible, providing adequate time is given to schools in order to incorporate the study into their school planning.

6.2.3 Data collection

Longitudinal data collection over three phases was conducted, which included qualitative and quantitative data. The challenge with survey data collection has mainly been loss to follow-up. There were a number of teachers who only completed surveys at baseline, or baseline and one other phase, leading to the challenge of attrition. Researchers did not have direct access to teachers for request and reminders to complete the online survey at each phase of data collection. The emails had to be sent to the key contact person in the senior

leadership team, who would subsequently forward the request to teachers. A number of reminders were sent at each phase, as well as physical reminders when at each site for interviews. Considering the extensive effort of prompting and reminding of staff in each school for completing surveys, average survey response rate in the four schools over the three phases was 69%. Interviews revealed that financial incentives (gift vouchers) for survey completion were not found to be adequate to encourage teachers to complete the surveys. Motivations to complete surveys included helping the study, complying with the request by senior leadership, and raising the significance of staff wellbeing in the school. In a subsequent study, direct email access to teachers needs to be considered, and incentives will need to be increased. Alternatively, other motivations will need to be effectively targeted to increase survey response and reduce attrition, such as a time incentive, considering the teachers' high workload.

Accessibility of organisational data was also met with challenges. The four schools were inconsistent with their provision of the requested organisational data, which included school level performance, absence and turnover data, as well as individual-level sickness absence and lesson observation grades for teachers. In retrospect, it would be helpful to provide a data collection tool to the schools so that they complete all specific fields, rather than providing a list of data required. Individual-level organisational data on performance and sickness absence was challenging and time consuming for schools to organise, as they had to be anonymised by the school before provision to researchers. This may have been the reason for their inconsistency with organisational data provision in general. Considering the significance of the organisational data as outcomes as

well as covariates for a rigorous multiple imputation model, a larger subsequent study must outline the time commitment required from the school and incorporate this in the signed agreement at the start of the study.

6.2.4 Survey response

98% of the teacher population across the four schools (255 out of 259 teachers) completed the surveys at least once throughout the three phases of data collection. However, survey responses were considerably lower when assessing response rates at each phase. Furthermore, the average response rate across the three phases was considerably lower in the intervention schools at 59%, compared to control schools at 78%.

Response to surveys in this study was voluntary in each school and there was no compulsion for any teacher to complete surveys. The qualitative data demonstrates that teachers' absence, temporary leave, and high workload at time of survey response requests were reasons for not completing surveys. With respect to the latter factor, interviewees at all four schools referred to receiving many emails on a daily basis, and the possibility of overlooking the email reminder to complete the study survey if pre-occupied with other more pressing tasks. The above reasons for non-response was shared across the teacher population, and no teacher sub-groups were identified to have other unique causes for non-response. As such, it can be considered that non-response was at random without a specific and systematic teacher-level cause. However the section below attempts to provide further explanation for the difference in

motivations for survey responses at control schools compared to intervention schools, highlighting contextual differences that could affect survey response.

Control-Urban school had the highest average survey response rate across the three time points at 82%. The qualitative findings indicate an autocratic leadership style of the head-teacher, who had achieved considerable success in the area of student discipline and behaviour. The school is in a disadvantaged catchment area and was historically notorious for bad behaviour and poor student aspirations. The interviews highlighted the role of the head-teacher in transforming the school image and climate over the past few years, which justified the style of leadership. Further, a surge in survey responses was noticed in a short space of time following each interval of email reminders to the head-teacher for teachers at Control-Urban school to complete online surveys. This suggests that teachers were partly following instructions to complete the surveys, possibly perceived as an expected task from management. Furthermore, this was the only school from the cohort where the school contact with the research team was the head-teacher, in contrast to other schools who had designated a deputy or assistant head-teacher to liaise with this research project. This may also be suggestive of the autocratic and controlling leadership style of the head-teacher at Control-Urban school.

Control-Rural school had an average survey response rate across the three time points at 73%. Staff wellbeing was a more salient issue at Control-Rural school, whereby an assistant head-teacher had specific responsibility for staff wellbeing. Among a number of individual-level staff wellbeing initiatives, the school

undertook annual staff wellbeing surveys, and subsequently analysed and discussed the results with the staff. It may be suggested that taking action for staff wellbeing had more salience among teachers at Control-Rural school, and also that the status quo within the staff body in regularly completing surveys may have helped the survey response rate.

In contrast, the average survey response rate across the three time points was 60% for Urban school and 58% for Rural school. As outlined in the qualitative chapters, Urban school had many organisational and management challenges, which also translated to survey completion reminders not being as effective as other schools. The researcher observed delays in response to queries from the school contact with the research team, and slow uptake of reminders to complete surveys, which may be due to the reminders being forwarded to teaching staff with considerable delay. A number of interviewees at Phase 2 (T1) and Phase 3 (T2) of data collection relayed their perception of more significance and attention attached to the Action Groups (output of the intervention) by staff and management in comparison to the need for survey completion. Furthermore, due to it being a considerably larger organisation and also the architecture of the school, interviewees reported that many teachers do not get a chance to always attend staff briefings, where survey completion for this study was reminded.

At Rural school, the senior leadership stated that they regularly requested for surveys to be completed, and relayed the significance of this research for Rural school and for the teachers. However, they asserted that the official figures of teachers employed at Rural school did not equate to the actual number of

teachers present in the school at any time point. A significant number of teachers were reported to have flexible and part-time employment. This was corroborated by the survey data, which indicate a significantly higher number of teachers with part-time employment at Rural school (39.6%), compared to the average of 25.1% across the four schools. Moreover, the senior leadership at Rural school cited a number of the aforementioned reasons such as sickness absence and maternity leave for the lower response rates.

6.2.5 Cost analysis

A cost analysis of the implementation of the Change Laboratory intervention in UK secondary schools is presented in this section. A comprehensive economic evaluation is beyond the scope of this exploratory pilot trial, and will need to be conducted in a subsequent well-powered trial with sufficient follow-up. This should include meaningful calculations of cost-effectiveness and Quality Adjusted Life Years (QALY) with respect to effects on outcomes of interest.

The cost of the intervention includes base expenses; researcher/facilitator time for set-up meetings, interviews for mirror data, and conducting the Change Laboratory sessions; research assistant time; and travel expenses (Table 6.1). The cost analysis does not include study costs, such as survey data collection, interviews related to process evaluation and outcome evaluation, and analysis and writing up of study findings.

Table 6.1 Cost breakdown of the Change Laboratory intervention in UK schools

Base expenses		£615
Audio recorder	£165	
Camcorder x 2	£400	
Accessories: Tripod, SD Cards & batteries	£50	
Researcher/facilitator time (£30/hour; £240/day)		£5040
Recruitment and set-up meetings- 3 days	£720	
Interviews for mirror data- 4 days	£960	
7 Change Laboratory sessions (to include 1 day of session and 1 day for planning/analysis)- 14 days	£3360	
Research Assistant (£15/hour: £120/day)		£840
Assistance with 7 Change Laboratory sessions- 7 days	£840	
Travel (Average 30miles round-trip x £0.50/mile = £15/day)		£210
14 days x £15	£210	
Total cost of intervention per school		£6705
Total cost of intervention per teacher		£112

Considering an average of 60 teachers per school in the present study, the cost of intervention per teacher equates to £112. It is worth noting that the cost of facilitator and research assistant is calculated on a freelance/consultancy basis. In a subsequent large-scale study, these costs will be considerably lower, as such activities will be performed by full-time employed researchers and research assistants. Furthermore, the base cost will be shared with other schools in the trial, further reducing the cost of the intervention in a subsequent study.

Although a thorough economic evaluation is outside the scope of the present study, but as an indication, the cost of the intervention per teacher can be compared to the cost of sickness absence in schools. Aside from the costs of stress-related sickness absence to the health and wellbeing of the teacher, and the collateral costs on the performance of students and the school, the direct cost of a replacement supply teacher is reported by teachers and management at the schools under study to be at least £150 per day. The data from the surveys demonstrate that at baseline, reported stress-related sickness absence equates to an average of 0.47 days per teacher per year. This equates to an average replacement supply teacher cost of £71 per teacher for stress-related sickness absence in the schools in the present study (c.f. cost of intervention at £112). A larger trial with adequate follow-up period will result in sufficient data to conduct a thorough economic evaluation that would also calculate QALY with respect to stress-related psychological and physical problems, and budget gains with respect to pupil performance, school performance gains, and reduced teacher turnover.

6.3 Intervention & implementation challenges

6.3.1 Initial diagnostic sessions

A number of Change Laboratory participants discussed their frustration with the initial problem-dwelling sessions. A recurring participant feedback on the Change Laboratory sessions was that it took too long to get to the solution stage, and that it was a “Moan Lab” for a number of sessions:

If I’m being completely honest, I was questioning when I first went along to Change Lab, why I was giving two hours of time to this, because you know, it seemed to get quite slow because it was just everyone sort of inputting what the hell’s going wrong, you know, and I think that was quite difficult (Emily, Phase 3, Rural school).

This concern was also raised by senior management and other teachers who did not partake in the Change Laboratory sessions but heard about it. The pressure from the school climate and wider perceptions on the initial Change Laboratory sessions contributed to the participants drive to hastily move onto solutions as soon as problems were surfaced. However, the method compelled the group to dwell on the problems to discover the underlying system-level contradictions, before moving onto solutions. As one Action Group facilitator at Urban school explained:

There was quite a lot of: “Oh, I just want to get down to business now!”. But that couldn’t happen until we all understood where we were coming from (Margaret, Phase 2, Urban school)

In retrospect it may help to re-design the Change Laboratory to include a number of feedback processes during the Change Laboratory cycle. This includes a number of feedback/update meetings with senior leadership, as well as allocation of responsibility to Change Laboratory members to disseminate agreed findings to their respective departments after each session. This interaction can be reciprocal and group members can ask for comments and suggestions from their colleagues to be fed into the Change Laboratory sessions. This extension is also better aligned with the participative objectives of the Change Laboratory methodology.

6.3.2 Whole-school dissemination of Change Laboratory thinking and practice

One of the enduring challenges at both schools was the dissemination and communication of the principles and practices of Change Laboratory to the wider school body. The new “Change Lab thinking” that was mentioned regularly during follow-up data collection was only adequately understood and adopted by participants of the Change Laboratory sessions. At Urban school, a number of Action Group facilitators explained the challenge of communicating the concept and the process of the Change Laboratory approach to other members of staff who were not Change Laboratory participants:

First, it was very difficult- I found it really hard...It was about communicating what that was to staff so people don't automatically have their own idea of what it was...there had to be a certain amount of induction not only in the process but in

the “what”, what it was and what that could look like (Karen, Phase 3, Urban school).

The wider staff body had not been adequately involved, and it was the Change Laboratory participants at Rural school who were meeting, discussing, and planning. Although most of the Change Laboratory participants were champions of this systems-thinking approach, they did not have much success, at least in the short term, to communicate this way of thinking and organising to the rest of the school. The Change Laboratory participants were motivated to invest time in subsequent Change Laboratory group meetings because they were involved in it from the start and had ownership of the output. As one of the teachers asserts:

Well, I suppose we’ve gone from the start in the sense that we generated all of this (Emily, Phase 3, Rural school).

Similarly, an Action Group facilitator at Urban school related this challenge to the notion of ownership of the initiative, and not being fully involved in designing the Action Group process may be a reason for participants not fully comprehending its principles. These concerns suggest that

I think people that weren’t initially part of Change Lab in this school struggle to follow structures that they haven’t necessarily created themselves... I don’t think some people necessarily value the process yet. I think they might have to fail at something in order to go: “Oh yes, Oh we should have, Oh, if only we thought about that!” That I think would make a huge difference. That’s a bit frustrating (Claire, Phase 3, Urban school)

Other interviewees at Urban school related this challenge to absence of a feeling of empowerment by some non Change Laboratory participants in Action Groups, suggesting that such participative structures may need more all-encompassing involvement in their design stage:

I don't think its about getting the process, I think it's more that they don't understand that it should be all of us having an input, and if we don't have our say and we don't say what we think and what we want to change, it's not going to change. So they don't seem to get that notion, they still think that whatever we decide is going to go to senior management, and not going to be agreed to (Susan, Phase 3, Urban school)

The challenge of communicating the principles and process of the Change Laboratory, and its overlap with feelings of ownership and involvement also resonated with the leadership. The members of the senior leadership team at Urban school who were not participating in the Change Laboratory sessions found it difficult to adapt to the new way of working in Action Groups:

We had two members of senior leadership team in the group who genuinely felt that this Action Group was where they wanted to be, and I think that might have swayed things a bit too much. They weren't dominant as such, but they weren't people that have been a part of Change Lab. So I think they felt uncomfortable not being in control and not leading in any way. It wasn't a natural place for them to be... It has gotten a bit better, but at the start... (Kate, Phase 3, Urban school)

A number of Change Laboratory participants at Rural school were also concerned that they didn't think the core leadership team had commitment to

the Change Laboratory effort and *'genuinely thought that it was just a bunch of us getting together to moan'*. This was seen to improve with a briefing of the head-teacher by the researcher:

Since you've had the interview with the head-teacher [researcher interview in Phase 2], and have explained from a third party... then he started to get it, and so I think he does understand it (Kelly, Phase 3, Rural school).

Thus although the Change Laboratory group understand and appreciate this systems-thinking approach, it has not been explained in an adequately plain and unambiguous language in order for them to convincingly relay to others. The above excerpt also suggests that the challenge is more to do with intervention content rather than delivery, since the head-teacher was more supportive of the intervention once it was explained to him by the researcher. Therefore there is a need for a review and relaxation of the jargon used in the explanation and the process of the intervention. Further, the intervention would need to be re-designed to include organisation-wide communication pre- and post- Change Laboratory cycle, in order to facilitate the embedding of this new way of working.

The Change Lab members at Rural school elaborated on potential solutions for whole school dissemination of Change Lab thinking and practice. There was suggestions of rewarding involvement in subsequent policy reviews with giving teachers continuing professional development (CPD) credits which can be used to fulfil performance management targets and be added to teachers CV's. One of

the teachers further elaborated on another potential solution to this challenge of engaging other members of staff:

We need to address this effectively and kind of pick people up, and so if someone says: "I've got a thought or feedback about such and such", I'd be like: "great, come along to the meeting, we're going to change it and you should be a part of it". I think you pick up people that way. Putting out a blank email saying: "if anyone wants to join the Change Lab group, we're meeting here" isn't going to work (Helen, Phase 3, Rural school).

This suggests that dissemination of the 'Change Lab thinking' and its embedding into school-wide practice is a gradual process, since it is effectively within the domain of culture change which generally takes place over a prolonged period of time.

6.3.3 Preserving the Change Laboratory outputs

At Rural school, a de facto arrangement that endured after the Change Laboratory cycle was the Change Lab group. The Change Laboratory participants continued to meet at the end of the intervention to plan for piloting and dissemination of the outputs. The group were concerned with establishing the Change Lab group within the school structure and delineating its activities from that of other groups in the school. As a number of interviewees noted, there is a steady stream of change in the school, including groups forming to tackle different issues:

I think this one would've gone, to be honest, if it hadn't been picked up again, if we hadn't had that meeting where we all kind of said: "okay we need to do something here". Because they do, all these kind of groups, there was a Curriculum Review group- that went. There was an ICT improvement group- that went. You know, it's good to say: "right, everyone let's improve the school, lets meet," and get a group together so you can discuss and vote- if nothing's going to be done with that... (Claire, Phase 3, Rural school)

Interviewees asserted that these groups tend to disappear after a while, and members of the Change Lab group were happy that their group has not had the same fate. One of the teachers notes:

We're still a group, we're still doing the things which we began doing and if I'm honest I find that quite surprising because, what tends to happen, things tend to be a bit faddy, people tend to run out of energy, and I had wondered if we would lose our direction slightly, but that hasn't happened (Sarah, Phase 3, Rural school).

Although the first main project of the Change Lab group- the pilot of the new policy review system was well received, they were criticised by the head teacher as the process "took too long" and it needed to be "shorter" and "sharper":

The marking policy took about six months to embed, and that was too long... we need to identify an issue, then we need to find a way of doing something with it, and then embedding it -not within three weeks, but it just needs to be more structured (Daniel, Phase 3, Rural school)

Following the criticism for taking too long to conduct the pilot, the Change Lab group made a decision to give responsibility to a young middle manager as ‘facilitator’ of the group. This change in responsibility of the Change Lab group was a move to preserve the group rather than to side-line it, as confirmed by one of the senior leadership team (also a Change Laboratory participant):

I think it doesn't matter that it's Emily now instead of me. I think that's a good thing (David, Phase 3, Rural school).

The Change Lab group devised a number of strategies to revive the group and achieve its objectives. They planned to attract more teachers to the Change Lab group, which helps with the diffusion and dissemination of the Change Laboratory thinking across the school. In the first instance, they planned to ask each department to send one representative to the Change Lab meetings. There was also a survey sent to staff to get their ideas on pressing issues for them that lead to an adverse work environment and is in need of addressing. The survey was designed based on the themes that were originally discussed in the Change Lab sessions:

As of January, we got together and we decided to make a list of things that the staff would like to have change, or areas the staff would like to see thought about and changed and developed and therefore we're getting some feedback from staff rather than just going down the line of: "okay we're going to look at this as a small group". So we're trying to increase staff buy-in and input to Change Lab (Emily, Phase 3, Rural school).

At Urban school, the potential threat of losing the Change Laboratory output was less pronounced, as Action Groups were embedded in the school decision-making structure, at least for the priority areas allocated to each of the six Action Groups. However, serious challenges were surfaced in the implementation of the Action Groups, including consistency, communication, and questioning of the possibility of school-wide adoption of their outputs. A challenge that was voiced with the Action Groups initiative was communication between groups in order to facilitate school-wide buy-in, avoid duplication of work, and generate new cross-curricular ideas. However, staff generally reported limited knowledge of progress in other groups, as demonstrated in the excerpt below:

There was supposed to be one person whose task was to be group representative to other groups... All I can say, the only one I really heard about is the relationships group who have been doing cake on Mondays to boost morale and cheer us up (Michael, Phase 3, Urban school)

The interviews suggested that the various Action Groups were engaged in systemic analysis of problems with respect to the Activity System, although there were concerns in some groups as to the school-wide implementation of the solutions:

I joined the Teaching and Learning Action group and we have very full active meetings... We talk about everything. We talked about how parents can be involved? Because one of the concern is what is the literacy level of parents and should we do after school classes with them? Lots of ideas but I think like most things it's the implementation that it'll be the difficult thing... I just think they are still kind of blue sky brainstorming ideas (Martin, Phase 3, Urban school)

Conversely, some teachers were hopeful that the ideas generated in Action Groups would lead to change if they followed the rigorous process:

I think they could be implemented if we set up a plan and we then follow through and it can if the interventions we do get announced in briefings, so I don't think it would need to go up (to management), if we made such suggestion to the head, they would take it on. Because the whole idea was that the teachers were making decisions as a group, if we had a specific plan (Natalie, Phase 3, Urban school)

6.4 Adaptation and fidelity

The following is an analysis of the transportability issues arising from this exploratory pilot experience, to be considered for scaling up of the intervention in future research. In line with cultural adaptation of interventions and processes (Castro *et al.*, 2004; Ringwalt *et al.*, 2004), it was found that aspects of the Change Laboratory approach needed to be modified in the context of UK organisations. For example, the notion of ‘division of labour’ had multiple connotations for participants. In this context, ‘labour’ was generally understood as low-skilled manual jobs, and teachers do not associate their work with labour. Further, ‘division of labour’ can have Communist/Socialist connotations, which may not be taken positively by some. We eventually decided to replace the phrase with “division of work”, which we felt did not change its meaning and purpose and a cultural adaptation that was required.

Another issue with respect to cultural adaptation was a need to translate and explicate the activity-theoretical conceptualisation of ‘object’ to a more comprehensible understanding for this context. It took some time for the participants to grasp the concept, and clearer culture-specific guidance for participants would improve and facilitate implementation.

The number of sessions for the Change Laboratory cycle has typically been reported as 8 to 12 sessions in the literature, although a specific number has not been prescribed. Considering the time of the year, 7 sessions could be negotiated with the pilot schools. Further, decision for the duration of each session was an

issue of contention between our research team and the original intervention developers. The latter cited prior literature and experience of conducting the intervention in other countries to prescribe a duration of 2-3 hours for each Change Laboratory session, arguing that this long duration is needed for an in-depth dialogue and analysis. The teacher consultation session prior to the start of the pilot, and discussions with the schools management and teachers indicated that these durations will not be realistic. Another crucial factor was that the Change Laboratory sessions were conducted outside school hours and during non-paid time. Therefore we could only secure commitment from both schools for a 90 minute duration for each session.

Considering that the Change Laboratory intervention is described in terms of its functions rather than specific manualised components, reasonable variations in number and duration of Change Laboratory sessions should not compromise the integrity of the intervention and fidelity of implementation. Conversely, it is necessary to specify the functional fidelity of this type of intervention to satisfy the theory of change of the intervention and quality of its implementation.

6.5 Temporal changes in Rural school context

A number of temporal changes may have had an effect on the progress of the study, including impact on aspects of dissemination of the Change Laboratory principles, implementation of outputs of the Change Laboratory, and survey responses at Phase 2 and Phase 3 of data collection. Rural school achieved positive overall results, measured mainly by student's GCSE results. Staff were aware of this prior to the start of the new school year, which may have contributed to a positive atmosphere around the school.

Change Laboratory participants planned to present the Change laboratory intervention and its outputs in the whole-school development day (Inset day) at the beginning of the new school year. Their slot was reassigned to a "more immediate issue" shortly before the event, which caused frustration among the group:

Inset day didn't happen, and that was a really fundamental error, because that was the whole point. It should've been embedded from Day 1, it should've been: this is the way that [Rural school] works from now on. It was the big launch, but it didn't happen (Mary, Phase 3)

This presentation was a "golden opportunity" and could have had a profound impact for dissemination and whole-school uptake of the 'Change Lab thinking', as Inset is the only time of the year when all staff are together in a whole-school development context, and relatively free from everyday concerns. It was even suggested for the Change Lab group and the results of the pilots to be "re-

launched in the next Inset in September” as “unless everybody’s buying in, it’s pointless”. As one of the teachers asserts:

Staff were made aware of Change Lab. However, it didn’t go into any detail... It was mentioned a couple of times in staff meetings that we had, but it didn’t effectively roll out to whole staff. Essentially, they didn’t buy into the whole Change Lab thought process because we didn’t really make a vehicle for them to do so (Emma, Phase 3)

Six months after the implementation of the outputs of the Change Laboratory, the head teacher left Rural school. This had caused insecurity and uncertainty in many of the staff who were interviewed. They view a change in head-teacher as having a profound impact on the school and their working lives, as the head-teacher can abolish programmes and install new ones, and can choose to take the organisation in a radically different direction:

Have to see what happens with the new head-teacher, because they may or may not have any idea what we mean when we start saying those kinds of things... With a different head you don’t know what’s going to happen (Kate, Phase 3)

As well as causing uncertainty which affects the outcomes of the Change Laboratory outputs, the issue of head-teacher departure had more direct impact on the running of the Change Lab group:

It has been a bit quiet on the Change Lab front because of what’s been going on with the head and everyone has been extremely busy, but that’s not to say it has died a death because we haven’t had our teeth into another policy yet to review (Member of senior leadership team, Phase 3)

March/April was regarded as a hectic time of the year, articulated by one of the teachers as “doing the last things we can do for our Year 11’s”. This affects their workload, which can have an impact on teachers’ levels of stress. It can thus affect the survey results in Phase 3 of data collection, although surveys at baseline were also conducted in this time period (March/April in previous year).

6.6 Temporal changes in Urban school context

There have been destabilising changes in the school, stemming from the head-teacher's decision to leave due to retirement. This had caused a lot of uncertainty and anxiety:

There has been a lot of change...the head-teacher's given in his notice, we've had interviews and nobody really knows who does what anymore. The thing that has changed massively is that people feel the leadership has just gone. And we're in a real sort of...nobody really knows what's going on (Claire, Phase 3)

The issue of head-teacher departure was at the forefront of concerns by teachers at Urban school, and emerged numerous times in interviews. As one interviewee explained:

There has certainly been confusion and uncertainty, and then probably quite a bit of excitement at the actual interview but then disappointment when things weren't successful, and then a sort of worrying sense of what's going to happen next (Margaret, Phase 3)

Teachers also expressed concern that as well as continuing ambiguity with the role of the extended leadership team, there seems to be conflict among the core senior leadership:

The head teacher used to be around quite a lot, he's now not. And then we think David is in charge. But then they didn't give him the headship- he went for job interview but he didn't get it. And then you have a whole load of people underneath who have gained promotions, but nobody really knows what they do!... It doesn't

even seem that the core leadership team are together, they're not a team. I think some of them are a bit at odds because they are trying to lead at similar things, but not working together. Its just not good dynamics at the top at the moment. You can see it with the personal interactions between them. The way they talk to each other, and we have briefings and you can see that some of the things that come out quite openly contradict each other, and you think if they're a leadership team they would be singing from the same hymn sheet and have a level of cohesion and have a goal that they were all striving to achieve, but it just doesn't seem that way (Natalie, Phase 3)

As well as overshadowing the attention on the Action Groups initiative, the head-teacher departure along with the major building works had more direct consequences for the initiative:

People are thinking I'll hold off with initiatives because the school might you know, who knows what's going to happen in the future. And the Action Group meetings carried on probably not as frequently as I would like but I think it's due to circumstances- because this major building work going on there has to be a staff consultation about that, there's just lots of big things happening so I think circumstances rather than anything else has led to I think one of the meetings not happening recently (Karen, Phase 3)

6.7 Perspectives on the study

Teachers were generally pleased to have structured and directed time to be able to discuss organisational problems:

I think they're quite a nice forum for people to discuss issues...I think I went to about the second one where they were on about building relationships within staff, because by the nature of our buildings we are quite fragmented, and in that session we ended up doing cake, a lot of cake! (Kate, Phase 3, Urban school)

At Urban school, staff seemed to find the new way of working in the Action Groups to be value adding, and did not seem to have negative feelings about the time spent in such groups considering their significant time and workload constraints:

People are always worried about adding to their workload. But yeah, I haven't heard that people are sort of: "oh now we've got that again"- there's not that sense (Margaret, Phase 2, Urban school)

However, participation at Action Group sessions in Urban school have not been uniform, and peoples engagement with the priority issues have at times depended on their enthusiasm and drive to take action:

There are people who do enjoy it and do like being there because they don't feel like they get heard otherwise, and then you can tell there are people who are just there because they've been told to be there, so they sit back and they don't volunteer and they let everybody else take on the work (Susan, Phase 3, Urban school)

The Change Laboratory participants elaborated on the new considered approach to decision making within Rural school as a direct impact of the Change Laboratory. One of the participants explained how this was timely in the excerpt below:

We've had a real turbulent time with a lot of changes when Michael (head-teacher) came, and we are done with that. Now we need to really put something in place. We've, by hook or by crook got these great results, through a lot of knee-jerk reactions, but now we've got to take it to the next level of keeping that, and so the Change Lab does just that, I think. It takes a long view. It doesn't rush in to things and I think that Michael is now happy to appreciate that. I think he does understand that a lot more (Mandy, Phase 2)

This teacher continues to envision the long-term impact of the cultural shift in decision-making in Rural school from its status quo of a constant plethora of change:

We need to change the ethos of people so that they say: "Ah, right, okay, this is something that is different. This is here to stay", and that's a big challenge; that's a big cultural shift (Mandy, Phase 2)

The Change Laboratory cycle in Rural School revealed an inclination of participants to focus on the object of decision-making within the organisation, rather than our early expectation to focus on teaching and learning as the core object of their activity as teachers. The overwhelming explanation for this resistance was the feeling of disempowerment by teachers in being unable to adequately address this challenge due to it being a wider national policy agenda.

Another reason voiced by a number of teachers was the organisational-level urgency of addressing the top-down decision making culture, which would consequently impact teaching and learning:

The management issues were bigger than the teaching and learning issues. I think in their head, certainly in mine, if we could just get this top-down approach sorted, the teaching and learning would sort itself. I felt it was very much the case of one was led by another... I think it was just people's priorities; if they had one thing to change, they wanted to change the way the school was run (Harriet, Phase 3, Rural school).

6.8 Analysis

This analysis addresses the following 2 Research Questions:

Is the participative organisational intervention feasible and acceptable for implementation in UK schools?

Assuming the intervention is feasible, acceptable, and demonstrates potential for impact and effect, how can it be scaled-up for a well-powered evaluation, in line with the MRC Complex Interventions framework?

6.8.1 Summary of process findings

In line with MRC Guidance on Process Evaluation (Moore *et al.*, 2015), this chapter has aimed to identify the elements within context, implementation, and mechanisms of impact that constitute process evaluation, which is the “use of evaluation to understand how interventions work in practice” (ibid). It aims to address the question of how this intervention can be replicated in other contexts. The study follows an emerging tradition of integrating process evaluation into experimental designs (Oakley *et al.*, 2006; Bonell *et al.*, 2012; Evans *et al.*, 2015). Conduct of the pilot trial, contextual factors that shape theories of how the intervention works, participants’ interaction with intervention components, different aspects of implementation of the intervention and its outputs, temporal changes in context, and participants’ perspectives on the intervention are all important information for future development and replication of this complex structural intervention. In line with the MRC guidance (Moore *et al.*, 2015), this

process evaluation has been conducted prior to final quantitative analysis of the trial outcomes, in order to avoid biased interpretations.

The intervention, at its core, aimed to tackle the demand-control-support (Karasek and Theorell, 1990) and the effort-reward imbalance (Siegrist, 1996) in the school organisation. Providing teachers with more control over their work and the work organisation enables them to manage demands more effectively, strengthens avenues for support, and makes the work more amenable to them. Furthermore, it gives teachers more recognition and makes the work more rewarding. These mechanisms should lead to reduced work stress and improved psychological wellbeing (Siegrist and Marmot, 2004). They also fulfil organisational imperatives for improving quality and productivity, as staff will have more accountability and commitment to their organisation in a positive psychosocial work environment. It was found in the initial school recruitment stage of the study that arguing for the latter assumption was an important factor in gaining access to organisations for piloting of this structural intervention.

Challenges were identified with respect to process and context. The initial diagnostic phase of the Change Laboratory proved challenging, as it was accompanied with judgements that the Change Laboratory is overtly critical, and due to the participants wanting to hastily move onto solutions. Whole school dissemination of Change Laboratory thinking and practice proved challenging in both schools. The Change Laboratory participants understood and appreciated the approach and the outputs, but could not effectively communicate it to their colleagues.

A number of areas were identified for cultural adaptation to the intervention (Castro *et al.*, 2004; Ringwalt *et al.*, 2004), in order to comply with the context of UK organisations. As elaborated in the implementation framework section, integrity of the intervention is maintained with fidelity to the ‘conceptual components’ and the ‘functional components’. Within such framework, adaptation of intervention components is justified. The number of Change Laboratory sessions and duration of each session required negotiation, and in both cases were shorter than other published implementations of this intervention. However, the content of the revised sessions were planned with advice from intervention developers to ensure fidelity to the conceptual and functional components of the intervention. Some of the Activity Theory vocabulary also proved challenging in this context. For example, “division of labour” had certain connotations with the teachers and this was replaced with “division of work”, and it was felt that this did not change its meaning and purpose and a cultural adaptation that was required. Another issue with respect to cultural adaptation was a need to translate the Activity-theoretical conceptualisation of “object” to a more comprehensible understanding for this context. It took some time for the participants to grasp the concept, and clearer culture-specific guidance for participants would improve implementation.

The Change Laboratory cycle leads to a plan of action for one or more designed outputs. Action needs to be taken to implement these outputs, and the resulting contextual impact will generate the outcomes of interest. Implementation of the outputs of the intervention was met with challenges in both schools. In the case

of Rural school, the Change Laboratory participants persevered as a group after the end of the intervention in order to oversee the implementation of the outputs. The group were concerned with establishing the “Change Lab group” within the school structure and delineating its activities from that of other groups in the school. This imperative is paralleled in the literature with calls for participatory and wellbeing initiatives to be institutionalized and directly linked to core business operations in order to achieve sustainability (Fernandez and Rainey, 2006; DeJoy *et al.*, 2010). The Change Lab group planned to attract more teachers to the group, which helps with the diffusion and dissemination of the Change Laboratory thinking across the school. One of their challenges was that the pilot for the new collaborative management system took considerably longer time to implement, partly due to the participative elements built into the process. This was criticised by the head-teacher, and the Change Lab group had taken steps to shorten the duration of implementation, by making the process more structured and giving accountability to a “facilitator” to ensure timeliness of the various stages. However, the Change Lab group have stressed the need for a culture change at Rural school for a considered approach to decision-making. Through their representatives in the Extended Leadership Team, they have reiterated that policy review and implementation must follow the participatory steps in order to ensure rigorous policies and subsequent accountability and consistency by staff.

At Urban school, the different Action Groups had varying degrees of activity and output, and the initial plan of communication between groups had not effectively materialised. There were also doubts by some teachers as to the school-wide

implementation of the ideas generated by Action Groups. These challenges are not unrelated to the aforementioned challenge of whole school dissemination of Change Laboratory thinking and practice, and suggestions to address that challenge may also impact the success and endurance of the Action Groups. Furthermore, it has been observed in both schools that an enabler of preserving the outputs of the Change Laboratory intervention is the dedication and commitment of the champions of this new systems thinking approach, which include most of the Change Laboratory participants.

Implementation of the outputs of the Change Laboratory were affected by significant relevant contextual changes in each school, considering that its central goal was to change aspects of these contexts. At Rural school, the Change Laboratory group had planned a whole-school training and dissemination of the outputs and the new systems thinking approach in the Inset (staff development) day at the beginning of the new school year following the intervention. Their time slot was allocated to a “more immediate issue” by the senior leadership team just before the Inset day, which the group regarded as a major impediment and lost opportunity for whole-school buy-in of the Change Laboratory thinking and practice. At Urban school, major construction work to expand the school started in the new academic year following the intervention. Interviewees reported that this affected their daily work due to the disruptions, and also affected their time and focus due to regular consultation emails and meetings.

A significant contextual change in both schools which had a major impact on implementation of outputs of the intervention was the coincidental departure of

each respective head-teacher between Phase 2 and Phase 3 of data collection. This was unsettling for teachers and a major cause of anxiety and uncertainty. The interviews revealed that in both schools, teachers view a change in head-teacher as having a profound impact on the school and their working lives, as the head-teacher can abolish programmes and install new ones, and can choose to take the organisation in a radically different direction. This is paralleled in the literature on stress-related uncertainty associated with change- not knowing how the change will affect their advancement opportunities, training requirements, or even if they have a job in the restructured or merged organisation (Berger, 1987; Bordia *et al.*, 2004). The uncertainty can be highly stressful, and lead to low morale, job satisfaction, and turnover (Bastian, 1987; Johnson *et al.*, 1996). In line with this destabilising organisational impact, the revelation had adversely affected the school-wide emphasis on the outputs of the Change Laboratory in each respective school, and in both cases resulted in reduced frequency of meetings and activities related to the outputs of the intervention.

Having highlighted the challenges associated with study methods, intervention content, intervention output implementation, and context, it is important to also examine the extent to which the identified process challenges are a product of delivery of the intervention by the facilitator/researcher (Dusenbury *et al.*, 2003; Carroll *et al.*, 2007; Montgomery *et al.*, 2013). The role of persons delivering interventions can be conceptualised as ‘substantive’ in the case of educational or psychotherapy interventions, whereby the change agent is deploying skills and imparting knowledge, and the recipients obtain direct and measurable

knowledge or emotional/behavioural insights. The Change Laboratory is a developmental and 'process-oriented' intervention. The result and end-state cannot be pre-determined as in educational interventions, making assessment of delivery more complex. Delivering of process-oriented interventions can be conceptualised as 'formative', as the change agent utilises knowledge of conceptual tools, group dynamics, and time management skills to facilitate meaningful and object-focused conversations and ensure multi-voicedness in taking participants through various developmental stages.

A number of features of the intervention help delineate the effects of delivery from other process challenges. Within the Change Laboratory approach, the facilitator must refrain from giving solutions and acting as a 'consultant', in line with the tenets of the approach to ensure participant involvement and sense of ownership of the problems and generated solutions. Further, the activities and tasks for each Change Laboratory session were planned in advance in liaison with the intervention developers to ensure implementation fidelity. Moreover, while the output of the intervention can be attributed to quality of delivery, the facilitator had no input into the implementation of the outputs of the Change Laboratory. The process evaluation data suggests that the majority of challenges relate to this post-intervention stage. The process of the intervention at both intervention schools demonstrate fidelity to both the conceptual components and the functional components of the intervention (utilising the intervention implementation framework in Section 6.1). Further, the Qualitative Findings chapter demonstrates that the outputs of the intervention are in line with the theory of change, and fulfil the theoretical objectives of the intervention and the

desired outcomes, suggesting rigor in intervention delivery. Under the challenge of whole-school dissemination of Change Laboratory thinking and practice (Section 6.3.2), some interviewees questioned the commitment of the senior leadership to the Change Laboratory process and outputs. However, it was suggested that “since you’ve [facilitator] had the interview with the head-teacher, and have explained from a third party, then he started to get it, and so I think he does understand it”. This indicates that the challenge is more related to intervention content and intervention output implementation rather than delivery, since the acting head-teacher was more supportive of the intervention and its outputs once it was explained to him by the researcher.

6.8.2 Scaling up the Change Laboratory intervention for UK schools

The pilot trial of the Change Laboratory intervention with an experimental study design resulted in a number of learning points for scaling up of the intervention in a subsequent study. The school recruitment efforts at the start of the trial led to 5 schools willing to participate out of the potential 17, which equates to 29% of the total population of schools. It is possible to expect substantially higher recruitment rates in a larger subsequent study considering the following factors: Rigorous and country-specific evidence was not available at the recruitment stage of the present study to help attract schools. This pilot of the intervention and the organisational impact it has achieved can serve as an evidence-base for subsequent recruitment. Furthermore, the experience of recruitment at the early stages of approaching schools demonstrated the need to emphasize the potential organisational benefits of the intervention alongside the staff wellbeing

outcomes. It was found that this emphasis yielded more positive reactions by management in the schools approached subsequently. This is corroborated in the literature suggesting that work stress is not an adequate trigger for authorisation of organisation change (Cooper and Cartwright, 1997; Chandola, 2010). Finally, many of the schools that declined did so due to timetabling conflicts. A subsequent large-scale study must allow adequate time of up to 6 months between first approaching schools and start of the intervention. This may be achieved with a stepped wedge design cluster randomized trial, with schools randomly assigned to intervention in multiple cohorts depending on their readiness to be exposed to the intervention (Hemming *et al.*, 2015). Randomization of this organisational change intervention was found to be possible if schools are given adequate time to incorporate the trial of Change Laboratory into their school planning. Data collection was met with a number of challenges, including attrition due to the longitudinal nature of data collection over three phases, and access to organisational data. These challenges can be addressed with a combination of clarifying requirements and securing leadership commitment for cooperation in this area prior to the start of the study, as well as devising worthwhile incentives (Church, 1993; Edwards *et al.*, 2002). Considering the pattern in survey response, it may be plausible that a number of teachers assumed it adequate to complete the surveys only once. In subsequent scaling up of the intervention, it would be helpful to educate the participants on the purpose and significance of the experimental study design and longitudinal data collection.

Interaction of participants with the Change Laboratory intervention was suggestive of a number of challenges with respect to the intervention content and structure. A defining feature of the intervention was its initial diagnostic phase which spanned the first three Change Laboratory sessions. Dwelling on problems (in Change Laboratory sessions as well as in the Action Groups at Urban school which were modelled on the Change Laboratory) proved challenging, and participants wanted to hastily move onto solutions. This was exacerbated by perceptions around both schools that the initial sessions were overtly critical and negative and a “moan lab”. To address this challenge, there is a need to incorporate regular feedback mechanisms to senior leadership and staff (Fernandez and Rainey, 2006) throughout the delivery of the Change Laboratory sessions. This may include allocation of responsibility to Change Laboratory members to disseminate developments to their respective departments after each session. Furthermore, this feedback mechanism should be dynamic to feed comments and suggestions from the wider staff into the Change Laboratory sessions.

Another identified challenge was the problem of ‘reach’ (Glasgow *et al.*, 1999), referring to the nature and extent to which the intended audience come into contact with the intervention. Whole school dissemination of Change Laboratory thinking and practice proved challenging in both schools. The Change Laboratory participants understood and appreciated the approach and the outputs, but could not effectively communicate it to their colleagues. These concerns suggest that the outputs may require more all-encompassing involvement in their design stage. The problem of reach can be addressed by organisation-wide

communication of the Change Laboratory principles pre-implementation and Change Laboratory outcomes post-implementation to facilitate embedding of the outputs (Kotter, 1995; Fernandez and Rainey, 2006). Moreover, there is a need for revision and relaxation of the Activity Theory jargon of the intervention to facilitate its translation by Change Laboratory participants to the wider staff body. Finally, it is important to realise and clarify that the dissemination of this systems thinking approach and its embedding into school-wide practice is a gradual process.

A challenge closely related to reach was in the implementation of the outputs of the Change Laboratory, which took place without support from the researcher/facilitator. The wider staff body had not been adequately involved in the process of the Change Laboratory and its outputs, and it was the Change Laboratory participants who had more active roles in the progress of the outputs. The Change Lab group at Rural school faced criticisms due to the protracted pilot policy review with the new collaborative management system. Similarly at Urban school, Action Groups faced challenges of consistency in activity and output, and communication between groups. The slow uptake of the new systems were associated with inadequate involvement of the wider staff body, which would have otherwise led to a feeling of ownership of the outputs by the staff. A number of studies reporting implementation of the Change Laboratory have referred to conducting 'follow-up' Change Laboratory sessions at the stage of implementation of the outputs (Sannino, 2010; Virkkunen and Newnham, 2013). Follow-up Change Laboratory sessions were considered for arrangement between Phase 2 and Phase 3 of data collection. However, this

coincided with the news of head-teacher departure at both schools, which had a profound destabilising effect. As a result, the Change Laboratory was afforded relatively less priority and attention, and so it was not possible to arrange these sessions in the intervention schools. Challenges of communicating of the principles and outputs of the Change Laboratory, and disseminating the new systems thinking and collaborative decision-making approach in the school can benefit from such follow-up sessions in a subsequent scale-up of the intervention. These sessions would facilitate the evaluation of the output implementation efforts using the Activity System conceptual frameworks, and help participants with challenges of communication and translation of the new way of working to the wider staff. It would also help with planning the next stages of establishing the outputs within the school.

Perspectives of the target audience of the intervention on the study may also be useful in addressing the question of how this intervention can be replicated in other contexts. Interviewees were generally positive about the intervention, and even those who had very limited knowledge of the study articulated that it is intended to give teachers more control in the school organisation. Teachers saw the Change Laboratory as an opportunity to tackle the top-down decision-making culture which led to poor rules and subsequent inconsistencies. A number of teachers associated nuanced changes in leadership behaviour in empathetic one-to-one interactions, consultations, and a more considered approach to decision-making with an impact from the Change Laboratory intervention. The few negative comments were mainly pessimism on the likelihood of the school-wide implementation of ideas generated as a result of

enhanced teacher involvement. This may be addressed in future studies by striving to achieve more explicit and vocal support and commitment of senior management for involvement of staff in organisational decision-making (Mcmahon, 1976; Kristensen *et al.*, 2005; Huang *et al.*, 2010) prior to and during implementation of the intervention.

Table 6.2 Summary of proposed amendments and considerations for scale-up of the Change Laboratory study

Recruitment
Presenting outcomes, impact, and experience of this study as an evidence-base
Emphasizing alignment of staff wellbeing with organisational improvement
Study design
Stepped wedge design cluster randomized trial
Adequate time between recruitment and start of intervention (increases recruitment & amenability to randomization)
Data collection
Clarify requirements at stage of recruitment & signing of contract
Whole-school information provision on the purpose and objectives of experimental study design and longitudinal data collection
Securing direct email access to staff for survey reminders
Secure leadership commitment to provision of organisational data & encouragement of staff for data provision
Intervention
Securing commitment of senior leadership to vocal and explicit support for involvement of staff in decision making, and commitment to the eventual outputs of the Change Laboratory
Revision of Activity Theory jargon to help communication & translation to staff body
Feedback/update meetings between facilitator and senior leadership during Change Laboratory cycle
Whole-school communication of principles and objectives of the Change Laboratory intervention by facilitator pre-implementation
Whole-school communication of outcomes of the Change Laboratory by facilitator post-implementation
Devising a system for allocating departmental representatives among Change Laboratory participants for periodic reporting of content and outputs of each session of Change Laboratory to their respective department. Also to communicate comments and suggestions from their respective colleagues into subsequent Change Laboratory sessions
Follow-up Change Laboratory sessions

Table 6.2 presents a summary of proposed amendments and considerations for scale-up of the intervention as a result of process evaluation. The factors that refer to an extension of the intervention should be cross-examined with the implementation framework proposed at the start of the chapter. These factors include revision of Activity theory jargon, organisation-wide communication meetings, allocating departmental representatives among Change Laboratory participants, and Follow-up Change Laboratory sessions.

The conceptual component of ‘multi-voicedness’ is found to be a key target in this intervention development endeavour. Revision of Activity Theory jargon facilitates ‘multi-voicedness’ and enacts the functional component of ‘developing conceptual understanding’. It addresses the concern that adequate capacity building amongst employees does not often take place in order for them to effectively engage in participatory processes (Elo *et al.*, 2008). The proposition enables the involvement of more staff by allowing the conceptual tools and the systems perspective presented by the Change Laboratory to be more comprehensible.

Organisation-wide communication meetings also facilitate the conceptual component of ‘multi-voicedness’. They address the functional component of ‘developing conceptual understanding’ by utilising the opportunity of access to the wider staff body to ensure common understanding of the Activity System and nurture a systems-thinking perspective. The proposition addresses the functional component of ‘planning for action’ by organisation-wide

dissemination of the Change Laboratory results post-implementation to address the problem of reach (Glasgow *et al.*, 1999), and also facilitate uptake and embedding of the outputs (Kotter, 1995; Fernandez and Rainey, 2006).

Allocating departmental representatives among Change Laboratory participants enacts the conceptual component of 'multi-voicedness' by providing the wider staff body more dynamic access to the content and process of Change Laboratory sessions. It nurtures involvement of staff, which can subsequently improve the implementation of intervention outputs, attract support, and reduce resistances to uptake (Kotter, 1995). This proposition further extends the functional component of 'developing conceptual understanding', as well as the functional component of 'gathering organisational data', as it installs a system in place to achieve more dynamic contact of staff with the intervention processes and outcomes. Due to directly addressing the challenge of maximal staff involvement facing the Change Laboratory, it can be suggested that 'Dynamic feedback' can be signified as a functional component. It can be argued that the current list of functional components of the Change Laboratory lack a direct intermediate operationalization of the conceptual component of 'multi-voicedness'. Dynamic feedback can fill the missing link between multi-voicedness and the functional component of 'provision of a relational space'. The relational space of the Change Laboratory presumes a 'representative' body of participants, and 'dynamic feedback' can maintain and nurture the representativeness of the participants.

Follow-up Change Laboratory sessions would potentially enact all the conceptual components, and especially 'Expansive Learning'. The introduction of new

elements to the Activity System can lead to contradictions with other current elements, resulting in further development and change (Engestrom, 2001). Within an expansive learning process, this may eventually lead to the re-conceptualisation of the object of an activity and to the reorganization of its structure (Kajamaa, 2012). Due to taking place in the intervention output implementation stage of the study, Follow-up Change Laboratory sessions span and extend the functional components of ‘surfacing contradictions’, ‘developing solutions’, and ‘planning for action’. As such, it can be argued that this proposition warrants the addition of a functional component titled: ‘Follow-up support’. This function would crucially help with sustainability of the intervention outputs, and act as a vehicle for the advance of a number of other functional components, namely developing organisation-wide conceptual understanding, surfacing emerging contradictions, embedding solutions, and planning for subsequent challenges to implementation and dissemination. Follow-up support can be conceptualised as the intermediate operationalization of the advanced stages of the expansive learning process.

The intervention components to the Follow-up Change Laboratory sessions can be context-specific without compromising intervention integrity (Hawe *et al.*, 2004; Bonell *et al.*, 2012; Hawe, 2015). As outlined in the implementation framework section, the default will be to utilise intervention components from prior Change Laboratory sessions, and different components can be incorporated according to the contextual needs of the output implementation endeavour at the time. However, the intervention components must be cross-examined with the functional components and the conceptual components to

ensure intervention integrity. In this study, the process evaluation confirms that high fidelity was maintained to the conceptual components and functional components of the intervention. However, considering that one of the central aims was to embark on intervention development, process evaluation has resulted in a number of suggestions for optimisation of functional components, as well as addition of new functional components. The latter is seen to better fulfil the objectives of the conceptual components of the intervention.

Table 6.3 Cost breakdown of revised Change Laboratory intervention in UK schools

Base expenses		£415
Audio recorder	£165	
Camcorder	£200	
Accessories: Tripod, SD Cards & batteries	£50	
Researcher/facilitator time (£30/hour; £240/day)		£6960
Recruitment and set-up meetings- 3 days	£720	
Interviews for mirror data- 4 days	£960	
7 Change Laboratory sessions (to include 1 day of session and 1 day for planning/analysis)- 14 days	£3360	
Pre- & post- implementation whole-school meetings- 2 days	£480	
2 Follow-up Change Laboratory sessions (to include 1 day of interviews and 1 day of analysis/planning for each session)- 6 days	£1440	
Travel (Average 30miles round-trip x £0.50/mile = £15/day)		£300
20 days x £15	£300	
Total cost of intervention per school		£7675
Total cost of intervention per teacher		£128

Considering the proposed amendments for scale-up of the intervention, a revision of the cost analysis (see Table 6.3) may also prove helpful for subsequent studies. A research assistant helped with the Change Laboratory sessions. The assistance was mainly with video-recording, along with other administrative/technical issues that could arise. The video-recording of the Change Laboratory sessions was with 2 camcorders, in line with previous

experiences of the Change Laboratory, and for the purpose of ensuring the capture of session dynamics. However, during analysis of the video data, it was found that a single camcorder was adequate for this study. Furthermore, the sessions are possible to be run solely by the facilitator if there is no need for a cameraperson. On this basis, a cost saving would be to eliminate one camcorder and the time cost of a research assistant for subsequent implementation of the intervention.

The process evaluation suggests the need for more support to the schools by the researcher/facilitator. These suggestions include whole-school communication of the Change Laboratory principles and outcomes before and after the intervention. They also include update meetings with senior leadership throughout the implementation of the Change Laboratory intervention, and further follow-up Change Laboratory sessions to support the school with embedding the collaborative and systems thinking approach in the organisation, and help with challenges related to implementation of outputs. With respect to costing, the update meetings with senior leadership can be arranged on the same day of school visits for conducting Change Laboratory sessions. The other extra costs, along with the proposed savings, would revise the cost of the intervention as outlined in Table 6.3. It demonstrates a slight increase of the price of the intervention from £112 to £128 per teacher as a result of the proposed optimisations to the intervention. Although beyond the scope of this exploratory pilot trial, a comprehensive economic evaluation is recommended in a subsequent well-powered trial with sufficient follow-up.

An important aspect of the consideration of scaling up is to examine the training of facilitators for delivering this organisational intervention. The facilitator for the present study spent a significant amount of time studying Activity Theory, including spending 1 month as a Visiting Scholar at the University of Helsinki with the intervention developers. Further, the study benefited from continued support from the intervention developers, suggesting that any deviations from intervention integrity will have been corrected in the interaction with intervention developers while conducting the Change Laboratory sessions. A realistic and pragmatic scale-up of the intervention would need to be significantly more efficient with training of facilitators on the methodology and its theoretical basis.

There is a clear need for follow-up research to address the facilitator training challenge, and its comprehensive examination is beyond the scope of the present study. The training would ideally need a degree of manualisation, so that it can be cascaded to others. However, the additional research may reveal that a cascade training model might not be suitable for this methodology, and that trainers will need to be adequately qualified and knowledgeable academics/practitioners with experience of implementing the Change Laboratory approach.

Aside from providing training on the underlying theory and intervention methodology, this study demonstrates the need for the facilitator to possess certain skills and aptitudes. One of the characteristics of the methodology is that the facilitator declares that they are not subject/context consultants, and refrains

from giving ideas and presenting solutions. This is a challenging commitment as the facilitator gets increasingly engaged in the collective endeavour to diagnose problems and challenges. There are instances when the facilitator might have ideas and solutions, and a degree of reflexivity and restraint is required to not transgress their role and contaminate the intervention, but rather nurture empowerment and allow for genuine ownership of the problems and solutions by the group of participants. A certain aptitude is required by the facilitator with respect to group dynamics, as well as in the early identification and effective management of inter-personal tensions and conflicts. Further, a mature conduct is needed with respect to dealing with sensitive and private information.

The apparent success of the delivery of the intervention in the present study, as examined with this process evaluation, suggests that the researcher possessed such skills. However, it remains to be seen whether these skills and aptitudes can be taught and subsequently assessed, or whether they serve as entry requirements to the training, with tools needed to identify such qualities prior to enrolling facilitators onto the training. The presence or learning of these skills would thus need to be adequately researched, piloted and added to the final facilitator training package for purposes of scaling up of the intervention. Further, a scale-up would need to incorporate tools with which such skills could be monitored as part of the assessment for maintaining intervention integrity.

Chapter 7- Quantitative Findings

Overview

This chapter reports the statistical analysis of the trial data for all four schools over the 3 phases of data collection. Although this study is an exploratory pilot trial with the major focus on feasibility and transportability, the quantitative effects would be interesting as an indication of the utility of the intervention. The chapter reports descriptive statistics, binary dependent variables, internal consistency of survey scales, dealing with missing data, and analysis. This chapter addresses the Research Question: Does the intervention demonstrate an indication of effect as a result of the exploratory pilot trial?

7.1 Descriptive statistics

7.1.1 Survey Response

The four schools in the pilot trial employed a total of 259 teachers. 255 teachers completed the survey at least once throughout the 3 time points, representing 98% of the population under study. Survey response rate was however considerably lower when assessed at each time point (see Table 7.1). The number of teachers completing surveys were 188 at Baseline, 170 at End-of-intervention (T1), and 165 at Follow-up (T2). On average, 59% of teachers in the intervention group responded to surveys at each time point, compared to 78% of teachers in the control group.

Table 7.1 Rates of survey response over the 3 time points

School	Population (N)	Baseline		End-of-intervention (T1)		Follow-up (T2)		Average n(%) across 3 phases
		N	n(%)	N	n(%)	N	n(%)	
Rural school	54	31	57	35	65	28	52	58
Urban school	86	59	69	45	52	50	58	60
Control-Rural school	67	55	82	47	70	45	67	73
Control-Urban school	52	43	83	43	83	42	81	82
Total n	259	188		170		165		

7.1.2 Demographic statistics

Of the 255 participants in the 4 schools, 174 (68.2%) were female and 81 (31.8%) male. 64.2% of teachers in the intervention group were female, compared to 72.0% in the control group (see Table 7.2). 64 teachers (25.1%) from 255 had part-time employment in their respective schools. 26.8% of teachers in the intervention group were employed part-time, compared to 23.5% in the control group (see Table 7.2). Chi squared tests indicate no statistically significant difference in gender: $\chi^2 (1, N = 255) = 1.76, p = .19$, or mode of employment: $\chi^2 (1, N = 255) = 0.38, p = .54$, between the intervention and control group.

The vast majority of participants (93.7%) identified their ethnic group as White British. Other ethnic groups, including Asian and Black respondents, comprised 6.3% of the sample of teachers (see Table 7.2). There was no significant difference between the intervention and control groups based on ethnicity of teachers. The average age of participants was 39.8 years (SD = 10.21), ranging from 22 to 63 years of age. The average age of teachers in the intervention group was 37.0 years (SD = 9.53), compared to 42.2 years (SD = 10.23) in the control group (see Table 7.2). Independent-sample t-test indicates a statistically significant baseline difference in age between teachers in the 2 study groups ($t = 3.38, p < .001$).

Table 7.2 Demographic characteristics of participants

	N	n(%)	Intervention	Control
Gender				
Female	174	68.20%	64.20%	72.00%
Male	81	31.80%	35.80%	28.00%
Employment				
Full-time	191	74.90%	73.20%	76.50%
Part-time	64	25.10%	26.80%	23.50%
Ethnicity				
White British	239	93.70%		
Asian	6	2.40%		
Black	3	1.20%		
Other	7	2.70%		
Age				
Median	39		35.5	43
Mean	39.76		37.01	42.23
SD	10.21		9.53	10.23
Min	22		23	22
Max	63		62	63

The average (Median) number of years teaching experience among the teachers in the intervention group was 8 years (Mean = 10.39, SD = 8.89), ranging from less than 1 year to 41 years. The average (Median) in the control group was 9 years (Mean = 10.73, SD = 8.01), ranging from less than 1 year to 42 years (see Table 7.3 for school-level data). The observations for number of years teaching was not normally distributed, and so a non-parametric test was used to analyse the variance. Wilcoxon rank-sum (Mann-Whitney) test indicates no statistically significant difference in teaching experience among participants between the 2 study groups ($z = 0.902, p = .37$).

Table 7.3 Number of Years teaching experience of participants

	Urban school	Rural school	Control-Urban school	Control-Rural school
Median	7	8	10	8
Mean	10.27	10.58	11.54	10.07
SD	9.28	8.35	8.42	7.65
Min	0	1	0	0
Max	41	38	42	37

The average (Median) number of years employed at the school among the teachers in the intervention group was 5 years (Mean = 5.53, SD = 4.25), ranging from less than 1 year to 20 years. The average (Median) in the control group was 6 years (Mean = 7.19, SD = 6.44), ranging from less than 1 year to 37 years (see Table 7.4 for school-level data). The observations for number of years employed at school was not normally distributed. Wilcoxon rank-sum (Mann-Whitney) test indicates a near-significant difference in number of years employed at school between teachers in the 2 study groups ($z = 1.80, p = .07$).

Table 7.4 Number of years employed at the school

	Urban school	Rural school	Control-Urban school	Control-Rural school
Median	5	4.5	5	6
Mean	5.56	5.48	6.45	7.82
SD	3.77	4.96	6.22	6.6
Min	0	1	0	0
Max	13	20	37	34

7.2 Binary dependent variables

Along with demographic questions at the start of the battery of questionnaires, the survey also included four questions about teachers perceptions of peer and manager support, stress-related sickness absence in the past 12 months, and likeliness of leaving teaching in the next 12 months due to stressors at work. These dependent variables are binary with a yes/no response, and are analysed as per protocol analysis prior to dealing with missing data via imputation.

Peer support and manager support

The vast majority of participants reported feeling supported by their peers and managers at baseline and the subsequent two time points across the 4 schools. On average, 96.4% of teachers in the intervention group felt supported by their managers, compared to 93.9% in the control group. Furthermore, 100% of the teachers in the intervention group and 99.7% of teachers in the control group felt supported by their peers (see Table 7.5). Chi squared tests indicate no statistically significant difference between the intervention and control group with respect to the feeling of support from peers and from managers at any of the time points.

Table 7.5 Participants' feeling of support by peers and managers

		Baseline	End-of-intervention (T1)	Follow-up (T2)
N		187	168	165
Peer Support	Intervention	100%	100%	100%
	Control	99.00%	100%	100%
	$\chi^2(1)$	0.91	-	-
	p	0.34	-	-
Manager Support	Intervention	95.50%	97.40%	96.20%
	Control	91.80%	94.40%	95.40%
	$\chi^2(1)$	1.05	0.94	0.06
	p	0.31	0.33	0.81

Stress-related sickness absence

Teachers were asked whether they have taken stress-related sickness absence in the past 12 months. On average, 16.5% of teachers in the intervention group reported stress-related sickness absence, compared to 14.7% in the control group. Chi squared tests indicate no statistically significant difference between the intervention and control group at any of the time points (see Table 7.6). However, the data suggests a near-significant ($p=.08$) increase in reported stress-related sickness absence at T2 in the intervention group, which comprised of 24.4% of teachers in the intervention group compared to 13.8% in the control group.

Table 7.6 Stress-related sickness absence and turnover among participants

		Baseline	End-of-intervention (T1)	Follow-up (T2)
N		179	168	165
Stress-related sickness absence	Intervention	16.0%	9.0%	24.4%
	Control	20.4%	10.0%	13.8%
	$\chi^2(1)$	0.56	0.05	3.01
	p	0.45	0.82	0.08
Stress-related teacher turnover	Intervention	17.8%	17.9%	21.8%
	Control	23.5%	21.1%	27.6%
	$\chi^2(1)$	0.92	0.26	0.74
	p	0.34	0.61	0.39

Stress-related teacher turnover

Participants were asked about their likelihood of leaving their job in the next 12 months due to stressors at work. On average, 19.2% of teachers in the intervention group felt that they were likely to leave teaching due to stress-related issues, compared to 24.1% in the control group. Chi squared tests indicate no statistically significant difference between the intervention and control group at any of the time points (see Table 7.6).

7.3 Internal consistency of survey scales

The administered survey consisted of the following four validated questionnaires: Teachers Stress Inventory, Maslach Burnout Inventory, Organisational Health Inventory, and Collective Efficacy Scale. To examining reliability of the data, the internal consistency of the scales were determined with Cronbach's alpha, which measures the average correlation of variables within the scale and produces a scale reliability coefficient (α). Internal consistency is deemed acceptable if Cronbach's alpha is more than 0.7 (Bland and Altman, 1997; Streiner and Norman, 2002). Table 7.7 reports Cronbach alpha's for all scales used in the analysis at all three time points. It demonstrates high internal consistency in most scales. The only exceptions are the Teacher Stress Inventory-behavioural manifestation (average $\alpha=0.62$) and Occupational Health Inventory-Institutional Integrity (average $\alpha=0.62$).

Table 7.7 Internal consistency of survey scales (Cronbach's α)

Scales	Alpha (Baseline)	Alpha (End-of-intervention)	Alpha (Follow-up)
TSI-total	0.82	0.83	0.84
TSI time management	0.79	0.83	0.78
TSI work-stressors	0.88	0.88	0.88
TSI professional distress	0.86	0.88	0.85
TSI discipline & motivation	0.87	0.88	0.91
TSI professional investment	0.78	0.78	0.74
TSI emotional manifest	0.90	0.92	0.92
TSI fatigue manifest	0.80	0.82	0.81
TSI cardio manifest	0.82	0.84	0.83
TSI gastro manifest	0.85	0.90	0.90
TSI behavioural manifest	0.50	0.69	0.66
MBI emotional exhaustion	0.89	0.90	0.92
MBI depersonalization	0.75	0.68	0.73
MBI personal accomplish	0.84	0.77	0.82
OHI-total	0.72	0.73	0.72
OHI institutional integrity	0.59	0.59	0.69
OHI initiating structure	0.80	0.77	0.82
OHI consideration	0.85	0.83	0.83
OHI principal influence	0.81	0.71	0.80
OHI resource support	0.81	0.86	0.84
OHI morale	0.79	0.72	0.75
OHI academic emphasis	0.80	0.81	0.84
CES-total	0.76	0.82	0.83

7.4 Dealing with missing Data

Although 98% (n = 255) of the teacher population in the 4 schools completed the study survey, they were generally not consistent with survey completion at all 3 time points of Baseline, End-of-intervention (T1), and Follow-up (T2). Table 7.8 depicts the frequency and pattern of survey response by teachers at the various time points. It demonstrates a combination of respondents at all 3 time points, as well as respondents at only 1 or 2 time points.

Table 7.8 Frequency and pattern of survey response at different time points

Frequency	Baseline	End-of-intervention (T1)	Follow-up (T2)
92			
51			
37			
26			
20			
19			
10			

In addition to missing complete data for respondents at 1 or 2 time points (unit non-response), there are also less pronounced cases of item non-response. The online survey design dictated every question within the battery of 4 validated questionnaires to be answered before proceeding to the subsequent section. This was deemed to comply with ethical approval, as survey response was voluntary and in the respondents own time. Respondents could abandon a survey part way without any record of the part-completed questions, and

without adverse consequences. However, the demographic information and the binary dependent variables reported earlier did not require mandatory responses, and as a consequence display within-survey missingness (item non-response). Furthermore, a number of the surveys at baseline were completed on paper, adding to the problem of item non-response.

The qualitative data indicated a number of causes of non-response at 1 or more time points which were generic to all teachers, including absence or high workload at the time of survey completion reminders. No teacher sub-groups were identified to have other unique causes for non-response, and thus it is contended that missing data within this sample of teachers was at random without a specific identified systematic cause.

In a review of quantitative studies published in the fields of psychology and education, Dong and Peng (2013) assert that there is no established cut-off from the literature regarding an acceptable percentage of missing data for valid statistical inferences. Tabachnick and Fidell (2012) suggest that the missing data mechanisms and patterns have greater impact on findings than the proportion of missing data. Rubin (1976) outlined 3 mechanisms under which missing data can occur: Missing Completely at Random (MCAR), Missing at Random (MAR), and Missing Not at Random (MNAR). MCAR refers to a condition in which the likelihood of missingness depends neither on the observed data nor on the missing data. As such, if missing data meet the MCAR assumption, they can be viewed as a random sample of the complete data, and ignoring missing data will not introduce bias. MAR is a more general assumption, and refers to a condition

in which the probability that data are missing depends on other observed covariates, but not on the missing data (Allison, 2002). MNAR refers to a condition in which the probability of missing depends on the missing value itself. The missing mechanism must be identified by the researcher and incorporated into the data analysis in order to produce unbiased parameter estimates (Dong and Peng, 2013).

The MCAR assumption can be examined using Little's multivariate test (Little, 1988), while reliable tests are not available for the other assumptions. Little's MCAR test involves examining means of dependent variables under different missing data patterns. If p value is not significant, the data may be assumed to be MCAR. The Little's MCAR test for the data resulted in a chi-square = 525.30 (df = 515; p=.37), demonstrating no identifiable patterns in the missing data and suggesting that the data complies with the MCAR assumptions.

Assuming the data are MCAR, complete-case analysis (pairwise deletion of missing data) will not introduce bias, as the data can be viewed as a random sample of the complete data (Fielding *et al.*, 2009). However, this leads to an increase in the standard error of the sample estimates due to reduced sample size. A complete-case analysis was conducted in order to provide an indication of the outcome of available data, and as a comparison and measure for the final choice of method for handling missing data.

Single imputations (e.g. mean imputation) can be justified under MCAR conditions. However, they reduce the standard errors of effect estimates and

introduce potentially significant bias, while not accounting for the uncertainty caused by imputation. Further, single imputation ignores information from other variables that may be relevant if the data were MAR, and underestimates variability by imputing a constant for all missing data regardless of differing participant characteristics (Dziura *et al.*, 2013). Other single imputation methods such as Last Observation Carried Forward (LOCF) are used in trials, which impute missing values with the last obtained observations for each case. LOCF has the advantage of being ‘real data’ for each participant, but distorts the effect of time for longitudinal data. This would be especially problematic in the present pilot trial, as the intervention is developmental and expansive, with variable and time-dependent impact and outcomes.

7.4.1 Multiple Imputation (MI)

It is important to note that MCAR is a special and often rare form of MAR, and thus a conservative decision to adopt a MAR assumption would be a more considered and plausible approach. MAR can be rigorously addressed with multiple imputation methods. Multiple imputation (MI) provides valid statistical inferences under the MAR condition, acknowledging the uncertainty associated with the imputed data (Little and Rubin, 2014). It generates a set of plausible values for each unobserved data point, resulting in multiple complete datasets with unique estimates of the missing values. The complete datasets are then analysed individually by the statistical package, resulting in slightly different estimates for each parameter. Finally, the multiple imputation function pools together the estimates to yield a single estimate of the parameter and its corresponding standard error. Using Rubin (1987) formula, the pooled standard

error incorporates the uncertainty due to using multiple data sets and combining variability within and between datasets. It thus minimises the bias by resulting in a standard error larger than that derived from a single imputation method.

As well as having identified the missing data mechanism as MAR, it is also important to specify the pattern of missing data for multiple imputation. The two missing patterns for longitudinal data are monotone and arbitrary. A monotone missing pattern occurs when a participant drops out at one point and his/her data are missing on subsequent measures. An arbitrary missing pattern is when missing data occurs in any variable for any participant in a random fashion (Dong and Peng, 2013). Having examined the data, the pattern of missingness is specified as monotone, which is further confirmed by testing of different multiple imputation models in Stata. The **mi impute monotone** function in Stata is thus utilised, which will impute missing values using a regression model of predictor variables (Rubin, 1987).

The literature does not demonstrate a consensus on a suitable model for determining the number of required imputations, which is related to the rate of missing data in the dataset. Focusing on the relative efficiency (Rubin, 1987) of estimates, (Schafer and Olsen, 1998) suggest that “in many applications, just 3-5 imputations are sufficient to obtain excellent results”. Others recommend the need for higher imputations, such as (Schafer and Graham, 2002) suggesting 20 imputations are adequate in many applications to reduce the bias in estimations. Using simulations to highlight the significance of loss of power with smaller numbers of imputations, Graham *et al.* (2007) recommend 20 imputations for

10% to 30% missing data, and 40 imputations for 50% missing data. White *et al.* (2011) argue that in addition to efficiency of estimates and concerns for loss of power, the Monte Carlo error should also be considered in specifying the optimal number of imputations. The Monte Carlo error is the standard deviation of the estimates across repeated runs of the same imputation procedure with the same data, which converges to zero as the number of MI datasets increase. White *et al.* (2011) recommend that the number of imputations should be similar to the percentage of cases that are incomplete. Another factor to consider is the computing time, which increases with more datasets. In the present study, cases within the dataset with missing observations on one or more variables were not uniform, ranging from 25% to 35% of the data depending on the phase of data collection. Based on the percentage of missing data, a conservative decision was made to specify 35 imputations in order to control the Monte Carlo error and maintain statistical power.

For MI, an imputation model should include useful variables. The model should include variables that are of theoretical interest, variables that are associated with the missing mechanism, and variables that are correlated with the variables with missing data (Dong and Peng, 2013). Due to the longitudinal nature of the data and monotone pattern of missingness, imputation is required for all the dependent variables within the survey. There are thus considerable restrictions with options of predictor variables for the imputation model. From the demographic statistics, the following variables are found to be theoretically meaningful to include in the imputation model: School, Gender, Full-time/part-time, Number of years teaching, and Number of years at school. Further, they all

displayed a low to medium correlation with the variables with missing observations, and provide some explanation for the missing mechanism under MAR assumptions. The school variable accounted for the clustering effect within the model. Gender, mode of employment, number of years at school and number of years teaching accounted for differences in characteristics of respondents with respect to the different domains of the survey.

7.4.2 Testing the Multiple Imputation model

The imputation procedure can be tested for its statistical reproducibility, in order to minimise simulation error associated with MI models. White *et al.* (2011) propose to test the MI procedure with the Monte Carlo error (MCE), which is the standard deviation of the results across repeated runs of the same imputation procedure using the same data. The criteria is that MCE of mean difference should be approximately 10 percent of its standard error, MCE of the test statistic should approximately be 0.1, and MCE of the p-value should be approximately 0.01 when the true p-value is 0.05, and 0.02 when the true p-value is 0.1. The test was conducted with the variables with statistically significant results. Table 7.9 demonstrates that all the Monte Carlo estimates are within the prescribed guidelines proposed by White *et al.* (2011), demonstrating statistical reproducibility of the MI model based on 35 imputations.

Table 7.9 Monte Carlo error test for statistical reproducibility

	Beta	Standard error	t	p-value
TSI work-stressors	-0.274	0.132	-2.09	0.039
MCE	0.01	0.004	0.09	0.008
OHI-total	-0.107	0.052	-2.06	0.042
MCE	0.005	0.002	0.14	0.013
OHI principal influence	-0.207	0.076	-2.72	0.007
MCE	0.006	0.002	0.09	0.002

Another test of the multiple imputation model would be to compare the results from multiple imputation with those from complete-case analysis and other potential imputation options. Comparing the imputation alternatives to the complete-case analysis can be justified due to having met the MCAR assumption. Table 7.10 displays results on selected variables for complete-case analysis, multiple imputation model, mean Imputation, and LOCF. The presented data are limited to dependent variables with statistically significant results (excluding variables with significant baseline differences), and displaying the mean difference (between intervention and control groups), standard error, and p value.

Table 7.10 Comparing Multiple imputation model with potential alternatives

Variable		Complete case analysis	Multiple imputation	Mean imputation	LOCF
TSI work-stressors(T1)	Beta	-0.28	-0.27	-0.26	-0.19
	SE	0.14	0.13	0.09	0.13
	p.	0.05	0.04	0.01	0.14
OHI-total(T2)	Beta	-0.12	-0.11	-0.11	-0.13
	SE	0.05	0.05	0.03	0.05
	p.	0.02	0.04	0	0.01
OHI principal influence(T2)	Beta	-0.25	-0.21	-0.23	-0.16
	SE	0.08	0.08	0.05	0.07
	p.	0	0.01	0	0.03
TSI time-management(T2)	Beta	0.14	0.14	0.14	0.12
	SE	0.1	0.11	0.07	0.1
	p.	0.17	0.22	0.03	0.23
TSI Professional-distress(T1)	Beta	-0.24	-0.23	-0.24	-0.18
	SE	0.16	0.17	0.11	0.15
	p.	0.14	0.18	0.02	0.23
TSI Professional-distress(T2)	Beta	-0.2	-0.23	-0.21	-0.11
	SE	0.16	0.16	0.11	0.15
	p.	0.23	0.17	0.05	0.48
MBI Depersonalisation(T2)	Beta	0.3	0.3	0.29	0.27
	SE	0.15	0.17	0.1	0.15
	p.	0.06	0.08	0	0.08
OHI Morale(T2)	Beta	-0.1	-0.1	-0.09	-0.13
	SE	0.06	0.06	0.04	0.06
	p.	0.12	0.12	0.02	0.02

TSI work-stressor (T1) improved ($p < .05$) in the Complete-case analysis. MI model and Mean Imputation had very similar effect estimates, although the latter displayed tighter standard error. Further, Mean Imputation had a significant

baseline difference. LOCF had the least similarity with Complete-case analysis, resulting in a non-significant effect estimate.

OHI-total (T2) deteriorated ($p < .05$) in the Complete-case analysis. All 3 alternative analyses displayed statistically significant similar effect estimates.

OHI Principal influence (T2) deteriorated ($p < .01$) in the Complete-case analysis. MI model and Mean Imputation had similar effect estimates, although the latter displayed tighter standard error. The effect estimate in LOCF analysis had the least similarity with Complete-case analysis.

TSI Time-management (T2) did not have a statistically significant effect estimate in the Complete-case analysis. MI model and LOCF had similar results, while Mean Imputation displayed a statistically significant effect.

TSI Professional distress (T1) did not have a statistically significant effect estimate in the Complete-case analysis. MI model had a very similar result. Mean Imputation displayed a statistically significant effect, while LOCF had a noticeably different effect estimate compared to Complete-case analysis.

TSI Professional distress (T2) did not have a statistically significant effect estimate in the Complete-case analysis. MI model had a very similar result. Mean Imputation displayed a statistically significant effect, while LOCF had a considerably different effect estimate compared to Complete-case analysis.

MBI Depersonalization (T2) had a near-significant ($p < .1$) deterioration in the Complete-case analysis. The MI model and LOCF had similar results, although the former had a slightly wider standard error. Mean Imputation displayed a statistically significant effect ($p < .01$).

OHI Morale (T2) did not have a statistically significant effect estimate in the Complete-case analysis. MI had a very similar result. Mean imputation and LOCF displayed a statistically significant effect ($p < .05$).

The above comparison demonstrates that the MI model displayed the most proximity to Complete-case analysis. Further, the number and pattern of statistically significant effect estimates, pattern of beneficial and deteriorating effects (see Table 7.10), and variables with statistically significant baseline differences are the same in both Complete-case analysis and the MI model. As expected, Mean imputation displayed more statistically significant effects compared to Complete-case analysis. LOCF displayed considerably different effect estimates on a number of variables compared to Complete-case analysis, demonstrating its distorting effect of time.

7.5 Analysis

Tables 7.11-7.13 report the effect estimates (mean difference) between the intervention and control group using bivariate regression of the multiply imputed dataset at each of the 3 time points: baseline, end-of-intervention (5 months post intervention), and follow-up (9 months post intervention). Considering that this is an intervention development exploratory pilot trial, effect direction is relatively more relevant than effect magnitude or statistical significance. Effect magnitude is limited by the inadequate time afforded to the intervention outputs to be fully implemented, to achieve their impact, and influence the outcomes of interest. Statistical significance is affected by the small sample size. The longitudinal data suggests that beneficial effects were observed at Phase 2 data collection (T1) in more than double the number of scales at baseline. Compared to the control group, the intervention group had beneficial effects on 7 out of the 23 scales at baseline. At T1, 16 scales out of 23 demonstrated beneficial effects, while at Phase 3 data collection (T2), a deterioration to 8 scales out of 23 is observed.

With respect to statistical significance, only those findings without significant baseline difference are discussed, as interpretation of outcomes on other time points will be limited.

Teacher Stress Inventory-(Work stressor) had a statistically significant improvement at T1, $\beta = -.27$, $SE = .13$, $t(247) = -2.09$, $p = .04$. The scale refers to

the sources of stress at the workplace and has 6 items, such as “my caseload/class is too big” and “there is little time to prepare for my lessons/responsibilities”.

Organisational Health Inventory-(Total) had a statistically significant deterioration at T2, $\beta = -.11$, $SE = .05$, $t(248) = -2.06$, $p = .04$. The scale is the sum of all 7 Organisational Health Inventory sub-scales, and gives an indication of the overall health profile of the organisation.

Organisational Health Inventory-(Principal Influence) had a statistically significant deterioration at T2, $\beta = -.21$, $SE = .08$, $t(248) = -2.72$, $p = .01$. The scale refers to the head-teacher’s influence with the school governors, and his/her independence in thought and action. It has five items, such as “the head-teacher is able to influence the actions of his or her superiors”.

Further, of interest may be a near-significant deterioration in Maslach Burnout Inventory-(Depersonalization) at T2, $\beta = .30$, $SE = .17$, $t(248) = 1.77$, $p = .08$. The scale describes detached and impersonal interaction with students, and consists of 5 items such as “I don’t really care what happens to some students” and “I worry that this job is hardening me emotionally”.

Although this pilot trial had a primary aim of testing feasibility and acceptability of the intervention and study design, the quantitative outcomes can give an indication of the potential effects. While realising that most of the effect estimates are not statistically significant, a pattern can be seen as a general

improvement of outcomes from Baseline to T1, and a regression to Baseline at T2. The qualitative finding of the destabilising effect of head-teacher departure at both intervention schools between T1 and T2 is corroborated by the significant worsening at T2 of the effect estimate of Organisational Health Inventory- (Principal Influence). Considering this confounding, this pilot trial suggests an indication of beneficial effects of the intervention at T1. Focusing on the findings with statistical significance, it can be observed that the intervention may have started to tackle the sources of stress in the organisation at T1. However, the findings indicate a general deterioration in the health profile of the organisation, in teacher's perception of the leadership, and in their interaction with students at T2. Deterioration at T2 also has evidence in self-reports of stress-related sickness absence, which deteriorated at near-significance ($p=.08$) in the intervention group (24.4%), compared to 13.8% in the control group.

A limitation in this analysis has been that clustering has not been taken into account due to the small sample size and the small number of clusters. The standard errors will thus be smaller, making the results less reliable. It should be noted that accounting for clustering will give the same effect estimates, but bigger standard errors and thus less likely statistical significance of findings. The primary objective of this exploratory pilot trial was intervention development, feasibility, and transportability. Effect estimates are thus viewed as an indication of direction of the intervention outcomes, and it is also realised that inadequate time has been afforded for the intervention to exert its effects. Thus statistical significance of effect estimates are not of primary concern, and it can be argued

that not accounting for clustering does not jeopardise the outcomes of interest, which is an indication of the direction of effect.

The imputation model was considerably limited due to the narrow options for covariates. In retrospect, data collection for this pilot study was not adequately designed with consideration of the potential for considerable missing data. It is likely that the objective organisational data on individual-level outcomes of teacher sickness absence and performance could have been strong predictors in a multiple imputation model, but these data were not adequately and consistently provided by the schools to be utilised in data analysis. In a subsequent scaling up of the intervention, data collection needs to incorporate sufficient information on an extensive set of covariates which can be used in the construction of a rigorous multivariate multiple imputation model to predict missing values under MAR assumptions. However, the primary goal in data collection in a subsequent study should be the reduction in missing data, which is further discussed in the Process Evaluation chapter.

Table 7.11 Mean difference between intervention and control group at Baseline

	Baseline (n = 254)			
	B	SE	t	p
TSI-total	0.04	0.09	0.49	0.63
TSI time management	0.05	0.1	0.51	0.61
TSI work-stressors	-0.18	0.13	-1.44	0.15
TSI professional distress	-0.14	0.14	-0.97	0.33
TSI discipline & motivation	0.37	0.14	2.65	0.01**
TSI professional investment	0.02	0.14	0.14	0.89
TSI emotional manifest	0.03	0.17	0.19	0.85
TSI fatigue manifest	0.18	0.15	1.21	0.23
TSI cardio manifest	0.03	0.14	0.23	0.82
TSI gastro manifest	-0.08	0.16	-0.53	0.6
TSI behavioural manifest	0.09	0.08	1.08	0.28
MBI emotional exhaustion	0.02	0.17	0.1	0.92
MBI depersonalization	0.22	0.15	1.47	0.14
MBI personal accomplish	0.34	0.15	2.3	0.02*
OHI-total	-0.02	0.04	-0.37	0.71
OHI institutional integrity	0.12	0.06	1.84	0.07
OHI initiating structure	-0.21	0.08	-2.72	0.01**
OHI consideration	0.4	0.09	4.28	0.00***
OHI principal influence	0.02	0.08	0.24	0.81
OHI resource support	-0.09	0.08	-1.09	0.28
OHI morale	-0.05	0.06	-0.87	0.39
OHI academic emphasis	-0.24	0.06	-3.72	0.00***
CES-total	-0.23	0.09	-2.61	0.01*

Key: shaded area= improvements; *=p<.05; **=p<.01; ***=p<.001

Table 7.12 Mean difference between intervention and control group at End-of-intervention (T1)

	End-of-intervention (n = 249)			
	B	SE	t	p
TSI-total	-0.06	0.1	-0.65	0.51
TSI time management	-0.04	0.12	-0.29	0.78
TSI work-stressors	-0.27	0.13	-2.09	0.04*
TSI professional distress	-0.23	0.17	-1.36	0.18
TSI discipline & motivation	0.48	0.15	3.29	0.00***
TSI professional investment	-0.04	0.14	-0.29	0.77
TSI emotional manifest	-0.08	0.19	-0.44	0.66
TSI fatigue manifest	-0.14	0.14	-1	0.32
TSI cardio manifest	-0.1	0.16	-0.63	0.53
TSI gastro manifest	-0.07	0.17	-0.38	0.71
TSI behavioural manifest	-0.08	0.11	-0.76	0.45
MBI emotional exhaustion	-0.11	0.18	-0.6	0.55
MBI depersonalization	0.12	0.14	0.86	0.39
MBI personal accomplish	0.05	0.13	0.41	0.68
OHI-total	0.02	0.05	0.33	0.75
OHI institutional integrity	0.11	0.07	1.7	0.09
OHI initiating structure	-0.21	0.07	-3.2	0.00***
OHI consideration	0.51	0.09	5.36	0.00***
OHI principal influence	-0.01	0.07	-0.19	0.85
OHI resource support	0.04	0.1	0.38	0.7
OHI morale	-0.01	0.06	-0.23	0.82
OHI academic emphasis	-0.28	0.07	-4.13	0.00***
CES-total	-0.44	0.1	-4.28	0.00***

Key: shaded area= improvements; *=p<.05; **=p<.01; ***=p<.001

Table 7.13 Mean difference between intervention and control group at Follow-up

	Follow-up (n = 250)			
	B	SE	t	p
TSI-total	0.04	0.1	0.41	0.69
TSI time management	0.14	0.11	1.23	0.22
TSI work-stressors	0.09	0.14	0.63	0.53
TSI professional distress	-0.23	0.16	-1.39	0.17
TSI discipline & motivation	0.5	0.17	2.86	0.01**
TSI professional investment	-0.05	0.14	-0.37	0.72
TSI emotional manifest	-0.07	0.18	-0.37	0.71
TSI fatigue manifest	-0.08	0.16	-0.53	0.6
TSI cardio manifest	0.23	0.17	1.37	0.18
TSI gastro manifest	0.04	0.18	0.21	0.84
TSI behavioural manifest	-0.08	0.1	-0.86	0.39
MBI emotional exhaustion	0.16	0.2	0.79	0.43
MBI depersonalization	0.3	0.17	1.77	0.08
MBI personal accomplish	0.12	0.14	0.82	0.42
OHI-total	-0.11	0.05	-2.06	0.04*
OHI institutional integrity	0.13	0.07	1.7	0.09
OHI initiating structure	-0.4	0.09	-4.62	0.00***
OHI consideration	0.37	0.09	4.08	0.00***
OHI principal influence	-0.21	0.08	-2.72	0.01**
OHI resource support	-0.14	0.1	-1.46	0.15
OHI morale	-0.1	0.06	-1.59	0.12
OHI academic emphasis	-0.43	0.07	-6.43	0.00***
CES-total	-0.46	0.09	-5.16	0.00***

Key: shaded area= improvements; *=p<.05; **=p<.01; ***=p<.001

Chapter 8- Discussion

The following provides a summary of findings and implications in relation to each successive stage and research question in the study. The study aimed to address the psychosocial work environment as an established social determinant of health. The focus was narrowed to a single occupation, teachers, due to high reported stress levels in national surveys and consequential policy challenges such as turnover, sickness absence, prognosis of individual health outcomes, and student achievements. The focus of intervention was narrowed to tackling the causes of stress after a scoping literature review found that most effort in this area has been directed towards individual-level interventions and programmes. A systematic review was initiated due to the paucity in the literature in synthesis of high quality evidence. Research questions at this stage were twofold.

Research Question 1

What is the evidence-base for effective interventions to reduce the causes of stress and improve wellbeing in teachers?

The rationale was that tackling the causes of stress (stressors) requires interventions at the regulatory/policy or organisational level, and this project focused on the latter. Many of the stressors are within the organisation of schools, and include organisational culture and climate, senior management practice and culture, relationship with colleagues and management, organisation

of the teacher's workload, communication, role ambiguity and role conflict, etc. Further, in comparison with regulatory/policy change, interventions at the organisational level seem to be more amenable to experimental design evaluations, and within the scope of the DPhil in Social Intervention. It was also highlighted that an organisational focus is more upstream than targeting individuals to increase their coping skills and alter their responses to stressors.

The systematic review was conducted under a Cochrane Review Group to ensure high methodological quality, which is now published in the Cochrane Library (Naghieh *et al.*, 2015). 3 cluster randomized controlled trials and 1 study with stepped wedge design met the inclusion criteria. The studies included a task-based organisational change intervention along with stress management training in 1 school, school-wide coaching support along with teacher training in 2 schools, and a multi-component intervention containing performance bonus, job promotion opportunities and mentoring support in 1 school. The study with task-based intervention found small reductions on stress indicators at 12 months, although the evidence was 'low-quality' (GRADE criteria) and intervention content was not described. The multi-component intervention found a moderate increase in retention rates at 12, 24, and 36 months, although the evidence was of 'very low-quality' (GRADE criteria) with high risk of reporting bias. The 2 schools with coaching support found no statistically significant effect.

Research Question 2

How can the evidence-base be utilised to establish sustainable solutions in schools for improving wellbeing and reducing the stressors at work for teachers?

This research question was contingent on the results from the first research question. If a rigorous evidence-base in the form of effectiveness trials were found, the aim was to embark on studying scalability, transportability, and sustainability of the effective intervention(s). On the contrary, if no high-quality evidence was found with scalability potential, it was planned to draw on theory-driven approaches as well as lower quality of evidence (e.g. observational studies; case studies), in order to embark on intervention development and testing in an exploratory pilot trial.

The low number and quality of evidence identified in the systematic review suggested a need for further primary research. In retrospect, the narrow inclusion criteria for rigorous study designs may not be the most appropriate strategy for intervention development studies. In effect, it was many of the excluded studies rather than the few included studies which contributed to intervention development. The common theme in these studies were the participatory nature of their intervention strategies, which was thought of as increasing the decision latitude and recognition of teachers. These findings were corroborated by health promotion guidelines and theoretical models, and were in line with the core work-related stress theories. Within the family of participative change approaches, the intervention methodology of Activity Theory, called the Change Laboratory, was identified due to its relative robust

theoretical and methodological basis. This Scandinavian approach had been applied and tested in a range of settings, but studied only within the interpretivist paradigm. One of the challenges with piloting this intervention was to examine its amenability to experimental design. In line with the MRC Complex Interventions framework (Craig *et al.*, 2008), an exploratory pilot trial of the Change Laboratory was initiated in four secondary schools in the UK. Two schools received the intervention and two schools were allocated to a no-intervention control group. The aim was to develop a process-oriented organisational intervention to improve wellbeing and reduce work-related stress in teachers. The exploratory pilot trial pursued a number of further research questions.

Research Question 3

What are the mechanisms of impact of this participative organisational change intervention on work-related stress and wellbeing?

The overarching intervention pathway demonstrated that the Change Laboratory intervention leads to the collaborative design of a number of outputs with a plan of action. These outputs were implemented and embedded throughout the organisation post-intervention, notwithstanding the implementation challenges that the participants had to deal with. It will naturally take time for these new systems to have an impact on structure, culture, leadership, organisational climate, and work practices. It is following this impact

that individual-level health and wellbeing outcomes can be realized and be meaningfully measured.

The Change Laboratory in Rural school resulted in a number of outputs. A collection of social cohesion initiatives were devised to address the identified challenge of 'community' and the need to nurture social capital and support functions. Another output was the Collaborative Management System, which sought to address the challenge of 'consistency'. The participants argued that consistency is contingent on a 'feeling of ownership' and 'sense of accountability', which are only achieved by real involvement of all stakeholders and specifically staff in devising and revising school policies. An indirect output of the Change Laboratory was an initiative titled the 'Teaching Alliance', which was set up to transform teaching and learning. The (acting) head-teacher instructed the Teaching Alliance team to "work to a Change Lab approach as a non-negotiable". This output sought to address the identified organisational challenge of 'teaching for exams'. The output at Urban school was a new structure in the school entitled 'Action Groups'. All identified organisational problems in the Change Laboratory sessions were considered to be addressed under this structural transformation initiative. Action Groups are a collaborative organisational system with the responsibility to identify major challenges and potential solutions within distinct problem areas, and to plan short-term, medium-term, and long-term actions to address these challenges. They were perceived by the Change Laboratory group as "a tool for collaborative policy-making", "a method to consult with and involve staff", "help to implement and review policies", "address consistency,

accountability, and shared ownership”, and “help all staff find out what is happening in different areas of the school and departments”.

Qualitative data from both schools reported the organisational impact of the intervention. The analysis for Urban school demonstrates themes on reports of improved morale and reduction in role ambiguities. Further, The Action Groups were seen as a vehicle to build better communication, collaboration, and relationships between different levels of the hierarchy. Leadership were also reported to be more conscious of asking staff for their opinions, and the Action Groups were thought to improve leadership attitudes who initially “felt uncomfortable not being in control”. The analysis for Rural school demonstrated themes on reports of the staff being “much more cohesive”, and a significant increase in attendance of social events directly attributed to the Change Laboratory. Teachers reported relatively more consultations, and increased recognition and reward of staff efforts by leadership, who reported discussing staff morale more regularly at leadership meetings. Classroom observations were widely reported in the literature as well as by teachers in this study as a major cause of pressure and stress. Leadership attitudes changed from defending “heavier regime of classroom observations” for underperforming teachers at baseline data collection, to “we have recently looked at changing the way we monitor lessons...” at follow-up data collection. Teachers reported an emerging shift from excessive unwarranted change which was a major reported cause of stress, to a more considered and inclusive view of change by the leadership team.

The intervention theory and process has an emphasis on the surfacing of contradictions between different elements of the Activity System as a means of development and innovation. Such development is cyclical and is referred to as expansive learning, whereby the transformations may eventually lead to a reconceptualization of the object of an activity and to the re-organisation of its structure. This analysis focuses on the actions that teachers and managers collaboratively designed in the intervention schools, in order to address organisational and systemic factors generating stress. The common theme in the output of both Change Laboratory cases was their focus on the object of decision-making, and leading to an expansive learning in terms of a reconceptualization of decision-making within their respective organisations. The central contradiction was found to be between the macro perspective and priorities and agendas of the senior leadership that shape policies and processes, and the micro perspective of those having to enact and comply with the decisions made by senior leaders. The Collaborative Management System in Rural school and the “Action Groups” in Urban school can be seen as mediators synthesized from this contradiction. Implicit within the discursive process of generating a mediator was building the capacity of the main-scale teacher to make meaningful and appropriate contribution to organisational decision-making (Elo *et al.*, 2008), and providing the senior leadership insight into the every day challenges of the main-scale teacher.

Utilising the Activity System model as a conceptual aid, Change Laboratory participants in both schools were able to move beyond situating teacher stress and wellbeing at an individual and superficial level, to identifying the historically

accumulated systemic factors that were adversely affecting their psychological wellbeing. The proposed system-level changes were found to be in line with the core work-related stress theories: demand-control-support model (Karasek and Theorell, 1990) and effort-reward imbalance model (Siegrist, 1996). The Change Laboratory intervention worked along several specific pathways identified in these models. At one level, the new Collaborative Management System at Rural school and the Action Groups at Urban school empower teachers with respect to their direct responsibilities and the wider school organisation, resulting in increasing the teacher's decision latitude and enhancing control over their job and the work environment. These new systems also provide support mechanisms for teachers with respect to enriching their daily work as well as dealing with problems and challenges. The effects of the new systems can further be explained via the effort-reward imbalance pathway, as greater involvement in organisational decision-making enhances self-esteem and a sense of belonging. The wider impact on organisational culture and leadership, including the number of proponents of Change Laboratory in the new leadership structure in each respective school, and its influence on other initiatives such as the Teaching Alliance at Rural school, can also increase recognition of teachers. Moreover, the activities and initiatives to enhance staff cohesion and engage staff in cross-curricular team-work in both schools nurture social support and further provide recognition and reward for staff.

Research Question 4

Can the wider structural stressors be tackled by this participative organisational change intervention?

The background literature review identified a number of wider structural factors which can affect wellbeing in teachers. Deployment of the new public management agenda in schools has led to the isolation of teachers, and the managerialist scheme of departmentalisation and individualisation has undermined the identification teachers have with peers in the school. Performativity had transformed the professional identity of teachers by shifting the focus on competition, efficiency, and targets, while undermining their motivation and commitment. Performativity links effort, values, purpose and self-understanding to measures and comparisons of output' (Ball, 2012). Of importance is also the role of standards in defining and controlling professionalism. The qualitative data demonstrates a number of causes of stress and frustration reported by teachers that do not seem to be directly explained by the core work-related stress models. The common themes in these causal factors expressed by teachers was their origin in new public management, and their role in undermining the professional identity of teachers. These include frustrations with classroom observations; the contradiction teachers face between the reality of teaching for exams and the ideal of imparting knowledge and skills relevant to students' lives; the "current results culture" not suiting highly dextrous but low-literate students, which is amplified to a conception that they are failing such students; and having to 'play the game' in order to achieve their targets. 'Playing the game' referred to ensuring certain percentage of students achieving at least a

C grade in exams. It resulted in teachers focusing on certain students at the expense of others, and “teaching them how to do the exam rather than teaching them skills and problem solving”.

‘Identity-relevant stressors’ (Thoits, 1991) have been elaborated in the psychological literature as adversely affecting psychological wellbeing. This is paralleled in the management literature with the notion of ‘work-identity integrity violations’ (Pratt *et al.*, 2006), which result in a struggle by the individuals to reconcile their professional self-conceptualizations with the work that they do. Thoits (1991) asserts that such stressors are involved in the aetiology of psychological disorder, and Siegrist and Marmot (2004) draw on the biomedical literature to outline the psychobiological pathway for these mechanisms. Professional identity can thus be conceptualised as a crucial dimension of wellbeing at work in tandem with the core theories of work-related stress.

The policy alienation framework (Tummers *et al.*, 2009) was utilised in this analysis (section 5.3.2) to demonstrate that the resulting actions from the Change Laboratory intervention provided teachers with organisational resources to mitigate the adverse experiences of the contemporary managerialist and performative culture. The two concepts of powerlessness and meaninglessness (Blauner, 1964) have been fundamentally targeted through the Change Laboratory intervention and the resulting outputs in each respective school to shift the organisational focus on teaching professionals. The outputs aimed to involve teachers in organisational decisions and provide them with

more control over their work environment. These efforts were paralleled with the drive by participants to develop the school community and enhance staff cohesion, which were seen as a necessary prerequisite for enhancing support, belonging, engagement and commitment.

A review of the intervention pathway in both schools, from conducting the Change Laboratory sessions, to development of outputs, actions taken, and organisational impact of the outputs in each respective school demonstrate a struggle by teachers to rebuild their professional identity. This endeavour has three stages. Firstly, *rediscovery* of the teachers' professional identity during the Change Laboratory sessions entailed a fundamental questioning of their object of activity. Teachers surfaced and analysed a major contradiction between the NPM imposed obligation to teach for exams and their professional commitment to imparting knowledge relevant to children's lives and teaching them life skills. The identity-relevant stressors (Thoits, 1991) and work-identity integrity violations (Pratt *et al.*, 2006) were identified at this stage. The second stage was the *reanimation* of the teachers' professional identity with exercising the new found influence and voice as a result of the Change Laboratory intervention, in order to shape their work environment. Their focus in this stage was on organisational decision-making rather than teaching. The Action Groups at Urban school and the new Collaborative Management System at Rural school provided voice and influence to teaching professionals in shaping the policies and rules which they would be obliged to enact. The wider diffusing organisational impact of the Change Laboratory outputs served to aid the longer-term transformation of the school administration from a managerial to a

professional ethos. Another focus in this stage was on fostering a sense of community, support, and sense of belonging to the organisation with a variety of popular social events and a focus on cross-curricular links. These efforts were seen to attenuate the pressure from the performative regime imposed on their profession. Finally, teachers embarked on the *regeneration* of their professional identity notwithstanding the reality of the prevailing NPM environment. At Rural school, the Teaching Alliance was set-up to collaboratively transform teaching and learning and "change the ethos of how we work". At Urban school, teachers devised a multi-faceted approach to tackling teaching and learning. This led to four of the six Action Groups being directly related to an aspect of teaching and learning. Teachers used these dialogic spaces to discuss and take action for fundamental issues related to professional identity, such as the need to "unpick what a good teacher is" and "how we can really assess teaching", and cross-curricular links, in order to transform teaching and learning.

Research Question 5

Does the intervention demonstrate an indication of effect as a result of the exploratory pilot trial?

The pilot trial was conducted as a controlled before-after study in four secondary schools (2 intervention and 2 control) with a total of 255 teachers. The control schools were matched based on socio-economic and geographical indicators. Data collection was conducted at 3 time points: baseline, end-of-intervention (5 months post intervention), and follow-up (9 months post intervention). The

administered survey consisted of the following four validated questionnaires: Teachers Stress Inventory, Maslach Burnout Inventory, Organisational Health Inventory, and Collective Efficacy Scale. Most of the sub-scales demonstrated high internal consistency. The only exceptions were the Teacher Stress Inventory-behavioural manifestation (average $\alpha=0.62$) and Occupational Health Inventory-Institutional Integrity (average $\alpha=0.62$). Missing data was addressed with Multiple Imputation. Considering that this is an intervention development exploratory pilot trial, effect direction is relatively more relevant than effect magnitude or statistical significance. Effect magnitude is limited by the inadequate time afforded to the intervention outputs to be fully implemented, to achieve their impact, and influence the outcomes of interest. Statistical significance is affected by the small sample size.

While realising that most of the effect estimates are not statistically significant, a pattern can be seen as a general improvement of outcomes from baseline to end-of-intervention, and a regression to baseline at follow-up. The qualitative finding of the destabilising effect of head-teacher departure at both intervention schools between end-of-intervention and follow-up is corroborated by the statistically significant deterioration of Organisational Health Inventory-(Principal Influence) at follow-up ($\beta = -.21$, $SE = .08$, $t(248) = -2.72$, $p = .01$). Considering this confounding, the pilot trial suggests an indication of beneficial effects of the intervention at end-of-intervention point. Focusing on the findings with statistical significance, it can be observed that the intervention may have started to tackle the sources of stress in the organisation at end-of-intervention, demonstrated with improvements ($\beta = -.27$, $SE = .13$, $t(247) = -2.09$, $p = .04$) in

Teacher Stress Inventory-(Work stressor). However, the findings indicate a general deterioration at follow-up in the health profile of the organisation [Organisational Health Inventory-(Total); $\beta = -.11$, $SE = .05$, $t(248) = -2.06$, $p = .04$]; in teacher's perception of the leadership [Organisational Health Inventory-(Principal Influence); $\beta = -.21$, $SE = .08$, $t(248) = -2.72$, $p = .01$]; and in their interaction with students [Maslach Burnout Inventory-(Depersonalization); $\beta = .30$, $SE = .17$, $t(248) = 1.77$, $p = .08$], although the later had a near-significant result. Deterioration at follow-up also has evidence in self-reports of stress-related sickness absence, which deteriorated at near-significance ($p=.08$) in the intervention group (24.4%), compared to 13.8% in the control group. In summary, the intervention indicated a potentially beneficial effect at end-of-intervention. However, regression to baseline was noticed at follow-up data collection, although head-teacher departure between end-of-intervention and follow-up data collection was a confounder.

Research Question 6

Is the participative organisational intervention feasible and acceptable for implementation in UK schools?

This exploratory pilot trial demonstrated that it is possible to encapsulate a methodology with its conceptual and analytical roots in the interpretivist paradigm into an experimental design study. The intervention framework (section 6.1), with its distinct domains of overarching intervention pathway, conceptual components, functional components, and intervention components

was found to be a valuable tool to delineate the different facets of the Change Laboratory and transform it into an 'evidence-based research compliant' intervention. In order not to contaminate the intervention, all the qualitative data collected at baseline was considered as part of the intervention, and the data collected at the three waves of quantitative data collection (baseline, post-intervention, and at follow up) was not utilised in the Change Laboratory sessions. First, the data collected in the 'mirror data' phase in the Change Laboratory were purposeful qualitative data, and analysis and presentation of baseline quantitative data would add little value to the depth of discussions expected in the Change Laboratory sessions. Secondly, in considering scalability of the intervention, collection and analysis of survey and organisational data were not deemed to be components of the intervention, as they make it more lengthy and costly while adding little value. Finally, the end-of-intervention point was considered as the end of Change Laboratory sessions.

Utilising the intervention implementation framework in Section 6.1, it can be suggested that the process of the intervention at both intervention schools demonstrate fidelity to both the conceptual components and the functional components of the intervention. The Qualitative Findings chapter demonstrates that the outputs of the intervention are in line with the theory of change, and fulfil the theoretical objectives of the intervention and the desired outcomes, suggesting rigor in intervention implementation. The intervention and its outputs were deemed to be acceptable to the staff and management in both intervention schools. Some challenges were present in this area, such as slow uptake of the new way of working by different members of the organisational

hierarchy. Interviewees were generally positive about the intervention. Teachers saw the Change Laboratory as an opportunity to tackle the top-down decision-making culture which led to poor rules and subsequent inconsistencies. A number of teachers associated nuanced changes in leadership behaviour in empathetic one-to-one interactions, consultations, and a more considered approach to decision-making with an impact from the Change Laboratory intervention. The few negative comments were mainly pessimism on the likelihood of the school-wide implementation of ideas generated as a result of enhanced teacher involvement. This may be addressed in future studies by striving to achieve more explicit and vocal support and commitment of senior management for involvement of staff in organisational decision-making.

The number of Change Laboratory sessions and duration of each session required negotiation, and in both cases were shorter than other published implementations of this intervention. “Division of labour” had certain connotations with the teachers and this was replaced with “division of work”. These adaptations to intervention components were deemed acceptable, and in line with the implementation framework, integrity of the intervention is maintained with fidelity to the ‘conceptual components’ and the ‘functional components’. The content of the revised sessions were planned with advice from intervention developers to further ensure fidelity. It has been observed in both schools that an enabler of preserving the outputs of the Change Laboratory intervention is the dedication and commitment of the champions of this new systems thinking approach, which include most of the Change Laboratory participants.

A cost analysis of the intervention as implemented in this pilot trial was conducted. It suggests that the cost of intervention equates to £112 per teacher. The intervention cost may be considered worthwhile, considering that the cost of a replacement supply teacher for 1 day of sickness absence is at least £150. This does not take into account the other associated costs and consequences of stress-related sickness absence. Furthermore, it does not consider the value of significant organisational development resulting from the Change Laboratory intervention. A comprehensive economic evaluation is recommended as an essential component of future evaluation of this organisational intervention.

Research Question 7

Assuming the intervention is feasible, acceptable, and demonstrates potential for impact and effect, how can it be scaled-up for a well-powered evaluation, in line with the MRC Complex Interventions framework?

The systematic review concluded with outlining the requirements for future studies to evaluate organisational interventions. These include a need to have a concrete conceptual understanding of the theory of change of organisational interventions, and the need to provide full details of the intervention content and on process evaluation. Socio-economic or performance indicators need to be used to justify similarities between the initial pool of schools prior to randomisation so that they can be meaningfully compared. Sample size calculations need to be conducted to ensure sufficiently powered trials, taking

into account the effect of clustering. Drawing on the data from the included studies, a minimum requirement of 18 schools was calculated for a sufficiently powered trial. Finally, it was emphasized that structural interventions take time to be fully embedded and their impact to be realized. A combination of subjective and objective outcomes should be measured at medium- and long-term follow-up, with a suggestion of 3 years for the latter.

The process evaluation resulted in a number of insights for scaling up this participative organisational intervention. The rate of school recruitment was 29%, which is the number of schools accepting to take part relative to the number of schools approached. The process evaluation demonstrates that the recruitment rate can be increased by presenting the outcomes, impact, and experience of this study as an evidence-base. Further, there is a need to emphasize the potential organisational benefits of the intervention, suggesting its alignment of staff wellbeing with organisational development. Finally, it is recommended to utilise a stepped wedge cluster randomized trial, allowing adequate time of up to six months between approaching schools and start of intervention, as most of the schools which declined to take part did so due to timetabling conflicts. Allowing adequate time also makes the schools more amenable to randomization. Data collection was met with a number of challenges, including attrition due to the longitudinal nature of data collection over three phases, and access to organisational data. These challenges can be addressed with a combination of clarifying requirements and securing leadership commitment for cooperation in this area prior to the start of the

study, as well as devising worthwhile incentives. Further, it would be beneficial to educate the participants about the purpose and significance of the experimental study design and longitudinal data collection.

In determining the feasibility and acceptability of the intervention, a number of challenges were identified which resulted in proposed intervention amendments and considerations for scale-up. Whole-school communication of the principles, objectives, and outcomes of the intervention pre- and post-implementation was proposed to address the problem of reach. Further, it was suggested that relaxation of the Activity Theory jargon of the intervention can facilitate its translation from Change Laboratory participants to the wider staff body. Regular and dynamic feedback was suggested by allocating responsibility to participants to liaise with individual departments, in order to facilitate early involvement of the staff and minimise misunderstandings and resistance. Follow-up Change Laboratory sessions were recommended to address the multi-faceted challenge recorded in both schools in the process of implementation of intervention outputs.

The proposed extensions to the intervention (Table 6.2) were subsequently cross-examined with the implementation framework (section 6.1). It was found that these extensions are in the first instance compliant with, and secondly reinforce and support conceptual components such as ‘multi-voicedness’ and a number of functional components. Some of the proposed extensions were in the form of new functional components. For example, ‘dynamic feedback’ was proposed as extending a number of functional components and serving as a

more direct intermediate operationalization of 'multi-voicedness'. Another proposed functional component was 'follow-up support', which was thought to crucially aid with organisational embedding and sustainability of intervention outputs, and act as a vehicle for the advance of some of the other functional components. Follow-up support was conceptualised as the intermediate operationalization of the advanced stages of the expansive learning process.

In light of the proposed amendments to the scale-up of the intervention, a revision of cost analysis was conducted, which resulted in a slight increase in the cost of the intervention from £112 to £128 per teacher. The process evaluation confirms that high fidelity was maintained to the conceptual components and functional components of the intervention. However, considering that one of the central aims was to embark on intervention development, process evaluation resulted in a number of suggestions for optimisation of functional components, as well as addition of new functional components, in order to better fulfil the objectives of the conceptual components of the intervention.

An important consideration for scaling up of this organisational intervention is devising a pragmatic and efficient training package for facilitators to deliver the intervention. The process evaluation demonstrates that as well as learning knowledge and insights on the methodology and its theoretical basis, there is a requirement for facilitators to possess a set of aptitudes which include reflexivity, managing group dynamics, and dealing with sensitive information. Further, mechanisms need to be in place to assess these skills were maintained in order to deduce intervention integrity.

Implications for research

Systematic review. The systematic review demonstrates that narrow inclusion criteria for rigorous study designs may not be the most appropriate strategy for intervention development endeavours. It was many of the excluded studies rather than the few included studies which guided the intervention development endeavour.

Professional identity construct. The qualitative data, from baseline interviews at Phase 1 through to interviews and observations of the organisational impact of the intervention at Phase 3, demonstrate that professional identity may be a crucial dimension of wellbeing at work in tandem with work-related stress theories. However, the notion of professional identity and identity-relevant stressors needs to be further developed and translated into a validated construct with strong internal consistency. It should then be incorporated into the outcome measures of a subsequent large-scale trial of the intervention. This will test whether the theory developed from the qualitative data in this analysis would be corroborated by quantitative evaluation, in order to objectively improve indicators of professional identity. Such evaluation can serve as an evidence base for the concept of professional identity to contribute to a more holistic picture of wellbeing at work and the psychosocial work environment. Furthermore, it will reliably test the effectiveness of the developed organisational intervention in improving this dimension, as well as the overarching work stress models of wellbeing at work.

Implementation framework. An implementation framework was developed to explicate and assess integrity of complex structural interventions along four distinct domains of overarching intervention pathway, conceptual components, functional components, and intervention components. This framework has proven useful in rigorously adopting, adapting, and improving process-oriented structural interventions.

Intervention integrity. This study demonstrates the possibility of transporting complex structural interventions not only across cultures and contexts, but across epistemological paradigms. This was made possible by utilising the implementation framework to delineate the different facets of the adopted intervention and transforming it into an ‘evidence-based research compliant’ intervention. Steps were also taken to isolate the intervention methods of data collection from the study design methods to avoid contamination of the intervention.

Intervention development. The study demonstrates the crucial role of a comprehensive process evaluation in intervention development, as a number of optimisations were applied to the intervention following this evaluation. These optimisations were cross-examined with the implementation framework to ensure intervention integrity and determine their relationship with the different intervention domains.

Experimental design. The proposed extension to the intervention of ‘Follow-up Change Laboratory sessions’ presents challenges for experimental

design. In this study, the final Change Laboratory session was determined as the end-of-intervention point, and two data collection phases followed this. Follow-up sessions bring into question the concept of end-of-intervention for process-oriented structural interventions, as such sessions will need to be planned on contextual contingencies, and will not be uniform across a cohort of schools. It may be more rigorous for the intervention and for study design to view the intervention effects as emerging, developmental, and expansive, and build-in data collection phases to measure changes in outcomes at different 'stages of development' rather than at the end of a defined intervention. This can provide insight into the process of organisational, cultural, and leadership change as the intervention and its outputs unfold. However, it poses questions regarding feasibility of data collection and possibilities of parsimony in this area. Such perspective is consistent with Theory-based Evaluation (Weiss, 1995), which aim to examine how hypothesized causal chains play out in practice. Furthermore, process-oriented interventions bring into question the relevance of distinctions between Phase II/Phase III or efficacy/effectiveness trials, as this small 'efficacy' trial has demonstrated profound impact on context. Considering these methodological challenges, more research is required to develop rigorous pragmatic trials for process-oriented structural intervention.

Ethical practice in multiple-role research settings. This study provided a unique challenge to maintain ethical practice while transitioning between multiple roles as researcher, facilitator of a change intervention, and evaluator of the intervention. It required constant revisiting of the values of maintaining researcher integrity and striving to discover 'what works' for a

positive social outcome, coupled with the purpose of maintaining intervention integrity. The struggle resulted in nurturing and enriching reflexivity at multiple levels, and being conscious of ethical practice beyond the procedural requirements of a research ethics protocol. It required the awareness to retreat and remain objective when getting too engaged with the collective endeavour of analysing the problems and devising solutions. The principle of multi-voicedness of the participative intervention developed an appreciation of the equality of knowledge possessed by various actors in the system, which further reinforced ethical practice in not privileging certain voices over others due to status, influence, or interests of the research. Coupled with this realisation, was the imperative to uphold confidentiality of sensitive and private information, and achieve a degree of reflexivity to prevent such knowledge to influence judgements of individuals. This affects consequential treatment (conscious or unconscious) of those individuals in the context of the intervention, such as permitting adequate exercise of voice and valuing their views. Maintaining an ethical protocol has clear advantages in prospective planning to mitigate potential adverse effects. However, it can be restrictive as this is done within the role of a researcher, at which point not everything can be anticipated for the role of the facilitator, and situations can unfold during the fieldwork which require pragmatic solutions for the facilitator of the intervention. There is value in returning to the study sites to share findings, alongside the original plan to forward a report to each school. This can be done from the perspective of the evaluator role, in order to provide an objective perspective of the impact of the participative intervention in relation to other schools in the study. A reflexive presentation of the ethical dilemmas of the multiple-role situation may also

prove valuable to the Change Laboratory participants in each respective school, and enrich their on-going implementation of the outputs and the new ways of working. Moreover, this will be beneficial for future development of the intervention, as it would help gain insight into the long-term unfolding and evolution of the intervention outputs and their impact.

Implications for policy and practice

Paucity of organisational interventions. The systematic review demonstrates that organisational interventions for staff wellbeing are rare relative to individual-level efforts. This may be due to the narrow occupational health focus of organisational intervention studies, which can be deemed as too risky for organisations to adopt. This exploratory study demonstrates that wellbeing can be aligned with organisational development in the strive to nurture a positive work environment. This is not just a strategy to access organisations, but as demonstrated in this study, such holistic perspective for the intervention endeavour is achievable.

Participative change. This intervention study demonstrated that an effective empowerment and participative organisational change intervention to address stress at the system level can lead to significant organisational development. The Change Laboratory intervention privileges people at work as active agents shaping and reforming their work context to address contradictions emerging from policy, technology and wider societal changes. As such, it foregrounds the importance of devolving knowledge, power and responsibility to frontline professionals who can adapt work routines and the work environment and address the more deeply rooted systemic drivers of work-related stress.

Mitigating effects of new public management. Effective and sustainable actions that rediscover, reanimate and regenerate professional

identity can provide an anchor to buffer the demands of the performative regime in UK schools, when there are overwhelming challenges to teacher's status, roles and practices. In turn, by having addressed organisational and systemic causes of stress, they can potentially enhance psychological wellbeing in individual teachers. Through the lens of organisational stress, questions are raised about the limits to managerialism in education and the extent to which the performative agenda in teaching is paradoxically undermining the quality and effectiveness of pedagogy. Providing teachers with opportunities and resources to build robust local communities and strong professional identities is potentially a more effective path to improving educational standards.

Reflexive space. This study demonstrates that participatory approaches are helpful alongside the realisation that capacity building is required for main-scale staff to make meaningful and appropriate contribution to organisational decision-making. The provision of a relational and reflexive space is crucial for such approach, which also provides significant learning for organisational leaders. However, the exploratory trial suggests that participation based on a temporary team model does not guarantee full participation, and more effort is needed for maximum participation of staff. Indeed, much of the new components of the extended intervention model as a result of process evaluation is focused on increasing participation.

Limitations

A limitation of the Change Laboratory methodology is that it does not anticipate and account for individual characteristics within group dynamics. It aims to locate the faults in the system, while some problems may inevitably be due to individual personalities and characteristics.

The challenges identified in process evaluation may be attributed in part to delivery of the intervention by the facilitator/researcher. A number of features of the study helped mitigate this effect. The facilitator refrained from giving solutions and acting as a 'consultant', in line with the tenets of the approach to ensure participant involvement and sense of ownership of the problems and the generated solutions. Further, the activities and tasks for each Change Laboratory session were planned in advance in liaison with the intervention developers to ensure implementation fidelity. It is also important to note that the majority of the identified challenges relate to the post-intervention stage of implementation of outputs of the intervention.

Although the overwhelming majority of participants completed surveys, they were not consistent with data provision in all three phases of data collection. This led to considerable loss to follow-up. Further, the imputation model was considerably limited due to the narrow options for covariates. Due to small sample size and small number of clusters, the completed-case analysis did not account for clustering. However, clustering was accounted for in the imputation model.

A significant contextual change in both schools which had a major impact on implementation of outputs of the intervention was the coincidental departure of each respective head-teacher between Phase 2 (end-of-intervention) and Phase 3 (follow-up) of data collection. This was unsettling for teachers and a major cause of anxiety and uncertainty. In line with this destabilising organisational impact, the revelation had adversely affected the school-wide emphasis on the outputs of the Change Laboratory in each respective school, and in both cases resulted in reduced frequency of meetings and activities related to the outputs of the intervention. This effect is realised in the quantitative findings, whereby a trend towards beneficial effects is seen at end-of-intervention, and a deterioration at follow-up. In order to make the intervention outputs more resilient and sustainable in future implementations of the intervention, a potential solution to this risk may be to prospectively involve a number of school governors in the Change Laboratory sessions. Considering that most Change Laboratory participants became champions of the approach and its principles and practices, it may be suggested that involvement of school governors may influence their governing duties, which includes selecting new head teachers. The new collective management ethos as a result of the Change Laboratory intervention would potentially be expected from prospective head teachers, and staff may thus experience less anxiety about the transformation associated with changes in school leadership.

Although this study had a focus on staff wellbeing, a limitation can be thought of as the inadequate involvement of students, as they constitute the 'object of

activity' of teachers. At the time of ethical approval application, little attention was given to the potential for researching children in schools, being discouraged by the extra bureaucracy and study delays attached with such approval procedure. This decision was restrictive when conducting the fieldwork, as the researcher did not have ethical approval to directly pursue the views of students on the school climate. A truly democratic and participative organisational change in schools would naturally incorporate the voice of students. A solution was devised to seek the views of students, and Departmental Research Ethics Committee were consulted to ensure the fieldwork remained within the confines of the ethical approval. Change Laboratory participants were asked to encourage their students to write an anonymous essay on the sources of their positive and frustrating experiences at the school. This exercise was voluntary on behalf of both students and teachers. Further, participants were asked to collate all anonymous essays prior to presenting to the facilitator, in order to avoid potential for recognition based on teacher/classroom association. The limited attempt to involve student perspectives proved valuable and enriched the discussions in the diagnostic stages of the Change Laboratory sessions, as elaborated in the Qualitative Findings chapter. However, future implementation would need to consider adequate involvement of student voice. This may be in the form of student representatives to the Change Laboratory sessions. However, this may prove challenging, as a degree of maturity may be expected by other participants to be privy to sensitive and confidential information about teachers, management practice, and school climate. Also, power dynamics within the group setting may prevent student representatives to exercise multi-voicedness. Student involvement may also be in the form of a parallel student workshop or

Change Laboratory cycle. However, this option precludes student involvement in the relational and collective elements of the actions taken within the Change Laboratory intervention. The dilemma on student involvement would thus require sufficient research in a follow-up study.

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Appendices

Appendix 2.1 PsycINFO search strategy

#1 (school teacher* OR teaching assistant OR teaching profession* OR teaching staff OR school personnel OR school staff OR head teacher* OR school employee*).mp. #2 teachers/ OR college teachers/ OR elementary school teachers/ OR junior high school teachers/ OR middle school teachers/ #3 "teacher*".ti.

#4 1 OR 2 OR 3 #5 occupational stress/ #6 (burnout OR burn out OR psychological workload OR psychological work load OR job satisfaction OR occupational stress*).mp. #7 5 OR 6 #8 4 AND 7 #9 stress/ OR psychological stress/ OR anxiety/ OR distress/ OR health/ OR mental health/ OR well being/ #10 4 AND 9 #11 (well being OR wellbeing OR stress* OR burnout OR anxie* OR anxious* OR depress* OR satisfaction OR strain OR burden OR absent* OR turnover OR retention).mp. #12 (work* OR occupation* OR job OR jobs OR employee* OR organisation* OR organization* OR school OR college OR academy OR classroom).mp. #13 11 AND 12 #14 4 AND 13 #15 8 OR 14

#16 (intervention OR promotion OR prevention OR programme OR program* OR evaluat* OR effect* OR service OR change OR modif* OR switch* OR alter* OR substitut* OR shift OR promot* OR transform* OR control*).mp. #17 15 AND 16 #18 (school level policy OR school level governance OR management practice OR management culture OR school ethos OR (school ADJ5 climate) OR (school ADJ5 culture) OR (school ADJ5 environment) OR (school ADJ5 manag*) OR (school ADJ5 leader*) OR (school ADJ5 organisation*) OR (school ADJ5 organization*) OR (school ADJ5 governance) OR (teaching ADJ3 practices) OR (teaching ADJ3 standard*) OR (teaching ADJ3 style*) OR (teaching ADJ3 method*) OR (teaching ADJ3 differen*) OR (teaching ADJ3 varia*) OR education* context* OR classroom manag* OR organization* structure OR organisation* structure OR organisation* culture OR organization* culture OR communication OR work environment OR (education* ADJ3 practices) OR (education* ADJ3 culture) OR (education* ADJ3 manag*) OR (education* ADJ3 leader*) OR (education* ADJ3 communicat*)).mp.

#19 17 AND 18

Appendix 2.2 Search strategies for other databases

ASSIA

all("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" or "head teacher" OR "school employee") OR ti(teacher*) AEI ("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" or "head teacher" OR "school employee") OR ti. teacher*

BiblioMap 1 Freetext: "teacher*" 2 Freetext: "stress*" 3 Combine 1 and 2 4 Keyword term: Focus of the report: mental health 5 Combine 1 and 4 6 Combine 3 or 5

BEI

S1 ("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" or "head teacher" OR "school employee") OR ti(teacher*) S2 SU.EXACT.EXPLODE("Licensed Teachers") OR SU.EXACT.EXPLODE("Physical Education Teachers") OR SU.EXACT.EXPLODE("Middle School Teachers") OR SU.EXACT.EXPLODE("Special Education Teachers") OR SU.EXACT.EXPLODE("Secondary School Teachers") OR SU.EXACT.EXPLODE("Black Teachers") OR SU.EXACT.EXPLODE("Minority Group Teachers") OR SU.EXACT.EXPLODE("Substitute Teachers") OR SU.EXACT.EXPLODE("Business Education Teachers") OR SU.EXACT.EXPLODE("Careers Teachers") OR SU.EXACT.EXPLODE("Art Teachers") OR SU.EXACT.EXPLODE("Geography Teachers") OR SU.EXACT.EXPLODE("Music Teachers") OR SU.EXACT.EXPLODE("Science Teachers") OR SU.EXACT.EXPLODE("Biology Teachers") OR SU.EXACT.EXPLODE("Home Economics Teachers") OR SU.EXACT.EXPLODE("Mathematics Teachers") OR SU.EXACT.EXPLODE("Primary School Teachers") OR SU.EXACT.EXPLODE("Physics Teachers") OR SU.EXACT.EXPLODE("Craft Education Teachers") OR SU.EXACT.EXPLODE("Part Time Teachers") OR SU.EXACT.EXPLODE("Bilingual Teachers") OR SU.EXACT.EXPLODE("Vocational Education Teachers") OR SU.EXACT.EXPLODE("Technology Teachers") OR SU.EXACT.EXPLODE("English Studies Teachers") OR SU.EXACT.EXPLODE("History Teachers") OR SU.EXACT.EXPLODE("Remedial Teachers") OR SU.EXACT.EXPLODE("Language Teachers") OR SU.EXACT.EXPLODE("Chemistry Teachers") OR SU.EXACT.EXPLODE("Drama Teachers") OR SU.EXACT.EXPLODE("Deputy Head Teachers") OR SU.EXACT.EXPLODE("Religious Education Teachers") OR SU.EXACT.EXPLODE("Peripatetic Teachers") OR SU.EXACT.EXPLODE("Advanced Skills Teachers") OR SU.EXACT.EXPLODE("Head Teachers") OR SU.EXACT.EXPLODE("Technical Education Teachers") OR SU.EXACT.EXPLODE("Women Teachers") OR SU.EXACT.EXPLODE("Adult Education Teachers") OR SU.EXACT.EXPLODE("Support Teachers") OR SU.EXACT.EXPLODE("Teachers") OR SU.EXACT.EXPLODE("Reading Teachers") OR SU.EXACT.EXPLODE("Further Education Teachers") S3 (("school teacher*" OR "teaching assistant" OR

"teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR (SU.EXACT.EXPLODE("Licensed Teachers") OR SU.EXACT.EXPLODE("Physical Education Teachers") OR SU.EXACT.EXPLODE("Middle School Teachers") OR SU.EXACT.EXPLODE("Special Education Teachers") OR SU.EXACT.EXPLODE("Secondary School Teachers") OR SU.EXACT.EXPLODE("Black Teachers") OR SU.EXACT.EXPLODE("Minority Group Teachers") OR SU.EXACT.EXPLODE("Substitute Teachers") OR SU.EXACT.EXPLODE("Business Education Teachers") OR SU.EXACT.EXPLODE("Careers Teachers") OR SU.EXACT.EXPLODE("Art Teachers") OR SU.EXACT.EXPLODE("Geography Teachers") OR SU.EXACT.EXPLODE("Music Teachers") OR SU.EXACT.EXPLODE("Science Teachers") OR SU.EXACT.EXPLODE("Biology Teachers") OR SU.EXACT.EXPLODE("Home Economics Teachers") OR SU.EXACT.EXPLODE("Mathematics Teachers") OR SU.EXACT.EXPLODE("Primary School Teachers") OR SU.EXACT.EXPLODE("Physics Teachers") OR SU.EXACT.EXPLODE("Craft Education Teachers") OR SU.EXACT.EXPLODE("Part Time Teachers") OR SU.EXACT.EXPLODE("Bilingual Teachers") OR SU.EXACT.EXPLODE("Vocational Education Teachers") OR SU.EXACT.EXPLODE("Technology Teachers") OR SU.EXACT.EXPLODE("English Studies Teachers") OR SU.EXACT.EXPLODE("Part Time Teachers") OR SU.EXACT.EXPLODE("Bilingual Teachers") OR SU.EXACT.EXPLODE("Vocational Education Teachers") OR SU.EXACT.EXPLODE("Technology Teachers") OR SU.EXACT.EXPLODE("English Studies Teachers") OR SU.EXACT.EXPLODE("History Teachers") OR SU.EXACT.EXPLODE("Remedial Teachers") OR SU.EXACT.EXPLODE("Language Teachers") OR SU.EXACT.EXPLODE("Chemistry Teachers") OR SU.EXACT.EXPLODE("Drama Teachers") OR SU.EXACT.EXPLODE("Deputy Head Teachers") OR SU.EXACT.EXPLODE("Religious

Education Teachers") OR SU.EXACT.EXPLODE("Peripatetic Teachers") OR SU.EXACT.EXPLODE("Advanced Skills Teachers") OR SU.EXACT.EXPLODE("Head Teachers") OR SU.EXACT.EXPLODE("Technical Education Teachers") OR SU.EXACT.EXPLODE("Women Teachers") OR SU.EXACT.EXPLODE("Adult Education Teachers") OR SU.EXACT.EXPLODE("Support Teachers") OR SU.EXACT.EXPLODE("Teacher s") OR SU.EXACT.EXPLODE("Reading Teachers") OR SU.EXACT.EXPLODE("Further Education Teachers"))

S4 SU.EXACT.EXPLODE("Teacher Burnout") OR SU.EXACT.EXPLODE("Burnout") S5 burnout OR "burn out" OR "psychological workload" OR "psychological work load" OR "Job satisfaction" OR "occupational stress" OR "work related stress" OR "vocational stress" S6 (SU.EXACT.EXPLODE("Teacher Burnout") OR SU.EXACT.EXPLODE("Burnout ")) OR (burnout OR "burn out" OR "psychological workload" OR "psychological work load" OR "Job satisfaction" OR "occupational stress" OR "work related stress" OR "vocational stress")

S7 SU.EXACT.EXPLODE("Special Education Teachers") OR SU.EXACT.EXPLODE("Secondary School Teachers") OR SU.EXACT.EXPLODE("Black Teachers") OR SU.EXACT.EXPLODE("Minority Group

Teachers") OR SU.EXACT.EXPLODE("Substitute Teachers") OR
 SU.EXACT.EXPLODE("Business Education Teachers") OR
 SU.EXACT.EXPLODE("Careers Teachers") OR SU.EXACT.EXPLODE("Art
 Teachers") OR SU.EXACT.EXPLODE("Geography Teachers") OR
 SU.EXACT.EXPLODE("Music Teachers") OR SU.EXACT.EXPLODE("Science
 Teachers") OR SU.EXACT.EXPLODE("Biology Teachers") OR
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 Education Teachers") OR SU.EXACT.EXPLODE("Support Teachers") OR
 SU.EXACT.EXPLODE("Teachers") OR SU.EXACT.EXPLODE("Reading Teachers")
 OR SU.EXACT.EXPLODE("Further Education Teachers")) AND
 ((SU.EXACT.EXPLODE("Teacher Burnout") OR SU.EXACT.EXPLODE("Burnout "))
 OR (burnout OR "burn out" OR "psychological workload" OR "psychological work
 load" OR "Job satisfaction" OR "occupational stress" OR "work related stress" OR
 "vocational stress"))

S8 SU.EXACT.EXPLODE("Stress (Psychological)") OR
 (SU.EXACT.EXPLODE("Anxiety ") OR SU.EXACT.EXPLODE("Depress ion
 (Psychology)")) S9 "well being" or wellbeing or stress* or burnout or "burn out"
 or anxie* or anxious* or depress* or satisfaction or strain or burden or absent*
 or turnover or retention S10 (SU.EXACT.EXPLODE("Stress (Psychological)") OR
 (SU.EXACT.EXPLODE("Anxiety ") OR SU.EXACT.EXPLODE("Depress ion
 (Psychology)")) OR ("well being" or wellbeing or stress* or burnout or "burn
 out" or anxie* or anxious* or depress* or satisfaction or strain or burden or
 absent* or turnover or retention) S11 work* or occupation* or job or jobs or
 employee* or organisation* or organization* S12 ((SU.EXACT.EXPLODE("Stress
 (Psychological)") OR (SU.EXACT.EXPLODE("Anxiety ") OR
 SU.EXACT.EXPLODE("Depress ion (Psychology)")) OR ("well being" or wellbeing
 or stress* or burnout or "burn out" or anxie* or anxious* or depress* or
 satisfaction or strain or burden or absent* or turnover or retention)) AND
 (work* or occupation* or job or jobs or employee* or organisation* or
 organization*)

S13 (((("school teacher*" OR "teaching assistant" OR "teaching profession*" OR
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S14 (((("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR (SU.EXACT.EXPLODE("License d Teachers") OR SU.EXACT.EXPLODE("Physical Education Teachers") OR SU.EXACT.EXPLODE("Middle School Teachers") OR SU.EXACT.EXPLODE("Special Education Teachers") OR SU.EXACT.EXPLODE("Secondary School Teachers") OR SU.EXACT.EXPLODE("Black Teachers") OR SU.EXACT.EXPLODE("Minority Group Teachers") OR SU.EXACT.EXPLODE("Substitute Teachers") OR SU.EXACT.EXPLODE("Business Education Teachers") OR SU.EXACT.EXPLODE("Careers Teachers") OR SU.EXACT.EXPLODE("Art Teachers") OR SU.EXACT.EXPLODE("Geography Teachers") OR SU.EXACT.EXPLODE("Music Teachers") OR SU.EXACT.EXPLODE("Science

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 OR SU.EXACT.EXPLODE("Further Education Teachers")) AND
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 load" OR "Job satisfaction" OR "occupational stress" OR "work related stress" OR
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 out" or anxie* or anxious* or depress* or satisfaction or strain or burden or
 absent* or turnover or retention)) AND (work* or occupation* or job or jobs or
 employee* or organisation* or organization*)))

S15 intervention or promotion or prevention or programme or program* or
 evaluat* or effect* or trial* or service or change or modif* or switch* or alter* or
 substitut* or shift or promot* or transform* or control*

S16 (((("school teacher*" OR "teaching assistant" OR "teaching profession*" OR
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 out" or anxie* or anxious* or depress* or satisfaction or strain or burden or
 absent* or turnover or retention)) AND (work* or occupation* or job or jobs or
 employee* or organisation* or organization*)))) AND (intervention or
 promotion or prevention or programme or program* or evaluat* or effect* or
 trial* or service or change or modif* or switch* or alter* or substitut* or shift or
 promot* or transform* or control*)

S17 "school level policy" or "school level governance" or "management practice" or "management culture" or "school ethos" or "school effectiveness" or "school improvement" or "school NEAR/3 climate" or school NEAR/3 culture or school NEAR/3 environment or school NEAR/3 manag* or school NEAR/3 leader* or school NEAR/3 organisation* or school NEAR/3 organization* or school NEAR/3 governance or teaching NEAR/3 practic* or teaching NEAR/3 standard* or teaching NEAR/3 style* or teaching NEAR/3 method* or teaching NEAR/3 differen* or teaching NEAR/3 varia* or "education* context*" or "classroom manag*" or "organization* structure" or "organisation* structure" or "organisation* culture" or "organization* culture" or communication or "work environment" or education* NEAR/3 practic* or education* NEAR/3 culture or education* NEAR/3 manag* or education* NEAR/3 leader* or education* NEAR/3 communicat* S18 (((((("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR (SU.EXACT.EXPLODE("License d Teachers") OR SU.EXACT.EXPLODE("Physical Education Teachers") OR SU.EXACT.EXPLODE("Middle School Teach- ers") OR SU.EXACT.EXPLODE("Special Education Teachers") OR SU.EXACT.EXPLODE("Secondary School Teachers") OR SU.EXACT.EXPLODE("Black Teachers") OR SU.EXACT.EXPLODE("Minority Group Teachers") OR SU.EXACT.EXPLODE("Substitute Teachers") OR SU.EXACT.EXPLODE("Business Education Teachers") OR SU.EXACT.EXPLODE("Careers Teachers") OR SU.EXACT.EXPLODE("Art Teachers") OR SU.EXACT.EXPLODE("Geography Teachers") OR SU.EXACT.EXPLODE("Music Teachers") OR SU.EXACT.EXPLODE("Science Teachers") OR SU.EXACT.EXPLODE("Biology Teachers") OR SU.EXACT.EXPLODE("Home Economics Teachers") OR SU.EXACT.EXPLODE("Mathematics Teachers") OR SU.EXACT.EXPLODE("Primary School Teachers") OR SU.EXACT.EXPLODE("Physics Teachers") OR SU.EXACT.EXPLODE("Craft Education Teachers") OR SU.EXACT.EXPLODE("Part Time Teachers") OR SU.EXACT.EXPLODE("Bilingual Teachers") OR SU.EXACT.EXPLODE("Vocational Education Teachers") OR SU.EXACT.EXPLODE("Technology Teachers") OR SU.EXACT.EXPLODE("English Studies Teachers") OR SU.EXACT.EXPLODE("History Teachers") OR SU.EXACT.EXPLODE("Remedial Teachers") OR SU.EXACT.EXPLODE("Language Teachers") OR SU.EXACT.EXPLODE("Chemistry Teachers") OR SU.EXACT.EXPLODE("Drama Teachers") OR SU.EXACT.EXPLODE("Deputy Head Teachers") OR SU.EXACT.EXPLODE("Religious Education Teach- ers") OR SU.EXACT.EXPLODE("Peripatetic Teachers") OR SU.EXACT.EXPLODE("Advanced Skills Teachers") OR SU.EXACT.EXPLODE("Head Teachers") OR SU.EXACT.EXPLODE("Technic al Education Teachers") OR SU.EXACT.EXPLODE("Women Teachers") OR SU.EXACT.EXPLODE("Adult Education Teachers") OR SU.EXACT.EXPLODE("Support Teachers") OR SU.EXACT.EXPLODE("Teacher s") OR SU.EXACT.EXPLODE("Reading Teachers") OR SU.EXACT.EXPLODE("Further Education Teachers")))) AND ((SU.EXACT.EXPLODE("Teacher Burnout") OR SU.EXACT.EXPLODE("Burnout ")) OR (burnout OR "burn out" OR "psychological workload" OR "psychological work load" OR "Job satisfaction" OR "occupational stress" OR "work related stress" OR "vocational stress")))) OR (((("school teacher*" OR "teaching assistant" OR

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 (SU.EXACT.EXPLODE("License d Teachers") OR
 SU.EXACT.EXPLODE("Physical Education Teachers") OR
 SU.EXACT.EXPLODE("Middle School Teachers") OR SU.EXACT.EXPLODE("Special Educa- tion Teachers") OR SU.EXACT.EXPLODE("Secondary School Teachers")
 OR SU.EXACT.EXPLODE("Black Teachers") OR SU.EXACT.EXPLODE("Minority Group Teachers") OR SU.EXACT.EXPLODE("Substitute Teachers") OR
 SU.EXACT.EXPLODE("Business Education Teachers") OR
 SU.EXACT.EXPLODE("Careers Teachers") OR SU.EXACT.EXPLODE("Art Teachers") OR SU.EXACT.EXPLODE("Geography Teachers") OR
 SU.EXACT.EXPLODE("Music Teachers") OR SU.EXACT.EXPLODE("Science Teachers") OR SU.EXACT.EXPLODE("Biology Teachers") OR
 SU.EXACT.EXPLODE("Home Economics Teachers") OR
 SU.EXACT.EXPLODE("Mathematics Teachers") OR SU.EXACT.EXPLODE("Primary School Teachers") OR SU.EXACT.EXPLODE("Physics Teachers") OR
 SU.EXACT.EXPLODE("Craft Education Teachers") OR SU.EXACT.EXPLODE("Part Time Teachers") OR SU.EXACT.EXPLODE("Bilingual Teachers") OR
 SU.EXACT.EXPLODE("Vocational Education Teachers") OR
 SU.EXACT.EXPLODE("Technology Teachers") OR SU.EXACT.EXPLODE("English Studies Teachers")
 ORSU.EXACT.EXPLODE("HistoryTeachers")ORSU.EXACT.EXPLODE("RemedialTe achers")ORSU.EXACT.EXPLODE("Language Teachers") OR
 SU.EXACT.EXPLODE("Chemistry Teachers") OR SU.EXACT.EXPLODE("Drama Teachers") OR SU.EXACT.EXPLODE("Deputy Head Teachers") OR
 SU.EXACT.EXPLODE("Religious Education Teachers") OR
 SU.EXACT.EXPLODE("Peripatetic Teachers")
 ORSU.EXACT.EXPLODE("AdvancedSkillsTeachers")ORSU.EXACT.EXPLODE("Hea dTeachers")ORSU.EXACT.EXPLODE("Technic al Education Teachers") OR
 SU.EXACT.EXPLODE("Women Teachers") OR SU.EXACT.EXPLODE("Adult Education Teachers") OR SU.EXACT.EXPLODE("Support Teachers") OR
 SU.EXACT.EXPLODE("Teacher s") OR SU.EXACT.EXPLODE("Reading Teachers")
 OR SU.EXACT.EXPLODE("Further Education Teachers")) AND
 (((SU.EXACT.EXPLODE("Stress (Psychological)") OR
 (SU.EXACT.EXPLODE("Anxiety ") OR SU.EXACT.EXPLODE("Depress ion (Psychology)")))) OR ("well being" or wellbeing or stress* or burnout or "burn out" or anxie* or anxious* or depress* or satisfaction or strain or burden or absent* or turnover or retention)) AND (work* or occupation* or job or jobs or employee* or organisation* or organization*)))) AND (intervention or promotion or prevention or programme or program* or evaluat* or effect* or trial* or service or change or modif* or switch* or alter* or substitut* or shift or promot* or transform* or control*)) AND ("school level policy" or "school level governance" or "management practice" or "management culture" or "school ethos" or "school effectiveness" or "school improvement" or "school NEAR/3 climate" or school NEAR/3 culture or school NEAR/3 environment or school NEAR/3 manag* or school NEAR/3 leader* or school NEAR/ 3 organisation* or school NEAR/3 organization* or school NEAR/3 governance or teaching NEAR/3 practic* or teaching NEAR/

3 standard* or teaching NEAR/3 style* or teaching NEAR/3 method* or teaching NEAR/3 differen* or teaching NEAR/3 varia* or "education* context*" or "classroom manag*" or "organization* structure" or "organisation* structure" or "organisation* culture" or "organization* culture" or communication or "work environment" or education* NEAR/3 practic* or education* NEAR/3 culture or education* NEAR/3 manag* or education* NEAR/3 leader* or education* NEAR/3 communicat*)

S19 (((((("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR (SU.EXACT.EXPLODE("License d Teachers") OR SU.EXACT.EXPLODE("Physical Education Teachers") OR SU.EXACT.EXPLODE("Middle School Teach- ers") OR SU.EXACT.EXPLODE("Special Education Teachers") OR SU.EXACT.EXPLODE("Secondary School Teachers") OR SU.EXACT.EXPLODE("Black Teachers") OR SU.EXACT.EXPLODE("Minority Group Teachers") OR SU.EXACT.EXPLODE("Substitute Teachers") OR SU.EXACT.EXPLODE("Business Education Teachers") OR SU.EXACT.EXPLODE("Careers Teachers") OR SU.EXACT.EXPLODE("Art Teachers") OR SU.EXACT.EXPLODE("Geography Teachers") OR SU.EXACT.EXPLODE("Music Teachers") OR SU.EXACT.EXPLODE("Science Teachers") OR SU.EXACT.EXPLODE("Biology Teachers") OR SU.EXACT.EXPLODE("Home Economics Teachers") OR SU.EXACT.EXPLODE("Mathematics Teachers") OR SU.EXACT.EXPLODE("Primary School Teachers") OR SU.EXACT.EXPLODE("Physics Teachers") OR SU.EXACT.EXPLODE("Craft Education Teachers") OR SU.EXACT.EXPLODE("Part Time Teachers") OR SU.EXACT.EXPLODE("Bilingual Teachers") OR SU.EXACT.EXPLODE("Vocational Education Teachers") OR SU.EXACT.EXPLODE("Technology Teachers") OR SU.EXACT.EXPLODE("English Studies Teachers") OR SU.EXACT.EXPLODE("History Teachers") OR SU.EXACT.EXPLODE("Remedial Teachers") OR SU.EXACT.EXPLODE("Language Teachers") OR SU.EXACT.EXPLODE("Chemistry Teachers") OR SU.EXACT.EXPLODE("Drama Teachers") OR SU.EXACT.EXPLODE("Deputy Head Teachers") OR SU.EXACT.EXPLODE("Religious Education Teach- ers") OR SU.EXACT.EXPLODE("Peripatetic Teachers") OR SU.EXACT.EXPLODE("Advanced Skills Teachers") OR SU.EXACT.EXPLODE("Head Teachers") OR SU.EXACT.EXPLODE("Technical Education Teachers") OR SU.EXACT.EXPLODE("Women Teachers") OR SU.EXACT.EXPLODE("Adult Education Teachers") OR SU.EXACT.EXPLODE("Support Teachers") OR SU.EXACT.EXPLODE("Teacher s") OR SU.EXACT.EXPLODE("Reading Teachers") OR SU.EXACT.EXPLODE("Further Education Teachers")))) AND ((SU.EXACT.EXPLODE("Teacher Burnout") OR SU.EXACT.EXPLODE("Burnout ")) OR (burnout OR "burn out" OR "psychological workload" OR "psychological work load" OR "Job satisfaction" OR "occupational stress" OR "work related stress" OR "vocational stress")) OR (((("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR (SU.EXACT.EXPLODE("Licensed Teachers") OR SU.EXACT.EXPLODE("Physical Education Teachers") OR

SU.EXACT.EXPLODE("Middle School Teachers") OR SU.EXACT.EXPLODE("Special Educa- tion Teachers") OR SU.EXACT.EXPLODE("Secondary School Teachers") OR SU.EXACT.EXPLODE("Black Teachers") OR SU.EXACT.EXPLODE("Minority Group Teachers") OR SU.EXACT.EXPLODE("Substitute Teachers") OR SU.EXACT.EXPLODE("Business Education Teachers") OR SU.EXACT.EXPLODE("Careers Teachers") OR SU.EXACT.EXPLODE("Art Teachers") OR SU.EXACT.EXPLODE("Geography Teachers") OR SU.EXACT.EXPLODE("Music Teachers") OR SU.EXACT.EXPLODE("Science Teachers") OR SU.EXACT.EXPLODE("Biology Teachers") OR SU.EXACT.EXPLODE("Home Economics Teachers") OR SU.EXACT.EXPLODE("Mathematics Teachers") OR SU.EXACT.EXPLODE("Primary School Teachers") OR SU.EXACT.EXPLODE("Physics Teachers") OR SU.EXACT.EXPLODE("Craft Education Teachers") OR SU.EXACT.EXPLODE("Part Time Teachers") OR SU.EXACT.EXPLODE("Bilingual Teachers") OR SU.EXACT.EXPLODE("Vocational Education Teachers") OR SU.EXACT.EXPLODE("Technology Teachers") OR SU.EXACT.EXPLODE("English Studies Teachers") OR SU.EXACT.EXPLODE("History Teachers") OR SU.EXACT.EXPLODE("Remedial Teachers") OR SU.EXACT.EXPLODE("Language Teachers") OR SU.EXACT.EXPLODE("Chemistry Teachers") OR SU.EXACT.EXPLODE("Drama Teachers") OR SU.EXACT.EXPLODE("Deputy Head Teachers") OR SU.EXACT.EXPLODE("Religious Education Teachers") OR SU.EXACT.EXPLODE("Peripatetic Teachers") OR SU.EXACT.EXPLODE("Advanced Skills Teachers") OR SU.EXACT.EXPLODE("Head Teachers") OR SU.EXACT.EXPLODE("Technical Education Teachers") OR SU.EXACT.EXPLODE("Women Teachers") OR SU.EXACT.EXPLODE("Adult Education Teachers") OR SU.EXACT.EXPLODE("Support Teachers") OR SU.EXACT.EXPLODE("Teacher s") OR SU.EXACT.EXPLODE("Reading Teachers") OR SU.EXACT.EXPLODE("Further Education Teachers")) AND (((SU.EXACT.EXPLODE("Stress (Psychological)") OR (SU.EXACT.EXPLODE("Anxiety ") OR SU.EXACT.EXPLODE("Depression (Psychology)")) OR ("well being" or wellbeing or stress* or burnout or "burn out" or anxie* or anxious* or depress* or satisfaction or strain or burden or absent* or turnover or retention)) AND (work* or occupation* or job or jobs or employee* or organisation* or organization*)))) AND (intervention or promotion or prevention or programme or program* or evaluat* or effect* or trial* or service or change or modif* or switch* or alter*

or substitut* or shift or promot* or transform* or control*)) NOT ("school level policy" or "school level governance" or "management practice" or "management culture" or "school ethos" or "school effectiveness" or "school improvement" or "school NEAR/3 climate" or school NEAR/3 culture or school NEAR/3 environment or school NEAR/3 manag* or school NEAR/3 leader* or school NEAR/ 3 organisation* or school NEAR/3 organization* or school NEAR/3 governance or teaching NEAR/3 practic* or teaching NEAR/ 3 standard* or teaching NEAR/3 style* or teaching NEAR/3 method* or teaching NEAR/3 differen* or teaching NEAR/3 varia* or "education* context*" or "classroom manag*" or "organization* structure" or "organisation* structure" or "organisation* culture" or "organization* culture" or communication or "work

environment" or education* NEAR/3 practic* or education*

CENTRAL

#1 MeSH descriptor Stress, Psychological explode all trees #2 well being or wellbeing or stress* or burnout or burn out or anxie* or anxious* or depress* or satisfaction or strain or burden or absent* or turnover or retention #3 work* or occupation* or job or jobs or employee* or organisation* or organization* or school or college or academy or classroom #4 MeSH descriptor Burnout, Professional explode all trees #5 MeSH descriptor Mental Health explode tree 1 #6 (#2 AND #3) #7 ('school level policy' or 'school level governance' or 'management practice' or 'management culture' or 'school ethos' or 'school effectiveness' or 'school improvement' or (school NEAR/3 climate) or (school NEAR/3 culture) or (school NEAR/3 environment) or (school NEAR/3 manag*) or (school NEAR/3 leader*) or (school NEAR/3 organisation*) or (school NEAR/3 organization*) or (school NEAR/ 3 governance) or (teaching NEAR/3 practices) or (teaching NEAR/3 standard*) or (teaching NEAR/3 style*) or (teaching NEAR/3 method*) or (teaching NEAR/3 differen*) or (teaching NEAR/3 varia*) or education* NEXT/1 context* or classroom NEXT/1 manag* or organization* NEXT/1 structure or organisation* NEXT/1 structure or organisation* NEXT/1 culture or organization* NEXT/1 culture or communication or 'work environment' or (education* NEAR/3 practices) or (education* NEAR/3 culture) or (education* NEAR/3 manag*) or (education* NEAR/3 leader*) or (education* NEAR/3 communicat*)) #8 teacher* OR (school NEXT/1 teacher*) OR (teaching NEXT/1 assistant*) OR (teaching NEXT/1 profession*) OR 'teaching staff' OR 'school personnel' OR 'school staff' OR (head NEXT/1 teacher*) OR (school NEXT/1 employee*) #9 (#8 AND (#1 OR #4 OR #5 OR #6)) #10 (#9 AND #7) **ClinicalTrials** 1 Freetext: TI: teacher* AND burnout 2 Freetext: TI: teacher* and burn out 3 Freetext: TI: teacher* and stress 4 Freetext: TI: teacher* AND anxiety 5 Freetext: TI: teacher* AND depression

DARE

1 Freetext: teacher*:TI. OR "school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" or "head teacher" OR "school employee" 2 Freetext: burnout OR burn out OR stress OR anxiety OR depress* 3 Combine 1 and 2

DER

1 Freetext: "teacher*" 2 Keyword term: What is/are the population focus/foci of the study?: Teaching staff 3 Combine 1 or 2 4 Freetext: "stress"

5 Combine 3 and 4

EMBASE

#1 teacher*:ti OR (school NEXT/1 teacher*):ab,ti OR (teaching NEXT/1 assistant*):ab,ti OR (teaching NEXT/1 profession*):ab,ti OR 'teaching staff':ab,ti OR 'school personnel':ab,ti OR 'school staff':ab,ti OR (head NEXT/1

teacher*):ab,ti OR (school NEXT/1 employee*):ab,ti #2 'teacher'/de #3 #1 OR #2 #4 'job stress'/exp #5 'burnout'/exp #6 burnout:ab,ti OR 'burn out':ab,ti OR 'psychological workload':ab,ti OR 'psychological work load':ab,ti OR 'job satisfaction':ab,ti OR (occupational NEXT/1 stress*):ab,ti OR ('work related' NEXT/1 stress*):ab,ti OR (vocational NEXT/1 stress*):ab,ti #7 #4 OR #5 OR #6 #8 #3 AND #7 #9 'stress'/de OR 'school stress'/de OR 'acute stress'/de OR 'behavioral stress'/de OR 'chronic stress'/de OR 'emotional stress'/de #10 'mental stress'/de OR 'role stress'/de OR 'anxiety disorder'/exp OR 'mental health'/de OR 'psychological well being'/de #11 'well being':ab,ti OR wellbeing:ab,ti OR stress*:ab,ti OR anxie*:ab,ti OR anxious*:ab,ti OR depress*:ab,ti OR satisfaction:ab,ti OR strain:ab,ti OR burden:ab,ti OR absent*:ab,ti OR turnover:ab,ti OR retention:ab,ti #12 #9 OR #10 OR #11 #13 work*:de,ab,ti OR occupation*:de,ab,ti OR job:de,ab,ti OR jobs:de,ab,ti OR employee*:de,ab,ti OR organisation*:de,ab,ti OR organization*:de,ab,ti OR school:de,ab,ti OR college:de,ab,ti OR academy:de,ab,ti OR classroom:de,ab,ti #14 #12 AND #13 #15 #3 AND #14 #16 #8 OR #15 #17 intervention:de,ab,ti OR promotion:de,ab,ti OR prevention:de,ab,ti OR programme:de,ab,ti OR program*:de,ab,ti OR evaluat*: de,ab,ti OR effect*:de,ab,ti OR trial*:de,ab,ti OR service:de,ab,ti OR change:de,ab,ti OR modif*:de,ab,ti OR switch*:de,ab,ti OR alter*:de,ab,ti OR substitut*:de,ab,ti OR shift:de,ab,ti OR promot*:de,ab,ti OR transform*:de,ab,ti OR control*:de,ab,ti #18 #16 AND #17 #19 #18 AND [embase]/lim #20 'school level policy':de,ab,ti OR 'school level governance':de,ab,ti OR 'management practice':de,ab,ti OR 'management culture':de,ab,ti OR 'school ethos':de,ab,ti OR 'school effectiveness':de,ab,ti OR 'school improvement':de,ab,ti OR (school NEAR/3 climate):de,ab,ti OR (school NEAR/3 culture):de,ab,ti OR (school NEAR/3 environment):de,ab,ti OR (school NEAR/3 manag*):de,ab,ti OR (school NEAR/3 leader*):de,ab,ti OR (school NEAR/3 organisation*):de,ab,ti OR (school NEAR/3 organization*):de,ab,ti OR (school NEAR/ 3 governance):de,ab,ti OR (teaching NEAR/3 practices):de,ab,ti OR (teaching NEAR/3 standard*):de,ab,ti OR (teaching NEAR/3

style*):de,ab,ti OR (teaching NEAR/3 method*):de,ab,ti OR (teaching NEAR/3 differen*):de,ab,ti OR (teaching NEAR/3 varia*): de,ab,ti OR (education* NEXT/1 context*):de,ab,ti OR (classroom NEXT/1 manag*):de,ab,ti OR (organization* NEXT/1 structure): de,ab,ti OR (organisation* NEXT/1 structure):de,ab,ti OR (organisation* NEXT/1 culture):de,ab,ti OR (organization* NEXT/1 culture):de,ab,ti OR communication:de,ab,ti OR 'work environment':de,ab,ti OR (education* NEAR/3 practices):de,ab,ti OR (education* NEAR/3 culture):de,ab,ti OR (education* NEAR/3 manag*):de,ab,ti OR (education* NEAR/3 leader*):de,ab,ti OR (education* NEAR/3 communicat*):de,ab,ti

#21 #19 AND #20 **ERIC** S1 ("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" or "head teacher" OR "school employee") OR ti(teacher*) S2 SU.EXACT("Master Teachers") OR SU.EXACT("Experienced Teachers") OR SU.EXACT("Physical Education Teachers") OR SU.EXACT("Industrial Arts Teachers") OR SU.EXACT("Reading Teachers") OR SU.EXACT("Science Teachers") OR SU.EXACT("Vocational Education Teachers") OR SU.EXACT("Resource Teachers") OR SU.EXACT("Writing Teachers") OR

SU.EXACT("Public School Teachers") OR SU.EXACT("Special Education Teachers") OR SU.EXACT("Middle School Teachers") OR SU.EXACT("Music Teachers") OR SU.EXACT("Minority Group Teachers") OR SU.EXACT("Secondary School Teachers") OR SU.EXACT("English Teachers") OR SU.EXACT("Remedial Teachers") OR SU.EXACT("Home Economics Teachers") OR SU.EXACT("Methods Teachers") OR SU.EXACT("Elementary School Teachers") OR SU.EXACT("Teachers") OR SU.EXACT("Language Teachers") OR SU.EXACT("Itinerant Teachers") OR SU.EXACT("Substitute Teachers") OR SU.EXACT("Mathematics Teachers") S3 (("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR (SU.EXACT("Master Teachers") OR SU.EXACT("Experienced Teachers") OR SU.EXACT("Physical Education Teachers") OR SU.EXACT("Industrial Arts Teachers") OR SU.EXACT("Reading Teachers") OR SU.EXACT("Science Teachers") OR SU.EXACT("Vocational Education Teachers") OR SU.EXACT("Resource Teachers") OR SU.EXACT("Writing Teachers") OR SU.EXACT("Public School Teachers") OR SU.EXACT("Special Education Teachers") OR SU.EXACT("Middle School Teachers") OR SU.EXACT("Music Teachers") OR SU.EXACT("Minority Group Teachers") OR SU.EXACT("Secondary School Teachers") OR SU.EXACT("English Teachers") OR SU.EXACT("Remedial Teachers") OR SU.EXACT("Home Economics Teachers") OR SU.EXACT("Methods Teachers") OR SU.EXACT("Elementary School Teachers") OR SU.EXACT("Teachers") OR SU.EXACT("Language Teachers") OR SU.EXACT("Itinerant Teachers") OR SU.EXACT("Substitute Teachers") OR SU.EXACT("Mathematics Teachers")) S4 SU.EXACT("Burnout") OR SU.EXACT("Teacher Burnout") S5 burnout OR "burn out" OR "psychological workload" OR "psychological work load" OR "Job satisfaction" OR "occupational stress" OR "work related stress" OR "vocational stress" S6 (SU.EXACT("Burnout") OR SU.EXACT("Teacher Burnout")) OR (burnout OR "burn out" OR "psychological workload" OR "psychological work load" OR "Job satisfaction" OR "occupational stress" OR "work related stress" OR "vocational stress") S7 (((("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR (SU.EXACT("Master Teachers") OR SU.EXACT("Experienced Teachers") OR SU.EXACT("Physical Education Teachers") OR SU.EXACT("Industrial Arts Teachers") OR SU.EXACT("Reading Teachers") OR SU.EXACT("Science Teachers") OR SU.EXACT("Vocational Education Teachers") OR SU.EXACT("Resource Teachers") OR SU.EXACT("Writing Teachers") OR SU.EXACT("Public School Teachers") OR SU.EXACT("Special Education Teachers") OR SU.EXACT("Middle School Teachers") OR SU.EXACT("Music Teachers") OR SU.EXACT("Minority Group Teachers") OR SU.EXACT("Secondary School Teachers") OR SU.EXACT("English Teachers") OR SU.EXACT("Remedial Teachers") OR SU.EXACT("Home Economics Teachers") OR SU.EXACT("Methods Teachers") OR SU.EXACT("Elementary School Teachers") OR SU.EXACT("Teachers") OR SU.EXACT("Language Teachers") OR SU.EXACT("Itinerant Teachers") OR SU.EXACT("Substitute Teachers") OR SU.EXACT("Mathematics Teachers")))) AND ((SU.EXACT("Burnout") OR SU.EXACT("Teacher Burnout")) OR

(burnout OR "burn out" OR "psychological workload" OR "psychological work load" OR "Job satisfaction" OR "occupational stress" OR "work related stress" OR "vocational stress")) S8 (SU.EXACT("Wellness") OR SU.EXACT("Well Being")) OR (SU.EXACT("Anxiety") OR SU.EXACT("Mental Disorders") OR SU.EXACT("Depression (Psychology)"))

S9 "well being" or wellbeing or stress* or burnout or "burn out" or anxie* or anxious* or depress* or satisfaction or strain or burden or absent* or turnover or retention S10 ((SU.EXACT("Wellness") OR SU.EXACT("Well Being")) OR (SU.EXACT("Anxiety") OR SU.EXACT("Mental Disorders") OR SU.EXACT("Depression (Psychology)"))) OR ("well being" or wellbeing or stress* or burnout or "burn out" or anxie* or anxious* or depress* or satisfaction or strain or burden or absent* or turnover or retention) S11 work* or occupation* or job or jobs or employee* or organisation* or organization* S12 (((SU.EXACT("Wellness") OR SU.EXACT("Well Being")) OR (SU.EXACT("Anxiety") OR SU.EXACT("Mental Disorders") OR SU.EXACT("Depression (Psychology)"))) OR ("well being" or wellbeing or stress* or burnout or "burn out" or anxie* or anxious* or depress* or satisfaction or strain or burden or absent* or turnover or retention)) AND (work* or occupation* or job or jobs or employee* or organisation* or organization*) S13 (((("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR (SU.EXACT("Master Teachers") OR SU.EXACT("Experienced Teachers") OR SU.EXACT("Physical Education Teachers") OR SU.EXACT("Industrial Arts Teachers") OR SU.EXACT("Reading Teachers") OR SU.EXACT("Science Teachers") OR SU.EXACT("Vocational Education Teachers") OR SU.EXACT("Resource Teachers") OR SU.EXACT("Writing Teachers") OR SU.EXACT("Public School Teachers") OR SU.EXACT("Special Education Teachers") OR SU.EXACT("Middle School Teachers") OR SU.EXACT("Music Teachers") OR SU.EXACT("Minority Group Teachers") OR SU.EXACT("Secondary School Teachers") OR SU.EXACT("English Teachers") OR SU.EXACT("Remedial Teachers") OR SU.EXACT("Home Economics Teachers") OR SU.EXACT("Methods Teachers") OR SU.EXACT("Elementary School Teachers") OR SU.EXACT("Teachers") OR SU.EXACT("Language Teachers") OR SU.EXACT("Itinerant Teachers") OR SU.EXACT("Substitute Teachers") OR SU.EXACT("Mathematics Teachers")))) AND (((SU.EXACT("Wellness") OR SU.EXACT("Well Being")) OR (SU.EXACT("Anxiety") OR SU.EXACT("Mental Disorders") OR SU.EXACT("Depression (Psychology)"))) OR ("well being" or wellbeing or stress* or burnout or "burn out" or anxie* or anxious* or depress* or satisfaction or strain or burden or absent* or turnover or retention)) AND (work* or occupation* or job or jobs or employee* or organisation* or organization*)) S14 (((("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR (SU.EXACT("Master Teachers") OR SU.EXACT("Experienced Teachers") OR SU.EXACT("Physical Education Teachers") OR SU.EXACT("Industrial Arts Teachers") OR SU.EXACT("Reading Teachers") OR SU.EXACT("Science Teachers") OR SU.EXACT("Vocational Education Teachers") OR SU.EXACT("Resource Teachers") OR

SU.EXACT("Writing Teachers") OR SU.EXACT("Public School Teachers") OR SU.EXACT("Special Education Teachers") OR SU.EXACT("Middle School Teachers") OR SU.EXACT("Music Teachers") OR SU.EXACT("Minority Group Teachers") OR SU.EXACT("Secondary School Teachers") OR SU.EXACT("English Teachers") OR SU.EXACT("Remedial Teachers") OR SU.EXACT("Home Economics Teachers") OR SU.EXACT("Methods Teachers") OR SU.EXACT("Elementary School Teachers") OR SU.EXACT("Teachers") OR SU.EXACT("Language Teachers") OR SU.EXACT("Itinerant Teachers") OR SU.EXACT("Substitute Teachers") OR SU.EXACT("Mathematics Teachers")) AND ((SU.EXACT("Burnout") OR SU.EXACT("Teacher Burnout")) OR (burnout OR "burn out" OR "psychological workload" OR "psychological work load" OR "job satisfaction" OR "occupational stress" OR "work related stress" OR "vocational stress")) OR (((("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR (SU.EXACT("Master Teachers") OR SU.EXACT("Experienced Teachers") OR SU.EXACT("Physical Education Teachers") OR SU.EXACT("Industrial Arts Teachers") OR SU.EXACT("Reading Teachers") OR SU.EXACT("Science Teachers") OR SU.EXACT("Vocational Education Teachers") OR SU.EXACT("Resource Teachers") OR SU.EXACT("Writing Teachers") OR SU.EXACT("Public School Teachers") OR SU.EXACT("Special Education Teachers") OR SU.EXACT("Middle School Teachers") OR SU.EXACT("Music Teachers") OR SU.EXACT("Minority Group Teachers") OR SU.EXACT("Secondary School Teachers") OR SU.EXACT("English Teachers") OR SU.EXACT("Remedial Teachers") OR

SU.EXACT("Home Economics Teachers") OR SU.EXACT("Methods Teachers") OR SU.EXACT("Elementary School Teachers") OR SU.EXACT("Teachers") OR SU.EXACT("Language Teachers") OR SU.EXACT("Itinerant Teachers") OR SU.EXACT("Substitute Teachers") OR SU.EXACT("Mathematics Teachers")) AND (((SU.EXACT("Wellness") OR SU.EXACT("Well Being")) OR

(SU.EXACT("Anxiety") OR SU.EXACT("Mental Disorders") OR SU.EXACT("Depression (Psychology)")) OR ("well being" or wellbeing or stress* or burnout or "burn out" or anxie* or anxious* or depress* or satisfaction or strain or burden or absent* or turnover or retention)) AND (work* or occupation* or job or jobs or employee* or organisation* or organization*))) S15

intervention or promotion or prevention or programme or program* or evaluat* or effect* or trial* or service or change or modif* or switch* or alter* or substitut* or shift or promot* or transform* or control* S16 (((("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR (SU.EXACT("Master Teachers") OR SU.EXACT("Experienced Teachers") OR SU.EXACT("Physical Education Teachers") OR SU.EXACT("Industrial Arts Teachers") OR SU.EXACT("Reading Teachers") OR SU.EXACT("Science Teachers") OR SU.EXACT("Vocational Education Teachers") OR SU.EXACT("Resource Teachers") OR SU.EXACT("Writing Teachers") OR SU.EXACT("Public School Teachers") OR SU.EXACT("Special Education Teachers") OR SU.EXACT("Middle School

Teachers") OR SU.EXACT("Music Teachers") OR SU.EXACT("Minority Group Teachers") OR SU.EXACT("Secondary School Teachers") OR SU.EXACT("English Teachers") OR SU.EXACT("Remedial Teachers") OR SU.EXACT("Home Economics Teachers") OR SU.EXACT("Methods Teachers") OR SU.EXACT("Elementary School Teachers") OR SU.EXACT("Teachers") OR SU.EXACT("Language Teachers") OR SU.EXACT("Itinerant Teachers") OR SU.EXACT("Substitute Teachers") OR SU.EXACT("Mathematics Teachers")) AND ((SU.EXACT("Burnout") OR SU.EXACT("Teacher Burnout")) OR (burnout OR "burn out" OR "psychological workload" OR "psychological work load" OR "job satisfaction" OR "occupational stress" OR "work related stress" OR "vocational stress")) OR (((("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR (SU.EXACT("Master Teachers") OR SU.EXACT("Experienced Teachers") OR SU.EXACT("Physical Education Teachers") OR SU.EXACT("Industrial Arts Teachers") OR SU.EXACT("Reading Teachers") OR SU.EXACT("Science Teachers") OR SU.EXACT("Vocational Education Teachers") OR SU.EXACT("Resource Teachers") OR SU.EXACT("Writing Teachers") OR SU.EXACT("Public School Teachers") OR SU.EXACT("Special Education Teachers") OR SU.EXACT("Middle School Teachers") OR SU.EXACT("Music Teachers") OR SU.EXACT("Minority Group Teachers") OR SU.EXACT("Secondary School Teachers") OR SU.EXACT("English Teachers") OR SU.EXACT("Remedial Teachers") OR SU.EXACT("Home Economics Teachers") OR SU.EXACT("Methods Teachers") OR SU.EXACT("Elementary School Teachers") OR SU.EXACT("Teachers") OR SU.EXACT("Language Teachers") OR SU.EXACT("Itinerant Teachers") OR SU.EXACT("Substitute Teachers") OR SU.EXACT("Mathematics Teachers")) AND (((SU.EXACT("Wellness") OR SU.EXACT("Well Being")) OR (SU.EXACT("Anxiety") OR SU.EXACT("Mental Disorders") OR SU.EXACT("Depression (Psychology)")) OR ("well being" or wellbeing or stress* or burnout or "burn out" or anxie* or anxious* or depress* or satisfaction or strain or burden or absent* or turnover or retention)) AND (work* or occupation* or job or jobs or employee* or organisation* or organization*)))) AND (intervention or promotion or prevention or programme or program* or evaluat* or effect* or trial* or service or change or modif* or switch* or alter* or substitut* or shift or promot* or transform* or control*)

S17 "school level policy" or "school level governance" or "management practice" or "management culture" or "school ethos" or "school effectiveness" or "school improvement" or "school NEAR/3 climate" or school NEAR/3 culture or school NEAR/3 environment or school NEAR/3 manag* or school NEAR/3 leader* or school NEAR/3 organisation* or school NEAR/3 organization* or school NEAR/3 governance or teaching NEAR/3 practic* or teaching NEAR/3 standard* or teaching NEAR/3 style* or teaching NEAR/3 method* or teaching NEAR/3 differen* or teaching NEAR/3 varia* or "education* context*" or "classroom manag*" or "organization* structure" or "organisation* structure" or "organisation* culture" or "organization* culture" or communication or "work environment" or education* NEAR/3 practic* or education* NEAR/3 culture or education* NEAR/3 manag* or education* NEAR/3 leader* or education* NEAR/3 communicat* S18 ((((((("school teacher*" OR "teaching assistant" OR

"teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR (SU.EXACT("Master Teachers") OR SU.EXACT("Experienced Teachers") OR SU.EXACT("Physical Education Teachers") OR SU.EXACT("Industrial Arts Teachers") OR SU.EXACT("Reading Teachers") OR SU.EXACT("Science Teachers") OR SU.EXACT("Vocational Education Teachers") OR SU.EXACT("Resource Teachers") OR SU.EXACT("Writing Teachers") OR SU.EXACT("Public School Teachers") OR SU.EXACT("Special Education Teachers") OR SU.EXACT("Middle School Teachers") OR SU.EXACT("Music Teachers") OR SU.EXACT("Minority Group Teachers") OR SU.EXACT("Secondary School Teachers") OR SU.EXACT("English Teachers") OR SU.EXACT("Remedial Teachers") OR SU.EXACT("Home Economics Teachers") OR SU.EXACT("Methods Teachers") OR SU.EXACT("Elementary School Teachers") OR SU.EXACT("Teachers") OR SU.EXACT("Language Teachers") OR SU.EXACT("Itinerant Teachers") OR SU.EXACT("Substitute Teachers") OR SU.EXACT("Mathematics Teachers")) AND ((SU.EXACT("Burnout") OR SU.EXACT("Teacher Burnout")) OR (burnout OR "burn out" OR "psychological workload" OR "psychological work load" OR "Job satisfaction" OR "occupational stress" OR "work related stress" OR "vocational stress")) OR (((("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR (SU.EXACT("Master Teachers") OR SU.EXACT("Experienced Teachers") OR SU.EXACT("Physical Education Teachers") OR SU.EXACT("Industrial Arts Teachers") OR SU.EXACT("Reading Teachers") OR SU.EXACT("Science Teachers") OR SU.EXACT("Vocational Education Teachers") OR SU.EXACT("Resource Teachers") OR SU.EXACT("Writing Teachers") OR SU.EXACT("Public School Teachers") OR SU.EXACT("Special Education Teachers") OR SU.EXACT("Middle School Teachers") OR SU.EXACT("Music Teachers") OR SU.EXACT("Minority Group Teachers") OR SU.EXACT("Secondary School Teachers") OR SU.EXACT("English Teachers") OR SU.EXACT("Remedial Teachers") OR SU.EXACT("Home Economics Teachers") OR SU.EXACT("Methods Teachers") OR SU.EXACT("Elementary School Teachers") OR SU.EXACT("Teachers") OR SU.EXACT("Language Teachers") OR SU.EXACT("Itinerant Teachers") OR SU.EXACT("Substitute Teachers") OR SU.EXACT("Mathematics Teachers")) AND (((SU.EXACT("Wellness") OR SU.EXACT("Well Being")) OR

(SU.EXACT("Anxiety") OR SU.EXACT("Mental Disorders") OR SU.EXACT("Depression (Psychology)")) OR ("well being" or wellbeing or stress* or burnout or "burn out" or anxie* or anxious* or depress* or satisfaction or strain or burden or absent* or turnover or retention)) AND (work* or occupation* or job or jobs or employee* or organisation* or organization*)) AND (intervention or promotion or prevention or programme or program* or evaluat* or effect* or trial* or service or change or modif* or switch* or alter* or substitut* or shift or promot* or transform* or control*)) AND ("school level policy" or "school level governance" or "management practice" or "management culture" or "school ethos" or "school effectiveness" or "school improvement" or "school NEAR/3 climate" or school NEAR/3 culture or school NEAR/3 environment or school NEAR/3 manag* or school NEAR/3 leader* or school NEAR/

3 organisation* or school NEAR/3 organization* or school NEAR/3 governance or teaching NEAR/3 practic* or teaching NEAR/ 3 standard* or teaching NEAR/3 style* or teaching NEAR/3 method* or teaching NEAR/3 differen* or teaching NEAR/3 varia* or "education* context*" or "classroom manag*" or "organization* structure" or "organisation* structure" or "organisation* culture" or "organization* culture" or communication or "work environment" or education* NEAR/3 practic* or education* NEAR/3 culture or education* NEAR/3 manag* or education* NEAR/3 leader* or education* NEAR/3 communicat*)

S19 (((((("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR (SU.EXACT("Master Teachers") OR SU.EXACT("Experienced Teachers") OR SU.EXACT("Physical Education Teachers") OR SU.EXACT("Industrial Arts Teachers") OR SU.EXACT("Reading Teachers") OR SU.EXACT("Science Teachers") OR SU.EXACT("Vocational Education Teachers") OR SU.EXACT("Resource Teachers") OR SU.EXACT("Writing Teachers") OR SU.EXACT("Public School Teachers") OR SU.EXACT("Special Education Teachers") OR SU.EXACT("Middle School Teachers") OR SU.EXACT("Music Teachers") OR SU.EXACT("Minority Group Teachers") OR SU.EXACT("Secondary School Teachers") OR SU.EXACT("English Teachers") OR SU.EXACT("Remedial Teachers") OR SU.EXACT("Home Economics Teachers") OR SU.EXACT("Methods Teachers") OR SU.EXACT("Elementary School Teachers") OR SU.EXACT("Teachers") OR SU.EXACT("Language Teachers") OR SU.EXACT("Itinerant Teachers") OR SU.EXACT("Substitute Teachers") OR SU.EXACT("Mathematics Teachers")))) AND ((SU.EXACT("Burnout") OR SU.EXACT("Teacher Burnout")) OR (burnout OR "burn out" OR "psychological workload" OR "psychological work load" OR "Job satisfaction" OR "occupational stress" OR "work related stress" OR "vocational stress")))) OR (((("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR (SU.EXACT("Master Teachers") OR SU.EXACT("Experienced Teachers") OR SU.EXACT("Physical Education Teachers") OR SU.EXACT("Industrial Arts Teachers") OR SU.EXACT("Reading Teachers") OR SU.EXACT("Science Teachers") OR SU.EXACT("Vocational Education Teachers") OR SU.EXACT("Resource Teachers") OR SU.EXACT("Writing Teachers") OR SU.EXACT("Public School Teachers") OR SU.EXACT("Special Education Teachers") OR SU.EXACT("Middle School Teachers") OR SU.EXACT("Music Teachers") OR SU.EXACT("Minority Group Teachers") OR SU.EXACT("Secondary School Teachers") OR SU.EXACT("English Teachers") OR SU.EXACT("Remedial Teachers") OR SU.EXACT("Home Economics Teachers") OR SU.EXACT("Methods Teachers") OR SU.EXACT("Elementary School Teachers") OR SU.EXACT("Teachers") OR SU.EXACT("Language Teachers") OR SU.EXACT("Itinerant Teachers") OR SU.EXACT("Substitute Teachers") OR SU.EXACT("Mathematics Teachers")))) AND (((SU.EXACT("Wellness") OR SU.EXACT("Well Being")) OR (SU.EXACT("Anxiety") OR SU.EXACT("Mental Disorders") OR SU.EXACT("Depression (Psychology)")))) OR ("well being" or wellbeing or stress* or burnout or "burn out" or anxie* or anxious* or depress* or satisfaction or

strain or burden or absent* or turnover or retention)) AND (work* or occupation* or job or jobs or employee* or organisation* or organization*)))) AND (intervention or promotion or prevention or programme or program* or evaluat* or effect* or trial* or service or change or modif* or switch* or alter* or substitut* or shift or promot* or transform* or control*)) NOT ((((((“school teacher*” OR “teaching assistant” OR “teaching profession*” OR “Teaching staff” OR “school personnel” OR “School staff” OR “head teacher” OR “school employee”) OR ti(teacher*)) OR (SU.EXACT(“Master Teachers”) OR SU.EXACT(“Experienced Teachers”) OR SU.EXACT(“Physical Education Teachers”) OR SU.EXACT(“Industrial Arts Teachers”) OR SU.EXACT(“Reading Teachers”) OR SU.EXACT(“Science Teachers”) OR SU.EXACT(“Vocational Education Teachers”) OR SU.EXACT(“Resource Teachers”) OR SU.EXACT(“Writing Teachers”) OR SU.EXACT(“Public School Teachers”) OR SU.EXACT(“Special Education Teachers”) OR SU.EXACT(“Middle School Teachers”) OR SU.EXACT(“Music Teachers”) OR SU.EXACT(“Minority Group Teachers”) OR SU.EXACT(“Secondary School Teachers”) OR SU.EXACT(“English Teachers”) OR SU.EXACT(“Remedial Teachers”) OR SU.EXACT(“Home Economics Teachers”) OR SU.EXACT(“Methods Teachers”) OR SU.EXACT(“Elementary School Teachers”) OR SU.EXACT(“Teachers”) OR SU.EXACT(“Language Teachers”) OR SU.EXACT(“Itinerant Teachers”) OR SU.EXACT(“Substitute Teachers”) OR SU.EXACT(“Mathematics Teachers”)))) AND ((SU.EXACT(“Burnout”) OR SU.EXACT(“Teacher Burnout”)) OR (burnout OR “burn out” OR “psychological workload” OR “psychological work load” OR “Job satisfaction” OR “occupational stress” OR “work related stress” OR “vocational stress”))) OR (((“school teacher*” OR “teaching assistant” OR “teaching profession*” OR “Teaching staff” OR “school personnel” OR “School staff” OR “head teacher” OR “school employee”) OR ti(teacher*)) OR (SU.EXACT(“Master Teachers”) OR SU.EXACT(“Experienced Teachers”) OR SU.EXACT(“Physical Education Teachers”) OR SU.EXACT(“Industrial Arts Teachers”) OR SU.EXACT(“Reading Teachers”) OR SU.EXACT(“Science Teachers”) OR SU.EXACT(“Vocational Education Teachers”) OR SU.EXACT(“Resource Teachers”) OR SU.EXACT(“Writing Teachers”) OR SU.EXACT(“Public School Teachers”) OR SU.EXACT(“Special Education Teachers”) OR SU.EXACT(“Middle School Teachers”) OR SU.EXACT(“Music Teachers”) OR SU.EXACT(“Minority Group Teachers”) OR SU.EXACT(“Secondary School Teachers”) OR SU.EXACT(“English Teachers”) OR SU.EXACT(“Remedial Teachers”) OR SU.EXACT(“Home Economics Teachers”) OR SU.EXACT(“Methods Teachers”) OR SU.EXACT(“Elementary School Teachers”) OR SU.EXACT(“Teachers”) OR SU.EXACT(“Language Teachers”) OR SU.EXACT(“Itinerant Teachers”) OR SU.EXACT(“Substitute Teachers”) OR SU.EXACT(“Mathematics Teachers”)))) AND (((SU.EXACT(“Wellness”) OR SU.EXACT(“Well Being”)) OR (SU.EXACT(“Anxiety”) OR SU.EXACT(“Mental Disorders”) OR SU.EXACT(“Depression (Psychology)”))) OR (“well being” or wellbeing or stress* or burnout or “burn out” or anxie* or anxious* or depress* or satisfaction or strain or burden or absent* or turnover or retention)) AND (work* or occupation* or job or jobs or employee* or organisation* or organization*)))) AND (intervention or promotion or prevention or programme or program* or evaluat* or effect* or trial* or service or change or modif* or

switch* or alter* or substitut* or shift or promot* or transform* or control*))
 AND ("school level policy" or "school level governance" or "management
 practice" or "management culture" or "school ethos" or "school effectiveness" or
 "school improvement" or "school NEAR/3 climate" or school NEAR/3 culture or
 school NEAR/3 environment or school NEAR/3 manag* or school NEAR/3
 leader* or school NEAR/3 organisation* or school NEAR/3 organization* or
 school NEAR/3 governance or

teaching NEAR/3 practic* or teaching NEAR/3 standard* or teaching NEAR/3
 style* or teaching NEAR/3 method* or teaching NEAR/ 3 differen* or teaching
 NEAR/3 varia* or "education* context*" or "classroom manag*" or
 "organization* structure" or "organisation* structure" or "organisation* culture"
 or "organization* culture" or communication or "work environment" or
 education* NEAR/ 3 practic* or education* NEAR/3 culture or education*
 NEAR/3 manag* or education* NEAR/3 leader* or education* NEAR/3
 communicat*))

IBSS

S1 all("school teacher*" OR "teaching assistant" OR "teaching profession*" OR
 "Teaching staff" OR "school personnel" OR "School

staff " or "head teacher" OR "school employee") OR ti(teacher*) S2

SU.EXACT.EXPLODE("Headteachers") OR SU.EXACT.EXPLODE("Teachers" OR
 "Teaching personnel") S3

(all("school teacher*" OR "teaching assistant" OR "teaching profession*" OR
 "Teaching staff" OR "school personnel" OR

"School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR
 (SU.EXACT.EXPLODE("Headteachers") OR SU.EXACT.EXPLODE("Teacher s" OR
 "Teaching personnel")) S4 SU.EXACT.EXPLODE("Mental stress")

S5 all(burnout OR "burn out" OR "psychological workload" OR "psychological
 work load" OR "Job satisfaction" OR "occupational

stress" OR "work related stress" OR "vocational
 stress") S6 SU.EXACT.EXPLODE("Mental stress") OR all(burnout OR "burn out"
 OR "psychological workload" OR "psychological work load"

OR "Job satisfaction" OR "occupational stress" OR "work related stress" OR
 "vocational stress") S7 ((all("school teacher*" OR "teaching assistant" OR
 "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School
 staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR
 (SU.EXACT.EXPLODE("Headteachers") OR

SU.EXACT.EXPLODE("Teacher s" OR "Teaching personnel")) AND
 (SU.EXACT.EXPLODE("Mental stress") OR all(burnout OR "burn out" OR
 "psychological workload" OR "psychological work load" OR "Job satisfaction" OR
 "occupational stress" OR "work related stress" OR "vocational stress")) S8

(SU.EXACT.EXPLODE("Mental stress") OR SU.EXACT.EXPLODE("Anxiety")) OR
 SU.EXACT.EXPLODE("Well-being") OR
 SU.EXACT.EXPLODE("Depression") S9 all("well being" or wellbeing or stress* or
 burnout or "burn out" or anxie* or anxious* or depress* or satisfaction or strain
 or burden or absent* or turnover or retention)

S10 ((SU.EXACT.EXPLODE("Mental stress") OR SU.EXACT.EXPLODE("Anxiety"))
 OR SU.EXACT.EXPLODE("Wellbeing") OR SU.EXACT.EXPLODE("Depress ion"))
 OR all("well being" OR wellbeing OR stress* OR burnout OR "burn out" OR anxie*
 OR anxious* OR depress* OR satisfaction OR strain OR burden OR absent* OR
 turnover OR retention) S11 all(work* or occupation* or job or jobs or employee*
 or organisation* or organization* or school or college or academy or classroom)
 S12 (((SU.EXACT.EXPLODE("Mental stress") OR SU.EXACT.EXPLODE("Anxiety"))
 OR SU.EXACT.EXPLODE("Wellbeing") OR SU.EXACT.EXPLODE("Depress ion"))
 OR all("well being" OR wellbeing OR stress* OR burnout OR "burn out" OR anxie*
 OR anxious* OR depress* OR satisfaction OR strain OR burden OR absent* OR
 turnover OR retention)) AND all(work* OR occupation* OR job OR jobs OR
 employee* OR organisation* OR organization* OR school OR college OR academy
 OR classroom) S13 ((all("school teacher*" OR "teaching assistant" OR "teaching
 profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR
 "head teacher" OR "school employee") OR ti(teacher*)) OR
 (SU.EXACT.EXPLODE("Headteachers") OR SU.EXACT.EXPLODE("Teacher s" OR
 "Teaching personnel"))) AND (((SU.EXACT.EXPLODE("Mental stress") OR
 SU.EXACT.EXPLODE("Anxiety")) OR SU.EXACT.EXPLODE("Wellbeing") OR
 SU.EXACT.EXPLODE("Depress ion")) OR all("well being" OR wellbeing OR stress*
 OR burnout OR "burn out" OR anxie* OR anxious* OR depress* OR satisfaction
 OR strain OR burden OR absent* OR turnover OR retention)) AND all(work* OR
 occupation* OR job OR jobs OR employee* OR organisation* OR organization* OR
 school OR college OR academy OR classroom)) S14 (((all("school teacher*" OR
 "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school
 personnel" OR "School staff" OR "head teacher" OR "school employee") OR
 ti(teacher*)) OR (SU.EXACT.EXPLODE("Headteachers") OR
 SU.EXACT.EXPLODE("Teacher s" OR "Teaching personnel"))) AND
 (SU.EXACT.EXPLODE("Mental stress") OR all(burnout OR "burn out" OR
 "psychological workload" OR "psychological work load" OR "Job satisfaction" OR
 "occupational stress" OR "work related stress" OR "vocational stress"))) OR
 (((all("school teacher*" OR "teaching assistant" OR "teaching profession*" OR
 "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR
 "school employee") OR ti(teacher*)) OR (SU.EXACT.EXPLODE("Headteachers")
 OR SU.EXACT.EXPLODE("Teacher s" OR "Teaching personnel"))))

AND (((SU.EXACT.EXPLODE("Mental stress") OR SU.EXACT.EXPLODE("Anxiety"
)) OR SU.EXACT.EXPLODE("Wellbeing") OR SU.EXACT.EXPLODE("Depress ion"))
 OR all("well being" OR wellbeing OR stress* OR burnout OR "burn out" OR anxie*
 OR anxious* OR depress* OR satisfaction OR strain OR burden OR absent* OR
 turnover OR retention)) AND all(work* OR occupation* OR job OR jobs OR
 employee* OR organisation* OR organization* OR school OR college OR academy
 OR classroom))) S15

all(intervention or promotion or prevention or programme or program* or

evaluat* or effect* or trial* or service or change or modif* or switch* or alter* or
 substitut* or shift or promot* or transform* or control*) S16 (((all("school
 teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff"
 OR "school personnel" OR "School staff" OR "head teacher" OR "school
 employee") OR ti(teacher*)) OR (SU.EXACT.EXPLODE("Headteachers") OR
 SU.EXACT.EXPLODE("Teacher s" OR "Teaching personnel"))) AND
 (SU.EXACT.EXPLODE("Mental stress") OR all(burnout OR "burn out" OR
 "psychological workload" OR "psychological work load" OR "Job satisfaction" OR
 "occupational stress" OR "work related stress" OR "vocational stress"))) OR
 (((all("school teacher*" OR "teaching assistant" OR "teaching profession*" OR
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 "school employee") OR ti(teacher*)) OR (SU.EXACT.EXPLODE("Headteachers")
 OR SU.EXACT.EXPLODE("Teacher s" OR "Teaching personnel"))) AND
 (((SU.EXACT.EXPLODE("Mental stress") OR SU.EXACT.EXPLODE("Anxiety"))
 OR SU.EXACT.EXPLODE("Wellbeing") OR SU.EXACT.EXPLODE("Depress ion"))
 OR all("well being" OR wellbeing OR stress* OR burnout OR "burn out" OR anxie*
 OR anxious* OR depress* OR satisfaction OR strain OR burden OR absent* OR
 turnover OR retention)) AND all(work* OR occupation* OR job OR jobs OR
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 OR classroom)))) AND all(intervention OR promotion OR prevention OR
 programme OR program* OR evaluat* OR effect* OR trial* OR service OR change
 OR modif* OR switch* OR alter* OR substitut* OR shift OR promot* OR
 transform* OR control*)

S17 all("school level policy" or "school level governance" or "management
 practice" or "management culture" or "school ethos" or "school effectiveness" or
 "school improvement" or "school NEAR/3 climate" or school NEAR/3 culture or
 school NEAR/3 environment or school NEAR/3 manag* or school NEAR/3
 leader* or school NEAR/3 organisation* or school NEAR/3 organization* or
 school NEAR/3 governance or teaching NEAR/3 practic* or teaching NEAR/3
 standard* or teaching NEAR/3 style* or teaching NEAR/3 method* or teaching
 NEAR/3 differen* or teaching NEAR/3 varia* or "education* context*" or
 "classroom manag*" or "organization* structure" or "organisation* structure" or
 "organisation* culture" or "organization* culture" or communication or "work
 environment" or education* NEAR/3 practic* or education* NEAR/3 culture or
 education* NEAR/3 manag* or education* NEAR/3 leader* or education* NEAR/
 3 communicat*) S18 (((all("school teacher*" OR "teaching assistant" OR
 "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School
 staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR
 (SU.EXACT.EXPLODE("Headteachers") OR SU.EXACT.EXPLODE("Teacher s" OR
 "Teaching personnel"))) AND (SU.EXACT.EXPLODE("Mental stress") OR
 all(burnout OR "burn out" OR "psychological workload" OR "psychological work
 load" OR "Job satisfaction" OR "occupational stress" OR "work related stress" OR
 "vocational stress"))) OR (((all("school teacher*" OR "teaching assistant" OR
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 (SU.EXACT.EXPLODE("Headteachers") OR SU.EXACT.EXPLODE("Teacher s" OR
 "Teaching personnel"))) AND (((SU.EXACT.EXPLODE("Mental stress") OR
 SU.EXACT.EXPLODE("Anxiety")) OR SU.EXACT.EXPLODE("Wellbeing") OR

SU.EXACT.EXPLODE("Depress ion")) OR all("well being" OR wellbeing OR stress* OR burnout OR "burn out" OR anxie* OR anxious* OR depress* OR satisfaction OR strain OR burden OR absent* OR turnover OR retention)) AND all(work* OR occupation* OR job OR jobs OR employee* OR organisation* OR organization* OR school OR college OR academy OR classroom)))) AND all(intervention OR promotion OR prevention OR programme OR program* OR evaluat* OR effect* OR trial* OR service OR change OR modif* OR switch* OR alter* OR substitut* OR shift OR promot* OR transform* OR control*)) AND all("school level policy" OR "school level governance" OR "management practice" OR "management culture" OR "school ethos" OR "school effectiveness" OR "school improvement" OR "school NEAR/3 climate" OR school NEAR/3 culture OR school NEAR/3 environment OR school NEAR/3 manag* OR school NEAR/3 leader* OR school NEAR/3 organisation* OR school NEAR/3 organization* OR school NEAR/3 governance OR teaching NEAR/3 practic* OR teaching NEAR/3 standard* OR teaching NEAR/3 style* OR teaching NEAR/3 method* OR teaching NEAR/3 differen* OR teaching NEAR/3 varia* OR "education* context*" OR "classroom manag*" OR "organization* structure" OR "organisation* structure" OR "organisation* culture" OR "organization* culture" OR communication OR "work environment" OR education* NEAR/3 practic* OR education* NEAR/3 culture OR education* NEAR/3 manag* OR education* NEAR/3 leader* OR education* NEAR/3 communicat*) S19

(((((all("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR (SU.EXACT.EXPLODE("Headteachers") OR SU.EXACT.EXPLODE("Teacher s" OR "Teaching personnel")) AND (SU.EXACT.EXPLODE("Mental stress") OR all(burnout OR "burn out" OR "psychological workload" OR "psychological work load" OR "Job satisfaction" OR "occupational stress" OR "work related stress" OR "vocational stress")) OR (((all("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR (SU.EXACT.EXPLODE("Headteachers") OR SU.EXACT.EXPLODE("Teacher s" OR "Teaching personnel")) AND (((SU.EXACT.EXPLODE("Mental stress") OR SU.EXACT.EXPLODE("Anxiety") OR SU.EXACT.EXPLODE("Wellbeing") OR SU.EXACT.EXPLODE("Depress ion")) OR all("well being" OR wellbeing OR stress* OR burnout OR "burn out" OR anxie* OR anxious* OR depress* OR satisfaction OR strain OR burden OR absent* OR turnover OR retention)) AND all(work* OR occupation* OR job OR jobs OR employee* OR organisation* OR organization* OR school OR college OR academy OR classroom)))) AND all(intervention OR promotion OR prevention OR programme OR program* OR evaluat* OR effect* OR trial* OR service OR change OR modif* OR switch* OR alter* OR substitut* OR shift OR promot* OR transform* OR control*)) NOT ((((((all("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR (SU.EXACT.EXPLODE("Headteachers") OR SU.EXACT.EXPLODE("Teacher s" OR "Teaching personnel")) AND (SU.EXACT.EXPLODE("Mental stress") OR all(burnout OR "burn out" OR "psychological workload" OR "psychological work load" OR "Job satisfaction" OR "occupational stress" OR "work related stress" OR

"vocational stress")) OR (((all("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR (SU.EXACT.EXPLODE("Headteachers") OR SU.EXACT.EXPLODE("Teacher s" OR "Teaching personnel")) AND (((SU.EXACT.EXPLODE("Mental stress") OR SU.EXACT.EXPLODE("Anxiety")) OR SU.EXACT.EXPLODE("Wellbeing") OR SU.EXACT.EXPLODE("Depress ion")) OR all("well being" OR wellbeing OR stress* OR burnout OR "burn out" OR anxie* OR anxious* OR depress* OR satisfaction OR strain OR burden OR absent*

OpenGrey

1 Freetext: teacher* AND burnout 2 Freetext: teacher* AND burn out 3 Freetext: teacher* AND anxiety 4 Freetext: teacher* AND stress

5 Freetext: teacher* AND depression

OSH-Update

(Within which we searched the following databases: CISDOC HSELINE NIOSHTIC and NIOSHTIC2

RILOSH International Bibliographic) #1 GW{teacher* OR teaching*}

#2 GW{school personnel OR school staff OR school employee*}

#3 #1 OR #2

#4 GW{occupational stress* OR burn out OR burnout OR psychological workload OR job satisfaction OR work related stress* OR vocational stress*}

#5 GW{well being OR wellbeing OR stress* OR anxie* OR anxious* OR depress*OR satisfaction OR strain OR burden OR absent* OR turnover OR retention}

#6 GW{work* OR occupation* OR job OR jobs OR employee* OR organization* OR organisation* Or school OR academy OR classroom}

#7 #5 AND #6

#8 #4 OR #7

#9 #3 AND #8

#10 GW{intervention* OR promotion OR prevention OR programme OR program* OR evaluat* OR effect* OR trial* OR service* OR change OR changi* OR modif* OR switch* OR alter* OR substitut* OR shift OR promot* OR transform* OR control*}

#11 #9 AND #10

#12 GW{school level policy OR school level governance OR management practice

OR management culture OR school ethos OR school effectiveness OR school improvement OR school climate OR school culture OR school environment OR school manag* OR school leader* OR school organisation* OR school organization* OR school governance OR teaching practices OR teaching standard* OR teaching style* OR teaching method OR teaching methods OR teaching methodo* OR teaching differenc* OR teaching different* OR teaching variabl* OR educational context* OR classroom manag* OR organizational structure OR organisational structure or organisational culture OR organizational culture OR communication OR work environment OR educational practices OR educational culture OR educational manag* OR educational leader* OR educational communicat*}

#13 #11 AND #12

#14 #11 NOT #13

#15 DC{OUCISD OR OUHSEL OR OUNIOC OR OUNIOS OR OURILO OR OUBIB}

#16 #13 AND #15

#17 #14 AND #15

Proquest Dis & Thesis (((ab("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) AND (ab("well being" OR wellbeing OR stress* OR burnout OR "burn out" OR anxie* OR anxious* OR depress* OR satisfaction OR strain OR burden OR absent* OR turnover OR retention) AND ab(work* OR occupation* OR job OR jobs OR employee* OR organisation* OR organization* OR school OR college OR academy OR classroom)))) OR ((ab("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) AND ab(burnout OR "burn out" OR "psychological workload" OR "psychological work load" OR "Job satisfaction" OR "occupational stress" OR "work related stress" OR "vocational stress")) AND ab(intervention OR promotion OR prevention OR programme OR program* OR evaluat* OR effect* OR trial* OR service OR change OR modif* OR switch* OR alter* OR substitut* OR shift OR promot* OR transform* OR control*)) AND ab("school level policy" OR "school level governance" OR "management practice" OR "management culture" OR "school ethos" OR "school effectiveness" OR "school improvement" OR "school NEAR/2 climate" OR school NEAR/2 culture OR school NEAR/ 2 environment OR school NEAR/2 manag* OR school NEAR/2 leader* OR school NEAR/2 organisation* OR school NEAR/2 organization* OR school NEAR/2 governance OR teaching NEAR/2 practic* OR teaching NEAR/2 standard* OR teaching NEAR/ 2 style* OR teaching NEAR/2 method* OR teaching NEAR/2 differen* OR teaching NEAR/2 varia* OR "education* context*" OR "classroom manag*" OR "organization* structure" OR "organisation* structure" OR "organisation* culture" OR "organization* culture" OR communication OR "work environment" OR education* NEAR/2 practic* OR

education* NEAR/2 culture OR education* NEAR/2 manag* OR education* NEAR/2 leader* OR education* NEAR/2 communicat*) (((ab("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) AND (ab("well being" OR wellbeing OR stress* OR burnout OR "burn out" OR anxie* OR anxious* OR depress* OR satisfaction OR strain OR burden OR absent* OR turnover OR retention) AND ab(work* OR occupation* OR job OR jobs OR employee* OR organisation* OR organization* OR school OR college OR academy OR classroom))) OR ((ab("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) AND ab(burnout OR "burn out" OR "psychological workload" OR "psychological work load" OR "Job satisfaction" OR "occupational stress" OR "work related stress" OR "vocational stress")) AND ab(intervention OR promotion OR prevention OR programme OR program* OR evaluat* OR effect* OR trial* OR service OR change OR modif* OR

switch* OR alter* OR substitut* OR shift OR promot* OR transform* OR control*)) NOT (((((ab("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) AND (ab("well being" OR wellbeing OR stress* OR burnout OR "burn out" OR anxie* OR anxious* OR depress* OR satisfaction OR strain OR burden OR absent* OR turnover OR retention) AND ab(work* OR occupation* OR job OR jobs OR employee* OR organisation* OR organization* OR school OR college OR academy OR classroom))) OR ((ab("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) AND ab(burnout OR "burn out" OR "psychological workload" OR "psychological work load" OR "Job satisfaction" OR "occupational stress" OR "work related stress" OR "vocational stress")) AND ab(intervention OR promotion OR prevention OR programme OR program*

PUBMED

#18 Search #16 NOT #17 #17 Search #3 AND #10 AND #12 #16 Search #3 AND #10 #13 Search #10 AND #12 #12 Search school level policy[tw] OR school level governance[tw] OR management practice[tw] OR management culture[tw] OR school ethos[tw] OR school effectiveness[tw] OR school improvement[tw] OR school climate[tw] OR school culture[tw] OR school environment[tw] OR school manag*[tw] OR school leader*[tw] OR school organisation*[tw] OR school organization*[tw] OR school governance[tw] OR teaching practices[tw] OR teaching standard*[tw] OR teaching style*[tw] OR teaching method[tw] OR teaching methods[tw] OR teaching methodo*[tw] OR teaching differenc*[tw] OR teaching different*[tw] OR teaching variabl*[tw] OR educational context*[tw] OR classroom manag*[tw] OR organizational structure[tw] OR organisational structure[tw] or organisational culture[tw] OR organizational culture[tw] OR communication[tw] OR work environment[tw] OR educational practices[tw] OR educational culture[tw] OR educational manag*[tw] OR educational leader*[tw] OR educational communicat*[tw] #10 Search #8 AND #9 #9 Search effect*[tw]

OR control[tw] OR controls*[tw] OR controla*[tw] OR controle*[tw] OR controli*[tw] OR controll*[tw] OR evaluation*[tw] OR program*[tw] OR intervention[tw] OR promotion[tw] OR prevention[tw] OR programme[tw] OR trial*[tw] OR service[tw] OR change[tw] OR modif*[tw] OR switch*[tw] OR alter*[tw] OR substitut*[tw] OR shift[tw] OR promot*[tw] OR transform*[tw] #8 Search #4 OR #7 #7 Search #5 AND #6 #6 Search work[tw] OR works*[tw] OR work*[tw] OR worka*[tw] OR worke*[tw] OR workg*[tw] OR worki*[tw] OR workl*[tw] OR workp*[tw] OR occupation*[tw] OR job[tw] OR jobs [tw] OR employee*[tw] OR organisation*[tw] OR organization*[tw] #5 Search "Stress, Psychological"[Mesh] OR "Anxiety"[Mesh:NoExp] OR "Depression"[Mesh] OR "personal satisfaction"[Mesh] OR well being[tiab] OR wellbeing[tiab] OR satisfaction[tiab] OR anxie*[tw] OR anxious*[tw] OR depress*[tw] OR stress*[tw] OR strain[tw] OR burden[tw] OR psychological load[tw] OR turnover[tiab] OR retention[tiab] #4 Search "Burnout, Professional"[Mesh] OR burnout[tiab] OR burn out[tiab] OR psychological workload[tw] OR job satisfaction[tw] OR occupational stress*[tw] OR work related stress[tw] OR vocational stress[tw] #3 Search #1 OR #2 #2 Search (school[tiab] OR college[tiab] OR academy[tiab] OR classroom[tiab]) AND (teacher*[tw] OR assistant[tiab] OR profession*[tiab] OR staff[tiab] OR personnel[tiab] OR manpower[tiab] OR workforce[tiab] OR educator*[tiab])

#1 Search teacher*[ti] or school teacher*[tw] OR teaching assistant[tw] OR teaching profession*[tw] OR teaching staff[tw] OR school personnel[tw] OR school staff[tw] OR head teacher*[tw] OR school employee*[tw] **Socio Abstracts** S1 all("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" or "head teacher" OR "school employee") OR ti(teacher*) S2 SU.EXACT.EXPLODE("College Faculty" OR "Teachers") S3 (all("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR SU.EXACT.EXPLODE("College Faculty" OR "Teachers") S4 SU.EXACT.EXPLODE("Occupational Stress") S5 all(burnout OR "burn out" OR "psychological workload" OR "psychological work load" OR "Job satisfaction" OR "occupational stress" OR "work related stress" OR "vocational stress") S6 SU.EXACT.EXPLODE("Occupational Stress") OR all(burnout OR "burn out" OR "psychological workload" OR "psychological work load" OR "Job satisfaction" OR "occupational stress" OR "work related stress" OR "vocational stress") S7 (SU.EXACT.EXPLODE("Occupational Stress") OR all(burnout OR "burn out" OR "psychological workload" OR "psychological work load" OR "Job satisfaction" OR "occupational stress" OR "work related stress" OR "vocational stress")) AND ((all("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR SU.EXACT.EXPLODE("College Faculty" OR "Teachers")) S8 (SU.EXACT.EXPLODE("Occupational Stress" OR "Psychological Stress" OR "Stress" OR "Trauma") OR SU.EXACT.EXPLODE("Psychological Stress")) OR (SU.EXACT.EXPLODE("Depression (Psychology)") OR SU.EXACT.EXPLODE("Anxiety")) S9 all("well being" or wellbeing or stress* or

burnout or "burn out" or anxie* or anxious* or depress* or satisfaction or strain or burden or absent* or turnover or retention) S10 ((SU.EXACT.EXPLODE("Occupational Stress" OR "Psychological Stress" OR "Stress" OR "Trauma") OR SU.EXACT.EXPLODE("Psychological Stress")) OR (SU.EXACT.EXPLODE("Depression (Psychology)") OR SU.EXACT.EXPLODE("Anxiety"))) OR all("well being" OR wellbeing OR stress* OR burnout OR "burn out" OR anxie* OR anxious* OR depress* OR satisfaction OR strain OR burden OR absent* OR turnover OR retention) S11 all(work* or occupation* or job or jobs or employee* or organisation* or organization* or school or college or academy or classroom) S12 (((SU.EXACT.EXPLODE("Occupational Stress" OR "Psychological Stress" OR "Stress" OR "Trauma") OR SU.EXACT.EXPLODE("Psychological Stress")) OR (SU.EXACT.EXPLODE("Depression (Psychology)") OR SU.EXACT.EXPLODE("Anxiety"))) OR all("well being" OR wellbeing OR stress* OR burnout OR "burn out" OR anxie* OR anxious* OR depress* OR satisfaction OR strain OR burden OR absent* OR turnover OR retention)) AND all(work* OR occupation* OR job OR jobs OR employee* OR organisation* OR organization* OR school OR college OR academy OR classroom) S13 ((all("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR SU.EXACT.EXPLODE("College Faculty" OR "Teachers")) AND (((SU.EXACT.EXPLODE("Occupational Stress" OR "Psychological Stress" OR "Stress" OR "Trauma") OR SU.EXACT.EXPLODE("Psychological Stress")) OR (SU.EXACT.EXPLODE("Depression (Psychology)") OR SU.EXACT.EXPLODE("Anxiety"))) OR all("well being" OR wellbeing OR stress* OR burnout OR "burn out" OR anxie* OR anxious* OR depress* OR satisfaction OR strain OR burden OR absent* OR turnover OR retention)) AND all(work* OR occupation* OR job OR jobs OR employee* OR organisation* OR organization* OR school OR college OR academy OR classroom)) S14 ((SU.EXACT.EXPLODE("Occupational Stress") OR all(burnout OR "burn out" OR "psychological workload" OR "psychological work load" OR "Job satisfaction" OR "occupational stress" OR "work related stress" OR "vocational stress")) AND ((all("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR SU.EXACT.EXPLODE("College Faculty" OR "Teachers"))) OR (((all("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR SU.EXACT.EXPLODE("College Faculty" OR "Teachers")) AND (((SU.EXACT.EXPLODE("Occupational Stress" OR "Psychological Stress" OR "Stress" OR "Trauma") OR SU.EXACT.EXPLODE("Psychological Stress")) OR (SU.EXACT.EXPLODE("Depression (Psychology)") OR SU.EXACT.EXPLODE("Anxiety"))) OR all("well being" OR wellbeing OR stress* OR burnout OR "burn out" OR anxie* OR anxious* OR depress* OR satisfaction OR strain OR burden OR absent* OR turnover OR retention)) AND all(work* OR occupation* OR job OR jobs OR employee* OR organisation* OR organization* OR school OR college OR academy OR classroom)))

S15 all(intervention or promotion or prevention or programme or program* or
 evaluat* or effect* or trial* or service or change or modif* or switch* or alter* or
 substitut* or shift or promot* or transform* or
 control*) S16 (((SU.EXACT.EXPLODE("Occupational Stress") OR all(burnout OR
 "burn out" OR "psychological workload" OR "psychological work load" OR "Job
 satisfaction" OR "occupational stress" OR "work related stress" OR "vocational
 stress")) AND ((all("school teacher*" OR "teaching assistant" OR "teaching
 profession*" OR "Teaching staff" OR "school personnel" OR "School staff" OR
 "head teacher" OR "school employee") OR ti(teacher*)) OR
 SU.EXACT.EXPLODE("College Faculty" OR "Teachers")) OR (((all("school
 teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff"
 OR "school personnel" OR "School staff" OR "head teacher" OR "school
 employee") OR ti(teacher*)) OR SU.EXACT.EXPLODE("College Faculty" OR
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 (SU.EXACT.EXPLODE("Depression (Psychology)") OR
 SU.EXACT.EXPLODE("Anxiety"))) OR all("well being" OR wellbeing OR stress*
 OR burnout OR "burn out" OR anxie* OR anxious* OR depress* OR satisfaction
 OR strain OR burden OR absent* OR turnover OR retention)) AND all(work* OR
 occupation* OR job OR jobs OR employee* OR organisation* OR organization* OR
 school OR college OR academy OR classroom)))) AND all(intervention OR
 promotion OR prevention OR programme OR program* OR evaluat* OR effect*
 OR trial* OR service OR change OR modif* OR switch* OR alter* OR substitut* OR
 shift OR promot* OR transform* OR control*) S17 all("school level policy" or
 "school level governance" or "management practice" or "management culture" or
 "school ethos" or "school effectiveness" or "school improvement" or "school
 NEAR/ 3 climate" or school NEAR/3 culture or school NEAR/3 environment or
 school NEAR/3 manag* or school NEAR/3 leader* or school NEAR/3
 organisation* or school NEAR/3 organization* or school NEAR/ 3governance or
 teaching NEAR/3 practic* or teaching NEAR/3 standard* or teaching NEAR/3
 style* or teaching NEAR/3 method* or teaching NEAR/3 differen* or teaching
 NEAR/3 varia* or "education* context*" or "classroom manag*" or "organization*
 structure" or "organisation* structure" or "organisation* culture" or
 "organization* culture" or communication or "work environment" or education*
 NEAR/3 practic* or education* NEAR/3 culture or education* NEAR/3 manag*
 or education* NEAR/3 leader* or education* NEAR/3
 communicat*) S18 (((SU.EXACT.EXPLODE("Occupational Stress") OR
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 load" OR "Job satisfaction" OR "occupational stress" OR "work related stress" OR
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 "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School
 staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR
 SU.EXACT.EXPLODE("College Faculty" OR "Teachers")) OR (((all("school
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 OR "school personnel" OR "School staff" OR "head teacher" OR "school
 employee") OR ti(teacher*)) OR SU.EXACT.EXPLODE("College Faculty" OR
 "Teachers")) AND (((SU.EXACT.EXPLODE("Occupational Stress" OR
 "Psychological Stress" OR "Stress" OR "Trauma") OR

SU.EXACT.EXPLODE("Psychological Stress")) OR
 (SU.EXACT.EXPLODE("Depression (Psychology)") OR
 SU.EXACT.EXPLODE("Anxiety"))) OR all("well being" OR wellbeing OR stress*
 OR burnout OR "burn out" OR anxie* OR anxious* OR depress* OR satisfaction
 OR strain OR burden OR absent* OR turnover OR retention)) AND all(work* OR
 occupation* OR job OR jobs OR employee* OR organisation* OR organization* OR
 school OR college OR academy OR classroom)))) AND all(intervention OR
 promotion OR prevention OR programme OR program* OR evaluat* OR effect*
 OR trial* OR service OR change OR modif* OR switch* OR alter* OR substitut* OR
 shift OR promot* OR transform* OR control*)) AND all("school level policy" OR
 "school level governance" OR "management practice" OR "management culture"
 OR "school ethos" OR "school effectiveness"

OR "school improvement" OR "school NEAR/3 climate" OR school NEAR/3
 culture OR school NEAR/3 environment OR school NEAR/3 manag* OR school
 NEAR/3 leader* S19 (((SU.EXACT.EXPLODE("Occupational Stress") OR
 all(burnout OR "burn out" OR "psychological workload" OR "psychological work
 load" OR "Job satisfaction" OR "occupational stress" OR "work related stress" OR
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 "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School
 staff" OR "head teacher" OR "school employee") OR ti(teacher*)) OR
 SU.EXACT.EXPLODE("College Faculty" OR "Teachers")) OR (((all("school
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 OR "school personnel" OR "School staff" OR "head teacher" OR "school
 employee") OR ti(teacher*)) OR SU.EXACT.EXPLODE("College Faculty" OR
 "Teachers")) AND (((SU.EXACT.EXPLODE("Occupational Stress" OR
 "Psychological Stress" OR "Stress" OR "Trauma") OR
 SU.EXACT.EXPLODE("Psychological Stress")) OR
 (SU.EXACT.EXPLODE("Depression (Psychology)") OR
 SU.EXACT.EXPLODE("Anxiety"))) OR all("well being" OR wellbeing OR stress*
 OR burnout OR "burn out" OR anxie* OR anxious* OR depress* OR satisfaction
 OR strain OR burden OR absent* OR turnover OR retention)) AND all(work* OR
 occupation* OR job OR jobs OR employee* OR organisation* OR organization* OR
 school OR college OR academy OR classroom)))) AND all(intervention OR
 promotion OR prevention OR programme OR program* OR evaluat* OR effect*
 OR trial* OR service OR change OR modif* OR switch* OR alter* OR substitut* OR
 shift OR promot* OR transform* OR control*)) NOT
 ((((((SU.EXACT.EXPLODE("Occupational Stress") OR all(burnout OR "burn out"
 OR "psychological workload" OR "psychological work load" OR "Job satisfaction"
 OR "occupational stress" OR "work related stress" OR "vocational stress")) AND
 ((all("school teacher*" OR "teaching assistant" OR "teaching

SSCI

14 #13 AND #12 Databases=SSCI Timespan=All Years Lemmatization=On #
 13 TS=("school level policy" or "school level governance" or "management
 practice" or "management culture" or "school ethos" or "school effectiveness" or
 "school improvement" or "school climate" or "school culture" or "school

environment" or "school manag*" or "school leader*" or "school organisation*" or "school organization*" or "school governance" or "teaching practic*" or "teaching standard*" or "teaching style*" or "teaching method*" or "teaching differen*" or "teaching varia*" or "education* context*" or "classroom manag*" or "organization* structure" or "organisation* structure" or "organisation* culture" or "organization* culture" or communication or "work environment" or "education* practic*" or "education* culture" or "education* manag*" or "education* leader*" or "education* communicat*") Databases=SSCI

Timespan=All Years Lemmatization=On # 12 #11 AND #10 Databases=SSCI

Timespan=All Years Lemmatization=On # 11 TS=(intervention or promotion or prevention or programme or program* or evaluat* or effect* or trial* or service or change or modif* or switch* or alter* or substitut* or shift or promot* or transform* or control*) Databases=SSCI Timespan=All

Years Lemmatization=On # 10 #9 OR #5 Databases=SSCI Timespan=All

Years Lemmatization=On #9 #8 AND #3 Databases=SSCI Timespan=All

Years Lemmatization=On #8 #7 AND #6

Databases=SSCI Timespan=All Years Lemmatization=On #7 TS=(work* or occupation* or job or jobs or employee* or organisation* or organization*) Databases=SSCI Timespan=All Years

Lemmatization=On #6 TS=("well being" or wellbeing or stress* or burnout or "burn out" or anxie* or anxious* or depress* or satisfaction or strain or burden or absent* or turnover or retention) Databases=SSCI Timespan=All

Years Lemmatization=On #5 #4 AND #3 Databases=SSCI Timespan=All

Years Lemmatization=On #4 TS=(burnout OR "burn out" OR "psychological workload" OR "psychological work load" OR "Job satisfaction" OR "occupational stress" OR "work related stress" OR "vocational stress") Databases=SSCI

Timespan=All Years Lemmatization=On #3 #2 OR #1 Databases=SSCI

Timespan=All Years Lemmatization=On #2 TS=("school teacher*" OR "teaching assistant" OR "teaching profession*" OR "Teaching staff" OR "school personnel" OR "School staff" or "head teacher" OR "school employee") Databases=SSCI

Timespan=All Years Lemmatization=On #1 TI=teacher* Databases=SSCI

Timespan=All Years Lemmatization=On **TROPHI** 1 Freetext: "teacher*" 2

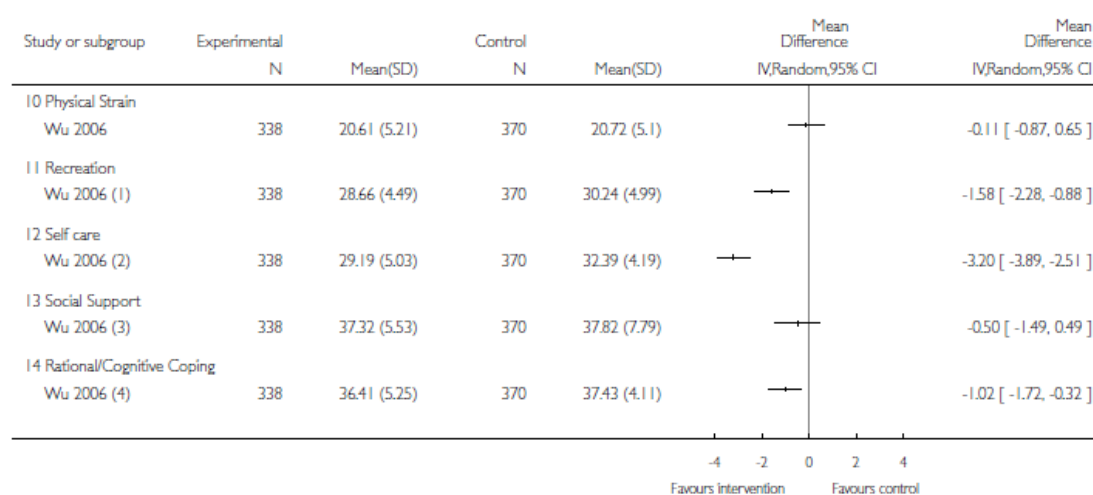
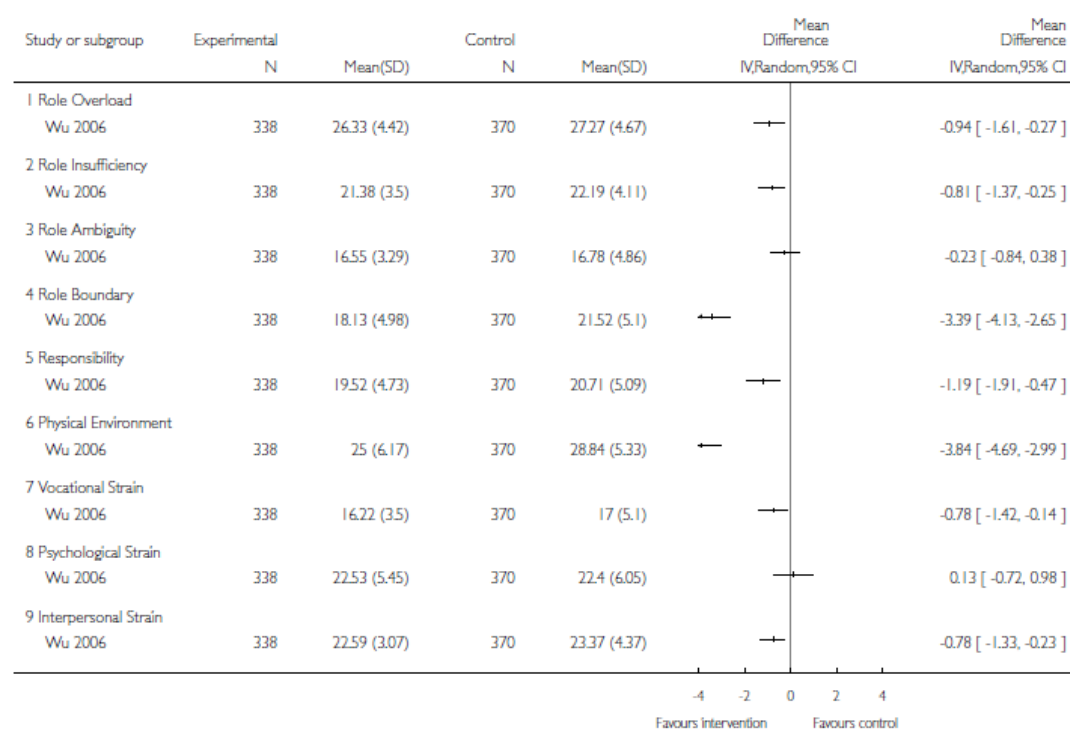
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Appendix 2.3 Changing task characteristics versus no intervention, Occupational Stress Inventory.

Review: Organisational interventions for improving wellbeing and reducing work-related stress in teachers

Comparison: 1 Changing task characteristics versus no intervention

Outcome: 1 Occupational Stress Inventory



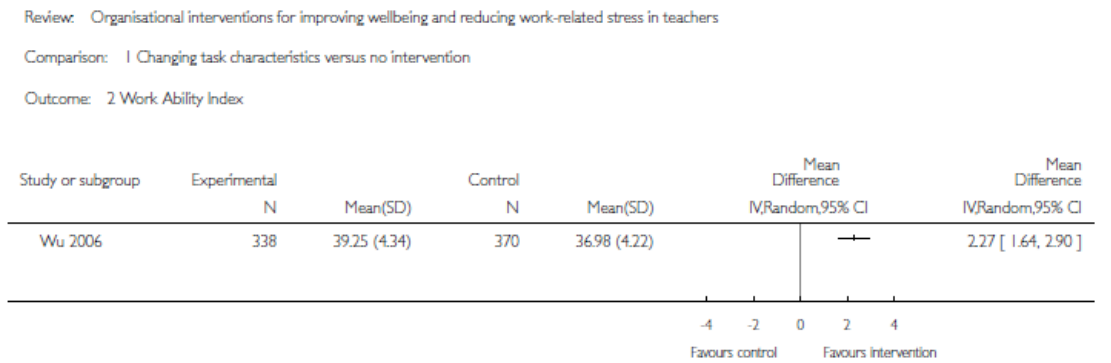
(1) Recreation, Self-care, Social Support, % Rational/Cognitive Coping sub-scales reverse coded for correct graphical representation

(2) Recreation, Self-care, Social Support, % Rational/Cognitive Coping sub-scales reverse coded for correct graphical representation

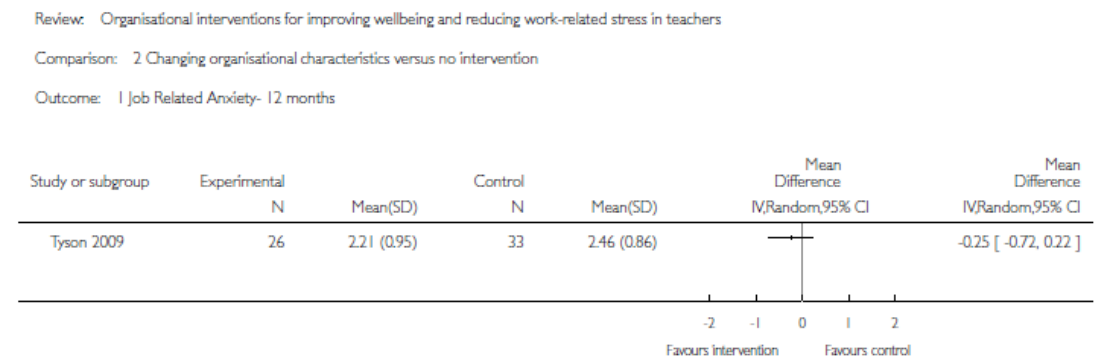
(3) Recreation, Self-care, Social Support, % Rational/Cognitive Coping sub-scales reverse coded for correct graphical representation

(4) Recreation, Self-care, Social Support, % Rational/Cognitive Coping sub-scales reverse coded for correct graphical representation

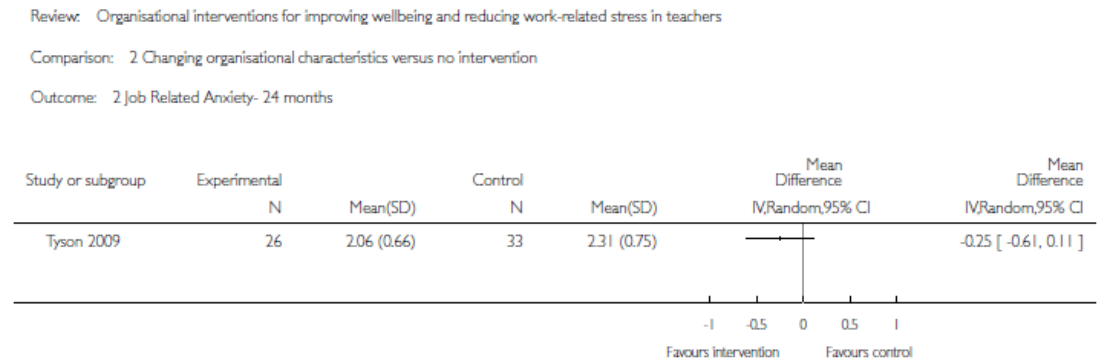
Appendix 2.4 Changing task characteristics versus no intervention, Work Ability Index.



Appendix 2.5 Changing organisational characteristics versus no intervention, Job Related Anxiety- 12 months.



Appendix 2.6 Changing organisational characteristics versus no intervention, Job Related Anxiety- 24 months.

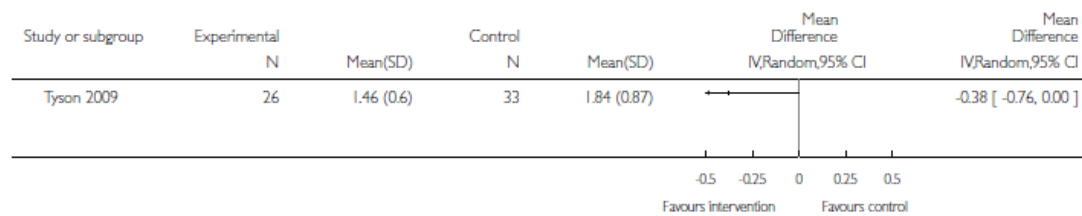


Appendix 2.7 Changing organisational characteristics versus no intervention, Job Related Depression- 12 months.

Review: Organisational interventions for improving wellbeing and reducing work-related stress in teachers

Comparison: 2 Changing organisational characteristics versus no intervention

Outcome: 3 Job Related Depression- 12 months

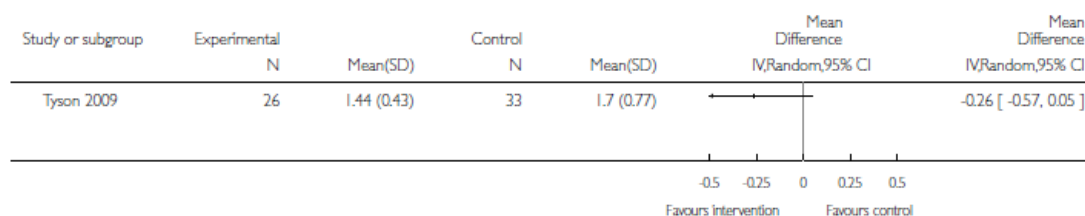


Appendix 2.8 Changing organisational characteristics versus no intervention, Job Related Depression- 24 months.

Review: Organisational interventions for improving wellbeing and reducing work-related stress in teachers

Comparison: 2 Changing organisational characteristics versus no intervention

Outcome: 4 Job Related Depression- 24 months

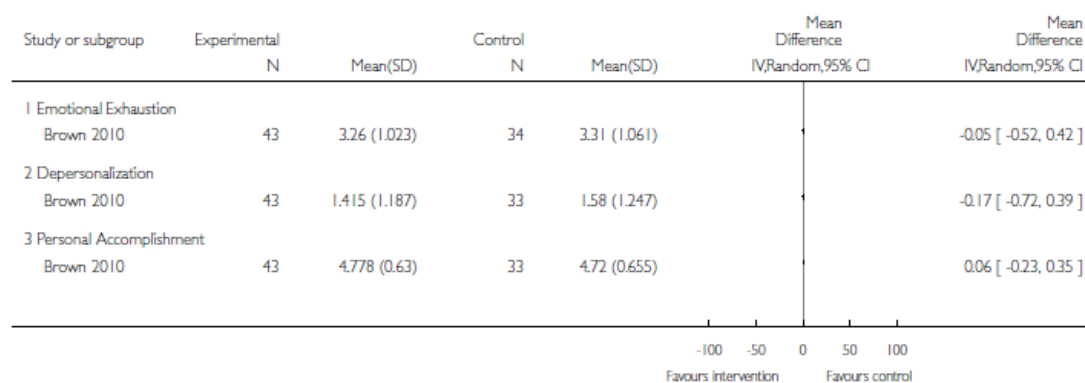


Appendix 2.9 Changing organisational characteristics versus no intervention, Maslach Burnout Inventory- Educators Survey.

Review: Organisational interventions for improving wellbeing and reducing work-related stress in teachers

Comparison: 2 Changing organisational characteristics versus no intervention

Outcome: 5 Maslach Burnout Inventory- Educators Survey

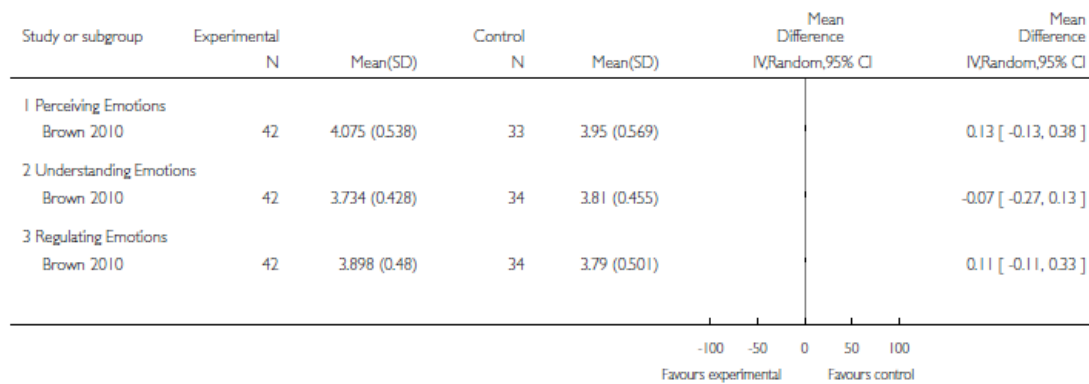


Appendix 2.10 Changing organisational characteristics versus no intervention, Emotional Ability.

Review: Organisational interventions for improving wellbeing and reducing work-related stress in teachers

Comparison: 2 Changing organisational characteristics versus no intervention

Outcome: 6 Emotional Ability

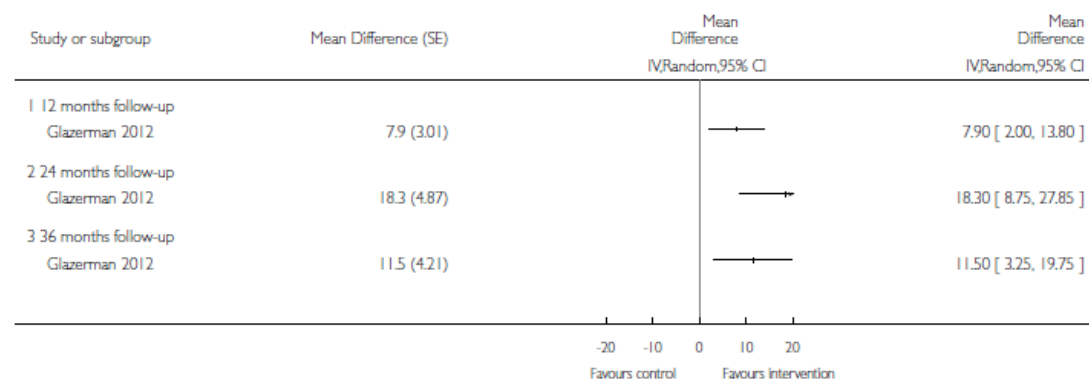


Appendix 2.11 Multi-component intervention versus no intervention(matched comparison), Retention rates, Cohort 1.

Review: Organisational interventions for improving wellbeing and reducing work-related stress in teachers

Comparison: 3 Multi-component intervention versus no intervention(matched comparison)

Outcome: 1 Retention rates, Cohort 1



Appendix 4.1 Practical stages of the study

Practical Stage	Contributions
Systematic Review	Conducted the review with a team of experts in this multidisciplinary area in order to ensure comprehensiveness. As well as my supervisor (Prof Paul Montgomery), the team included Professor Chris Bonell (Institute of Education; expertise in structural interventions for public health), Professor Larry Aber (New York University; expertise in school-level studies for psychological wellbeing), and Dr Marc Thompson (Said Business School, Oxford; expertise in organisational change). The systematic review was primarily written by myself, and the team of experts supported the different stages of the review including protocol development (P.M.; C.B.; L.A.; M.T.), eligibility screening (P.M.; C.B.), quality assessment (P.M.), data extraction (P.M.), and commenting on the drafts of the review for publication (P.M.; C.B.; L.A.; M.T.).
Change Laboratory learning	I spent 1 month at the Center for Research on Activity, Development and Learning (CRADLE), University of Helsinki as a Visiting Scholar. I attended lectures and seminars and conducted a series of meetings with Prof Yrjo Engestrom and colleagues to better understand the intervention and gain application and implementation insights.
School recruitment	My supervisors helped school recruitment by accompanying me in such meetings with each respective school leadership
Data collection	Qualitative and quantitative data collection at all 3 phases of the pilot trial were conducted by myself
Data analysis	Qualitative and quantitative data analysis was conducted by myself. In order to maintain rigor, validity checks were conducted by my supervisor (P.M.). The codes and themes for the qualitative analysis were deduced by both of us in an independent manner, and subsequently reconciled
Conducting Change Laboratory sessions	The sessions were conducted by myself. A research assistant helped with video-recording and other administrative/technical issues that could arise. The activities and tasks for each session were planned in advance with advice from one of the intervention developers (Prof Jaakko Virkkunen), in order to ensure implementation fidelity.

Appendix 4.2 Ethical approval letter

DEPARTMENT OF SOCIAL POLICY AND INTERVENTION

Barnett House, 32 Wellington Square,
Oxford, OX1 2ER, United Kingdom
www.spi.ox.ac.uk



18th March 2013

Ali Naghieh
Green Templeton College
Oxford

Dear Ali,

Ref: 2012-13_11

Re: Organisational intervention development for teacher well being

Your application for research ethics approval in connection with your thesis has been considered by the Departmental Research Ethics Committee (DREC) in accordance with the procedures laid down by the University for Ethical Approval.

I am pleased to inform you that, on the basis of the information provided, the proposed research has been judged as meeting appropriate ethical standards and DREC approval has been granted.

Yours sincerely

A handwritten signature in black ink that reads 'Lucie Cluver'.

Dr Lucie Cluver
Chair of DREC

Cc Paul Montgomery

Direct line: Tel: +44 (0)1865 280734 Email: gemma.roche@spi.ox.ac.uk
General enquiries: Tel. +44(0)1865 270325 Fax: +44(0)1865 270324

Appendix 4.3 Participant information sheet

CENTRE FOR EVIDENCE-BASED INTERVENTION

Department of Social Policy and Intervention
Barnett House, 32 Wellington Square, Oxford OX1 2ER
Tel: +44(0)1865 270325 Fax: +44(0)1865 270324
Mobile: 07944 485895
Email: ali.naghieh@spi.ox.ac.uk
www.spi.ox.ac.uk



Organisational intervention development for teacher stress and wellbeing

Participant Information Sheet

March 2013

What is the purpose of this study?

We are conducting research in your school in order to develop solutions at the organisational level for improving wellbeing and reducing work-related stress among teachers. There is established evidence on the detrimental effects of work stress on mental and physical health. Teachers experience some of the highest levels of prevalence of work-related stress. Effective action to reduce teacher stress may positively impact on the health and wellbeing of teachers, and potentially the wellbeing and educational attainment of the children they teach. There may also be a positive contribution to the economic burden of teacher turnover and sickness absence. The aim of the proposed project is to develop interventions that address the root causes by targeting the school organisation, rather than treating the symptoms of stress in individual teachers.

Such interventions may also lead to improvements in school performance indicators in two ways. The intended outcome of teacher wellbeing is pursued via improving the working environment and working practices, and such changes are inevitably linked to enhanced performance. Further, it can be argued that teachers who are less stressed and more satisfied at work are more likely to be motivated to enhance their performance.

What is the change method?

The objective of this project is to conduct a pilot trial of the 'Change Laboratory' with a focus on organisational learning and development in four secondary schools. The Change Laboratory is a methodology that develops new work practices by the participants in dialogue and debate among themselves, their management, and facilitated by researchers. It does not impose a 'top-down solution' but rather works with representatives from the teaching and management teams to co-produce practices that can address the relevant problems in your school. The Change Laboratory method has been used successfully to co-design new work systems in areas such as finance, manufacturing, health and social care, and other government areas.

Around 15 representatives of the teaching and management teams within the school participate in the Change Laboratory, which typically requires 8 weekly sessions as well as a number of follow-up sessions. The researchers facilitate each session with a rich set of methods and conceptual tools for identification and analysis of contradictions and discrepancies within the work environment and for constructing new models of the work activity. The participants analyse, negotiate and implement the designed solutions in the work setting. Implementation is usually initiated in the form of pilot experiments while the Change Laboratory sessions are running, the progress of which is reported in subsequent sessions in order to fine-tune and enhance the intervention. This process will culminate in the development of a context specific school-wide intervention targeting working practices and the working environment, which can potentially lead to improvements in wellbeing and reduction of work-related stress, as well as enhancing the effectiveness of teachers and the overall performance of the school.

How do I get involved?

Participation in the study is on a voluntary basis, and eligible participants can volunteer to take part in either or all of the three activities described below:

Participation in the confidential survey- All employed teachers in the school can volunteer to participate in the survey, which asks a range of questions about work related stress, burnout, self-efficacy, and job satisfaction. This will be carried out at the start of the project, after implementation of the school-wide intervention, and at a follow-up time point around 8 months after intervention implementation. This is a crucial component of the study as it allows us to determine whether the intervention has been effective in achieving the intended teacher wellbeing outcomes. We thus encourage as many teachers as possible to complete the survey.

Participation in focus groups and interviews- All employed teachers can volunteer to participate in the focus groups, and each would consist of 5-8 teachers. Members of the teaching and management team may also be approached for individual interviews, although participation will be on a voluntary basis. Interviews and focus groups provide an integral part of the input data for discussion and analysis in the Change Laboratory sessions.

Participation in the Change Laboratory sessions- All employed teachers can volunteer to participate in the Change Laboratory sessions, which will take place on a weekly basis after school during non-directed time. Representatives from the school management team will also be self-selected by the management to participate. The output of the Change Laboratory cycle will be a school-wide intervention, and so we encourage all departments/divisions within the school to ensure they have 2 representatives in the Change Laboratory sessions. There will also be space in the Change Laboratory sessions for one volunteer from the teaching assistants and one volunteer from the administrative team.

We would appreciate the support of all teaching staff in conducting this project. We encourage all teachers to liaise with their representatives in the Change Laboratory sessions to relay any ideas, suggestions, or criticisms in relation to the analysis of problems and potential solutions.

Data collection, usage, and storage

The following data will be collected during the study:

- 1- Survey data provided by you
- 2- School-level data including teacher turnover and sickness absence provided by your school
- 3- Focus groups, individual interviews, and Change Laboratory sessions will be audio and video-recorded digitally. Excerpts of these recordings may be shown in Change Laboratory sessions to facilitate constructive dialogue for analysing problems and modelling solutions.

All data will be kept strictly confidential, and maintenance of confidentiality of information will be subject to normal legal requirements. Names and other personal identifiers will be replaced by identification codes on all study material, and we will follow university guidelines on storing personal data. Paper copies of data will be kept securely in locked filing cabinets. Electronic data will be stored in secure password-protected computer folders. Only the research team will have access to the study data, and no personal information will be shared or published. All personal data and personal identifiers will be destroyed at the end of the study (2014). Paper copies of data will be securely shredded and disposed. Electronic data will be erased from the secure computer folders and from the hard-drive. Audio and video files will be destroyed following completion of analysis and discussion of the data within this study, but no later than 5 years after the end of the study.

Who is responsible for this study?

Professor Paul Montgomery (Department of Social Policy & Intervention) and Dr Marc Thompson (Said Business School) are the Principal Investigators for this study. The study is also advised by Professor Anne Edwards (Department of Education). The main researcher conducting the study in your school will be Ali Naghie (Department of Social Policy & Intervention).

This project has been reviewed by, and received ethics clearance through the University of Oxford Central University Research Ethics Committee.

How will it benefit me?

This study facilitates constructive dialogue between teachers and management and draws on the teacher's knowledge in planning school-wide change, in order to improve work practices and the work environment. This can potentially lead to improvements in wellbeing and reduction of work-related stress, as well as enhancing the effectiveness of teachers and the overall performance of the school.

Moreover, for every survey completed by teachers in schools, we will contribute £5 to the school fund. For interviews and focus groups we will contribute £10 per person per session to the fund. We will not offer material incentives to Change Laboratory participants, but will try to negotiate some time incentives for them from the school management (to free up some of the time they need to attend Change Laboratory sessions).

What if there is a problem?

No significant risk is foreseeable in taking part in this study. Some people may experience a degree of distress in completing the survey as some of the questions require the respondent to dwell on their work-related stress and illness. Similar risk of distress is also possible in the focus groups, interviews and Change Laboratory sessions.

Any unexpected detriments that arise during the study will be brought immediately to the attention of participants. The Researcher will remain vigilant for signs of distress or discomfort and would remind the participant's right to decline to answer questions or continue participating in the interview, focus group, or Change Laboratory session if these are noted.

You can raise any concerns you have about the conduct of the study with your school management. You can also forward complaints to the principal investigator of the project Professor Paul Montgomery on 01865 280325, email paul.montgomery@spi.ox.ac.uk.

What will happen to the results of the study?

When the study is complete we will send you a report to let you know what we found. This may be of interest to you especially that four schools are involved in this study. No disclosure of identity of staff or the schools will be made in the report. A report will also be written in 'The Teacher' magazine, and the results will be published in peer-reviewed journals.

Further Information

If you would like any more information about the study you can contact the research team via the following contact:

Ali Naghieh
DPhil Candidate/Research Officer
Centre for Evidence-Based Intervention
University of Oxford, Barnett House
32, Wellington Square,
Oxford, OX1 2ER

Email: ali.naghieh@spi.ox.ac.uk
Tel: 07944 485895

Organisational intervention development for teacher wellbeing

Consent Form

You will be given a copy of this information sheet and consent form to keep. Taking part in each component of this study is voluntary, and you can refuse to take part. Also you can withdraw from the study at any point without any negative consequences. If you wish to stop at any time, just tell anyone on the research team.

Have you read the participant information sheet and do you understand the information given here?

---Yes ---No

Have you had the opportunity to ask for additional information and had any questions you may have about the study satisfactorily answered?

---Yes ---No

Do you understand that you can withdraw from the study without penalty at any time by advising any member of the research team?

---Yes ---No

Do you understand who will have access to the personal data provided by you and your school, how this data is stored, and what happens to the data at the end of the study?

---Yes ---No

If you are taking part in the Change Laboratory sessions, focus groups, or interviews, are you happy for the sessions to be audio and video-recorded?

---Yes ---No

By signing below, you agree that you have read the participant information sheet and you give consent to participate in the study as outlined. Thank you for your cooperation.

Signature of Participant

Printed Name

Date

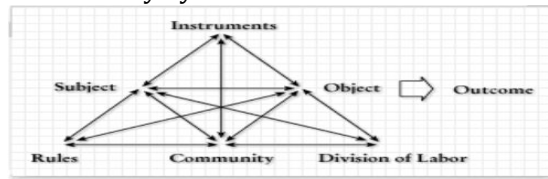
Signature of Researcher

Printed Name

Date

Appendix 4.4- Interview cues for researcher

The Activity System:



-Please introduce yourself, your background...

-What is your current role?- description

-Tell me about what has influenced how you do your job? Life experiences, training, ideas, certain people, organisational climate...

-Culture of the school

-which group of people in the school would you say your apart of?

-how do they influence your work

-do you support each other

-socializing?

-How does the school evaluate performance? What do the teachers think about this?

-Students- how they have changed, their priorities, their motivation, anything done about this?

How does the school deal with change?

-leadership role in initiating and implementing change

-staff role? participation?

-organisation readiness?

-communication

-evaluation

-Have you tried to change something e.g. work practices and systems?

-tell me about the barriers and resistances to this change

-tell me about the facilitators for this change

-What was your idea for change based on? Evidence, experience, brainstorming?

-Current problems

-current internal and external challenges

-how they have come about

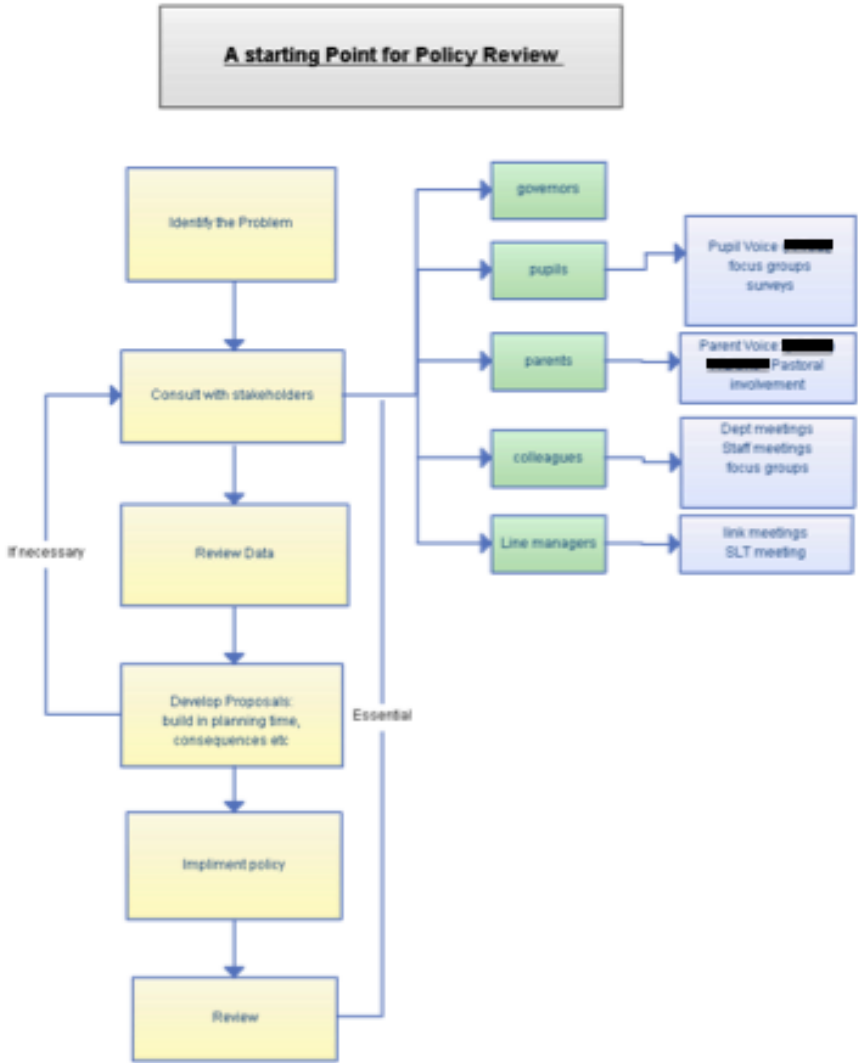
-daily disturbances to the work of teaching?

-daily stressors to teachers

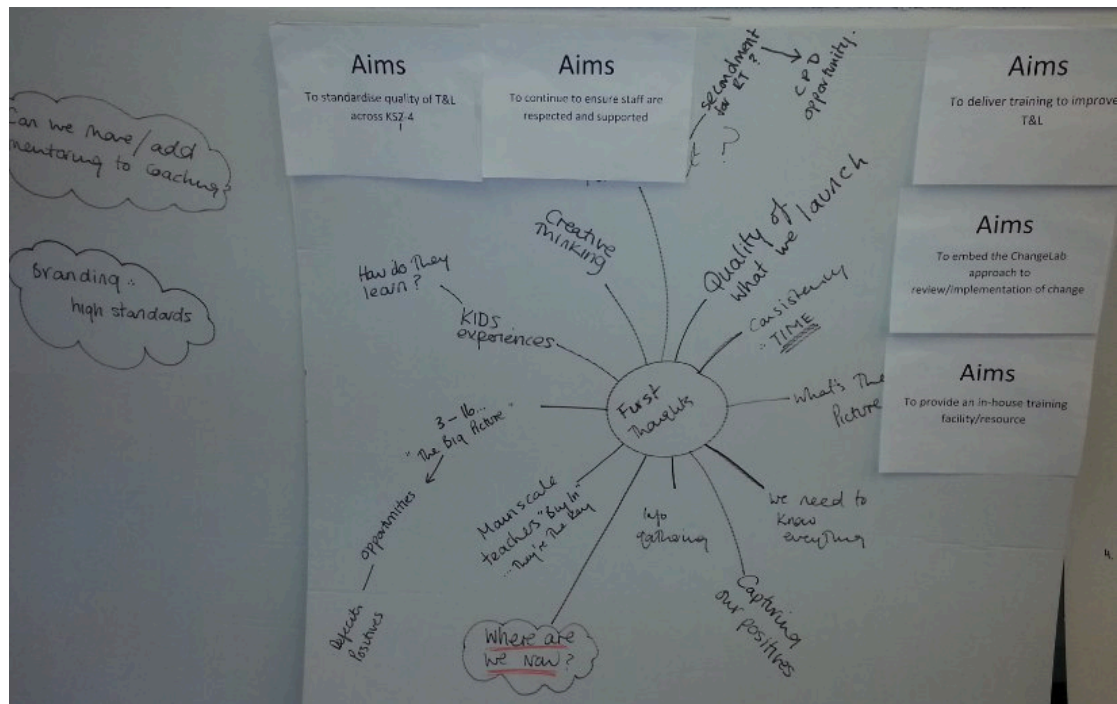
-How do they see the current state for teachers in this school, and the future?

If you had to choose one word, metaphor or image to describe your organisation, what would it be? Past, present, future

Appendix 5.1- Process map devised by a participant- Rural school



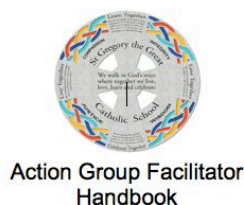
Appendix 5.2- Embed Change Lab as a “non-negotiable”- Rural school



Appendix 5.3- Example of output from one of the Action Groups- Urban School



Appendix 5.4- Action Group Facilitator Handbook- Urban school



September 2013

Vision

Working within the school Mission/Vision of Wisdom, Integrity, Compassion and Justice, colleagues will join together in Action Groups to ensure improved student outcomes in each area of School Improvement Plan.

A common process will enable cross-curricular Action Groups to improve outcomes in each area while ensuring consistency, good communication and clarity of roles & responsibilities across the school.

Action Groups:

At the School Review meetings in Summer 2013 we agreed to form the following Action Groups:

- **Expansive curriculum** – incorporating wider objectives into the curriculum: Mission/Vision, moral development, learning to learn, creativity and a growth mindset.
- **Everyone Achieves** – ensuring that all pupils achieve, focusing especially on those group who make less progress: School Action Plus and vulnerable learners.
- **Teaching & Learning** – developed professional development enabling colleagues to research, develop, improve & share collaborative teaching and learning initiatives.
- **Relationships** – building positive relationships among students, staff and families within a community of shared values and aspirations.
- **Resources** – providing the best tools and resources, including IT infrastructure & resources, and working practices to support learning.
- **Learning to Lead** – student-led projects developing virtues, confidence and skills, assessed through taking responsibility for areas of school improvement.

Action Groups will meet eight times throughout the 2013-14 academic year during divided time devolved from the CPD programme. Each teacher will choose which Action Group to join and each subject department will ensure that it is represented on all Action Groups. Non-teaching colleagues are also encouraged to join and will be paid overtime where meetings take outside of school contracted hours.

Group Facilitators should ensure that everyone is fully engaged throughout the year. Any concerns should be discussed with the SLT member with overview for that group.

Roles & Responsibilities

The Action Groups will work in parallel using the Change Lab format and a common improvement cycle (see page 5). There will be a number of roles within each group.

Action Group Facilitators

For this year, facilitators are volunteers from the original Change Lab group who are familiar with the principles, format and working processes of this project. They were also responsible for training the Action Group programme. Each facilitator will ensure that the work of the group:

- is true to the Mission/Vision and Catholic ethos of the school
- is focused on measurable improvements in pupil outcomes, especially for underachieving pupils
- is within the group remit, derived from agreed improvement priorities
- Follows the common school improvement process
- Uses the Change Lab principles and format
- is reported to the Leadership Team and School Committee

A checklist to help facilitators prepare for meetings is provided on page 6.

Subject Representatives

Teachers who represent their subject department on the Action group will ensure that their departments are working on agreed improvement priorities.

At the first meeting the following roles will be assigned:

Action Group Ambassador(s)

Will liaise with the other action groups in order to:

- Communicate the work of the group to the other Action Groups
- Feed back information on the work of other Action Groups to their own group
- Liaise with their counterparts in other groups to ensure that parallel projects do not conflict (e.g. one subject is not burdened with several simultaneous pilots)

Learning to Lead Ambassador(s)

Will ensure that the views of students are fully represented in the improvement process. This may involve liaison with a parallel student Action Group.

Parent Ambassador(s)

Will ensure that the views of parents and carers are fully represented in the improvement process.

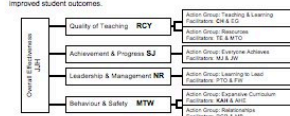
At each meeting the following roles will be assigned or rotated:

Scribe: to capture the thinking of the group on a board during the meeting and photograph the final version.

Recorder: to record and circulate action points from the **agenda**.

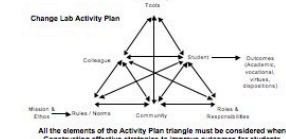
Link to School Self Evaluation

The work of each group will be mapped onto areas of the School Self Evaluation (SSE), which are based on the inspection framework. SLT members shown in **bold type** on the mapping diagram below will have overview of the work of each Action Group, and will be responsible for ensuring that progress and evidence are recorded within the Titled SSE tool. The whole Leadership team will be responsible for monitoring progress towards improved student outcomes.



Change Laboratory Format

St Gregory the Great is involved in an Oxford University project to pilot a Finnish approach to collaborative working called Change Laboratory. Last year we used an Activity Plan (below) and a workshop format for considering minor data (gathered from colleagues, students and school databases) to identify and address whole school issues. You can find out more about Change Lab at <http://www.oxford.ac.uk/department/education/learning/2013/03/20/change-lab/>. This example is from healthcare, but the principles apply equally to education.



Change Lab Meeting Format

Action Group meetings will follow the Change Lab format. Groups are non-hierarchical and constructed to include colleagues working in all areas: support staff and teachers, all management and leadership levels, all departments. This ensures that the group includes all the different perspectives within school.

Whatever individual roles or responsibilities, everyone has a right to be heard and everyone has a responsibility to contribute. Facilitators must make sure that the **Reporters**, page 4 of the first meeting different roles will be allocated within the group, by agreement (see 3). Some of these roles will last for the duration of the **agenda**, others will be allocated for that meeting only.

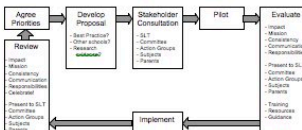
Each Action Group has a responsibility to work with regard to the improvement priorities established at whole school level and within the Mission/Vision and Catholic ethos of the school. It is the responsibility of the facilitator to remind the group of this if necessary.

Decisions can only be made by the agreement of the group. Action points and decisions will be recorded and circulated shortly after the meeting. If tasks are assigned to group members for the period before the next meeting, these must be recorded clearly. A photographic / digital record will also be made of the thinking captured by the scribe.

Each meeting will start by reviewing the action points and records from the previous one, together with any new data.

The Improvement Cycle

Each Action group will follow the improvement cycle (below) to work within its agreed remit to develop, pilot, evaluate, implement and review initiatives to secure better student outcomes.

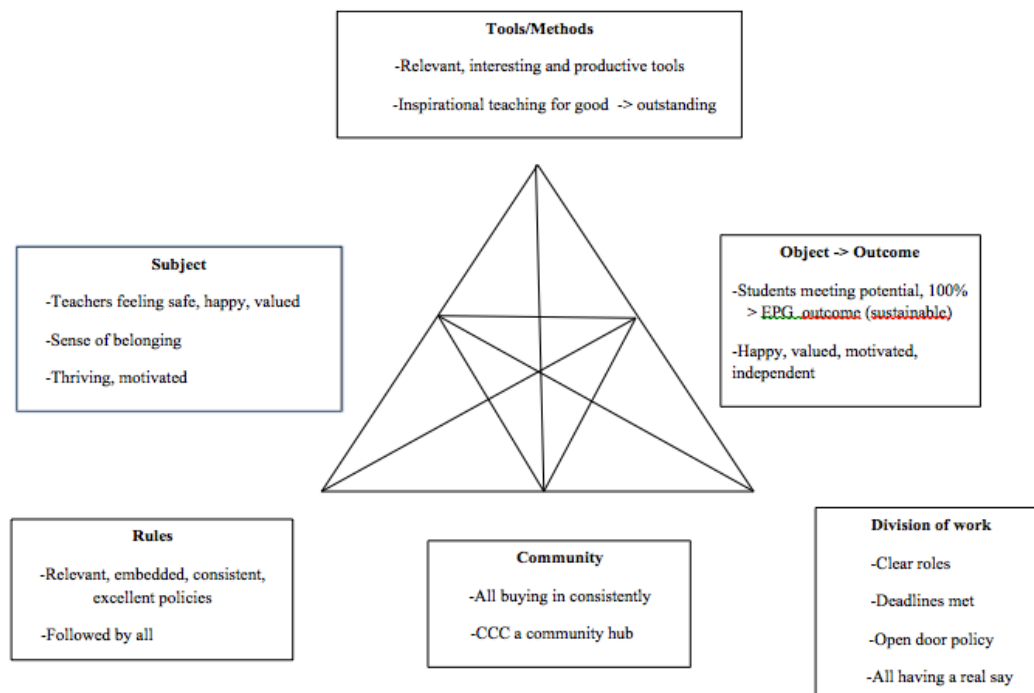


Action Groups will work on one initiative at a time, although this may involve different elements. Progress will be monitored in six-week blocks (which will usually equate to a term). Initiatives will vary in length, so facilitators should plan in terms of multiples of six weeks. It is strongly recommended that the first initiative is a 'quick win' that can be piloted and implemented within six or twelve weeks.

Action Group Meeting Checklist

Action Group		
Facilitator		
Meeting Date		
Before meeting	Yes	Action Needed
Action points from last meeting circulated?		
Meeting time and venue circulated?		
Minor data / evidence / reports ready?		
During Meeting	Yes	Action Needed
Subject representatives chosen?		
Action Group Ambassador(s) chosen?		
Parent Link Ambassadors chosen?		
Name of Scribe for this meeting		
Name of Recorder for this meeting		
Action Points from last meeting reviewed?		
Opening Prayer?		
New data / evidence / reports shared?		
Aims for this meeting covered?		
Has everyone had an opportunity to contribute?		
Decisions summarised & captured		
Consistent with Mission & Ethos?		
Focused on outcomes?		
Within Action Group remit?		
Next actions and responsibilities clear?		
After Meeting	Yes	Action Needed
Action points reviewed with Recorder?		
Reported to SLT?		
Reported to School Committee?		

Appendix 6.1- Rural school vision



Appendix 6.2- Urban school vision

