A FRAMEWORK FOR THE STUDY OF COLLABORATIVE TEAMS IN EDUCATION

Judith Ann Crigan
ORCID: 0000-0002-8878-3964

G02AA Master of Educational Psychology/ Doctor of Philosophy

July 2019

Melbourne Graduate School of Education
University of Melbourne

Submitted in partial fulfilment of the requirements of the degree
Abstract

Educators are facing pressure to improve teaching effectiveness, and the use of teacher collaboration focussed on improving teaching practice is being put forward as one way to achieve this (Goddard, Goddard & Tschannen-Moran, 2007; Johnson, 2003; Stoll, Bolam, McMahon, Wallace, & Thomas, 2006; van Garderen, Stormont, & Goel, 2012). There is limited research on collaborative teams in education – that is, research which examines the extent to which collaborative teamwork can improve student learning outcomes and what makes such teams effective. Research on teams in education has faced criticism in the same way that educational research in general has been criticised for being atheoretical, and lacking empirical support and methodological rigor (Crow & Pounder, 2000; Smylie, 1995). In contrast, research in psychology tends to rely heavily on theory formation and adherence, and a comprehensive understanding of team effectiveness has accumulated in this area (Borrego, Karlin, McNair, & Beddoes, 2013). It is useful therefore to draw on what is known about teams in general and apply this to teams in education to attempt to bring a theoretical understanding to the area on which future research can build.

The aim of this research is to develop a framework to explain teamwork in education. To do this, information from studies that have examined teams in education is overlayed on models of team effectiveness from the organisational psychology literature to develop a hypothetical model of team functioning that can be applied to teams in education. A self-report instrument was created based on the elements identified and administered to 593 teachers working in collaborative teams in schools in Victoria, Australia. The data were analysed using structural equation modelling showing how the elements are related to each other, and how they are...
related to student learning achievement. Good fit was found for the one level (teacher) model which indicates the hypothesised framework might be useful in understanding team functioning in education. A two-level model with student academic achievement at the first level and teacher responses at the second level did not show a significant effect of team functioning on student achievement. This raises questions about associations between collaborative teamwork, teaching practice and student learning. The major contribution of this thesis lies in providing a framework through which teams in education may be conceptualised and studied, thereby providing a basis upon which to explore associations between team functioning and student achievement.
Declaration

I, Judith Ann Crigan, declare that the PhD thesis entitled *A Framework for the Study of Collaborative Teams in Education* is no more than 100,000 words in length including quotes and exclusive of tables, figures, appendices, bibliography, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. This thesis is presented in partial fulfilment of G02AA Master of Educational Psychology/ Doctor of Philosophy. This thesis contains no material previously published or written by another person, except where due reference has been made in the text. Except where otherwise indicated, this thesis is my own work.

Signature:  

Date: 28 July 2019
Preface

One aspect of this work was carried out in collaboration with another and this is duly cited in the text. It is estimated that collaborative work amounts to 1% of the total work of this thesis. No work was carried out prior to enrolment in the degree, no third party editorial assistance was provided, and no aspect of this thesis has been submitted for publication.

This research was supported under the Australian Research Council's Linkage Projects scheme. Project LP0991123 – *The influence of evidence-based decisions by collaborative teacher teams on student achievement*, which was funded by the Australian Government and industry partners the Department of Education and Training, Victoria and the Catholic Education Office, Archdiocese of Melbourne. Financial support was provided by way of a Special Postgraduate Studentship.

Signature:

Date: 28 July 2019
Acknowledgements

Professor Esther Care

Professor Patrick Griffin

Associate Professor Vicki McKenzie

Associate Professor Lawrie Drysdale

Ms Pamela Robertson

Dr Zhonghua Zhang

I would like to express my sincere gratitude to my advisor Prof. Esther Care for the continuous support of my Ph.D study, for her motivation, inspiration and knowledge and Emeritus Professor Patrick Griffin for providing me with the opportunity to complete this work and learn from him. I would also like to thank A. Prof. Vicki McKenzie and A. Prof Lawrie Drysdale for their encouragement and support to complete the work.

My sincere thanks also goes to Dr. Zhonghua Zhang, Ms Pam Robertson and the team at the Assessment Research Centre, University of Melbourne who provided me with a fantastic work and study environment.

I would also like to thank my family: to Jeff for his patience and support, to my children for their understanding and encouragement and to friends for their continued faith in me.
Table of Contents

Abstract ............................................................................................................................................. i
Declaration ....................................................................................................................................... iii
Preface ............................................................................................................................................... iv
Acknowledgements ........................................................................................................................... v
Table of Contents ............................................................................................................................... vi
List of Figures .................................................................................................................................... vii
List of Tables ....................................................................................................................................... viii
List of Abbreviations ......................................................................................................................... ix

Chapter 1: Introduction .................................................................................................................. 12
Purpose and Significance ..................................................................................................................... 25
Research Questions ............................................................................................................................ 28

Chapter 2: Literature Review ......................................................................................................... 31
The Study of Groups ............................................................................................................................ 33
What is a team? .................................................................................................................................. 36
Teams in General ............................................................................................................................... 38
What Elements Are Studied in Team Research? ........................................................................... 42
What Frameworks Have Been Used to Study Teams? .................................................................. 60
Teams in Education .......................................................................................................................... 76
What are the Key Characteristics of Teams in Education? ............................................................. 77
What frameworks have been used to study teams in an educational setting? ....................... 90
What is the effect of teams in education? ....................................................................................... 109

Proposed Theoretical Framework ................................................................................................. 119

Chapter 3: Examining the Validity of the Proposed Framework ............................................... 131
Method .............................................................................................................................................. 132
Instrument Design ............................................................................................................................. 136
Item Writing ...................................................................................................................................... 142
Instrument Review ............................................................................................................................ 143
Instrument Analysis ........................................................................................................................... 146
Data Preparation ............................................................................................................................... 149
Data Analysis ................................................................................................................................... 150

Results ............................................................................................................................................ 157
Descriptive Statistics ....................................................................................................................... 157
Measurement Model ......................................................................................................................... 157
Structural Model .............................................................................................................................. 185

Conclusions .................................................................................................................................... 190
Linking Elements of PLT Functioning to Student Learning ......................................................... 192

Method .............................................................................................................................................. 193
Participants 193
Data Preparation .............................................................................................................................. 199
Data Analysis ................................................................................................................................... 203

Results ............................................................................................................................................ 203
Descriptive Statistics ....................................................................................................................... 203
A Framework for the Study of Collaborative Teams in Education
List of Figures

Figure 1. Hypothesised model of team functioning .................................................. 129
Figure 2. Graphical depiction of Model 1. ................................................................. 152
Figure 3. Graphical depiction of Model 2 ................................................................. 152
Figure 4. Graphical depiction of Model 3 ................................................................. 153
Figure 5. Graphical depiction of Model 1 ................................................................. 158
Figure 6. Graphical depiction of Model 2 ................................................................. 160
Figure 7. Graphical depiction of Model 2 including factor loadings ......................... 173
Figure 8. Graphical depiction of Model 3 ................................................................. 183
Figure 9. Graphical depiction of relationship between the constructs in Model 3 ......................... 184
Figure 10. Graphical depiction of Model 4 .............................................................. 186
Figure 11. Structural Estimates for Model 4 ............................................................ 187
Figure 12. Structural Estimates for Model 5 ............................................................ 189
Figure 13. Hypothesised model of team functioning .............................................. 190
Figure 14. Graphical depiction of Model 1 .............................................................. 238
Figure 15. Graphical depiction of Model 2 .............................................................. 238
Figure 16. Graphical depiction of Model 3 .............................................................. 238
Figure 17. Revised Hypothetical Model of PLT Functioning ................................... 249
Figure 18. Revised Hypothetical Model Showing Factor Loadings ......................... 250
List of Tables

Table 1. Teamwork Constructs.................................................................54
Table 2. Frequency of Participants in Age Ranges.................................148
Table 3. Teaching Experience in Ranges ..............................................149
Table 4. Items Measuring the Construct of School Support ....................158
Table 5. Factor Loadings of the Items that Measure the Construct of School Support.................................................................160
Table 6. Items that Measure the Construct of Communication................161
Table 7. Factor Loadings of the Items that Measure Communication.........164
Table 8. Items that Measure the Construct of Workload Sharing ............165
Table 9. Factor Loadings of the Items that Measure the Construct of Workload Sharing.................................................................166
Table 10. Items that Measure the Construct of Intergroup Processes .......167
Table 11. Factor Loadings of the Items that Measure the Construct of Intergroup Processes.................................................................168
Table 12. Factor Loadings of the Items that Measure the Construct of Supportiveness.................................................................169
Table 13. Factor Loadings of the Items Measuring Supportiveness ...........170
Table 14. Intercorrelations among Teamwork Variables (standard error in parenthesis).................................................................172
Table 15. Standardised Factor Loadings of the Latent Variables Measuring Teamwork.................................................................172
Table 16. Factor Loadings of the Items that Measure Facilitate Student Learning.................................................................176
Table 17. Factor Loadings for the factor of Facilitating Student Learning ....179
Table 18. Factor Loadings of the Items Measuring Construct of Facilitating Teacher Learning.................................................................180
Table 19. Factor Loadings for the Factor of Facilitating Teacher Learning ....182
Table 20. Estimates, Standard Error and Significance of the structural model for Model 4 .................................................................187
Table 21. Estimates, Standard Error and Significance of the structural model for Model 5 .................................................................189
Table 22. Frequency of Participants in Study Two in Age Ranges ............195
Table 23. Teaching Experience of Participants in Study Two in Ranges .......195
Table 24. Student Year Levels. .................................................................196
Table 25. Regression Co-efficients On Student Learning in Two Level Model.................................................................206
Table 26. Construct Labels - Initial and Revised Labels.................................................. 252
List of Abbreviations

ALP  Assessment and Learning Partnerships
CFI  Comparative Fit Index
IEA  International Association for the Evaluation of Educational
     Achievement
OECD Organization for Economic and Common Development
PISA Programme for International Student Assessment
PLC  Professional Learning Community
PLT  Professional Learning Team
RMSEA Root Mean Square Error of Approximation
SES  Socio Economic Status
SEM  Structural Equation Modelling
TIMSS Trends in International Mathematics and Science Study
TLI  Tucker Lewis Index
WRMR Weighted Root Mean Residual
Chapter 1: Introduction

Since industrialisation there has been an imperative to improve educational standards, and in recent times the pressure to make substantial progress in improving the educational outcomes of students is marked, and highlighted through initiatives such as OECD PISA and IEA’s TIMSS, as well as at national political levels. Educators are facing greater pressure to improve teaching effectiveness, sustain that effectiveness and spread improvements throughout the whole educational system (Stoll, Bolam, McMahon, Wallace, & Thomas, 2006). This is not limited to Australia as education systems throughout the world strive to improve their students’ performance (Department of Education and Training, 2003). The reasons for this include increasingly sophisticated economies, more complex and changing societies, more varied workforces and more competition in educational success – all of which put pressure on policy makers and schools to improve the educational outcomes of all students (Department of Education and Training, 2003).

Pressure is put on schools by parents who seek a school that can provide the essential resources for their son or daughter to achieve academic grades to the best of their potential. This leads to competition between schools to attract higher achieving students into the school and the potential to achieve high scores in their end of secondary education results. The competition is reflected in the marketing of schools where it is common for schools to highlight the academic results of their current students and to use this as a point of comparison between schools.

The government is also a driver of schools’ increased focus on improved academic achievement. Australia’s education system has shown decline in recent
international rankings in the key areas of reading, science and mathematics (OECD, 2016).

In response to this decline, the federal government established a review to help support educational reform and lift student achievement and school improvement. The Review to Achieve Educational Excellence in Australian Schools (the Review) set out to identify and recommend the most effective and efficient reform practices that will stimulate change in the current education (Department of Education and Training, 2018). This is a difficult task, partly due to the lack of research on effective practices in (Department of Education and Training, 2018). Research into what works in education has been inconclusive. Until recently, the research literature notes a plethora of ideas, programs and approaches, all claiming to offer the answer to schools’ problems. For example, Carpenter (2000) found 361 “good ideas” in a review of articles published in Phi Delta Kappan in the ten years to 1997. However, as Carpenter noted in 2000, it is embarrassing that with so many good ideas, the state of education has seen little improvement.

In recent times, the literature has come to a consensus, that one of the most powerful things that can be done to improve student learning is to lift the individual and collective capacity of teachers (Stoll et al., 2006). Teacher capacity is one of the biggest factors influencing student learning outcomes that is within the control of the education system (Rockoff, 2003). It is accepted that the skill of a teacher can have a significant impact on the learning of the students in their care and this effect can be seen in large scale data. When compared to other countries in the Program for International Student Assessment (PISA), Australian students show less achievement difference between schools than the OECD average, but greater achievement difference within schools between classes (OECD). The large difference in student
learning outcomes between classes indicates that the teacher makes a significant difference to the learning of the students in their care. The finding that there are smaller differences between schools than between classes within a school, indicates that overall, Australian schools are similar and that whole school initiatives are not as powerful a driver of student learning growth than the practices of the individual teacher that a student has. We also know that only a small part of the achievement difference between students within schools is due to socio-economic status (SES) differences (OECD). It should be noted of course that the teacher is not the only differentiating factor between classes. The specific group of students and the behaviour and personality of those in the class may also contribute to difference between classes. Although the variance in differences that can be attributed to the class varies widely across countries, there is agreement in the literature on the importance of the teacher in influencing student outcomes (Stoll et al., 2006). It appears that in Australia, some teachers are able to support their students to make far larger learning gains than others. Greater gains for all students could be achieved if more consistent teaching practices were delivered at the higher level. That is if we could harness the practices of these great teachers and lift the practices of those struggling to support their students to make as large gains, then many students would benefit.

Collaboration has been put forward by many educational experts as a way to improve teaching practice (Goddard, Goddard, & Tschannen-Moran, 2007; Johnson, 2003; van Garderen, Stormont, & Goel, 2012). Collaboration is broadly defined as the interaction between people as they work towards a common goal. The concept of collaboration in schools may refer to the practice of teachers working in a team with the goal of improving teaching practice so that their students' learning is improved.
Teachers working collaboratively to improve their practice has been put forward by as a recommendation to improve Australia’s education system (Department of Education & Training, 2018). The Review noted that teachers must seize every opportunity to work collaboratively so that they can move away from a 20th century model of delivering a standard, mass education and move to a tailored, individualised approach which focuses on individual student (Department of Education & Training, 2018). The Review made five recommendations to reach the goals identified – one of which was to create, support and value a profession of expert educators. The Review proposed that one way this could be achieved is to create conditions that enable and encourage greater professional collaboration, observation, feedback and mentoring amongst teachers (Department of Education & Training, 2018).

The idea of teacher collaboration is encompassed in many terms in the literature, such as professional learning team (PLT), professional learning community (PLC), communities of practice, professional community, learning community and organisational (shared, collaborative, collective) learning (Lee, Dedrick, & Smith, 1991; Louis & Marks, 1998; McLaughlin & Talbert, 2001; Newmann & Wehlage, 1996; Sleegers, den Brok, Verbiest, Moolenaar, & Daly, 2013). Due to the disparate writings on the concept, and different terms used in the literature, here the term PLT is used to describe a group of people who collaboratively reflect on their teaching practice in a learning-oriented and growth promoting way and articulate their outcomes in terms of data that shows changed teaching practice and improved student learning. The goal of this collaborative work is to enhance their effectiveness as professionals so that students benefit (Bolam, McMahon, Stoll, Thomas, & Wallace, 2005; Dufour, 2004; Hord, 1997).
The teaching profession is moving away from its traditional autonomous approach to embrace interdependence – where teachers work together in teaching and learning eschewing the practice of one teacher making the teaching decisions within one classroom. Working in a collaborative team has been reported to be valued by educators as it leads to more student-centred-practice, and intensifies awareness of teaching and its consequences (Newmann & Wehlage, 1996). Through working together on ways to improve teaching, deciding how best to go about their work and sharing resources, teachers are exposed to different views and ways of working, and their teaching knowledge is expanded (Dunne, Nave, & Lewis, 2000; Strahan, 2003). Critical reflection with input from peers allows teachers to develop their teaching practice so that students benefit. The research which has evaluated the effectiveness of PLTs tends to show that working in a PLT leads to positive benefits for student learning, although the body of research is diverse. Of the published works reviewed for this study, very few approached the study from a theoretical basis.

Establishing and working in PLTs does not come without its costs. There are costs to the school in providing meeting time and resources, and costs to the teachers involved in the PLTs in increased workload, time commitment, and the emotional effort that they commit in critically evaluating their practice and sharing their difficulties with their peers. It is therefore pertinent to encourage research which examines the effectiveness of such an approach, which is the underlying impetus for this study. Research which has examined PLT effectiveness is limited and not conclusive. Studies generally have not used a theoretical framework nor has there been consistency in the factors under investigation. This has led to a lack of coherence in the literature, limited subsequent research building on previous studies, and a lack of theory to help explain and make sense of the findings. No conclusive
agreement regarding the effectiveness of PLTs has been reached. A framework or theory of PLT functioning would serve to support research to build on extant findings. An underlying premise of this study is that the development of a conceptual model of PLT functioning would help to support a more coherent body of research in the area, help to tie together existing research, and help to explain findings.

It has been argued that working in isolation is the biggest obstacle to learning to teach because teachers must depend on trial and error or experiences of their own schooling when they were students themselves, which leaves them with little guidance for effective teaching (Rosenholtz, 1989). Collaboration is not generally taught in pre-service training nor modelled through the tertiary system (Goddard et al., 2007). Without the infrastructure to support collaboration, teachers are left with little choice but to rely on their existing skills and draw on professional development offerings to develop their teaching practice.

The concept of collaboration in the education sector is a synthesis of a range of influences. The ideas of a thinking school, problem-solving school and creative school have been espoused since the 1970s and have extended to self-evaluating or self-reviewing schools in the 1980s (Bolam, McMahon, Stoll, Thomas, & Wallace, 2005). Another influence is an idea that was popular in the business sector in the 1990s of a ‘learning organisation’ (Vescio, Ross, & Adams, 2008). The concept was to create an environment

where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together (Senge, 1990)(p. 3).
The idea of a learning organisation was to change the way companies work through group problem solving and systems thinking (Senge, 1990). This resonated with educators who valued a model which provided a mechanism for the knowledge that is held by teachers to be shared and the notion of a learning organisation was adapted for the education environment. This draws on models of knowledge building which have been researched primarily in the area of student achievement (Scardamalia & Bereiter, 2003). A Knowledge Building Environment is defined as any environment (virtual or otherwise) that enhances collaborative efforts to create and continually improve ideas (Scardamalia & Bereiter, 2003). Members continually contribute to the shared knowledge of the organisation, thus the community’s knowledge is continually built upon and acts as a growing shared resource which is greater than the knowledge of any individual member (Scardamalia & Bereiter, 2003).

Two assumptions have been key to making the "learning organisation" concept fit in the educational environment. The first is that knowledge is situated in the day-to-day experience of teachers and best understood through critical reflection with others. The second is that engaging in such reflective work will increase professional knowledge (Supovitz, 2002; Vescio et al., 2008). These two assumptions underpin a movement to an environment of collaboration between teachers.

The new problem of change . . . is what would it take to make the educational system a learning organization—expert at dealing with change as a normal part of its work, not just in relation to the latest policy, but as a way of life (Fullan, 1993, p. 4).

Another influence on the move towards greater collaboration in education follows a similar shift to that found in many other sectors. Traditional approaches to
working, which have relied on flat, hierarchical management structures and discrete work assignments, have been seen as inadequate for complex and challenging work environments that have evolved over recent decades. A team-based approach has been seen as more responsive to change and a means to greater effectiveness in organisations (Supovitz, 2002). Many different types of organisations have implemented a team-based approach to their work, because it is thought that productivity is not only increased due to the range of skills and resources that team members bring, but also due to the processes that occur as team members interact with and teach other (Marks, Mathieu, & Zaccaro, 2001). In an education setting, it is assumed that collaboration leads to greater commitment and more effective teaching, which in turn leads to improved student outcomes (Rosenholtz, 1989).

The composition of collaborative teams in education varies, but generally the team is made up of teachers and possibly other members of the school community, such as school leaders. Their work involves critically examining their teaching practice, including teaching strategies, lesson plans, and assessment data. Within well-functioning teams, teachers undertake mentoring, observe each other’s lessons and provide each other with developmental feedback so that they support each other in building their teaching expertise (Hattie, 2009; Jensen, Hunter, Sonnemann, & Burns, 2012; OECD, 2009).

Descriptions of teams in education seem to have two major foci which can be described as (1) a focus on building teacher capacity, and (2) a focus on improving student learning. Writers taking the first view focus on the importance of collaborative activity to enhance teacher enquiry, peer support and professional development – with the teacher being the subject. In such a conceptualisation of a team, the goal is on teacher learning and it is through changes in the teachers’
knowledge, skills, attitudes and classroom practice that student learning is improved (Lee et al., 1991). It is assumed that a move away from teacher autonomy to collaboration can offer a support network which could be beneficial to teacher performance. Teachers who feel more supported (by way of teacher networks or cooperation among colleagues) are more likely to adopt new classroom practices, more empowered to obtain the knowledge needed to support their students and more positive about staying in the profession (Darling-Hammond, 1996; Rosenholtz, 1989). Darling-Hammond suggests that greater dissemination of decision-making authority contributes to the perception of teachers that educational reform is more effective in as far as teachers in schools with shared decision making indicate feeling more positive about the influence that curriculum reform has on teaching practice (Darling-Hammond, 1996). It appears then that when teachers are more involved with each other and the decisions within the schools, their teaching practice evolves. This focus on teacher support and skill development represents one major aspect of the work of teams in education.

The second major focus of teams in education is to make student learning the main goal of the team. With this view collaborative activity is focused on the learning of individual students whereby assessment data are used to inform decision-making (Dufour, 2004; Griffin, Murray, Care, Thomas, & Perri, 2010). Dufour suggests professional learning communities should focus on learning rather than teaching, work collaboratively, and be accountable for results. (Dufour, 2004) (Dufour, 2004a). This is reiterated by Griffin and colleagues who stress that the focus on all discussion should be the students’ learning needs (2010). Griffin, Robertson and Hutchinson (2014) highlight the importance of the use of data to identify student learning readiness and assert that all discussion in teams should be on the student, not
on the teacher or teaching practice. By focusing on the student, teacher learning needs are highlighted where there is a gap between what the student needs to be taught and the skills of the teacher to teach it. This matching of teacher professional development with student learning needs would ensure that teachers are equipped with the knowledge and skills to be effective teachers for their students. Griffin and Care (2009) note that peer accountability and an atmosphere where teachers challenge assumptions of student ability that are not based in observable evidence are important features of high performing teams. In their conceptualisation of teams in education, teams work through a cycle which requires teachers to examine evidence of student learning collaboratively and link it to a developmental progression to identify the student’s zone of proximal development (Griffin & Robertson, 2014; Vygotsky, 1986). Teaching interventions are then designed to target the student’s emerging skills. The decision to determine which teaching practices to undertake is based on the student’s needs rather than a teacher’s preferred teaching strategy, teaching style or desire to trial a new technique.

The practical difference between whether the focus of the team is to improve teaching practice or improve student learning outcomes is probably not meaningful. Both approaches attempt to lift the performance of both teachers and students.

Taking a collaborative approach to teaching has implications for the way teaching occurs in the classroom. Working in a team has been associated with an evidence-based approach to teaching (Griffin & Care, 2009). Teams make use of student data to inform teaching and reflect on the success of their teaching interventions (Earl & Timperley, 2009; Griffin & Care, 2009). Griffin and Care (2009) note that collaboration is not synonymous with sharing or supporting, but is more active and critical, requiring challenge, and acceptance of statements only when
supported by evidence. This approach challenges individual teachers’ teaching decisions as they are share with the team their practice and resulting student learning outcomes. It provides the environment where teachers can critically reflect on the effectiveness of the strategies they use, and learn better practices from each other. Thus it has the potential to reduce the disparity between the learning outcomes teachers that we know exists in Australia (OECD, 2016).

This evidence-based approach represents two major shifts in the way that teachers have worked in the past. The Australian education system still reflects the 20th century industrial view of education which focuses on a set of skills to be gained by all students at each year level, before they move lock-step into the next year level (Department of Education & Training, 2018). The team-based approach helps move teaching practice to more individualised learning, as it requires teachers to draw on data of what students can currently do, and then teach them at their one zone of proximal development (Griffin & Care, 2009), thus individualising the teaching. The other shift from the way that teachers have worked in the past, is the privatisation of their practice (Newmann & Wehlage, 1996). Teachers have traditionally delivered their lessons autonomously, without the need to consult with others on the way the teaching strategies they choose. The team-based method opens up their practice for group discussion and debate.

Research in the area of teams in education has been undertaken for over twenty years and shows some support for the approach as a mechanism for whole school improvement (Berry, Johnson, & Montgomery, 2005; Bolam et al., 2005; Hollins, McIntyre, DeBose, Hollins, & Towner, 2004; Jensen et al., 2012; Louis & Marks, 1998; OECD, 2009; Phillips, 2003; Richmond & Manokore, 2011; Sigurðardóttir, 2010; Strahan, 2003; Supovitz, 2002; Taylor, Pearson, Peterson, & Rodriguez, 2005).
The literature tends to focus on identifying the characteristics of successful teams or describing the conditions necessary for teams be successful (Bolam et al., 2005; Dufour, 2004; Hord, Roussin, & Sommers, 1997; McComish & Parsons, 2013; Moller, Mickelson, Stearns, Banerjee, & Bottia, 2013; Newmann & Wehlage, 1996; Williams, 2012). However empirical studies which explore the way that teams work, or those that link working in a team with student learning outcomes is limited. One literature review of the effectiveness of teams in education was found in a search of the literature. That review, which was undertaken in 2008, was only able to find 10 empirical studies that evaluated the impact of the approach on teaching practice and/or student learning (Vescio et al., 2008). Despite the gathering momentum to change educational practice from individual or autonomous work to collaborative and reflective practice, and the popularity in the literature discussing the approach, research into the way teams operate and their effectiveness is still in its infancy (Sleegers et al., 2013; Stoll et al., 2006; Vescio et al., 2008). The literature that discusses the role of collaboration in teachers’ professional learning seems to be in agreement that the collaborative model is valuable as a means of changing teaching practice and there is some evidence that the accompanying change in teacher practice improves student achievement (Dufour, 2004; Newmann & Wehlage, 1996).

One issue that could be contributing to the lack of a body of research is that there is broad range of teams operating differently which leads to vague definitions. Dufour (Dufour, 2004) cautions that the term PLC has become so widely used used that it at risk of losing all meaning. Teams seemingly working in the same manner are usually called Professional Learning Teams or Learning Communities. Clear definitions of teams in education are essential to support the synthesis of empirical research to examine effectiveness of such an approach.
Another contributing factor which may be limiting research in the field is a lack of a theoretical basis to guide research. Much of the literature on teams in education describes the practices of successful schools or consists of expert opinion of what constitutes best practice. Few studies were found which were based on a framework or a theoretical model. This contributes to a lack of cohesiveness in the study of teams in education. It also makes it difficult to compare findings and evaluate conclusions. Studies consider different foci and different factors to conceptualise the teams. There is no agreement on the interrelatedness of dimensions and there is a lack of clarity around the measurement of the dimensions at the multiple levels in operation in school settings (Sleegers et al., 2013).

This lack of theoretical development has led to several recent studies seeking to shed light on the process of teacher learning within a collaborative environment (Bruce & Flynn, 2013; Mintzes, Marcum, Messerschmidt-Yates, & Mark, 2013; Riveros, Newton, & Burgess, 2012). Perhaps it is a result of the atheoretical nature of research in the area that there are few studies that empirically examine the effectiveness of teams and that no theory or framework has been developed to support further study. The literature on the use of teams in education has faced criticism in the same way that educational research in general has been criticised for a lack of empiricism and methodological rigor and for being atheoretical (Crow & Pounder, 2000; Smylie, 1995). These issues need to be resolved to help make sense of previous research and to support and encourage future research into teams in education.

In contrast, research in psychology tends to rely heavily on theory formation and adherence, and a comprehensive understanding of team effectiveness, across a broad range of practice areas has been accumulated (Borrego, Karlin, McNair, &
Theory, backed by empirical data, is essential if progress is to be made in researching the effectiveness of PLTs and the elements of team functioning that make up a successful team within an educational setting. Theory provides a framework through which to organise facts and guides the interpretation of information. It allows predictions to be made and tested through research and supports research development. Another important feature of having a theory is that it encourages research. Greater gains are made when researchers build on each other’s work and a theory provides a central point on which research can be focused – encouraging researchers to test the theory and replicate each other’s work. A theoretically-based framework would not only serve to guide (and perhaps encourage) future study, but it could also provide a structure for practitioners who are seeking guidance to implement and manage teams in education. This thesis sets out to develop a theory of team functioning that is applicable to teams in an educational setting.

The goal of this thesis is to contribute to the current understanding of teams in education. More specifically, it sets out to develop a framework to identify a set of elements that may be important for team effectiveness.

**Purpose and Significance**

The purpose of this study is to develop a conceptual framework to understand the processes involved as teachers work in teams. It is hoped that this framework will help focus research efforts so that a body of empirical work is established to examine team effectiveness. The framework is informed both by the way that teams in education have been conceptualised and by the large body of work that explores inputs, processes and outputs of teams in general. A framework that helps to explain team functioning will serve to progress research in the area. Theory supports research
by providing a guiding framework on which to base studies, by identifying the elements of interest and by providing a common definition of the constructs.

The push to implement teams in schools does not come about without its challenges so a solid research base would be advantageous to understand the merits and limitations of the approach. In the past, although teachers have come together with other teaching professionals for training, for social support, and for administration matters, their core work – teaching – has been mostly conducted independently, and strongly held norms of individualism and autonomy in education are difficult to change (Rosenholtz, 1989a; Timperley, Wilson, Barrar, & Fung, 2007; Vescio et al., 2008). There are also challenges around balancing the potential gains that could be achieved through the collaborative work (and quantifying those gains) compared to the cost (Crow & Pounder, 2000). Time, materials and space need to be allocated for meetings, teachers require skill development for team-based work, and an increased workload is placed on teachers both in and beyond the classroom in terms of meeting time and analysing student performance. Therefore, greater research in the area, and particularly a more coherent literature in the area is valuable to allow policy makers and school leaders to make informed decisions regarding implementing PLTs.

A way to examine the functioning of teams in education systematically will also help determine the effectiveness of the approach and support decisions by policy makers and school leadership to determine the most judicious allocation of resources. Research which identifies the specific aspects of team-based work would be beneficial in the implementation of teams – for example knowing the optimal balance of skills and experience for a team. It may also be advantageous in
identifying areas (and strategies to address those areas) for team intervention when teams are not operating effectively.

More literature on team functioning will also support educators to change their practice. Guidance which identifies the practices of effective teams would help them focus their effort where it is likely to have the greatest impact. Teachers working in a collaborative environment are doing so with little professional guidance to help them improve their team work – to identify what their team is doing and what high performing teams of teachers are doing so that they can be working towards team improvement. Research which identifies and isolates the effects of specific aspects of team functioning could be used to aid team development and help team members focus their attention in regard to the way the team is working to where it is likely to be most effective. It would allow teams to work on developing those aspects of team work which are related to greater student achievement. In this research, the criterion of effectiveness is the learning outcomes of students under the care of a team.

One large body of research which could contribute to developing a framework for teams in an educational setting stems from research into groups or teams in other fields. The move towards a more team-based way of working in the educational sector follows a similar shift in many other areas of work (Kozlowski & Ilgen, 2006; Marks et al., 2001). In the same way that education is changing from independent individual teaching to more collaborative team-based practices, organisations from a range of settings have modified their workplaces over the last several decades from individual jobs to teams situated in more complex workflow systems (Kozlowski & Ilgen, 2006). Over this time, there has been an accompanying wealth of research examining teams – and in particular identifying aspects that lead to effectiveness (Marks et al., 2001).
An understanding of teams in general, and how teams can be effective will be informative in our understanding of how teams in education may be effective. Thus, identifying a link between a broader understanding of teams and teams in education would be helpful. There is a wealth of information that can be drawn on regarding the composition of teams, what successful teamwork looks like, and how best to intervene when teams need improvement that can benefit schools.

The main goal of this research is to establish a theoretical framework for the functioning of PLTs.

**Research Questions**

The specific research questions that this study addresses are:

1. Can a model of team functioning be created that is consistent with the functioning of teams in education?

2. What is the relationship between each of the elements of the model and between the elements and student achievement?

To answer these research questions, several activities were undertaken. A review of the literature examining the use of teams in general was carried out, as was an examination of research into the use of teams in organisational psychology. Further, a review of the pertinent literature on the effectiveness of teams in an educational setting was undertaken. Overall, this literature review sought to elaborate on the following questions:

   a. What are the key characteristics of teams in general?

   b. What frameworks have been used to study teams in general?

   c. What are the key characteristics of teams in education?
d. What frameworks have been used to study teams in education?

By drawing on the literature of general team research and overlaying that on literature of teams in education, a set of elements is identified which may be pertinent to support an understanding of the effectiveness of teams. These elements are presented in a framework of team functioning. This framework is then examined to understand its validity and identify areas of further research. First, each element in the framework was considered in relation to how it is may be manifested in teams in education. A group of experts in education teams was consulted to advise on the development of a set of questions to measure the extent to which each of the elements may be manifested in a team. This questionnaire was piloted and refined, and administered to a group of teachers working in teams. Confirmatory factor analysis was conducted on that data to determine the relationships between the items and the proposed elements and between the elements. Next, the data were examined to ascertain whether those elements were related to the learning achievement of students under the care of those teacher teams.

This thesis focuses on team-related factors and does not address elements related to the student or family, notwithstanding that there are many aspects at this level which are important determinants of student learning outcomes, nor does it address aspects of teaching or other school-related aspects.

This study does not address the broader conceptualisation of a collaborative approach that incorporates the whole school community involvement which is focused on improving student learning outcomes. Such an approach includes relationships with the broader school community and culture within the school community such as family/school relationship. This creates a nebulous entity which
poses difficulties for systematic research. This study confines the focus to examining the processes and work that comes from teachers who work in collaborative teams.
Chapter 2: Literature Review

The main goal of this research is to establish a theoretical framework for the functioning of PLTs. Research Question One asked whether a model of team functioning could be created that is consistent with the functioning of teams in education. To address this question, it was decided to consider how individuals are influenced when they belong to a group and the formation of group research which laid the foundation of team research. This area is titled *The Study of Groups* and leads to an exploration of the definition of teams in the section *What is a Team?*. The second area reviewed is the study of teams in general in the section titled *Teams in General*. It reviews teams across a range of work sectors by researchers in the field of psychology, and specifically organisational psychology. This area relies on theory formation and adherence and as such, much theory has developed on the study of groups and teams. Collaborative or team-based approaches have been taken up by a range of industries since the 1980s and gains in productivity or effectiveness are often realised as a result. This proliferation of self-managed work teams has led to an informative body of research examining their effectiveness (Sundstrom, de Meuse, & Futrell, 1990). The section titled *What Elements Are Studied in Team Research* focuses on the variables that have been investigated. Variables are grouped into the three categories of input, throughput and output. Variables at the throughput level are further divided into those that reflect the functioning of the team, and termed teamwork, and those that reflect the work that the team does and titled task work. This is followed by a section titled *What Frameworks Have Been Used to Study Teams?*. This section considers the relationships between those variables and the frameworks that have been put forward to explain team functioning. It is these
frameworks that form the basis of the hypothetical model of team functioning put forward in this study.

The final area of literature which is reviewed is writings on collaborative teams in education in the section titled *Teams in Education*. Most of this work comes from expert writing in the field and case studies. It explores the specific elements of team functioning that appear in the literature to gain a picture of the important features of working in an educational team in the section titled *What are the Key Characteristics of Teams in Education*. This section also considers any frameworks or theories that have been adopted or developed and used in studies under the heading *What Frameworks Have Been Used to Study Teams in an Educational Setting?* This is useful because it provides an understanding of PLT work and brings to light how working in a team in education may be similar or different to working in a team in other areas outside of education. This is done to determine whether those variables and frameworks identified in the previous section are relevant to teams in education.

The last area of *Teams in Education* considers the effectiveness of teams in education in the section titled *What is the Effect of Teams in Education?* With collaboration being touted as beneficial to both teacher professional development and student learning, it is helpful to consider the whether the approach has been shown to be effective.

Literature was reviewed with a view to developing a framework of team functioning that is aligned with the way teams in education work. The specific focus of this review was on the elements that are described as important in team functioning both in teams from a range of settings, and in teams in an educational setting. The literature was synthesised to determine a core set of elements and to
develop a framework that is based on the culmination of knowledge on work teams and considered in light of the current understanding of teams in education.

The chapter concludes with the proposal of a framework of team functioning which is presented in the section titled; *Proposed Theoretical Framework*. It includes the elements identified in the literature review of both teams in general and teams in education. The proposed relationships are also drawn from the literature. These elements form the basis of an instrument to test the framework and this is explored in the following chapter.

This chapter addresses Research Question One which asked whether a model of team functioning could be created that is consistent with the functioning of teams in education. This question is further explored in the following chapter: Chapter 3: Examining the Validity of the Proposed Framework.

**The Study of Groups**

To determine an effective way to study teams in education, an understanding of how groups and teams in general have been studied is useful. The way people work together may be studied through a range of frameworks taken from areas such as sociology, anthropology, or psychology and each would provide a different viewpoint. This section considers how groups of people have been conceptualised from a psychological viewpoint. Although research into team effectiveness is relatively new, the study of peoples’ behaviour in groups has been developing since the turn of the 20th century. Various conceptualisations of group behaviour have informed our understanding of groups and the way that groups influence both cognitions and behaviour. This early seminal work informs many contemporary views of group dynamics and team work.
Experimental social psychology is said to have begun with Triplett when he noted that cyclists are slower when they ride alone compared to when they ride with one another. He then supported his observations in what has been recognised as the first experiment in social psychology (Strubbe, 2005). Triplett termed the effect social facilitation and his research spurred the field of experimental social psychology.

The study of groups can be considered to revolve around the Gestalt credo that the properties of any of the parts are governed by the structural laws of the whole. Wertheimer (1924) p. 7 noted that:

There are entities where the behaviour of the whole cannot be derived from its individual elements nor from the way these elements fit together; rather the opposite is true: the properties of any of the parts are determined by the intrinsic structural laws of the whole.

Gestalt psychologist, Lewin (1951), developed some insightful explanations of behaviour that are still influential in the study of groups. Lewin’s field theory describes the social environment as a dynamic field interacting with human psychology – an individual’s perception of themselves and the environment are thought to influence behavioural decisions (Lewin, 1951). Therefore, to understand behaviour, the whole psychological field, or life space within which people belong needs to be understood – a view in keeping with gestalt principals. Lewin believed individuals participated in different life spaces (such as family, work, school) and may be influenced differently in each (Lewin, 1951). This view is reflected in contemporary conceptualisations of group functioning with most theories acknowledging the effect of the context within which a group functions, the differential effects groups can have on behaviour and considering the group as an
entity rather than the sum of the individual members (e.g. Campion, Medsker, & Higgs, 1993; Gladstein, 1984; Salas, Dickinson, Converse & Tannenbaum, 1992).

Two specific ideas that have emerged from field theory – *interdependence of fate* and *task interdependence* – have played an important role in group research. Lewin (1951) proposed that groups are formed not out of similarity or dissimilarity of the individuals that make up the group, but rather based on the realisation that their fate depends on the fate of the group as a whole. This idea is termed the interdependence of fate, which perhaps represents a special case of a second principal of group formation - task interdependence. Lewin argued that a powerful dynamic is created when members are dependent on each other for achievement of a goal. In a positive sense, one person’s success facilitates another’s success; however, in some circumstances, one person’s success is another’s failure – this is more commonly termed competition (Brown, 1988). Current conceptualisations of team functioning, and indeed definitions of what constitutes a team, usually include interdependence between members as a defining feature (Guzzo & Dickson, 1996).

Throughout the 20th century a large body of work clearly showed that others with whom one identifies (those in the same group) could have a considerable influence on one’s behaviour. For example, Wundt proposed that group membership influences virtually all behaviour, perceptual and cognitive processes (Wundt, 1916). Most notable in illustrating the effect of others on an individual was Milgram’s obedience to authority experiments (Milgram, 1974). Sherif and colleagues studied groups of boys on holiday camp to understand group identification, the development of norms of behaviour and how conflict can be overcome (Sherif, Harvey, White, Hood, & Sherif, 1961). This group research laid the foundation for the research into
teams and team effectiveness that followed. The definition of a team is examined in the following section.

**What is a team?**

This section considers some of the definitions of a team. Many researchers use the terms *team, self-managed team, taskforce, project team,* and *group* interchangeably – a view supported by Hackman (2002) who makes no distinction between the terms. Others make a distinction along the lines of work – where *groups* may be any group of people such as a group of friends, and *teams, work teams* and *work groups* represent a specific type of group that is defined by working towards a common goal or goals. For example Guzzo (1995) views teams (and work groups) as a particular type of group that is bound by common goals and team members who work collaboratively to achieve those goals. Others, who take a similar view include Katzenbach and Smith (1993) who also add that members are mutually accountable for their purpose, approach and goals. Larson and LaFasto (1989) note that teams are constituted by coordinated activity among members.

Others take a different approach. For example Kinlaw (1991) describes a qualitative difference between teams and groups or work groups and considers that teams operate at a higher level than groups or work groups. Kinlaw defines a work group as “a set of two or more job holders who make up some identifiable organisational unit that is considered to be a permanent part of an organisation”; whereas teams are “work groups that have reached a new plateau of productivity and quality”.

Some theorists note the work orientation of a team and recognise the social connectedness of the members embedded in a larger context. For example Cohen and Bailey (1997) define a team as:
A collection of individuals who are interdependent in their tasks, who share responsibility for outcomes, as an intact social entity embedded in one or more larger social systems (for example, business unit or corporation), and who manage their relationships across organizational boundaries [p. 241].

Similarly, Guzzo and Dickson (1996) based their definition on the work of Alderfer (1977) and Hackman (1987) characterise a *work group* or *work team* as:

Individuals who see themselves and who are seen by others as a social entity, who are interdependent because of the tasks they perform as members of a group, who are embedded in one or more larger social systems (e.g. community, organization), and who perform tasks that affect others (such as customers or coworkers) p. 308.

Thus, an important feature of a team is that the team members see themselves and are seen by others as belonging together. This is certainly seen in discussions of teams in education which identify clearly defined groups of people. They are recognised in the school structure and by other members of the school as a distinct group, and members have no ambiguity of the membership of their team (Bolam et al., 2005).

Another defining feature of a team is that the work undertaken requires task-based interdependence among group members who work collaboratively towards a common goal (Cohen & Bailey, 1997; Guzzo & Dickson, 1996; McIntyre & Salas, 1995).

McIntyre and Salas (1995) differentiate between the actual interdependence of the subtasks that make up the team task and an attitude of interdependence in the team. The latter refers to the degree to which team members recognise that their success is dependent on other team members. These authors have found that it is
essential that team members depend on each other completing their tasks and see interdependence as a virtue (rather than a weakness) to be strived towards for highly effective team functioning.

The definition of a team that is used here will follow Guzzo and Dickson (1996) and provided above. Considering this definition, teams working in education can be thought of as work teams. However, one could argue that teachers who are working collaboratively in professional learning teams may collaborate in some aspects of their work such as lesson planning, examining data and undertaking professional learning, the teachers’ core work with students is still conducted independently. As such, it may be more accurate when considering the entirety of the work of teachers who take such a collaborative approach as being partly collaborative and partly independent. Notwithstanding this issue of how much of teachers’ work is collaborative, the collaborative approach of working in PLTs is being put forth to support school improvement. The extent to which work teams in education contribute to student learning is the topic of this thesis, and teachers working in PLTs are considered to be members of work teams.

Teams in General

Since the early 1980s a considerable body of research has been developed on team functioning within the field of psychology. This body of research is reviewed here to identify the characteristics or variables studied and examine key frameworks that have been put forward to explain the ways those variables may fit together. In this section, major models are described and considered alongside what is known about teams in education. This provides the basis of developing a framework that is specifically aligned with the way that PLTs work.
There are such differences between teams, and the contexts in which they work, that the assumption that work teams represent a single entity for which generalisations can be made has been questioned (Sundstrom et al., 1990). In their review of group effectiveness research, Cohen and Bailey (1997) categorise four types of teams: a) work teams, b) parallel teams, c) project teams and d) management teams. Others have taken a different approach to categorising different types of teams. Sundstrom (1990) suggested four broad categories; a) production and service, b) advice and involvement, c) projects and development, and d) action and negotiation. Cohen and Bailey concede that the first three in each typology (as listed here) correspond, and the fourth differs in that Cohen and Bailey identify a management type of team whereas Sundstrom et al. identify their fourth type as action and negotiation.

Work teams are generally a stable well-defined group of people who are responsible for producing goods or services (Cohen, Ledford, & Spreitzer, 1996; Sundstrom et al., 1990). Specific cases of work teams have been termed self-managing (Hackman, 1987), empowered (Kirkman & Rosen, 1999), autonomous (Cummings, 1978) or self-directed. Such groups tend to possess broad skills or are ‘cross-trained’ in the skills that are relevant for their team’s work (Cohen & Bailey, 1997). Due to this spread of skills, members of the team usually have the freedom to decide the division of labour within the team (Sundstrom et al., 1990).

Models of team functioning have been proposed within the ethos of social psychology (e.g., McGrath, 1964; Steiner, 1972), socio-technical theory (e.g., (Cummings, 1978; Pasmore, Francis, Haldeman, & Shani, 1982); and organisational psychology (Gladstein, 1984; Guzzo & Shea, 1992; Hackman, 1987; Sundstrom et al., 1990). Much team effectiveness research has been conducted in organisational
psychology and this is used as the main focus for this section of the literature review since the teams studied in this area tend to be work teams. Teams in education exist within an organisational environment and this fits closest to the research conducted in organisational psychology.

The study of work teams has commonly been considered linear three stage system consisting of inputs, processes and output (known as the IPO framework) (McGrath, 1964). Theories of team functioning from the industrial and organisational perspective generally take this three stage approach, where the team uses resources (input), maintains internal processes (throughput) and produces specific products (output) (Mickan & Roger, 2000). The resources at a team’s disposal (inputs) may be reward systems (Cannon-Bowers, Tannenbaum, Salas, & Volpe, 1995), the design of the task (Hackman & Oldham, 1980), and member knowledge, skills and abilities (Tannenbaum, Beard, & Salas, 1992). Internal processes maintained by the team may include the strategies they employ in pursuit of the team’s goals and elements such as communication, effort and back-up behaviour (Gladstein, 1984; Salas et al., 1992). The output produced by the team is generally considered the major measure of the team’s effectiveness (Guzzo & Dickson, 1996). Much research has been based on this three stage model since it was put forward by McGrath (1964).

The IPO framework has been used as the basis for much research although it has been modified by some to accommodate several criticisms (Mathieu, Maynard, Rapp, & Gilson, 2008). The IPO framework has been criticised for failing to classify process variables adequately, and in particular for combining a range of variables as process variables that are not processes (Mathieu et al., 2008). For example, it has been noted that internal group processes should be differentiated from group psychological traits (Cohen & Bailey, 1997). Marks et al. (2001) refer to cognitive,
motivational and affective states of teams as emergent states and differentiate these from team processes. To better describe those elements that explain how inputs are transferred to outputs some have used the terms mediator and throughput variables (Ilgin, Hollenbeck, Johnson, & Jundt, 2005; Tannenbaum et al., 1992). In line with this way of thinking, the term throughput will be used here to identify the elements that mediate inputs and output.

Another criticism of the IPO framework is that it treats team effectiveness as an end-state which disregards the dynamic nature of team work and blurs the causal nature of team effectiveness (Mathieu et al., 2008). Hackman (1987), who was one of the original proponents of the IPO framework concedes the model is simplistic. He asserts that teams evaluate their performance in an ongoing way which affects group processes and subsequent performance. The effect of such a feedback loop, being either positive or negative (Sundstrom et al., 1990). Marks, Mathieu and Zaccaro (Marks et al., 2001). proposed a temporally-based framework which outlines the cyclical nature of teamwork, a concept adopted by others (Tannenbaum et al., 1992).

Considering the temporal nature of teamwork highlights that the IPO framework is missing a measure of the team’s viability and long term success. According to simplistic IPO models, a team’s effectiveness can be measured by the production of designated products or the meeting of goals e.g. (Gladstein, 1984; Guzzo & Shea, 1992). This static, outcome-oriented view does not consider the manner in which the team interacts while producing the output. A team may produce well, but ‘burn itself up’ through unresolved conflict or divisive interaction (Hackman & Oldham, 1980). Sundstrom and colleagues propose that viewing effectiveness as the “production of products” is too simplistic, and that the definition of a team’s effectiveness should incorporate team viability by variables such as
cohesion and mature communication (Sundstrom et al., 1990). Such aspects are usually considered throughput variables – again highlighting the iterative nature of team work and the difficulty of classifying variables to be input, throughput or output. To account for the team’s viability some models combine a measure of performance with a measure of team member satisfaction (Campion et al., 1993; Gladstein, 1984; Salas et al., 1992).

Many valid and useful points have been noted on the limitations of the IPO framework, and the reality is that team work is extremely complex. Teams vary in their developmental stage, progress towards their goal, and even while completing multiple goals at different stages. Membership may change and teams learn from previous cycles of their work from input through to output. Notwithstanding the limitations of a simple IPO framework, it serves as a valuable guide to research, especially research in its initial stages such as examining PLT functioning (Mathieu et al., 2008). It is used here as an initial guide to examining the different elements that may be important in team functioning and to group those elements into the three categories of the IPO framework. The following section considers what aspects of teams have been investigated.

**What Elements Are Studied in Team Research?**

The main variables used in team research and discussed by authors as important aspects in the study of team functioning are reviewed here and grouped according to the input-process-output framework.

**Input Variables**

A range of variables has been identified that influence a team’s effectiveness at the input level. It is generally accepted that teams are influenced by the context in which they operate (Cummings, 1978; Gladstein, 1984; Guzzo & Shea, 1992;
Hackman, 1987). The context of a team refers to those aspects that are superordinate to the team – thus not part of the team. Sundstrom et al.’s ecological framework for analysing work team effectiveness highlights how the organisational context can influence all aspects of team functioning (Sundstrom et al., 1990). According to this model, context acts not only as an input in the linear IPO model, but also influences team outcomes directly.

The context that is relevant to an educational team in the first instance is the school environment and in particular the support of the school leadership. The school leadership may support a team by providing resources such as relief for teaching duties to allow time for meetings or scheduling team meetings in the school’s meeting structure. Dufour stresses the importance of providing teachers the time to meet during the work day and throughout the school year so that they feel they have the time to adequately address the students’ learning issues (Dufour, 2004).

Another aspect often studied is the environmental climate. This is variously described as the level of stress (Driskell, Hogan, & Salas, 1987; Tannenbaum et al., 1992), organisational climate (Tannenbaum et al., 1992), organisational culture (Sundstrom et al., 1990) and environmental uncertainty (Cannon-Bowers, et al., 1995; Gladstein, 1984; Tannenbaum, et al., 1992). Mathieu and colleagues distinguish between contextual influences that stem from the organisation and influences from the broader environment outside the organisation (Mathieu et al., 2008). According to Mathieu and colleagues, organisational contextual variables emanate from outside the team but within the organisation in which the team is nested and environmental contextual variables are sources of influence on the team that emanate from outside the organisation (Mathieu et al., 2008). The organisation in which educational teams are working in is the school.
An organisational environmental input variable that is recognised in many models is the resources that are available to the team (Cannon-Bowers et al., 1995; Driskell, et al., 1987; Gladstein, 1984; Salas et al., 1992; Sundstrom et al., 1990; Tannenbaum et al., 1992). Aspects of resources include training and consultation (Gladstein, 1984; Salas et al., 1992; Sundstrom et al., 1990) (Campion et al., 1993).

Many team effectiveness models recognise the influence of the management of a team such as the level of a team’s autonomy and managerial support (Hackman & Oldham, 1980; Sundstrom et al., 1990) or supervisory control (Cannon-Bowers et al., 1995; Gladstein, 1984; Tannenbaum et al., 1992). Distributed leadership within the school, links with other schools, focused professional development coordination and physical site facilities that are conducive to collaborative work have also been identified to be important in effective teams in education (Bolam et al., 2005; Hord et al., 1997; Kleine-Kracht, 1993; Prestine, 1993).

**Throughput Variables**

Here, the category of *throughput* refers to the processes, interventions and other intervening elements that mediate input elements and output elements in acknowledgement of some of the criticisms of the term *processes.* (Tannenbaum et al., 1992). As discussed above, throughput elements are often seen as team processes i.e. performing functions such as coordinating tasks, communicating and resolving conflict. Throughput variables also include cognitive, motivational or affective states such as collective effort and potency, generally referred to as *emergent states* (Mathieu et al., 2008). However, no matter how well team processes are functioning or the level of emergent states, the team will not be effective unless it is also effectively carrying out the tasks that are required of it. So team effectiveness hinges on team members’ ability to manage these two major tracts of activities – the work
that they do (task work) and the way they interact while going about their work (teamwork) (Mathieu et al., 2008; McIntyre & Salas, 1995). According to Marks and colleagues:

Task work represents what it is the teams are doing, whereas teamwork describes the way they are doing it with each other (Marks et al., 2001) p. 357.

It is pertinent to consider the two aspects of teamwork and task work when examining the effectiveness of PLTs. It could be argued that it is the task work that leads directly to achievement, and studying how teams go about their work is not necessary to measure their success. However, the clear majority of team research considers teamwork variables. These are generally amenable to intervention and serve as indicators of effective teams.

*Teamwork Variables*

It is important for teams to take some time early in the team’s life to consider how they will work together and lay a solid foundation to support the work that the team goes on to perform (Hackman, 2002; Mathieu & Rapp, 2009). Mathieu and Rapp (2009) show how a comprehensive understanding of teams can be gleaned by considering both teamwork and task work because of the significant interaction between the two. They found that effective teams that sustain their high level of performance over time show high functioning on both teamwork and task work tracks (Mathieu & Rapp, 2009).

The interdependence among team members, which is a defining feature of teams, requires interaction among team members in a coordinated or prescribed manner in order to accomplish the team’s tasks (Coovert, Craiger, & Cannon-Bowers, 1995). Teamwork refers to this interaction and the relationship between
members, and between the team and other bodies external to the team, such as other teams, organisational units and aspects of the context (e.g. uncertainty and market forces). It refers to how group members coordinate and react to one another, share resources, exchange information and support or reject a group leader (Cohen & Bailey, 1997; Guzzo & Shea, 1992). It is only by analysing these interactions that the team’s effect on performance can be measured. This facet was recognised very early in group research by Lewin (1951) and is still a dominant aspect of theoretical models of team effectiveness today where the interaction between members remains the focus of team research (e.g. Campion et al., 1993; Driskell, Hogan, et al., 1987; Gladstein, 1984; Klimoski & Mohammed, 1994; Salas et al., 1992).

The following section explores literature which considers the construct of teamwork with a view to identifying aspects that have been shown to be important in measuring team effectiveness. The construct of teamwork is somewhat broad and there is no unified conception of what team processes are and how they operate (Marks et al., 2001). This review aims to identify congruence between the various conceptualisations of team functioning with a view to defining a group of elements that encompasses the majority of the elements identified. Semantic groupings were identified to organise this information. This resulted in five broad categories: communication, workload sharing, intergroup processes, team efficacy and supportiveness. Literature which considers each of these broad areas is reviewed considering how they may fit with teams in education.

**Communication**

The most commonly cited aspect of teamwork, and that which is recognised in most models of team functioning, is the concept of the communication between team members (Campion et al., 1993; Gladstein, 1984; Klimoski & Mohammed, 1994;
McIntyre & Salas, 1995; Tannenbaum et al., 1992). Communication generally refers to team members feeling able to communicate with others in an open and frank manner (Gladstein, 1984), and the accuracy of the communication (Guzzo, 1995). Communication encompasses aspects related to problem solving (Tannenbaum et al., 1992), decision making (Tannenbaum et al., 1992) and conflict resolution (Gladstein, 1984; Tannenbaum et al., 1992). Klimoski and Jones refer to team members’ compatibility, which could be considered a precursor to a climate of open communication, as well as a result of it (Klimoski & Jones, 1995).

A related aspect is members’ ability to provide feedback to each other which links open communication to team improvement (Hackman, 1987; McIntyre & Salas, 1995). A climate of open communication allows and encourages feedback on task performance to be given. In this environment, feedback may be received positively rather than defensively and lead to team improvement. Aspects linked to this include the monitoring of other team members’ behaviour and providing back-up to other team members when required (McIntyre & Salas, 1995). Such elements are considered part of the construct of communication.

Coordination and cooperation are aspects related to the team’s communication and are important for team effectiveness (Campion et al., 1993; Gladstein, 1984; Tannenbaum et al., 1992). Coordination and cooperation rely on good levels of communication and are linked to the discussion of strategies that is a feature of high achieving teams (Gladstein, 1984; Klimoski & Jones, 1995).

The educational team literature also recognises the construct of communication. Collaboration, openness and the climate of challenging the statements of other team members are similar constructs that have been identified (Bolam et al., 2005; Dufour, 2004; Griffin & Care, 2009; Hord, 1997). The notion of
open communication is often highlighted in discussions of successful PLTs in which a large focus is on reflective professional enquiry which requires frank and honest communication between members (Newmann & Wehlage, 1996). In successful PLTs, teachers open up their practice, have frank and open discussions with fellow team members which lead to new ways of resolving issues that an individual would not be able to do independently (Newmann & Wehlage, 1996). Such an environment allows them to ask for help and receive feedback positively (Rosenholtz, 1989).

The culture or climate of the school is an aspect noted by most researchers and writers on collaborative teams in education. For these teams, it seems there are several aspects of the culture within the school that are important and hinge on communication. A culture which allows individuals to trust their colleagues so that they can open their practice to critique, receive feedback with an openness to make improvements to their practice is an essential component recognised in the education literature (Berry et al., 2005; Bolam et al., 2005; Hollins et al., 2004; Newmann & Wehlage, 1996; Strahan, 2003).

**Workload sharing**

The distribution of work within the team has been noted by many researchers. Gladstein (1984) refers to the weighting of individual inputs according to knowledge and skill, and Klimoski and Jones (1995) note the use of skill and level of effort brought to bear on team tasks. Klimoski and Jones make a distinction between knowledge or skill possessed and that which is brought to bear on the team’s tasks which suggests that the knowledge or skill possessed by individual members does not contribute to team effectiveness unless it is applied to the tasks (Klimoski & Jones, 1995). The research on task distribution within a team is complex. Workload sharing, or differentiating tasks between members can improve productivity by
preventing social loafing or free riding (Campion et al., 1993; Harkins, 1987). This is thought to occur because team members believe their efforts can be distinguished from others and that there is a link between their own performance and outcomes (Campion et al., 1993). However, research on reward structures would suggest better performance when tasks are not differentiated between members. Such research suggests better performance when rewards are interdependent – that is desirable consequences for individual team members that are contingent on the whole team’s performance (Sundstrom et al., 1990). This notion of rewards being dependent on the whole team’s functioning has been referred to as outcome interdependence (Guzzo & Shea, 1992) and motivates group-oriented behaviour (Campion et al., 1993).

Interdependence in the team’s work is recognised as an importance element for team effectiveness, and is a defining feature of a team (Guzzo, 1995; McIntyre & Salas, 1995). McIntyre and Salas (1995) differentiate between the actual interdependence of the subtasks that make up the team task and an attitude of interdependence in the team. The latter refers to the degree to which team members recognise that their success is dependent on other team members. They have found that teams are more effective when team members view themselves as reliant on each other to complete their tasks and view interdependence as a virtue (rather than a weakness) to be strived towards for highly effective team functioning.

A similar notion to workload sharing is identified in the educational team literature where a commonly discussed attribute of successful teams is that teams take collective responsibility for students’ learning and undertake collaborative work that is focused on learning (Bolam et al. 2005; Newmann & Wehlage, 1996).

**Intergroup Processes**
Many researchers have identified the importance of the interaction between the team and other individuals or groups. Gladstein (1984) refers to this as boundary management which encompasses interaction with the organisational environment including transferring information and enthusiasm for their work to outsiders. This takes on an aspect of sustainability and promoting the team’s work. Boundary management includes the team’s relationship with the larger system such as the organisation, coordination and synchronisation with suppliers, customers, managers and peers (Sundstrom et al., 1990). Tannenbaum et al. (1992) refer to this aspect as boundary spanning. In teams which are highly integrated, Sundstrom and colleagues note that failure at the boundary level not only affects the team in focus, but can affect other teams and the whole organisation (Sundstrom et al., 1990). A further aspect of boundary management is team differentiation, or the degree of specialisation, autonomy and independence in relation to other teams which acts to protect the team from contamination and distraction from other teams (Sundstrom et al., 1990).

The notion of boundary management is recognised in the educational team literature and often referred to as networks and partnerships. Teams must not only act as one; differentiating themselves from other teams, developing their own norms and feelings of cohesiveness, but they also need to manage how they interact with bodies external to the team and link with others in sharing resources and promoting the team. It is how teams tread this line between being insular and expanding that is described by the term boundary management. Bolam, et al. (2005) refers to successful PLTs proactively drawing on external links to seek out ways to improve their practice. It is also addressed by the idea of extending membership of the team beyond teachers and school leaders. Bolam et al. (2004) note that successful PLTs
have a very inclusive membership which allows teams to draw on a wider knowledge base.
Team Efficacy

Team efficacy is equivalent to the notion of self-efficacy, which is an individual's belief in his or her capacity to execute behaviours necessary to produce specific performance attainments (Bandura, 1977a; Guzzo, 1995). A team’s interactions with the environment, feedback from early efforts, or the team’s ability to make decisions all influences a team’s confidence and self-efficacy (Hackman, 1990; Klimoski & Jones, 1995). Expectations of levels of expertise of the team affect performance expectations, and ultimately the team’s outcomes (Guzzo, Yost, Campbell, & Shea, 1993). Hackman (Hackman, 1987) suggests that potency also affects outcomes via its effect on effort – that when team members feel part of a potent team, they are more committed and willing to work hard for the group.

Team efficacy refers to the belief by a group that it can be effective. The notion of team efficacy is dependent on team spirit - the feeling of members that they are part of a team. McIntyre and Salas (1995) note that a characteristic of successful groups is that members identify themselves as group members. This self-awareness of team membership is such that it recognises one’s own performance not as an individual, but contributing to the team’s success – that each member’s own effectiveness is equivalent to and dependent on the team’s effectiveness (McIntyre & Salas, 1995).

Teacher efficacy, or the extent to which teachers believe they have the capacity to affect student performance, has been found to relate to teaching success (Tschannen-Moran, Woolfolk & Hoy, 1998). The idea of collective teacher efficacy, or the idea that teachers as a group working together as a collective make a difference over and above what each individual teacher can do has found some support (Tschannen-Moran, Woolfolk & Hoy, 1998). Further, many authors note that
working in a team increases teacher efficacy (Hord, 1997; Mintzes et al., 2013; Strahan, 2003). It has been shown that as teams develop in their practice of collaborative enquiry, efficacy is increased, and that greater efficacy is linked to greater persistence when working to overcome obstacles to teaching, greater adoption of innovative strategies and more effective classroom management strategies as well as higher levels of student achievement (Bruce & Flynn, 2013).

**Supportiveness**

The social support that a team provides to its members is an aspect often identified in team effectiveness research (Campion et al., 1993; Gladstein, 1984). Positive interactions between team members and members providing assistance to each other can improve team effectiveness (Campion et al., 1993). McIntyre and Salas (1995) discuss the need for team members to be willing and prepared to back fellow members up which makes the team operate as greater than the sum of its parts. Back up generally refers to knowing what others are doing and stepping in and taking over when a fellow team member has neglected something or needs some support (Guzzo, 1995; Tannenbaum et al., 1992). A defining feature of high performing teams is where members show a willingness to help when needed and accept help without fear of being perceived as weak (Oser, McCullum, Salas, & Morgan, 1989).

Social support may also influence effectiveness through social facilitation (Campion et al., 1993) which suggests that individuals perform better in the real or imagined presence of others on well-learnt tasks (Harkins, 1987) – an aspect first recognised in Triplett’s experiments in social psychology (Strubbe, 2005).

Klimoski and Jones (1995) identified compatibility and emotional tone which are described as a ‘supportive and friendly atmosphere’. Such an atmosphere
supports smooth interaction and communication which may lead to increased effectiveness. Gladstein (1984) found that supportiveness was related to team members’ rating of satisfaction and their rating of team effectiveness, however supportiveness had little or a negative impact on actual effectiveness. The author suggested that individuals hold implicit models of how certain team processes ‘should’ benefit performance, and that teams in which there are high levels of support between members look like they are ‘good’ teams, and therefore rate themselves as effective. This highlights the importance of using objective measures of performance rather than relying on self-report measures of effectiveness.

**Summary of teamwork elements**

This review has identified several elements of team functioning that are important for teams to be effective. This grouping of teamwork elements is put forward to simplify a broad range of elements while ensuring the breadth of elements discussed in the literature is not lost. The elements are communication, workload sharing, intergroup process, team efficacy and supportiveness. Table 1 shows the groupings and the variables identified in the literature and some of the studies that include each.

Table 1. Teamwork Constructs

<table>
<thead>
<tr>
<th>Teamwork variables identified</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Communication</strong></td>
<td></td>
</tr>
<tr>
<td>Open communication</td>
<td>(Gladstein, 1984) (Newmann &amp; Wehlage, 1996)</td>
</tr>
<tr>
<td>Communication</td>
<td>1996</td>
</tr>
</tbody>
</table>
Chapter 2: Literature Review

<table>
<thead>
<tr>
<th>Compatibility</th>
<th>(Klimoski &amp; Jones, 1995)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decision making</td>
<td>(Tannenbaum et al., 1992)</td>
</tr>
<tr>
<td>Problem solving</td>
<td>(Tannenbaum et al., 1992)</td>
</tr>
<tr>
<td>Conflict/Conflict resolution</td>
<td>(Gladstein, 1984) (Tannenbaum et al., 1992)</td>
</tr>
<tr>
<td>Feedback</td>
<td>(Hackman &amp; Oldham, 1980; McIntyre &amp; Salas, 1995)</td>
</tr>
<tr>
<td>Monitor</td>
<td>(McIntyre &amp; Salas, 1995)</td>
</tr>
<tr>
<td>Coordination</td>
<td>(Campion et al., 1993; Tannenbaum et al., 1992)</td>
</tr>
<tr>
<td>Cooperation</td>
<td>1992</td>
</tr>
<tr>
<td>Discussion of strategy</td>
<td>(Gladstein, 1984)</td>
</tr>
</tbody>
</table>

**Workload sharing**

<table>
<thead>
<tr>
<th>Workload sharing</th>
<th>(Campion et al., 1993)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weighting of individual inputs</td>
<td>(Gladstein, 1984)</td>
</tr>
<tr>
<td>Use of skills</td>
<td>(Klimoski &amp; Jones, 1995)</td>
</tr>
<tr>
<td>Effort level</td>
<td>(Klimoski &amp; Jones, 1995)</td>
</tr>
<tr>
<td>Foster interdependence</td>
<td>(McIntyre &amp; Salas, 1995)</td>
</tr>
<tr>
<td>Back-up behaviour</td>
<td>(McIntyre &amp; Salas, 1995)</td>
</tr>
</tbody>
</table>

**Intergroup processes**
Boundary management (Gladstein, 1984)

Boundary spanning (Tannenbaum et al., 1992)

Work team differentiation (Sundstrom et al., 1990)

Integration -into the larger system (Sundstrom et al., 1990)

Building team capital (McIntyre & Salas, 1995)

**Team Efficacy**

Team efficacy Guzzo (1995)

Self-awareness of team membership (McIntyre & Salas, 1995)

Potency Campion et al. (1993), Hackman, (1990)

Mathiew et al. (2008), Klimoski & Jones (1995)

**Supportiveness**

Supportiveness (Gladstein, 1984)

Social support (Campion et al., 1993)

Compatibility (Klimoski & Jones, 1995)

Emotional tone (Klimoski & Jones, 1995)

Interpersonal processes (Sundstrom et al., 1990)

*Task Work Variables*

The second category of throughput recognised in many models of team effectiveness is the work that the team undertakes – or task work. In identifying what makes a successful team, clearly the work that the team undertakes is an important
aspect to study. No matter how well the team interacts, communicates, or supports each other, their output is dependent on the tasks they carry out. Task work can be defined as the team’s interactions with tasks, tools, machines, and systems (Bowers, Baker, & Morgan, 1997). It can also refer to the work that the team is performing, such as producing goods, serving a customer or playing a game (Mathieu et al., 2008). To understand the effectiveness of a team, it is important to understand aspects of the work that it does; how its tasks are structured and how team members interact with tasks. Models of team functioning identify such terms as task structure (Salas et al., 1992) task organisation, task type (Tannenbaum et al., 1992), or task characteristics (Driskell, Hogan, et al., 1987) which refer to broad characteristics of the tasks performed. The Hackman and Oldham Job Characteristics Model identifies three aspects of the task: task variety, which refers to breaking up monotonous tasks, task significance, which refers to members’ understanding of the importance of the work and task identity, which refers to members seeing a task through to the end product rather than working on a specific component (Hackman & Oldham, 1980). Others differentiate tasks by their design and technology requirements (Sundstrom et al., 1990) or the task complexity (Gladstein, 1984; Tannenbaum et al., 1992).

The idea of a teacher inquiry and knowledge-building cycle that encompasses both student learning and teacher learning needs has been recognised as an essential component of collaborative teams’ work in education settings (Birenbaum, Kimron, Shilton, & Shahaf-Barzilay, 2009; Dufour & Marzano, 2009; S. M. Hord & Sommers, 2008; OECD, 2009; Timperley et al., 2007). Although there is variation in the degree to which teacher learning is explicitly stated in the cycle, there is an expectation that the iterative nature of the cycle facilitates teacher learning and will
ensure teaching programs become more effective over time (Griffin & Robertson, 2014).

It appears that the effective work of collaborative teams in education should focus on facilitating student learning by critically examining evidence of their current skill in order to target teaching (Griffin & Robertson, 2014). This focus should be held concurrently with facilitating teacher learning that is matched to the needs of their students. In effective teams, this work is undertaken in a collaborative way which opens up teachers’ practice to their peers.

**Output Variables**

It is generally agreed that a team’s effectiveness is profitably measured by its production of goods or services and performance is the most widely studied outcome measure in human resource and management literatures (Bommer, Johnson, Rich, Podsakoff, & Mackenzie, 1995; Guzzo & Dickson, 1996). Performance may include the quantity, efficiency, quality and customer satisfaction of tasks that the team performs (Guzzo & Dickson, 1996; Hackman, 1987).

Some have argued for a broader measure of a team’s success. For example, Sundstrom et al. (1990) argue that a team’s outcome should incorporate a measure of team member satisfaction with working with the team to measure viability. For a comprehensive measure of team success, Sundstrom et al. (1990) suggest that mature communication, cohesion, inter-member coordination, problem solving and clear norms and roles should be included – aspects that these authors attributes to team maturity and which reflects team viability. This again speaks to the iterative nature of team functioning, recognising that teams evolve over time and draw on feedback from experience (Sundstrom et al. 1990).
Taking less importance in the literature than the production of goods or services, another common outcome measure includes aspects that contribute to the team’s success in the future and the team’s effect on its members (Campion et al., 1993; Gladstein, 1984; Hackman, 1987; Klimoski & Mohammed, 1994; Salas et al., 1992; Tannenbaum et al., 1992). Guzzo and Dickson (1996) encapsulate the research by defining team effectiveness to include a) group-produced outputs, b) the consequences a group has for its members, and c) the enhancement of a team’s capability to perform effectively in the future. Similarly, Tannenbaum et al. (1996) identify three broad categories of outcome measures: team performance, individual changes and team changes. Team performance is considered broadly to include aspects such as the cost, time and errors involved in producing the team’s output as well as the quality and quantity of production. Individual team member changes include new knowledge, skill and ability, changes in attitude and motivation, and changes in mental models. Mental models refer to the similarity of team members’ mental schemas of team work. Team changes include new norms, new roles, norms, communication patterns and new processes. These latter aspects are thought to reverse the forces of entropy and allow the team to remain vital, to grow and regenerate itself (Tannenbaum, Salas, & Cannon-Bowers, 1996). The three areas suggested by these authors – team performance, individual changes and team changes – although categorised differently, embody the broad areas identified in the research and described by Guzzo and Dickson (1996).

Collaborative teams in education can be considered to have two broad goals. One is to improve teacher practice and the other is to improve student learning. Different researchers place different emphasis on the two aspects. Some see the goal of the team is to enhance teacher enquiry, peer support and professional development
with the teacher being the subject (Hord et al., 1997; Rosenholtz, 1985; Timperley et al., 2007). This focus assumes that student learning will follow improved teacher practice. Others put the goal firmly in improved student outcomes, with teacher learning being a mediating factor towards that end (Dufour, 2004; Griffin et al., 2010). In this latter approach a team’s effectiveness is measured by the learning of the students under their responsibility. However, it is acknowledged that the effect of the team is broader than simply its effect on student learning. The literature identifies effects at various levels. In this study, the measure of team effectiveness is the learning of students under the care of the team.

**What Frameworks Have Been Used to Study Teams?**

The above review has identified a range of variables that have received attention in the literature that examines team functioning. The identification of such characteristics is the first step in studying teams as it identifies ‘what’ to study. Another aspect that it is fruitful to clarify when attempting to understand the way teams work, is the relationship between such elements. This section reviews some of the major industrial/organisational models of team functioning, focusing on the interaction between characteristics. The goal is to identify how the elements that have been identified may be related to each other with a view to developing a model which would fit with the functioning of teams in education.

The seven models discussed here examine the functioning of teams in general and have been developed by Hackman and Oldham (1980), Gladstein (1984), Driskell et al. (1987), Salas et al. (1992), Tannenbaum et al. (1992), Campion, et al. (1993) and Klimoski and Jones (1995). They are reviewed here to provide some understanding of the way team functioning has been conceptualised. They do not provide a comprehensive list of all models put forward in the research but are those
that have received more citations in the literature. The selection is intended to provide a broad sample of different types of models within the industrial and organisational IPO framework.

**Job Characteristics Model**

Hackman and Oldham’s Job Characteristics Model (Hackman & Oldham, 1980) has been influential in team-based research and was one of the first proponents of the input – process – output approach. The model proposes that it is the team’s tasks that influence job satisfaction, motivation and performance. Intervention then according to this model is to be aimed at improving the qualities of the tasks.

This model identifies factors that are purported to lead to improved effectiveness at the input level and which are termed *job characteristics*. These are *skill variety* (extent to which a range of skills is used), *task identity* (seeing task from beginning to end), *task significance* (deemed importance of task), *autonomy*, and *feedback*.

At the input level, the theory assumes that variety in a job and performing different activities stretches an employee’s skills and keeps them motivated to perform at their best. It also proposes that employees will be motivated to perform well if the task *has task identity*. The idea is that they know how their contribution to the task fits into the bigger picture. It suggests that the work will be more motivating when employees work on the task as a whole which may involve performing the many smaller tasks that are required see a job through to completion, taking responsibility for the whole task and knowing what is required of them.

The theory suggests that when employees believe their job has a substantial impact and is meaningful, or has *task significance*, outcomes will be improved. Task
significance refers to a belief that your contribution is valuable, that an employee can identify how their work contributes to something wider and valuable.

The also theory recognises the importance of employee *autonomy* which refers to the freedom or flexibility employees have to complete the tasks in their own way.

*Feedback* is recognised as a motivating factor. It refers to employees receiving information about their performance and knowledge of the outcomes of their work. *Feedback*, whether from another person or the job itself, is thought to improve motivation because information on performance can be used to change the way they work and improve performance.

According to the model, each of these characteristics impacts on the process level in which three elements are identified and termed *critical psychological states*. These are *feelings of meaningfulness*, *experienced responsibility for outcomes*, and *knowledge of the actual results*.

It is proposed that *skill variety*, *task identity* and *task significance* influence *feelings of meaningfulness*. That when the work has meaning it leads to intrinsic motivation rather than performing the task for an extrinsic reward.

It is proposed that *autonomy* influences *feelings of responsibility*. The flexibility afforded by autonomous tasks, according to the model, allows individuals to make changes to the way they perform their tasks and incorporate feedback to make improvements. This leads to feelings of responsibility.

The model proposes that *feedback* influences *knowledge of results of work*. According to Hackman and Oldham (1980), receiving feedback on how well the work is being completed, or where there is room for improvement is important as it
allows people to improve, but also as it gives purpose to their work. Knowing the outcome, and how their work has an impact can help improve motivation.

These three states are thought to influence work outcomes which are *job satisfaction, absenteeism, work motivation*, etc. The definition of team effectiveness, according to this model, is that a) the team’s outputs meet or exceed the organisation’s standards of quality and quantity, b) the members feel satisfied, and c) the team’s processes at least maintain, or exceed, the team’s propensity to work together in the future (Hackman & Oldham, 1980).

The model puts forward mediating variables that influence both the relationships between *job characteristics (input)* and *psychological states (process)* and *psychological states* and *outcomes*. The mediating variables proposed are: *growth need strength, knowledge and skill*, and *context satisfaction*. Growth need strength is defined as the degree to which individuals strive for improvement and personal growth. They desire accomplishment and seek to capitalise on learning opportunities.

*Knowledge and skill* refer to the individual’s competence to perform the job, and those with greater knowledge and skill for the job are more likely to feel positively about their job and thus achieve better outcomes.

*Context satisfaction* refers to the level of satisfaction an employee has around the work context or job context. The context includes external motivators such as bonus, incentives, pay and job conditions.

The theory suggests that the higher an individual is rated on the mediator variables, the higher will be their psychological states regarding the job, which in turn affects outcomes. The theory hypothesises that tasks set up to optimise the five
core dimensions of job characteristics will lead to increased motivation, and thus improved performance for individuals with adequate knowledge and skill.

Hackman and Oldham’s model has been influential, as one of the first to attempt to document the elements that make teams successful, and its influence is seen in many other models. The elements identified relate to the design of the team’s tasks or the design of the work that teams undertake. It suggests that for optimal motivation and performance, team members should work on a variety of tasks, are able to see their tasks through to completion, believe their work is important, have some degree of autonomy and receive feedback on their work. The theory makes provision for individual differences in the influence of intrinsically and extrinsically motivating job characteristics which is noted as employee growth need strength. The theory also posits that employees higher in growth need strength respond more positively to jobs with higher levels of the five core task characteristics. However its moderating effect has been shown to be low (Graen, Scandura, & Graen, 1986). The theory assumes a linear causal relationship from the task characteristics which affect one’s attitude and behaviour, which influence team outcomes. A moderating variable of individual differences in response to the task can influence at each of the steps.

The Job Characteristics Model does not make any reference to the way that team members work together, which is an important part, and indeed often the main focus of many of the later models of team functioning. As such, the Job Characteristics Model is more of a model of work design, explaining the optimum conditions for productivity of individuals, rather than a model of teamwork which considers the effect of the interactions amongst team members.
**Comprehensive Model of Group Effectiveness**

Gladstein sought to integrate prior findings on group performance to create and test a general model of group behaviour in a field setting (Gladstein, 1984). Gladstein based the model on McGrath (1964) which predicts that group process leads to effectiveness. A set of elements of group functioning was empirically determined and it was proposed that a team’s effectiveness is not solely due to the actions that they carry out, rather it is differentially affected by experience and the organisational context. Gladstein’s comprehensive model of group effectiveness identifies the input variables of group composition, group structure, resources available and organisational structure to have both a direct effect on the group’s effectiveness, as well as an effect which is mediated by the group’s processes.

Within the category of group composition, Gladstein (1984) identifies adequate skill of team members, heterogeneity which allows for a mix of skills within the team, organisational tenure and job tenure. Gladstein identifies the aspects of the group structure such as role and goal clarity – team members knowing what they are required to do and what their contribution is. Another aspect of group structure is the work norms that have been established, task control, the size of the group, and the leadership structure within the group. Resources available to the team such are also recognised as training and technical consultation. Organisational variables are also identified at the input level which include reward structures and supervisory control.

The theory proposes that variables to do with the task, such as the complexity, the uncertainty of the environment, and the level of interdependence that the task requires mediate the relationship between group processes and group effectiveness. For example, Gladstein notes that flexible communication is related to effectiveness.
only when the task is uncertain, and discussion of alternate strategies is helpful with complex tasks but not when tasks are simple (Gladstein, 1984).

At the process level, the model identifies open communication, supportiveness, conflict resolution, discussion of strategy, weighting of individual inputs and boundary management.

The output variables in the model of group effectiveness is performance and satisfaction. The sample which formed the basis of Gladstein’s study was a group of sales teams receiving no information about their actual sales. The outcome measures were self-reported effectiveness and satisfaction as well as actual sales. Results showed the elements that led to self-reported effectiveness were open communication, supportiveness, active leadership, training, and experience in the organisation, however, these elements had a small or negative relationship with actual sales revenue. Sales were affected by market growth, experience and other unidentified variables. Satisfaction and self-reported effectiveness were highly related, but they were not related to actual performance. This highlights the importance of an objective outcome measure, rather than relying on self-report indications of effectiveness. Gladstein’s (1984) work contributes to our understanding of how the elements may be related to each other as it identifies elements at the individual, team, and organisational level. The model posits that input variables influence the output both directly and indirectly via group processes.

Considering the variables identified for this study, and drawing on Gladstein’s model, the organisational variable school support would be considered an input variable, and influence the teamwork as well as the output directly. Gladstein considers the teamwork variables to be related to each other, and to have a direct
effect on the outcome variable. The model does not consider the work that the team is doing (1984).

*Group Performance Model*

Driskell, Salas, and Hogan (Driskell, Salas, & Hogan, 1987) developed a model for forming effective naval teams. They described it as a ‘meta-theoretical model’ which drew on a range of models in the literature. It conceptualised input factors as a team’s potential productivity (Driskell et al., 1987). Similar to Gladstein’s comprehensive model of group effectiveness, Driskell et al. included individual, group and environmental level factors at the input level.

The individual input factors include member skills, knowledge, status and personality of the individual group members. The group level factors at the input level include group structure, group norms and group size. The environmental factors at the input level include task characteristics, reward structure and level of environmental stress. Driskell et al. (1987) assert that the team’s input factors represent their potential productivity and the difference between potential and actual productivity is a function of group process which act as a mediator. The difference between potential and actual productivity is facilitated through group processes. According to the model, group process factors include communication structures, coalition formation and the way that group members go about their tasks. Factors that may cause process loss include social loafing, and the degree of congruence between the structure of the group and an individual’s personality.

Of note in the model (Driskell, et al., 1987) is the recognition of the effect of input factors, the interaction between input factors and processes, and the interaction of the process factors themselves. The model proposes that this interaction may lead to either process gains or losses.
The model emphasises the importance of the personality of team members which acts as both input variables and in interaction with process variables and affect most of the elements described. Personality traits, according to the theory, can be evaluated via their effect on three mediating variables; the effort group members exert on a task, the knowledge and skills group members apply to the task, and the task performance strategies that are used to complete the task (Driskell et al., 1987). According to the theory, personality plays a key role in these three elements. For example, the effort team members bring to a task is related to personality and the type of task. Effort may be differentially applied dependent on the interest or engagement of an individual to a particular task. The knowledge and skill that an individual brings to a task is also influenced by personality. Although it is strongly influenced by the skill or knowledge that an individual possesses, it is also influenced by how much an individual chooses to bring to bear on the task. The task performance strategies, according to the model are also influenced by personality in so far as a ‘high intellectance’ person (someone who shows a high level of curiosity, open mindedness, and an appreciation for adventure and new experiences) may be more familiar with appropriate and successful strategies and better able to apply them when needed (Driskell, et al. 1987). The outcome is termed group performance which is dependent on the task of the team.

The Group Performance Model makes several key contributions to the field. It notes the interaction between input and output variables, and the influence of personality at on many aspects of team work. It also is unique in that it recognises that teamwork does not necessarily improve output but could lead to a process loss. Although the model does not extrapolate on the processes occurring within the group, these aspects have been addressed by other models.
**Group Effectiveness Model**

The Group Effectiveness Model from Salas et al. (1992) is another IPO framework which follows from the work of Hackman (1980). At the input level the model identifies an organisational context which reinforces and supports competent task work via a reward system, education system and information system. Also at the input level in this model is the team design which refers to a design which facilitates competent group work on the task via the structure of the task, team norms about performance process, composition of the team. The theory also recognises team synergy which refers to the interaction of the team in ways which either reduce process losses or create synergetic process gains.

At the process level, or process criteria of effectiveness according to this model (Salas et al., 1992) the model identifies the level of effort brought to bear on the team task, amount of knowledge and skill applied to the task work and appropriateness of task performance strategies used by the team. It also recognises material resources which includes the sufficiency of material resources required to complete the task an appropriately and timely manner. The output level of this model is termed group effectiveness and includes task outcomes that are acceptable to those who review it (performance), the ability of the group to continue to work together (sustainability) and that members are satisfied with their collaborative working environment (Salas et al., 1992).

**Model of Team Effectiveness**

The Model of Team Effectiveness was put forward by Tannenbaum, Beard and Salas (1992) and follows from the Group Effectiveness Model (Salas et al., 1992). It is based on four assumptions:
• Teams should only be used where required (that is where interdependencies exist)

• Management shows they support the team

• Team’s resources are being met

• Team’s needs are appropriately diagnosed (for tailored intervention)

The model builds on previous models, incorporating (Driskell, Hogan & Salas, 1987) and mental models which refer to the similarity of team members’ mental schemas of team work (Klimoski & Mohammed, 1994). In this model organisational and situational characteristics are depicted as influencing all stages of input, throughput and output. It represents how the work of teams is influenced at all stages by contextual variables such as the organisational climate, intergroup relations, levels of stress, competition and environmental uncertainty and resource scarcity (Tannenbaum et al. 1992).

The input level factors are broken down to four categories in the Tannenbaum et al. (1992) model. They cover task characteristics, work structure, individual characteristics and team characteristics. Task characteristics include task organisation, task type and task complexity. Work structure includes work assignment, team norms and communications structure. Individual characteristics include task knowledge skills and attitudes, general abilities, motivation, attitudes, personality and mental models (as mentioned above). Team characteristics include power distribution, member homogeneity, team resources and team cohesiveness or team climate (Tannenbaum et al. 1992).

The throughput level is termed team processes and includes coordination, communication, conflict resolution, decision making, problem solving and boundary
The model recognises the role of team interventions on team processes spanning. The model recognises the role of team interventions on team processes which includes individual training, team training and team building. Such team interventions not only, according to the model, act to influence the throughput level, but also feedback to influence at the input level (Tannenbaum et al. 1992).

The output level factors identified by the model are described at three levels, team changes, team performance and individual changes. The model recognises that output measure of team functioning is changes to the team by way of new team norms, new roles, new communication patterns and new processes. In the area of team performance, the model differentiates between the quality, quantity, time, errors and costs of the work that the team undertakes. It also identifies individual changes which include task knowledge, skills and abilities, attitudes, motivation and mental models. It also notes a feedback loop which acknowledges that output from the team processes can become inputs as the team continues to function together. For example, team changes and changes in the individual go on to affect inputs at later stages.

The key contributions of the Model of Team Effectiveness (Tannenbaum et al. 1992) include the emphasis on the context of the team on all aspects of team functioning. The model also makes a significant contribution by describing the comprehensive output which is measured by not just the team’s performance, but also by changes to the individual and changes to the team. It shows how the output influences future inputs – adding a dynamic aspect to the operation of teams. This model is also very comprehensive in that it distinguishes between teamwork and task work at both individual and team levels. Another key contribution of this model is that it specifies aspects of intervention. It notes that input variables may directly affect the output or be mediated by group processes as in Gladstein, (1984).
Themes and Characteristics Related to Work Group Effectiveness

Campion, Medsker and Higgs (Campion et al., 1993) reviewed the literature on effective work teams to develop a model of group effectiveness. The resulting model took a work design perspective – considering aspects of the task that could change for improved outcomes. The model draws heavily on the work of Hackman and Oldham (1980), Guzzo and Shea (1992) and Gladstein (1984). Five themes were derived previous the models of Gladstein (1984); Hackman (1987); Guzzo and Shea (1992); and Tannenbaum et al. (1992) among others. The five themes were: job design, interdependence, composition, context and process. The first four themes relate to inputs to the functioning of the team. The fifth theme, process, describes the things that go on in the team and follows the input-process-output model as proposed by McGrath (1964).

The job design theme is most closely aligned with the work of Hackman (1987) and incorporates input from other models mentioned above. It is made up of characteristics derived from the work done in motivational job design, although Campion et al. (1993) applied the characteristics at the group level rather than the individual level. One characteristic in the area of job design is self-management, which is considered at the group level and analogous to the same construct at the individual level. Team self-management, according to Campion et al. (1993), is thought to enhance effectiveness by increasing the sense of ownership and responsibility of team members and putting the decision making as near as possible to the needs of the team. Related to this is the characteristic of participation. Participation refers to the extent to which team members are allowed to participate in decision making. Other characteristics in the job design theme include task variety,
task identity and task significance as identified by Hackman (1987) and described above.

The second of the five themes identified by Campion et al. (1993) is *interdependence*. It includes the characteristics of task interdependence which is described as the need for group members to depend on each other to accomplish the work. Another characteristic is goal interdependence, or that the team has a clearly defined mission or purpose which is shared by members. The final characteristic identified in the theme of interdependence is interdependent feedback and rewards, which follows from Guzzo and Shea’s (1992) *outcome interdependence*. The idea is that individual feedback and rewards should be focused on the group’s performance to motivate and improve group behaviour.

The third theme identified in the Campion et al. (1993) model is group *composition*. Drawing on other models, Campion et al. (1993) identified the heterogeneity of group members as it allows diverse competencies to be drawn on and skills to be shared amongst members thus improving team performance. In the theme of composition, Campion et al. (1993) also notes *flexibility* in terms of the assignment of tasks, the relative size of the group – suggesting that the group should be the smallest possible to achieve the task. Another characteristic in the area of composition is the individual’s *preference for group work*. Group members who prefer to work with a group are likely to be more satisfied and effective according to the theory.

The fourth theme identified by Campion et al. (1993) is the organisational *context*. The characteristics include adequate *training, managerial support*, and *communication and co-operation between groups*. Communication and co-operation between groups is included as a contextual variable in this model because it was
thought to be the responsibility of management. It refers to the differentiation of group boundaries, and integration of the group with the rest of the organisation.

The fifth theme in the Campion et al. (1993) model is that of process. It identifies a number of characteristics at the throughput level. The characteristic of potency or the group’s belief that it is effective. It is thought to be the team level equivalent of self-efficacy (Bandura, 1977). Another characteristic identified in this model is social support which refers to members helping each other and may enhance effectiveness especially on mundane tasks (Campion et al. 1993). Workload sharing is another process characteristic which is the opposite of social loafing or free-riding (Campion et al. 1993). Campion et al. note that workload sharing is enhanced when members can distinguish their individual performance from the group’s. Communication and co-operation with the work group is the final process characteristic.

The effectiveness criteria identified were productivity, employee satisfaction and manager judgement. This model aligns with previous models in that it recognises job design, team member interdependence, team composition, the context and team process. It does not put forward any interaction between the variables.

**Model of Team Effectiveness**

Klimoski and Jones (1995) took a simple input/process/output approach which is modified to include the influence of environmental demands and resources at all stages to develop the Model of Team Effectiveness.

At the input level, Klimoski and Jones (1995) include the organisation of the team, team norms, team composition, leadership and team size. At the process level, the model identifies the use of skills, strategies, effort level and co-ordination, potency and compatibility. Output variables include task accomplishment, which is
thought to be separate from the quality of the work produced, member satisfaction and team sustainability (turnover) (Klimoski & Jones, 1995).

Klimoski and Jones (1995) propose that team effectiveness does not emerge from individual effort but from the interaction between members, and they place a major focus on team tasks. The premise is that each team member performing at their best will not equate to team effectiveness if no group strategy exists. Instead, the interpersonal dynamics of the team, the level of hostility or distrust in the team, and levels of compatibility between team members, are all factors that can shape the effectiveness of a team (Klimoski & Jones, 1995). Advantages of the model include that it notes contextual influence at all stages and distinguishes between task-based and team-based outputs.

**Summary of Frameworks Used to Study Teams in General**

The models of team functioning reviewed here generally take an input-process-output (or input-throughput-output) approach. Most recognise the importance of situational factors such as organisational support that influence all aspects of team functioning, including the output directly. This three-stage design suggests causal relationships – that the inputs that the team receives influence the way they go about their work (throughput) and this, in turn, influences the output.

This review of the way that variables of team functioning are considered to be related to each other provides a basis for a hypothetical model of PLT functioning. The next step was to review research into teams in education to consider 1) what are the key characteristic of these teams and 2) what frameworks have been applied to study teams in education. This information will inform the detail of the development of a model of team functioning that fits with teams in education. The variables that have been identified in this chapter as key characteristics of team functioning are
applicable to a broad range of teams, coming from research into quite diverse teams. It is necessary to understand how they may be manifest in teams within an education setting. The following section will shed light on this by drawing on expert writing and research into collaborative teams in education.

**Teams in Education**

It has been established that teams in education align with the definition of teams used in this study, which is:

Individuals who see themselves and who are seen by others as a social entity, who are interdependent because of the tasks they perform as members of a group, who are embedded in one or more larger social systems (e.g. community, organization), and who perform tasks that affect others (such as customers or co-workers) (Guzzo & Dickson, 1996) p. 308.

Considering this definition, the research presented above is applicable to such teams. Collaborative teams in education appear to fit in the first category of Cohen and Bailey’s *work team* or Sundstrom’s *production and service team* (Cohen & Bailey, 1997; Sundstrom et al., 1990). However, when looking at research of teams in education, which is presented in this section, it is clear that they have been conceptualised differently. Some have criticised the application learnings of teams from general team research to teams in education. O’Neill argues that teams in education are different, and theories from general team research do not take into account the complexity of the educational setting (O’Neill, 2003). O’Neill suggests that the role of teachers is always autonomous and their work in the classroom unique, so although teams in education can play a role in teacher related activities such as curriculum design, assessment and evaluation, the actual teaching work is completed independently (O’Neill, 2003). This view is somewhat reflected in
writings of teams in education which is presented next. Much of the work describes successful schools and their approach to collaboration, and some empirical work has also been conducted to examine team effectiveness. As was presented in the previous section, first the key characteristics of teams in education is presented, and this is followed by a description of frameworks that have been used to understand teams in education.

**What are the Key Characteristics of Teams in Education?**

It has been over twenty years since Newmann and Wehlage published their extensive study which examined the characteristics of successful teams in education (Newmann & Wehlage, 1996). Through that work, five characteristics of successful teams were identified, namely; that teachers develop shared values and norms, the team’s focus is on student learning, the team members have reflective dialogue, their practice is de-privatised, and there is a clear focus on collaboration. Almost a decade later, Bolam and colleagues undertook a large scale project also aimed at identifying the key characteristics of successful teams (Bolam et al., 2005). That work confirmed Newmann and Wehlage’s five characteristics and added three more – that the team works on individual and collective professional learning, they have inclusive membership (membership that extends beyond the classroom teachers involved) and mutual trust, respect and support. In this section, specific characteristics of successful teams that have been identified in the education literature are explored. The eight characteristics that were identified by Newmann and Wehlage (1996) and Bolam et al. (2005) are used to organise the information. Each of these characteristics is described here along with any research studies which sought to examine the characteristic in teams in education. The goal of this section is to gain a better understanding of the way that teams in education work to inform the development of
a theoretical framework of team functioning, and more specifically to determine how the aspects identified for this study may be measured.

**Shared Values and Vision**

In line with Newmann and Wehlage (1996), Bolam et al. (2005) identified shared values and vision as an essential characteristic of a collaborative team. The values refer to teachers’ views about children and their ability to learn, school priorities for the allocation of resources and the roles of school personnel (Newmann & Wehlage, 1996). These authors reported that student learning is enhanced when teachers hold high expectations that all students can learn. They note that teachers’ efficacy is further enhanced when such values become norms for the whole school community and teachers can rely on their colleagues to reinforce the message. This idea of shared values and vision is also put forward by Hord, Roussin and Sommers note that a vision which guides all behaviours be focused on student learning (Hord, Roussin, & Sommers, 1997). This becomes the goal not only for individuals but for the organisation as a whole and leads to binding norms of behaviour supported by staff (Hord, et al., 1997). As the staff in the school develop a stronger professional community, they become more similar and put forward a:

shared stance that links mutual values and beliefs into a communal attitude

and posture (Strahan, 2003, p. 131).

The assumption is that shared values and improved instructional practice lead to improvement in student learning, and this success builds further momentum and commitment from staff (Strahan, 2003).

It is through working together that teachers become more similar in their approach to their work. Newmann and Wehlage (1996) also emphasise the importance of collaborative work in establishing goals and norms and ensuring that
they are shared, and that it is through collaborative work that teachers develop a set of norms about children, learning and teaching. The process which is proposed is that when these shared values and norms are clear and positive, teachers can be more effective (Newmann & Wehlage, 1996). Clearly, the collaboration must lead to the development of effective norms in these areas, and this highlights a risk in collaborative work. As has been illustrated through psychological research into group norms, as groups form and become cohesive, they tend to form very similar attitudes and approaches (Sherif et al., 1961). It is therefore imperative that the norms that develop in PLTs are those that lead to improvement in student learning.

A positive shared value for a primary school may be a focus on the whole child – to nurture development and self-esteem, however secondary schools are more likely to hold values around academic achievement and good examination results (Bolam et al., 2005). Working collaboratively with such positive shared values leads to common approach whereby teachers support each other to overcome obstacles students may face outside school (Newmann & Wehlage, 1996). Teachers know that the students will get the same message from all within the school and that their work will be backed up by others. When all teachers in the school work together, delivering a consistent message to the school community, then student learning is enhanced (Darling-Hammond, Chung Wei, Andree, & Orphanos, 2009). The same idea is reiterated by Peterson and Deal, who note that “teachers and students are more likely to succeed in a culture that fosters hard work, commitment to valued ends, an attention to problem solving and a focus on learning for all students” (Peterson & Deal, 2011). Strahan also writes about the importance of a culture that is shaped by the normative beliefs and fuelled by individual and collective success. As
more social support is provided for learning, the culture becomes even more collaborative and teacher self-efficacy is further enhanced (Strahan, 2003).

Rosenholtz (1989) asserts that the core factor in the failure, mediocrity or success of a school lies within the school’s organisational goals, just as it does in any successful organisation. Agreed-upon goals provide a framework to guide the planning, motivating, justifying and evaluating of behaviour and shared ethical decision making (Bolam et al., 2005; Rosenholtz, 1989). It is the focus on all students' learning that galvanises teachers’ efforts so that the whole staff reinforce objectives and students receive the same message wherever they turn. Lack of clear and shared goals and norms leads to teachers working more autonomously and reduces their ability to rely on colleagues to reinforce objectives (Newmann & Wehlage, 1996). Isolated settings lead to teachers developing norms of self-reliance and independence, leading to less requests and offers of assistance – and in such settings unsolicited offers of help are in violation of the norms of self-reliance and typically are ill-received (Rosenholtz, 1989).

**Collective responsibility for student learning**

Effective teams in Bolam et al.’s study reported having a shared ethos towards the responsibility of all students and whole staff discussions about the progress of individual students (Bolam et al., 2005). Shared responsibility is part of what Sleegers (2013) refers to as *interpersonal capacity*. This notion is reiterated by Griffin and Robertson who shift the responsibility for a class from its teacher to the team in which that teacher works (Griffin & Robertson, 2014). The mantra ‘our students’ rather than ‘my class’ epitomises this change in responsibility (Griffin & Robertson, 2014). It reduces individual autonomy and provides an opportunity for teachers to integrate other points of view regarding students, their learning, or
teaching aspects (Bolam et al., 2005). It also reinforces the notion that the staff is a collective group, with shared objectives (Bolam et al., 2005).

With this approach, practice becomes less autonomous and more collaborative – what some have referred to as deprivatisation of practice (Newmann & Wehlage, 1996). This idea is also noted by Hord (1997) and referred to as shared personal practice. Linked with reflective dialogue as discussed above, in effective schools, autonomy is reduced and teachers improve their teaching by openly discussing their uncertainties about practice. Peers become a source of feedback and insight that can lead to reflective teachers re-assessing their practice and drawing on the expertise of their peers (Bolam et al., 2005). Bolam and colleagues refer to effective teams as being open to learning from individuals and other organisations outside its boundaries and proactively drawing on external links to seek out ways to improve their practice (Bolam et al., 2005). This is similar to what Newmann and Wehlage refer to as deprivatisation of practice – frank open discussions about teachers and their practice (Newmann & Wehlage, 1996), and what Berry et al. (2005) refer to as a culture of confidence and trust for teachers to share their difficulties and open up their practice to peer evaluation and share expertise. Such reflection is difficult or perhaps impossible to achieve independently as the insight and feedback that peers provide allows teachers to find new ways of working with the complex issues of the profession (Newmann & Wehlage, 1996). Hord et al. suggests that the practice is not evaluative, but supportive and is enabled by mutual respect and trustworthiness (Hord et al., 1997).

**Reflective Professional Enquiry**

As a group activity, reflective professional enquiry may include reviewing student data, discussing educational issues, examining practice, observing teaching
and planning and curriculum development (Bolam et al., 2005). Such group discussions can lead to continuing and extensive conversations which can be used to evaluate teachers themselves as well as their schools (Dunne et al., 2000; Newmann & Wehlage, 1996; Sleegers et al., 2013). Sometimes termed *enquiry*, deep questioning conversations about students, teaching and learning has the effect of bringing teachers of different specialisations together, debating what’s important and creating ties that unite them as a group with a set of shared ideas (Chin & Osborne, 2008).

Reflective professional enquiry refers to the critical evaluation of one’s practice and can intensify teachers’ awareness of their practice and its consequences (Newmann & Wehlage, 1996). Timperley and colleagues note that reflection is far more than simply enquiring about one’s practice but requires a systematic evaluation involving enquiring and improving practice. They break reflection to six dimensions: reflection about learning, self- or peer-assessment, reflection about the level of student engagement, reflection about sense of partnership, professional reflection, and students being taught to be routinely reflective (Timperley et al., 2007). Newmann and Wehlage reported that in effective schools, teachers as a group reflect on their practice, evaluating themselves and their school (Newmann & Wehlage, 1996). The practice intensifies teachers’ awareness of their practice and its consequences and can lead to improvement of practice (Newmann, 1991). As collaborative teams become more mature, they tend to become more reflective and critical of their work which can lead to changes in their practice (Hollins et al., 2004). Hord (1997) notes that reflective dialogue leads to collective creativity allowing teachers to apply new ideas and information to problem solving, which can also lead to enhanced self-efficacy as discussed above.
One study applied Mezirow’s Transformational Learning Theory to provide a framework to understand the learning of teachers in a collaborative team (Mezirow, 1991). The author argues that the collaborative nature of the teams creates the essential environment for transformational learning to occur. Transformational learning has been described as the processes of making meaning of one’s experiences and that it is only through the critical reflection and dialogue with those who can challenge one’s beliefs that adults’ assumptions be changed (Mezirow, 1991). Thus, the act of reflective enquiry is at the heart of a collaborative team and serves as the impetus of the team’s shared values and vision. Reflective enquiry may be an essential component for team effectiveness. It seems that when reflective dialogue is not occurring, the teachers’ practice does not change, and therefore no change is seen in student learning outcomes (Supovitz, 2002).

**Collaboration Focused on Learning**

Within the PLT literature, collaboration tends to focus on the professional development of teachers in the team as well as referring to team members taking collective responsibility for the learning of all students in the school – beyond the students in their own class. It is based on the assumption that such an approach contributes to peer accountability and social pressure, sustains commitment and eases isolation (Bolam et al., 2005; Griffin et al., 2010; Newmann & Wehlage, 1996).

Collaboration that is focused on learning is a characteristic reported to underpin all of the other identified characteristics and one which defines the culture of a school succeeding in a collaborative approach (Strahan, 2003). It encompasses the sharing of expertise which allows teachers to learn from peers and work together to improve their practice (Dufour, 2004; Hord, 1997; Newmann & Wehlage, 1996). Collaboration concerns more than mere exchanges of help or support and refers to
working interdependently towards the group’s goals (Bolam et al., 2005). Collaboration provides different perspectives and pools resources so that a larger stock of knowledge is available (Rosenholtz, 1989). In their synthesis of teacher professional learning and development, Timperley and colleagues found that in successful schools, norms of individualism and autonomy were replaced with norms of collaboration and collective responsibility. At the same time increased shared responsibility can be seen to undermine teacher autonomy, a hallmark of professionalism (Timperley et al., 2007). Timperley and colleagues note that accountability is important, and that a balance between autonomy and collective responsibility is required (Timperley et al., 2007).

The culture in the team needs to be one in which the goals are both shared and held strongly to allow teachers to reflect on their practice and collaborate in a non-threatening environment (Rosenholtz, 1989). In such a team, where a shared vision for improved student learning is held, the culture would allow teachers to work together and ask for help if needed without feeling embarrassed or inadequate (Rosenholtz, 1989). Rosenholtz (1989) notes that in schools without strongly held and shared goals, conversations tended to focus on aspects such as student misbehaviour or poor work conditions, exemplifying norms of independence as discussed above.

Dufour suggests that in some schools which attempt to establish a collaborative environment, the essential aspect of systematically analysing practice to improve it may be missed (Dufour, 2004). Schools may mistake collaboration for congeniality, they may jointly work on operational procedures other aspects such as technology or social climate – all missing the essential aspect which is collaboration around what is going on in the classroom regarding student learning (Dufour, 2004).
Collaboration which focuses on learning ensures that all staff are working towards improving student achievement (Dufour, 2004). As PLTs establish collaborative work based on a shared vision, goals change from perhaps implementing a specific teaching method, or using a new resource, to those focused on learning, e.g. increasing the proportion of students in the upper literacy bands (Dufour, 2004). Griffin et al stress that the language must shift from the teacher, resource or curriculum being the subject of discussion to the student being the subject of discussion (Griffin et al., 2010). Dufour also notes that student data should be critically and brutally examined without reference to the limitations from factors outside the classroom, or on the basis of how busy they are, or what initiatives they have implemented (Dufour, 2004).

Newmann and Wehlage reported that successful schools focus on what can be done to improve students’ opportunity to learn and enhance achievement (Newmann & Wehlage, 1996). With this view, the overarching goal of education becomes the intellectual development of students. This notion is reiterated by Dufour who notes that successful communities ensure that all students learn and the teams focus on results (Dufour, 2004).

**Individual and Collective Professional Learning**

Bolam et al. identify that, traditionally, professional learning in schools has often been an individual experience either through intended learning opportunities or less conscious incidental learning. However, for teachers working in a team, learning is more frequently collective – either through the sharing of learning by an individual or through a shared learning experience (Bolam et al., 2005). Sigurðardóttir found that in successful teams, there was a clear focus on the interdependency in the teachers’ work. In these teams, members would not complete
their work without collaboration (Sigurðardóttir, 2010). Several authors have noted the importance of the collaborative environment for teacher professional learning. For example, Riveros and colleagues argue that the learning of teachers in a collaborative team is better viewed as situated in the collaborative environment rather than in the individual cognitions of the teachers involved. With this epistemological framework, the collaboration of the teachers within the team takes a place of primary importance to explain the learning and agency that such method of working can lead to (Riveros et al., 2012).

Several authors have put forward explanations for the way that learning occurs in a collaborative environment. Dunne, Nave and Lewis focused on the collaborative nature of the teams involved in the Critical Friends Groups (CFGs) in their study. They proposed that in an established collaborative environment, teachers learn to work collaboratively through the learning activities of reflecting both their own teaching (through peer observations or feedback) and their students’ learning. This ongoing process of teacher reflection, action and feedback leads to teachers making changes to their teaching practice that are aimed at improving student learning – which leads to improvement in student achievement (Dunne et al., 2000).

Social Learning Theory (Bandura, 1977) has also been applied to explain the learning of teachers in a collaborative environment. Such work has focused on the importance of teacher self-efficacy which is the teachers’ belief about their capacity. Increased self-efficacy can lead to greater persistence when faced with problems in the classroom, enhanced willingness to attempt new or innovative strategies and the use of more effective classroom management strategies (Bruce & Flynn, 2013). It is these aspects that contribute to improved student outcomes (Bruce & Flynn, 2013).
It is also possible that learning is enhanced through the collective nature of the learning by way of social facilitation. Social facilitation suggests that performance is enhanced in the presence of others (Allport, 1924). People tend to try harder and produce better results when working with others under supportive conditions and it is possible that the supportive relationships of the team provides such an environment.

Another factor is the reflective dialogue present in effective teams can promote deep team learning as adult learning is facilitated through feedback with others. (Dufour, 2004; Supovitz, 2002). Darling-Hammond and colleagues report that for professional development to be effective it needs to be intensive, ongoing, in-line with school goals and contribute to strong working relationships among teachers (Darling-Hammond et al., 2009).

**Inclusive Membership**

Bolam and colleagues discuss the extent to which the team extends beyond teachers and school leaders (and includes, for example learning support staff, administration staff with the school, or members from outside the school), and the extent to which the team is school-wide or comprised of subgroups such as year level teachers or departments (Bolam et al., 2005). They note that successful PLTs have a very inclusive membership and teams are able to draw on a wider knowledge base. A broad membership benefits the team by bringing diverse ideas and approaches and the members make a contribution in providing challenge to existing ways of working (Bolam et al., 2005).

**Mutual Trust, Respect and Support**

It is clear from the way that effective teams operate that an environment with high levels of trust, respect and support is needed. Bolam and colleagues (2005) found that staff members in effective teams do not necessarily like each other but
maintain high levels of trust and respect. This enables staff members to open up their practice, expose their shortcomings and ask for help with the knowledge they will be supported, and their colleagues will act professionally. This is reiterated by Hord (1997), who notes the importance of a willingness to accept feedback and to work towards improvement. As well as trust and respect, Hord draws attention to the cognitive ability and skills necessary to enable effective teaching and learning, as well as supportive and shared leadership (Hord, 1997).

Openness, Networks and Partnerships

Bolam and colleagues have also identified that successful teams looked beyond the school to forge links or partnerships which provided external support to promote, sustain and extend the PLT and to provide a further input to the team and further challenge the prevailing point of view (Bolam et al., 2005).

Other elements

To understand the effectiveness of teams in education, it is important to consider factors that may influence the establishment and maintenance of a team. The context of the school is important to consider as it affects the learning of both students and teachers – the two main goals of teams in education (Bolam et al., 2005; Rosenholtz, 1989). Hord (1997) notes the importance of the role of the school leadership team in establishing and maintaining a team. The environment that is needed for such communities to flourish is one where the commonly held authority status of the principal is lessened and there is greater equality among all professionals in the school – a culture they are all learning, questioning, investigating and seeking solutions for school improvement (Kleine-Kracht, 1993). The idea of sharing authority is reiterated by others such as Prestine, who identifies the role of the principal as less authoritative and more facilitative (Prestine, 1993). Timperley et
al. (2007) reiterate the need for school communities to have a broadly distributed leadership system, but note that greater demands on leadership are needed and thus suggest distributing the leadership to share the increased workload. These authors place responsibility on the leaders not only to provide appropriate professional development opportunities but also to hold teachers accountable for integrating what they have learnt into their classroom practice. In her review of effective schools, Rosenholtz showed that teachers who have greater involvement in technical decision making (e.g. selecting instructional material, determining instructional methods, determining instructional policies) are more committed and feel greater ownership of the school’s instructional goals. Such a situation allows teachers to adapt to their specific students’ needs and thus be more effective (Rosenholtz, 1985).

**Summary**

There is consensus in the literature that when teachers take a collaborative approach to teaching, and establish a supportive environment which focuses on a clear goal of improved student learning, then both teachers and students will benefit (Dufour, 2004). This review has discussed the key characteristics of effective teams, namely; shared values and vision; collective responsibility for students’ learning; collaboration focused on learning; individual and collective professional learning; reflective professional enquiry; openness, networks and partnerships; inclusive membership; and mutual trust, respect and support. These characteristics do not operate in isolation, with many of the characteristics identified being dependent on the others and also dependent on aspects superordinate to the team such as the support of school leadership. With this understanding of effective teams in education in mind, the next step is to look to any frameworks that have been used to study teams in education.
What frameworks have been used to study teams in an educational setting?

To support the development of a model of team functioning, it is essential to understand how teams in the educational sector have been studied, whether frameworks have been used to guide that study, and the utility of various approaches. The term *education team* or PLT is used here to describe a group of people working in education who collaboratively reflect on their teaching practice in a learning-oriented and growth promoting way and articulate their outcomes in terms of data that shows changed teaching practice and improved student learning. The goal of this collaborative work is to enhance their effectiveness as professionals so that students benefit (Bolam et al., 2005; Dufour, 2004; Hord, 1997). It is acknowledged that many different terms are used in the literature to describe such a practice. In undertaking this literature review, the search terms used were PLC, PLT, teacher community, teachers and learning communities, critical friends groups, communities of practice, and communities of practice with qualifiers that included: and teachers, and schools, and student achievement. This reflects search terms used in other reviews such as (Vescio et al., 2008) who undertook an extensive review of the literature of education teams. Research which examined teams of educators in education that fit the description above and quantitatively measured the effectiveness of the team were included in the review. Works that have been published between 1990 and 2015 are included in this review. The search yielded 21 studies that fit the criteria described above. These studies were reviewed to identify whether any theoretical frameworks have been used to understand team functioning and the variables under investigation. These studies are categorised into four broad groups: those which study effective teams and apply a qualitative approach to identifying their characteristics, those which measure a set of factors that have been identified in
literature as essential characteristics of team work, those which measure the aspect of collaboration in the team and how that leads to teacher learning, and those which apply a framework of organisational functioning to teams in education.

The first group can be thought of as those studies that seek to identify characteristics that are thought to epitomise successful teams. The aim of this part of the literature review is to determine what it is that successful teams are doing. It is written to provide guidance to schools wishing to establish the approach or improve the way they are doing things. This research tends to describe schools that are already identified as being ‘successful’ without seeking to develop a framework or theory of team functioning.

The next group comprises those studies which draw on the characteristics previously identified to develop and test a framework or theory for how those characteristics may be related to each other or to student learning outcomes. These studies all take a different approach and create a range of theoretical frameworks through which the functioning of PLTs may be considered.

The third group of studies apply an existing theory of learning to explain the learning of teachers that occurs through collaboration within the team. The fourth group (two studies) apply an organisational theory to team functioning. Richmond and Manokore (2011) applied a leadership model put forward by Spillane, Halverson and Diamond (2001). Crow and Pounder (2000) applied the model of self-managing work groups put forward by Hackman and Oldham (1980). As mentioned earlier in this literature review, the Hackman and Oldham model, although a very influential model in the organisational literature, takes a very different approach to considering a team than is seen in the literature on education teams. The differences between the Hackman and Oldham model and Gladstein’s General Model of Group Behaviour
have been outlined above, with the latter appearing to be a much better fit with the way teams in education have been described in regards to the kinds of characteristics and processes.

Research examined as part of this review has used terms such as professional learning community (PLC), professional learning team (PLT) or critical friends group (CFG) to discuss groups of educators who are working in collaborative teams.

**Studies of successful teams that identify team characteristics**

One way that collaborative teams in education have been studied has been to examine the practices of teachers working in teams, and especially the discourse in team meetings and the culture in the school. This qualitative work describes the culture that emerges when a collaborative team-based approach is implemented. The culture that such studies portray is one that is collaborative, trusting, and committed to improving student learning. As described above Newmann and Wehlage (1996) and Bolam et al. (1995) have been influential in influencing other studies through their qualitative identification of the characteristics of effective PLTs.

Other studies have examined and sought to measure the culture in schools in which collaborative teams are operating. Hollins, et al. (2004) wanted to understand the professional development approaches for teachers that lead to improved academic performance of urban students. An intervention was implemented in schools to establish teams of teachers in a collaborative professional development model that fits the criteria of a team for this study. The goal was to enhance teachers’ ability to improve the literacy of African American children through a structured dialogue problem-solving approach. There were five steps in this intervention program where teachers working collaboratively on: 1) delineating challenges, 2) identifying approaches for meeting challenges, (3) implementing selected
approaches, (4) evaluating implementation, and (5) formulating theory to guide future practices (Hollins et al., 2004). This program is similar to what others term a cycle of knowledge-building (Timperley, 2011) or a PLT cycle (Francis, Robertson, & Hutchinson, 2014). One difference is that in the Hollins et al. (2004) model, the focus of issues discussed are not restricted to student learning issues but are broadened to include other challenges that teachers may be facing. To review the effect of the program, qualitative data from dialogue in study group sessions, field notes and interviews was analysed. The authors reported that conversations in meetings became more student-focused and more positive. In regard to their teaching, the authors reported that teachers became more open to reflect on their practice and more collaborative in developing new practice approaches (Hollins et al., 2004). One way that the effectiveness of the approach was measured was by examining change in student achievement. Compared to district-wide growth for the same period, students in schools which took part in the project showed greater achievement over the three-year period. This improvement was seen across year levels and ability levels.

Berry et al. (2005) describe a similar picture in a case study on one rural school in the USA. The school developed a culture where teachers had the confidence and trust to share their difficulties and open up their practice to peer evaluation and share expertise. The team devised carefully-selected training opportunities and shared experiences to improve their teaching practice. Teachers worked in teams to resolve issues that arose from school level data or difficult instructional issues. They made extensive use of student data and worked together to put appropriate teaching interventions in place to improve results.
Several research papers were found which put forward a framework to examine how the specific characteristics of teams in educational settings are related to team effectiveness. In these studies, the characteristics analysed have been identified from literature described above.

Louis and Marks (1998) developed and tested a model to explain the link between working collaboratively, classroom organisation and authentic student achievement. This study built on their previous empirical work which showed a positive relationship between the strength of the professional community within the school and the teachers’ sense of collective responsibility for student learning. The authors drew on some of their previous work and the defining features of a professional community which were first described by Newmann and Wehlage (1996), namely; shared norms and values, focus on student learning, reflective dialogue, deprivatisation of practice and collaboration. Louis and Marks (1998) argued that links have been shown between the professional community and authentic pedagogy, and between authentic pedagogy and student performance. Thus, the model proposed by Louis and Marks posits that the social organisation of the school (professional community) supports two aspects of classroom organisation – the social organisation of the classroom (social support for achievement) and the technical organisation of the classroom (authentic pedagogy) which in turn lead to greater levels of student performance. Multilevel analysis of a large sample supported the model. This model draws together multiple levels of analysis to understand how influences at the school and classroom level influence student achievement. It integrates organisational level (school) variables and their influence
on establishing a collaborative culture within the school with team level variables without neglecting the importance of what occurs in the classroom.

Supovitz (2002) examined the influence of teams on school culture, instructional practice and student outcomes. This study took a slightly different approach to defining the culture. Five aspects of school culture were measured – peer collaboration, faculty influence, deprivatisation, collective responsibility, and reflective dialogue. Supovitz reported positive changes in most of those constructs, but mixed improvement on collective responsibility and reflective dialogue which measured the extent to which teachers discussed curricular and instructional issues. Supovitz also reported that the change in teacher culture was not translated into changes in student outcomes unless the teams focused on instructional practice and individual instructional practices also changed (Supovitz, 2002).

The Supovitz (2002) study was followed up and extended by Supovitz and Christman (Supovitz & Christman, 2003). That study found that across two considerably different contexts there was an improvement in the communal culture of the schools and the relationships between the teachers. However, only in the schools that carried out work to change the instructional practice of the team members was there significant improvement in student outcomes. This underscores the importance of a focus on teacher practice if student learning is to change.

Newmann and Wehlage (1996) have identified eight characteristics of effective teams in their studies which comprised extensive literature reviews, survey, case studies and workshops. These characteristics are:

- shared values and norms
- focus on student learning
- reflective dialogue
deprivatisation of practice

- focus on collaboration
- individual and collective professional learning
- inclusive membership, and
- mutual trust, respect and support

Bolam et al. (2005) also identified four processes of PLC operation:

- optimising resources and structures
- promoting individual and collective professional learning
- evaluating and sustaining a learning community
- leading and managing an effective learning community

The outcome measures used to identify success in Bolam and colleagues’ (2005) study are professional learning, student learning and a shared understanding of the professional learning community. This work supported the development of a model to describe schools operating as professional learning communities. In this model, facilitators and inhibitors are recognised both external to the school and internal to the school and are believed to influence the school staff’s capacity to develop and sustain an effective PLC. These facilitators and inhibitors are put forward as influencing the PLC at the input, process and output level. The model identifies the eight characteristics described above. Although not stated as such in the model, these characteristics, as conceptualised in other models such as Campion et al. (1993), can be considered input variables.

The model recognises the recursive and cyclic nature of the PLC with each of the linear stages (as described by the model) of processes, characteristics and outcomes having bi-directional relationships and with outcomes directly affecting processes.
Another example of a study which measured characteristics that had been identified in previous literature can be found in the work of Sigurðardóttir (Sigurðardóttir, 2010) who examined characteristics which were derived from the literature such as that described above as indicative of the level of the professional learning community in the school. The characteristics studies by Sigurðardóttir were:

- Shared values and vision that focus on students’ learning
- High expectation of pupils’ academic achievement
- Shared leadership that values teachers’ participation in making decisions
- A perception of mutual support among staff
- Collaborative learning among professional staff that addresses pupils’ needs
- Organisational arrangement that supports teachers’ collaboration
- Habits of work that encourage collaborative learning
- A social climate that supports collaborative learning
- Job satisfaction and commitment

Sigurðardóttir examined each of these characteristics individually and in toto as an indication of the level of collaborative community in the school. To examine the effect of collaborative community the above variables were regressed onto a measure of school effectiveness. Shared values and vision and shared leadership were most strongly related to school’s effectiveness (Sigurðardóttir, 2010). Sigurðardóttir noted the central focus on the immediate influences on student outcomes, and the importance of interdependency in collaborative learning. In the model, students’ outcomes are central, and the immediate influence on student outcomes is inquiry into daily practice. Influencing inquiry into daily practice are four characteristics:
shared leadership involving teacher participation and decision making, cultural conditions involving mutual support and willingness to share, organisational arrangements and habits of work that require collaboration and interdependency, and collaborative learning that addresses student’s needs (Sigurðardóttir, 2010). Overarching, and influencing the whole system, Sigurðardóttir, places shared values and vision that focus on student learning.

Another phase of the study sought to examine the effect of improvement in the level of professional community by measuring levels of professional community before and after an intervention program and linking that change to school effectiveness. Although the teachers’ perception of the level of professional community changed little after the intervention program, qualitative data showed teachers changed their practice, and there was significant improvement in school effectiveness. This study makes a significant contribution by validating the characteristics that have been identified in the literature.

Moller (2013) examined the effect of organisational culture or collective pedagogical teacher culture, which was described as a workplace environment where teachers perceive (1) a strong community orientation and (2) the norm of teacher collaboration which focuses on student needs. In this study, the first construct – community orientation – was measured by five variables:

- teachers have school spirit
- leadership has communicated a school mission
- teachers agree on a school mission
- teachers feel accepted and respected as a colleague
- teachers are constantly engaged in learning
The second construct – the norm of teacher collaboration – was measured by three variables which assess teachers’ evaluation of the extent to which teachers in their school:

- collaborate on lesson planning
- collaborate on curriculum development
- meet to discuss children

These aspects identified by Moller (2013) align with the basic tenets of a collaborative community put forward by others, e.g. Bolam et al (2005) and Newmann and Wehlage (1996). Although not put forward as a theoretical framework, the grouping of processes into two main constructs does provide a way to conceptualise the work that occurs in collaborative teams. The empirical study that Moller (2013) undertook considered the differential effect of these constructs on different groups of students. The study found that there is greater achievement in mathematics and smaller achievement gap by race or socioeconomic status in schools in which teachers perceive they work in professional learning communities using collaboration.

Sleegers et al. (2013) developed a multidimensional and multilevel model of professional learning communities that was grounded in the literature. Their study sought to better understand how the proposed dimensions of PLCs which have been described in previous literature are related to each other and how they operate at the individual teacher, team and school levels of analysis. The model tested was comprised of the three interconnected capacities at the levels of personal, interpersonal and organisational, with a further eight underlying dimensions that were drawn from the PLC literature.
Personal capacity refers to the individual teacher’s capacity to construct knowledge about teaching and learning. It incorporates reflecting on practice, assessing, critiquing and reconstructing their knowledge through the use of available resources (Sleegers et al., 2013). According to the model, personal capacity has two underlying dimensions of currency (applying best practice and recent scientific knowledge) and active reflective construction of knowledge (reflective professional inquiry). Interpersonal capacity refers to an individual’s capacity to work with others in a collaborative way. It encompasses working on the affective and cognitive climate, taking responsibility for the learning of others and developing an environment of respect and trust (Sleegers et al., 2013). According to the model, interpersonal capacity is made up of three underlying dimensions of shared values and vision, collective learning and shared practices. The final capacity proposed by Sleegers et al. was organisational capacity which refers to the creation and maintenance of sustainable structures to support learning and improvement. Organisational capacity is proposed to be made up of the underlying dimensions of resources, structures and systems, relationships and climate and stimulating and participative leadership (Sleegers et al., 2013).

Sleegers et al. (2013) examined several models and found the best fit was for a multidimensional multilevel model. One alternate model tested by Sleegers et al. was that each of the eight dimensions loaded onto a single latent factor; that is, removing the three capacities and replacing them with one construct. This alternate model represents a common assumption that a PLC is a single construct. The authors reported that the single construct model was less parsimonious and had a worse fit than the proposed nested model. They then tested a second alternate model which examined the same multidimensional model with the addition of an overarching
latent construct to test whether all the dimensions and capacities load onto a single factor, reflecting the assumption that a multidimensional, multilevel model underlies a single overarching construct of PLC. This model too was less parsimonious and had a worse fit than their proposed model. Through this research, Sleegers and colleagues were able to validate their proposed multidimensional multilevel model and make a significant contribution to understanding of team functioning (Sleegers et al., 2013). This work takes the disparate writings that describe aspects that have been thought to define successful team functioning and develops them into a cohesive framework that was validated in a sample of Dutch primary schools.

Research Which Focuses on Collaboration that Leads to Teacher Learning

All of the research which examines the effectiveness of teams in the educational sector examines the way that team members collaborate. Collaboration is the central tenet of the approach and as such, some researchers have focused on the process of collaboration alone as the mechanism which leads to teacher learning and subsequently improved student outcomes.

One study which focuses on the collaboration between team members is that of Dunne, Nave and Lewis who evaluated a program of Critical Friends Groups (CFGs). That study sought to describe the process or mechanism of learning that is thought to occur when teachers participate in CFGs (Dunne et al., 2000). Dunne et al. focused on the collaborative nature of CFGs and proposed that when teachers join a CFG they learn to work collaboratively through the professional development activities of reflecting on student or teacher work (through peer observations or feedback). Through a continual process of teacher reflection, action and feedback the theory proposes that teachers make changes to their teaching practice that are aimed at improving student learning – which leads to improvement in student achievement.
The theory does not stipulate the aspects that are proposed to be necessary conditions for the CFG to operate. This study reported the results of a survey administered to a large group of teachers and compared the results of teachers who participated in the CFGs with those who did not. Significant differences (in the direction expected) were reported between the two groups on each of eight different areas. Opportunities (to try out new things), engagement (willingness to put in more effort), collaboration (with other teachers), adaption (instruction to student need), expectations (high expectation for students), support (received by school leadership), district and state (influence on their teaching – CFG teachers reported less influence).

Another example of a study which focuses on the collaboration as an explanation for the learning that occurs in a collaborative team can be seen in (Riveros et al., 2012). These authors argued that teacher professional learning occurs in the context of professional learning communities and is better viewed as situated within that collaborative environment rather than within the cognitions of the individuals. They sought to further develop the element of teacher practice within a collaborative environment by conceptualising learning as happening within the context of the educational organisation. The framework proposed by Riveros et al. (2012) reflects the concerns of several researchers who also stress the importance of the focusing on the process of teacher professional learning.

Strahan (2003) reported on three case studies of successful schools which had undergone significant reform to lift student performance. Based on previous studies, Strahan sought to measure the extent of a culture within the school which is described as one that promotes risk-taking on the part of teachers to try new ideas and learn from their errors in ways that lead to increased self-efficacy, and improved student outcomes, a culture that values hard work and commitment to the learning of
all students (Strahan, 2003). Strahan documented the change in the school culture of the three studied schools over the course of one year. Strahan posited that through the use of data and the discourse that occurs within the school, the sophistication of the discourse builds on previous steps to develop the culture which can lead to enhanced student achievement. Strahan (2003) reported that teachers and administrators work collaboratively to identify areas of improvement. This leads to them targeting areas of instructional improvement and align their practice to implement shared strategies. Through these efforts lead to higher levels of student engagement and academic achievement, and teachers developing a stronger professional learning community. Though this work, the school provides more social support for learning, the culture becomes more collaborative and the collective efficacy of teachers is increased (Strahan, 2003).

Strahan (2003) focused on the discourse in the meetings as the mechanism for teacher learning which was posited to lead to improved student outcomes. This model is particularly useful in that it describes the development of the maturity of the team. This is unlike many models which describe a team as a snapshot in time with little consideration of the changing nature of teams over time.

A similar focus on the influence of collaboration can be found in two studies which applied Bandura’s Social Learning Theory to understand how collaborative teacher work can lead to teacher learning. In particular, both studies focused on the construct of self-efficacy which refers to one's beliefs about their own capacity to achieve designated levels of performance (Bandura, 1977). Mintzez, et al. (2013) compared a group of professional learning communities in science teaching to a control group on measures of self-efficacy. The experimental group showed significantly higher self-efficacy. Qualitative analysis revealed that the changes
could be attributed to direct as well as vicarious experiences, emotional reinforcement and social persuasion.

Similarly, Bruce and Flynn (2013) applied Bandura’s Social Learning Theory (Bandura, 1977) to understand the effectiveness of a collaborative professional learning initiative. The authors argued that collaborative enquiry is linked to teacher efficacy, and that teacher efficacy is linked to greater persistence when working to overcome obstacles to teaching, greater adoption of innovative strategies and more effective classroom management strategies as well as higher levels of student achievement (Bruce & Flynn, 2013). The theoretical approach taken by Bruce and Flynn creates a simple explanation for how collaborative enquiry may influence student achievement. The study supported the hypothesis that collaborative enquiry increased teacher efficacy, positive student beliefs and student achievement (Bruce & Flynn, 2013).

The model put forward by Bruce and Flynn (2013) sets out a four stage linear approach. At the first stage, teachers participate in professional and collaborative enquiry in mathematics, and a transformational leadership approach is facilitated by Ministry facilitators and district leaders. These two initiatives contribute to three aspects at stage two: collaboration amongst participants, participative decision-making regarding mathematics content and tasks, and practicing challenging instructional strategies with support. According to the model, this leads to the third stage of increased teacher efficacy and positive beliefs about themselves regarding teaching of mathematics. The fourth stage describes three aspects of the outcome, which are increased student self-efficacy about themselves as mathematics learners, positive outcome beliefs of students about mathematics learning and increased student mathematics achievement.
Horn and Little attempted to identify processes of teacher learning that happens through collaboration. These authors examined the interactions by which groups are established and maintained to determine what makes the conversations in the groups generative for learning (Horn & Little, 2010). Horn and Little applied an organisational sociology approach of ‘organisational routines’ - the conversational patterns that are established in organisations. They studied the conversations of two groups who were otherwise similar but differed in their achievement of their goals. Their analysis showed differences in the opportunities afforded for individual and learning, in the ways they treated problems of practice in relation to teachers and in how they dealt with teaching problems. The authors posit that these differences in the groups’ conversation patterns in part explain the different success of the two groups studied (Horn & Little, 2010).

Another example of the application of a learning theory to understand how teacher learning takes place within a collaborative group can be seen in McComish and Parsons (2013). This study applied Mezirow’s Transformational Learning Theory to provide a framework to understand the learning of teachers in a PLC. The authors argued that the collaborative nature of PLCs creates the essential environment for transformational learning to occur (Mezirow, 1991). Transformational learning has been described as the processes of making meaning of one’s experiences and that it is only through the critical reflection and dialogue with those who can challenge one’s beliefs that adults’ assumptions be changed (Mezirow, 1991). This idea fits well with the often cited essential component collaborative teams in the critical reflection of one’s practice (Rosenholtz, 1989; Supovitz, 2002; Vescio et al., 2008). The application of learning theories to understand the effectiveness of teams represents one way to conceptualise the
processes that may be involved. Such theories may explain the way that teacher learning occurs in the collaborative setting. Others have taken a different approach, and instead of applying a theory of learning, have applied an organisational theory of teamwork to team functioning.

Van Lare and Brazer (2013) sought to build a conceptual framework through which to view PLCs. In response to a lack of a theoretical basis for much research into teacher learning within teams, and the recognition that much research only considers the groups in isolation with little regard for the context in which they work, Van Lare and Brazer sought to develop a conceptual framework to analyse how teacher learning occurs in a team within the broader context of the school and district. Their model draws on sociocultural learning theories to explain the processes within the teams that lead to teacher learning. It also incorporates organisational learning theory to explain how school and district change may occur as a result (Van Lare & Brazer, 2013).

At the core of Van Lare and Brazer’s (2013) model, are the content and processes of the conversations that occur within the group. Teachers revisit problems of practice, discussing issues and making sense of their work as identified by Horn and Little in their model of learning within a collaborative environment as described above (Horn & Little, 2010). Van Lare and Brazer use the terms *replays, rehearsals* and *extensions* to describe the interactions in which the teacher describes in more detail the problem or situation to make meaning from it (Van Lare & Brazer, 2013). The model uses the notion of double-loop learning suggested as a method to understand the sustainability of teams by Bolam and colleagues (2005). In Van Lare and Brazer’s model, double-loop learning refers to the process of aligning espoused values with actuality. For example an espoused value within a school may be that all
students should be given equal opportunity to learn, however in practice, teaching
may be overly focused on the lower ability students – neglecting the higher ability
students (Care, Griffin, Zhang, & Hutchinson, 2014). Double-loop learning,
according to this model, suggests that the group has the capacity to open up
discussion on the topic (that may have been considered ‘undiscussable’), the ability
to implement some method to address the situation (e.g. different teaching foci) and
ultimately altering governing variables (Van Lare & Brazer, 2013). In this way, the
work of the group influences higher levels of the organisation (school and district) by
challenging and changing accepted norms.

Research Which Applies an Organisational Psychology Framework to Teams
in Education

Two studies were found that applied an existing organisational psychology
framework for studying teams in education. These studies have applied well-
validated models to frame their study of teams in education.

Crow and Pounder (Crow & Pounder, 2000) applied a well-researched and
comprehensive theoretical model of effective work groups to their study of teacher
teams. That study applied Hackman and Oldham’s model of self-managing work
groups described above (Hackman & Oldham, 1980). This model identifies three
elements that influence team effectiveness; 1) a supportive organisational context, 2)
design features of the group and the task, and 3) healthy interpersonal relationships
which includes the way the team goes about determining effective strategies for their
tasks. The intermediate criteria that is put forward to have a direct impact on the
group’s effectiveness is the level of effort brought to bear on the task, the amount of
knowledge and skill applied to the task and the appropriateness of task performance
strategies. A mediating factor of work technology is included in the model.
On considering how the organisational context affects the teams, Crow and Pounder (2000) reported that several organisational support variables seemed to be critical for the teams under study. Scheduling time for meetings, or block scheduling was a considerable constraint. Without time to meet the team was not able to operate successfully. Another constraint had to do with the principal, in providing support by negotiating release time and facilitating professional development. The principal was also criticised for encouraging competition between teams and for initiating too many changes at the same time.

Considering the design aspects, the most important aspect to emerge from the Crow and Pounder (2000) study was the team’s task emphasis. All but one team under study preferred to spend the time on work that addressed student behavioural or learning problems (the one that did not, preferred to spend time on curriculum work). The two main foci of these teams was on decreased isolation and decreased work autonomy. Teachers reported valuing the decreased isolation but not the loss of autonomy.

The work group composition factors which were salient in the Crow and Pounder (2000) study include team size (most preferred five to six members). Another factor that emerged was team homogeneity especially in regard to educational philosophy in that those with greater homogeneity progressed more quickly in regard to planning, decision making, shared activities, consensus building and coordination (Crow & Pounder, 2000). However, the authors note that some heterogeneity is helpful to enrich team decision making and team growth. The interpersonal skills which emerged as being positive for team functioning in this study were flexibility, leadership expertise and teaching experience. The interpersonal process issues which were identified in this study include coordination
problems, imbalance of member inputs and inadequate schedule blocking (time to meet).

Richmond and Manokore (2011) drew on a leadership model for understanding teams in education. The model put forward by Spillane and colleagues (2001) and drawn on by Richmond and Manocore (2011) emphasises the situation in which the exchanges occur, and the interaction between three different types of capital (human, physical and social) and the situational environment. Richmond and Manakore used that model as a framework to study a group of science-based collaborative teams. They used the leadership framework to inform the identification of and classification of key elements that emerged in group conversations. Five elements emerged from the discourse analysis: teacher learning and collaboration, teacher community formation, teacher confidence, impact of policy on classroom practice and sustainability. The author’s reported that the leadership framework was useful to guide their work, although the elements identified bear little resemblance to the different types of capital identified by Spillane (2001).

What is the effect of teams in education?

When looking at published works on collaborative teams in education, there are few studies which examine PLTs empirically, some which report qualitative analyses of established teams, and some writings from educational experts experienced working with schools and teams. This review considers all this work to describe the key characteristics of effective PLTs and determine any frameworks that have been used in PLT research. This information will support the development of a framework of PLT functioning by informing how the variables identified for study may be operationalised for teams in education.
There has been much written on the virtues of collaboration in teaching which has been based on expert opinion and teacher’s perception of the benefits of collaboration in teaching, however few studies have empirically examined the changes in teachers’ practices or the effect on students’ learning (Vescio et al., 2008). Changes in school culture, teacher attitude, or perceptions may be precursors to changes in teaching practice. As Vescio and colleagues write in their review of the research of professional learning communities:

Participation in learning communities impacts teaching practice as teachers become more student centered. In addition, teaching culture is improved because the learning communities increase collaboration, a focus on student learning, teacher authority or empowerment, and continuous learning. When teachers participate in a learning community, students benefit as well, as indicated by improved achievement scores over time. (Vescio et al., 2008)p. 88

One of the main areas studied as an outcome measure of collaborative teams in education has been changes in the culture of the school. The culture changes to one in which there is a strong professional community and participation in collaborative teamwork (Newmann & Wehlage, 1996). This can be broken down to a few main changes in teacher attitude and practice. Firstly, teachers tend to become less autonomous and more open in their teaching practice, the have access to greater knowledge and skills through sharing with other teachers and develop a greater sense of self-efficacy, and they develop an attitude of focusing on and believing in the learning of individual students.

One influence of collaborative teams is that teachers develop an openness to changing their practice. It refers to teachers being prepared to discuss their
challenges and seek help so that they can improve their teaching practice (Newmann & Wehlage, 1996). They may observe each other’s classrooms and provide feedback so that improvements can be made. A high level of trust is needed for teachers to expose their shortcomings and reflect on their difficulties, but once that is established, significant learning can occur (Newmann & Wehlage, 1996; Sleegers et al., 2013).

The successful school in a case study undertaken by Berry, Johnson and Montgomery (Berry et al., 2005) developed a culture where teachers had the confidence and trust to share their difficulties and open up their practice to peer evaluation and share their expertise. Berry and colleagues reported that through working in teams, the school developed a culture of openness and that talking about their practice became commonplace. It became common for teachers to speak about the value of classroom assessment, observing each other’s classrooms and inviting constructive criticism (Berry et al., 2005). Hollins and colleagues also found that conversations became more open in reflection of practice, the sharing of strategies and in collaborating to develop new teaching strategies (Hollins et al., 2004).

Similarly in Strahan’s (2003) case study of three schools, the culture in the schools changed towards greater trust that enabled teachers to seek help in improving their practice and collaboration which led to greater support for their teaching (Strahan, 2003). Strahan reported that through the process of data-directed dialogue and purposeful conversations which were guided by formal and informal assessment, teachers became more receptive to changing their practice and developing stronger instructional norms (Strahan, 2003). Sleegers and colleagues use the term personal capacity to refer to the individual teacher’s capacity to construct knowledge about teaching and learning. It incorporates reflecting on practice, assessing, critiquing and
reconstructing their knowledge through the use of available resources (Sleegers et al., 2013).

Another way that collaborative work can improve teachers’ teaching practice is simply through the shared knowledge that can occur in a team. As the team discusses their teaching challenges in a collaborative environment they develop a pool of knowledge that can be widely shared (McLaughlin & Talbert, 1993). A number of studies note the increase in teacher self-efficacy as a result of working in a collaborative team (Bruce & Flynn, 2013; Mintzes et al., 2013; Strahan, 2003). It seems that the support provided by the team, in conjunction with the knowledge pool available to the individual teachers can make them feel a greater sense of effectiveness, and this is compounded as success is realised (Strahan, 2003).

One study that tested how collaboration can improve teaching efficacy was conducted by Shachar and Shmuelevitz who studied a group of 121 social studies teachers from nine junior high schools in Israel (Shachar & Shmuelevitz, 1997). That study considered the impact of a year-long in-service training course which focused on developing teachers’ skills in the use of co-operative learning. It examined the relationships between the frequency of implementation of cooperative learning, teachers’ level of collaboration with other staff and measures of teacher efficacy. Teachers’ collaborative work was positively related to general teaching efficacy and efficacy in enhancing social relations in students. The authors concluded that the frequency of collaboration accounted for the highest proportion of variance in teacher efficacy (Shachar & Shmuelevitz, 1997).

The collaborative work can also affect the expectations that teachers have of their students. Several authors discuss a shift to a more equitable belief that no single group of students should receive greater focus, and that all students have the capacity
for high levels of learning. Focus tends to shift from that of whole class instruction to addressing individual students’ needs. One study that measured this aspect was conducted by Dunne, Nave and Lewis (Dunne et al., 2000) who reported a two-year study on the effects of a form of professional development they termed *critical friends groups*. Through interviews and self-report methods, teachers who participated in the critical friends groups were more likely than those who did not to agree with the statement that they should change their approach and adapt their teaching to specific students’ needs, and that they could significantly alter student performance by changing their teaching method. Participating teachers reported holding higher expectations for their students and were less likely to agree to a statement that not all students are capable of learning.

Hollins, McIntyre, DeBose, Hollins and Towner (Hollins et al., 2004) reported the changes in conversations that occurred among teachers at a low-performing elementary school which undertook establishing a learning community aimed at improving literacy acquisition and development. The authors reported that over the two-year project, the teachers spoke more positively about the students, and made more links between their own experiences and the culture the students bring to the school (Hollins et al., 2004).

Andrews and Lewis (2002) documented the influence of a learning community project on school organisation. They reported that it changed their understanding of successful practice and led to a shared view of school-wide pedagogy and a more positive view of their ability to meet individual student learning needs. It is not just the difference in student ability that seems to be better catered for through a collaborative approach, but also one in which the diversity of the student population is embraced and leveraged. Phillips (2003) reported the case study of a single school
which established a learning community to provide high-quality professional development for their teachers for the express purpose of improving student academic achievement. The culture in that school changed to one which recognised and leveraged from the diversity of the student population to target teaching so that cultural differences are valued and drawn on to support their learning. The focus changed from one in which school success was gauged by the aggregated data to one in which each student’s data were considered and evaluated. This idea was also noted by Bolam and colleagues (2005), who found that in effective teams there was a shared ethos towards the responsibility of all students and whole staff discussions about the progress of individual students. Strahan reported that after the implementation of collaborative teams, the culture in the school became more positive towards the students. For example, one principal reported that the focus shifted from being on students’ (negative) behaviour to their academic achievements and rather than what they couldn’t do, or what they were doing wrong, the focus became on what is necessary to make progress (Strahan, 2003).

There appears to be positive effects of working in a collaborative team for teachers’ practice and attitudes, but the question is, do these changes translate to changes in student learning? A number of studies have documented a positive effect of collaborative schools on student learning. For example, Goddard, Goddard and Tschannen-Moran, (Goddard et al., 2007) reported that student achievement in mathematics and reading was higher in schools that had high levels of teacher collaboration. In that study, teacher collaboration had a large and significant effect on student achievement, even when race, gender and socioeconomic status were controlled.
One of the ways that Newmann and Wehlage (1996) measured the student effects of collaboration was authentic achievement which is learning in which students use disciplined inquiry to construct meaning and produce knowledge, with a focus on meaning that has real world application (Newmann, 1991). They found authentic pedagogy (instruction and assessment) to be strongly related to authentic achievement – accounting for 35% of the variance between classes. The schools which rated the highest in terms of authentic pedagogy had strong professional community and teamwork.

Hollins and colleagues also measured change in student achievement as a result of working in collaborative teams. Achievement was tracked by the change in performance on the Standford Achievement Test over a two-year period and comparing this change with districted averages. Some gains were seen in student reading levels for poorest readers. More students were reading above the 25th percentile and the 50th percentiles compared to previous years for each of the three schools and compared to district averages after three years of the intervention (Hollins et al., 2004). Similarly, in Berry and colleagues single case study of the implementation of a collaborative approach, over the time that the school reform took place, student results increased from about half of students performing at grade level at the start of the program, to over 80% performing at grade level at the end of the review period (Berry et al., 2005).

To examine the effectiveness of collaborative community, Sigurðardóttir defined effectiveness as the (school level) difference between actual results of student achievement on national tests in Grade 10 in the subjects of Icelandic and Mathematics, and predicted results which were based on achievement at Grade 4 and parents’ level of education. A strong relationship was found between teachers’
perception of the level of professional community and the school’s effectiveness. Shared values and vision and shared leadership were most strongly related to school’s effectiveness (Sigurðardóttir, 2010).

Moller et al. (2013) looked at the differential effect that organisational culture has on mathematics achievement gaps by race, ethnicity, and socioeconomic status. In this study, organisational culture was conceptualised as a collective pedagogical teacher culture, which was described as a workplace environment where teachers perceive 1) a strong community orientation and 2) the norm of teacher collaboration which focuses on student needs. In this study, the first construct – community orientation, was measured by five variables: 1) Teachers have school spirit, (2) leadership has communicated a school mission, (3) teachers agree on a school mission, (4) teachers feel accepted and respected as a colleague, and (5) teachers are constantly engaged in learning. The norm of teacher collaboration was measured by three variables which assess teachers’ evaluation of the extent to which teachers in their school (1) collaborate on lesson planning, (2) collaborate on curriculum development, and (3) meet to discuss children. These aspects identified by Moller (2013) align with the basic tenets of a collaborative community put forward by others (e.g. Bolam et al., 2005; Newmann & Wehlage, 1996). Moller found that the lowest achieving group of students, that is black low-SES students, experience the most benefit from being having teachers who report the existence of a strong professional pedagogical teacher culture (Moller et al., 2013). The author suggested that the teacher culture did not dissolves their mathematics disadvantage but protected them from the damaging effects of studying in schools where teachers do not report a high level of pedagogical culture.
Supovitz (2002) investigated this idea by examining the influence of teams on school culture, instructional practice and student outcomes. The study examined five aspects of school culture—peer collaboration, faculty influence, deprivatisation, collective responsibility, and reflective dialogue. Over three years, team-based schools consistently measured higher on the first three of those aspects. Only in one of the three years did team-based teachers report higher levels of collective responsibility and no differences were found on the aspect of reflective dialogue, which measured the extent to which teachers discussed curricular and instructional issues. The study also examined the influence that working in a team had on individual instructional practices. In the primary schools studied, there was no difference between team-based teachers and non-team-based teachers on the measure of instructional practices, however in secondary schools, team-based teachers had significantly higher levels of individual instructional practices. As the sample had more primary than secondary schools, the overall effect was not significant. This is in keeping with the previous non-significant finding of the effect of teams on reflective dialogue. If the team was not influencing teachers (overall in the study) to have meaningful discussions about their practice (reflective dialogue) one would expect that their practice also would not change. The third relationship the study examined was that between teaming and student achievement. Overall a significant relationship was not found between teamwork and student achievement. However, the author points out that with only about one quarter of the teaming schools undertaking specific instructional practice activities this is not surprising. Supovitz (2002) suggests that although the team-based reform produced positive changes in the culture of the schools, this was not translated into changes in student outcomes unless the teams focused on instructional practice. This finding was confirmed by
Supovitz and Christman (2003) who reported no relationship between collaborative teams and student achievement for the majority of schools. The only schools in this study that showed significant improvement in student outcomes were those that focused on changing the instructional practice of the team members. This underscores the importance of a focus on teacher practice if student learning is to change. It appears then, that as teachers work collaboratively, they are able to improve their practice which leads to improvement in student achievement. This positive reinforcement of their collaborative work may lead to greater commitment to collaboration and therefore greater social support for learning (Strahan, 2003).

Another study that reported specific changes in teaching practice was that of Louis and Marks who studied 24 schools at elementary, middle and high school levels to examine the connection between the quality of authentic classroom pedagogy and participation in a PLC (Louis & Marks, 1998). Authentic pedagogy in this study is defined as an emphasis on higher order thinking and deeper knowledge through the construction of meaning via conversation. The authors reported that PLC schools had higher levels of social support for achievement in the classroom and higher levels of authentic pedagogy (Louis & Marks, 1998). Social support for achievement in the classroom also was found to boost school achievement levels (Louis & Marks, 1998).

Andrews and Lewis (2002) reported changes in teachers’ perception of authentic pedagogy in the classroom through participating in Innovative Design for Enhancing Achievement in Schools (IDEAS) project. Teachers reported that the changed focus has impacted strongly on their behaviour in the classroom and on student achievement, however the report did not elaborate on what those changes were (Andrews & Lewis, 2002).
It seems that there are some aspects of collaborative work that are essential if gains in student learning are to be achieved. Changes in teachers’ attitude and knowledge cannot influence their students directly – changes in their practice must occur for any benefit to students to be realised. This is an important aspect to consider. The work that the team undertakes must be considered in any conceptualisation of team effectiveness. It is referred to in team research as the task work – or the carrying out of the work that is the goal of the team. No matter how well the team communicates or cooperates, if they are not focusing on the team’s goal, and carrying out the tasks that are essential to reach the goal then the team is not being effective (Marks et al., 2001).

Proposed Theoretical Framework

To meet the goal of developing a framework of team functioning that is applicable to teams in an educational setting, this chapter set out to consider how teams may be studied. To shed light on this topic, the study of groups in general was considered which led to a discussion and determination of a definition of a team for this study, and concluded that teachers working collaboratively in PLTs can be considered in the same way that teams have been conceptualised in the literature. The review then went on to present research examining the effectiveness of self-managed work teams. In particular, the review focused on identifying the variables that have been investigated and the relationship between those variables that have been put forward to explain team functioning.

Following this review of teams in general, research and literature of teams in education was reviewed – again with a focus on the elements identified for study and the relationship between the variables. The goal was to look for congruence between established team research and research in educational teams, and to understand what
variables may be pertinent to consider in educational team research, and the relationship between those variables in order to develop a framework.

This review has shown that research of teams in an educational setting has taken disparate approaches. The most common approach has been to study effective teams and identify what it is that they are doing in a qualitative way. This is a first step in understanding a phenomenon, and in order for progress in the field to be made, some theory is generally developed which makes sense of the qualitative findings and ties it together to guide research. Although some work has been done in developing, and also applying a framework to the study of teams, in general there has been limited theoretical approaches taken to the study of teams in education and the number of studies that have been undertaken is limited. The literature that was reviewed above which considered teams in education, used a criterion that some kind of empirical measurement is presented to assess the effectiveness of collaborative teams in education. The search of peer reviewed journals and published books only revealed 21 sources. Of these 21 studies, four applied a qualitative approach to understanding the way that teams work with a view to identifying the characteristics of successful teams in educational settings (Berry et al., 2005; Bolam et al., 2005; Hollins et al., 2004; Newmann & Wehlage, 1996). Seven of the studies measured a set of factors that were derived from the literature as being essential characteristics of teams (Bolam et al., 2005; Louis & Marks, 1998; Moller et al., 2013; Sigurðardóttir, 2010; Sleegers et al., 2013; Supovitz, 2002; Supovitz & Christman, 2003). Eight studies examined the aspect of collaboration in the team and how that leads to teacher learning (Bruce & Flynn, 2013; Dunne et al., 2000; Horn & Little, 2010; McComish & Parsons, 2013; Mintzes et al., 2013; Riveros et al., 2012; Strahan,
2003; Van Lare & Brazer, 2013) and two studies applied an organisational theory to team functioning (Richmond & Manokore, 2011) (Crow & Pounder, 2000).

The approach taken in proposing a framework is consistent with the way that teams have been conceptualised by numerous authors in undertaking research into collaborative teams within education contexts. Most writers of teams in education concur that the notion of collaboration, shared goals and reflective practice lie at the heart of successful PLTs (Bolam et al., 2005; Hord et al., 1997; Newmann & Wehlage, 1996; Rosenholtz, 1989). Further Bolam et al. (2005) also state that the interdependence of team members is defining feature of effective PLTs.

The hypothesised framework proposed draws on the input, process, output (IPO) framework first proposed by (McGrath, 1964) and used in research into work teams. The original work established a three-staged linear process of input, process and output, and has been used to conceptualise teams across a range of settings, including works by Mickan and Roger (2000), Cannon-Bowers et al., 1995, Hackman and Oldham (1980) and TAnnenbaum et al., (1992). Although few studies were found which explicitly outlined a quantitative framework to examine team effectiveness in education, those that did, such as Bolam et al. (2005) and Newmann and Wehlage (1996), applied a model based on the IPO framework. As one of the aims of this study is to build on and encourage research into the use of PLTs, it is pertinent to take a consistent approach to stimulate further comparison and research.

In the original framework, the input stage includes the context in which the team works (such as leadership support) and resources brought to bear on the team (such as knowledge and skills of team members and tangible resources). The process stage includes activities and operations that mediate the relationship between input elements and output elements such as the steps involved in planning activities,
monitoring progress and resources. The *process* stage is modified here to take into account subsequent criticisms and improvements which broaden the *process* aspect to include a range of elements that mediate input elements and output elements such as cognitive, motivational and affective states (Ilgin et al., 2005; Tannenbaum et al., 1992). The *output* stage is generally considered to be the achievement of the team’s goals.

At the input stage, the literature reviewed highlighted the importance of the organisational context within which the team is situated, and the integral role of the support of that organisation in a team’s success (Cummings, 1978; Gladstein, 1984; Guzzo & Shea, 1992; Hackman, 1987). Crow and Pounder (2000) note the importance of a supportive organisational context in their model for understanding educational teams which is based on Hackman and Oldham’s (1980) model of self-managing work teams.

Hord (1997) notes the importance of the school context as it is pivotal in facilitating both the learning of students and the learning of teachers. Louis and Marks (1998) also note the importance of the influence of school level variables on establishing a collaborative culture within the school. Organisational capacity (Sleegers et al. 2013). Considering this in relation to PLT research, the variable that captures the organisational context would encompass the support of the school.

Although the context is generally considered external to the team, it is clear in educational research that the support provided by the school is important (Dufour, 2004). Notwithstanding the issue that context is not part of the team, it is often investigated in many frameworks of team functioning at the *input* level, so is included in the framework in relation to how the school context may affect a team’s effectiveness. It is proposed that the framework contains a single input variable
termed *school support* to capture the fundamental role that the school environment plays on the work of PLTs. The literature recognises aspects of school support such as distributed leadership within the school, links with other schools, focused professional development coordination and physical site facilities that contribute to collaborative work (Bolam et al., 2005; Hord et al. 1997; Kleine-Kracht, 1993 & Prestine, 1993). This is in line with models of team effectiveness which identify the importance of management support including the level of autonomy and managerial input (Hackman & Oldham, 1980; Sundstrom et al., 1990) or what Cannon-Bowers et al. (1995) termed *supervisory control*. This approach has also be supported by the work of Gladstein (1984) and Tannenbaum et al. (1992). School support provides the necessary resources which the PLT draws on to operate effectively, and influences the culture in which the PLT operates. The resources include providing support to relieve teachers of class duties, making time in the meeting schedule for the team to meet and professional development. The provision of resources is recognised in the work of Gladstein, (1984), Salas et al. (1992a); Sundstrom et al. (1990) Tannenbaum et al. (1992) who identify resources as important organisational environmental input variables, and Dufour (2004b) who notes the value of providing teachers the time to meet to adequately address the students’ learning issues.

In an educational setting, an essential component is the focus on teacher learning and this requires resources from the school both in terms of the time for learning to occur and for external professional development to be undertaken which usually involves cost.

At the core of teams, is the way that individuals work together. The Literature Review identified a set of teamwork variables from general team research and presented them in Table 1. Teamwork Constructs on page 51. The elements
identified were communication, workload sharing, intergroup process, team efficacy and supportiveness.

These elements were identified through research into a range of teams and it is pertinent to consider how they may be manifest in teams in education. The notion of communication within teams is recognised as paramount in the educational research. One of the core characteristics of teams in education is that teams maintain reflective dialogue and that there is a clear focus on collaboration (Bolam et al., 2005; Dunne et al., 2000; Newmann & Whelage, 1996). The essence of this work is open communication as the team members question conversations around student learning and challenge previously held beliefs about students and about teaching (Chin & Osborne, 2008; Griffin et al. 2010).

The idea of workload sharing is somewhat akin to the notion in the educational team literature of collective responsibility for student learning. In the education team literature a key characteristic is collaboration that is focused on learning (Bolam et al., 2005; Griffin et al., 2010; Newmann & Wehlage, 1996). Collaboration goes beyond helping and mere exchanges of information in the PLT literature, but refers to working interdependently towards the team’s goals (Bolam et al. 2005). This shared responsibility represents a shift from the traditional approach which sees a teacher mainly responsible for his or her class, to one where the whole team takes responsibility for the learning of the students in the classes for which they cover. To accomplish this, team members must take on additional work, to support other teachers and to contribute to the decisions that will support students in other classes. Strahan (2003) describes the importance of a culture of hard work and commitment to the learning of all students and Griffin and Robertson (2014) use the phrase our students rather than my class to describe this shift.
The idea of intergroup process encompasses what Gladstein (1984) refers to as boundary spanning, which refers to the interaction and transfer of information with those outside the team. It is encompassed in Tannenbaum et al.’s (1992) use the term boundary spanning to incorporate the importance of the interaction and delineation between teams. Bolam et al. (2005) describe how successful teams in education work beyond their team, and their school to create links and partnerships to promote and enhance their PLT and expose their team to challenging views.

The idea of efficacy at a group level, or team efficacy has been identified in the team literature as an important construct in team effectiveness (Hackman, 1990; Klimoski & Jones, 1995). With the notable exception of Strahan (2003), in the education literature self-efficacy is generally identified at the individual (teacher) level. The importance of teacher self-efficacy, or teacher’s belief about their capacity is an important factor in teaching achievement. Teacher efficacy is defined as “the extent to which the teacher believes he or she has the capacity to affect student performance” (Berman, McLaughlin, Bass, Pauly & Zellman, 1077, p. 137. Bruce and Flynn (2013) note that increased self-efficacy can lead to greater willingness to try new strategies, to implement more effective classroom practices and greater persistence when faced with problems. Bruce and Flynn (2013) also note the positive effect of teacher efficacy and Strahan (2003), discussed how collaborative work increased collective teacher efficacy. The differentiation between self-efficacy at an individual level and efficacy at a group level is important to note. Group level efficacy has been examined and found to be an important aspect of team success so a measure of collective efficacy may be pertinent to investigate in PLT functioning. Both perceived self-efficacy for teaching and collective efficacy influence student achievement (Bandura, 1997). In relation to determining a model of team
functioning, the belief of the teachers in the power of the team to affect student outcomes is considered pertinent to measure.

The literature review showed most models of team functioning recognise supportiveness as a key component of a successful team (Campion et al., 1993; Gladstein, 1984; Klimoski & Jones, 1995; Sundstrom et al., 1990). A key characteristic recognised in the educational team literature is mutual trust, respect and support which is an analogous construct (Bolam et al., 2005; Hord, 1997; Sigurðardóttir, 2010 Newmann & Whelage, 1996). This characteristic enables the deprivatisation of practice and open and honest communication needed to give and receive feedback and to work towards improvement (Hord). Hord also notes supportive leadership as a key element of successful PLTs.

The Literature Review has shown many authors acknowledge that the elements of teamwork are highly related to each other e.g. Campion et al., 1993; Cohen & Bailey, 1997; Coovert et al., 1995; Driskell, Hogan, et al., 1987; Guzzo & Shea, 1992; Klimoski & Mohammed, 1994; Lewin, 1951; Salas, et al., 1992). In consideration of this, it is proposed that the elements that make up the way the team goes about its work, or the teamwork aspects, will share considerable variance. This supports the conceptualisation that was commonly seen in the Literature Review that individual team members are dependent on each other, and also reflects the constructs which, by their nature, one would expect members of a team to respond to in a similar way. Therefore, to capture some of this shared variability, a second order factor is proposed to be made up of all of the teamwork elements. That is, *communication, workload sharing, intergroup processes, supportiveness and team efficacy* are grouped together to form a second order construct called *teamwork*. 
Further, Cohen and Bailey (1997) and Sundstrom et al. (1990) have noted that teams are a group of individuals who are responsible for producing goods or services. Writings of successful PLTs have consistently identified two major tasks of PLTs – that they focus on improving student learning and that they address teacher professional development (Bolam et al., 2005; Sigurðardóttir, 2010; Sleegers et al., 2013). Consistently seen in the literature is that the tasks that a team undertakes require members to work interdependently (Cohen & Bailey, 1997; Sundstrom et al., 1990). This idea of interdependence of team members can be seen since the earliest work on teams where it was noted that members within a group influence each other’s behaviour and the internal processes established by the group (Le Bon, 1895 (2007); Wundt, 1916). This task based interdependence is a criterion of several of the definitions of teams, and the definition which is used in this study. In consideration of this, facilitating student learning and facilitating teacher learning are proposed to be related to teamwork.

It is not clear in the literature whether these two main tasks of PLTs are the focus of all PLTs, or what the relationship between them may be. Therefore, in the model proposed in this study, the two tasks of PLTs: facilitate student learning and facilitate teacher learning are considered separate constructs and the relationship between them will be examined.

Considering research into collaborative teams in education, a number of outcome variables have been used. For example; teaching practice (Dunne et al., 2000; Riveros et al. 2012), teacher self-efficacy (Mintzes et al., 2013), changes in conversation patterns within the team (Horn & Little, 2010), reflective dialogue (Rosenholtz, 1989; Supovitz, 2002; Vescio et al., 2008) and teacher learning (Van Lare & Brazer, 2013) and ultimately improved student outcomes (Strahan, 2003).
Although many researchers do not explicitly measure changes in student learning, all conceptualisations of team in education have as their underling goal, improvement in the learning of students. Therefore, it was decided to conceptualise student learning as the outcome variable in the proposed framework.

In consideration of the material presented above, a core set of elements is presented. The elements have been drawn from the synthesis of the literature reviewed and are proposed to be relevant to the study of effectiveness of teams in education.

The variables identified for study were:

**Input:**

- School support

**Throughput:**

- Teamwork
  - Communication
  - Workload sharing
  - Intergroup processes
  - Supportiveness
  - Team Efficacy
- Task work
  - Facilitate student learning
  - Facilitate teacher learning

**Output**
• Student Learning

The elements that make up throughput can be fruitfully broken down into three categories. The first is the teamwork aspect which represents the way the team goes about its work (labelled teamwork). The elements of teamwork that are important for teams to be effective are: communication, workload sharing, intergroup processes, supportiveness, and team efficacy. Within throughput are two further aspects – facilitating student learning and facilitating teacher learning. The output aspect in this study is the change in reading ability of the students under the responsibility of the team. Thus, based on the literature reviewed here, a hypothesised model of team functioning is presented in Error! Reference source not found..

![Diagram of hypothesised model of team functioning](image)

**Figure 1. Hypothesised model of team functioning**

This model suggests that the support that the leadership of the school has for the team affects both attitudes and perceptions of the team members of the way the team functions as well as the activities that the team undertakes in facilitating student learning and facilitating teacher learning. It also suggests a bi-directional relationship between team members’ perception of the way the team is functioning and the activities of the team both in facilitating student learning and facilitating teacher
learning. According to the model, all of the throughput elements influence student learning.

This chapter set out to answer Research Question One which asked whether a model of team functioning could be created that is consistent with the functioning of teams in education. The above review has shown that a large body of research into teams has identified variables that have been shown to be important in examining team effectiveness. It also showed that many of those variables are considered important in writings on teams in education. Upon looking at frameworks that illustrate how those variables might be related to each other, some congruence can be seen in the way that teams in education are conceptualised. This led to the development of a framework which can be applied to education teams.

The next step was to begin to validate the hypothesised framework. The validation process explained in the following chapter first describes how a survey instrument was developed to measure each of the proposed constructs in the hypothetical model. That instrument was administered to team members working in PLTs in schools. The data were analysed to determine both how well the constructs are measured by the instrument, the relationship between those constructs and the relationship between the constructs and student learning which is the identified outcome measure of team effectiveness. This analysis addresses Research Question Two which queried the relationships between each of the elements of the model and between the elements and student achievement.
Chapter 3: Examining the Validity of the Proposed Framework

This chapter examines the validity of the hypothesised model that was put forward in the previous chapter. To consider the elements in more detail, and how they may be manifest in PLTs, the following tasks were undertaken.

The first step described is the development of an instrument which was designed to measure each of the constructs identified in the hypothesised model of PLT functioning. The process taken to develop that self-report instrument is described, followed by the process of administering that instrument to educators working in teams and examination of data that was collected. The data are described both in terms of descriptive information and also in terms of the measurement model, or how well each of the constructs is measured by the items that were intended to measure them. The structural model is also described and represents the relationship between the constructs that is seen in the data. The tasks described above are referred to as Study One. This work responds to Research Question One which asked whether a model of team functioning could be created that is consistent with the functioning of teams in education.

The next step described is the analysis of the relationship between the hypothetical model and an outcome measure of team effectiveness. The outcome measure chosen was the literacy learning of students under the care of teachers working in the PLTs. This task is referred to as Study Two. The aim of Study Two is to respond to Research Question Two which queried the relationship between each of the elements of the model and between the elements and student achievement.
Method

An instrument was developed in the form of a self-report questionnaire. It was designed to capture how the elements that were identified in Chapter 2 may be represented in teams in education. This questionnaire was administered to a group of educators working in PLTs and analysed to understand how well the data fit the hypothesised model.

Setting

The teams that are under investigation in this study take a specific approach to their work through their involvement in the Assessment and Learning Partnerships (ALP) project. Therefore, it is pertinent to describe this project and the focus of the teams on which the model is tested. The ALP project investigated the use of student assessment data by educators in primary schools who are working in PLTs in Melbourne, Australia. It provided professional learning to these educators in the use of data to inform instruction in literacy and numeracy and in the collaborative examination of that data. Teachers established professional learning teams to undertake this work in their schools. Teams in the ALP project maintained an overarching goal of improving student learning by taking a developmental approach to focus learning at the point of learning readiness. This was supported by the use of evidence and matching that to a developmental progression to determine what a learner already knows and what they are ready to learn next. Within this process, any resources required to meet the goal of improved learning were identified and addressed. This included addressing the professional development learning needs of teachers. Maintaining a focus on student learning improvement, educators in the teams worked collaboratively and supported each other in any aspect of teaching or learning that may be necessary to achieve this goal. Such team work required high
levels of trust and communication as teachers are required to reflect on their own practice and critically evaluate their teaching practice. The collaborative nature of this teamwork not only pooled resources and teaching experience, but established an interdependent team environment in which team members were accountable to each other for carrying out the teaching and assessment decisions of the team (Griffin et al., 2010).

Teachers in the project were supported to work collaboratively towards the goal of improved student learning. They were encouraged to work in their team in a manner which moved away from endorsement and encouragement to peer accountability and evidence-based practices. The focus of all discussion was on the student, rather than on the teaching strategy or the teachers’ perception of the classroom. This change in focus placed the overarching goal of all activities on student learning. Teachers were encouraged to challenge peer assumptions of student ability and ensure that inferences were based on the evidence of skills that students exhibit. Findings from a pilot study identified that collaborative teams which used peer challenge and were accountable to each other had a positive effect on student learning (Griffin, et al., 2010).

Teachers working in ALP were shown how to use a specific protocol to ensure their interpretations of student ability were valid. They were trained in assessment practice and the analysis of evidence in a criterion-referenced manner to inform targeted instruction. This idea was based on Griffin’s (2007) work which highlighted that often assessment in the form of test scores is not helpful in determining a general level of proficiency. Instead, many forms of evidence of student learning can be used to determine student ability, such as standardised tests, teacher-produced assessment, work samples or student interviews. Such a range of test data can be interpreted in a
developmental assessment framework as outlined by Griffin (2007). Teachers were taught how to link evidence of student ability to a developmental progression to target teaching.

Teams of teachers in the ALP project collaboratively analysed assessment data to determine the point where each student is ready to learn and decide on teaching strategies aimed at achieving that goal. Individual teachers implemented the team’s decisions in their classroom, and reported to the team on the learning success of the strategy at a pre-determined future date. The teaching strategy was then reviewed and new goals set as needed. This action/research cycle enabled a body of successful strategies to be documented by the team.

As part of their involvement in the project, students in participating schools undertook assessments in literacy, numeracy and problem solving twice each school year. Criterion-referenced student reports were provided to teachers as soon as their students complete an assessment. These reports linked the students’ achievement to a developmental progression of skill acquisition. Teachers used this information in their PLTs to inform their decisions for targeted teaching. Teachers were shown how to link other forms of evidence to a developmental progression of skill acquisition to monitor student learning throughout the school year.

The ALP project provided a means for teachers to develop collaborative team-based approaches to evidence-based teaching with the constant focus of improved student learning. The project provides a pool of participants working in teams that take a common approach to the collaborative work who have agreed to participate in research activities. For this study, the teachers completed self-report questionnaires. The project also provides a measure of the learning of the students in the care of those teachers. The educators working in the PLTs provided the team member
sample for this study. The student learning data are drawn on to provide the outcome measure of the teams’ effectiveness.

**Materials**

The measure used in this study was a self-report questionnaire which was developed to measure team members’ perception of their team’s standing on the aspects of team functioning that were described in Chapter 2: Literature Review. The elements of team functioning that were to be measured in this study were:

- School support
- Communication
- Workload sharing
- Intergroup processes
- Supportiveness
- Team Efficacy
- Facilitating student learning
- Facilitating teacher learning

To develop an instrument to measure these elements, several resources were drawn upon; these included the research literature on team functioning which provided further contextual information to support the writing of items. I collaborated with a fellow student who was undertaking research to examine the developmental progression of team functioning (Robertson, 2012). The two of us worked together to develop full definitions and descriptions of the constructs. Once we came to a clear understanding of the constructs, we identified indicators of behaviours, and several levels of quality criteria of these behaviours. A number of items was written for each construct that was based on these behaviours and presented at a series of workshops. These workshops were attended by educators
who have experience in working in teams and assessment development experts. In these workshops draft items were scrutinised for their clarity and their relevance to the constructs. Once a draft instrument was complete, it was first checked with a small group of educators working in teams to receive feedback on the questionnaire. A group of 15 educators who were working in Catholic primary schools were PLT leaders who were undertaking professional development in the use of assessment to inform instruction was approached. These educators were all part of the larger sample who would go on to complete the next stage of the research project. Each agreed to undertake the review which involved working in three groups of five educators. The groups spent one hour discussing and making notes on the questions. This feedback provided the basis for refinement of the instrument in further panelling workshops. The refined instrument was piloted, and that data were examined psychometrically to identify how the items functioned. In addition, comments from the pilot group were taken into consideration in order to refine the instrument.

**Instrument Design**

In order to determine varying levels of functioning, a criterion-referenced framework was used for instrument development. In a criterion-referenced framework, levels of proficiency are identified that are based on an underlying continuum of skills, knowledge or attitude (Glaser, 1981). Interpretation in such a framework can be made such that the level of skills, knowledge or attitude of respondents can be determined and described. Gillis and Griffin (2004) describe a framework to develop criterion-referenced assessment using graded criteria. In this approach, items are written with a range of responses for each item – each describing behaviours at increasing levels of competency. Respondents select a single response describing a level of behaviour. Item response options are written so that each level
represents more advanced behaviours than those below it in a hierarchy. Respondents are advised that by selecting a response, it is assumed that they are selecting the behaviour described in that response and are also endorsing all the behaviours of levels below the selected response.

The instrument was designed to capture the perception of the team members who completed it. Those perceptions may be of their own behaviour as a member of the team, or the behaviour of the members of the team in general. As such, the data are considered to be at the individual level, and no team level data were analysed.

**Determining the Behaviours Indicative of the Elements**

The following section describes the method for deciding on the behaviours to be assessed that are indicative of each of the elements that make up teamwork and team activities, and the procedure undertaken to create the items to measure those behaviours.

The process involved describing each element as it applies to teams in general. That is, the way an element such as communication has been conceptualised in teams in the literature. If necessary, to clarify the meaning, further information was provided to the definition to describe how it may fit with the functioning of a team in education.

A project team was established to work on defining and operationalising the elements. The project team consisted of experienced educators, teachers knowledgeable about working in teams, and researchers experienced in writing assessment items. Once a description of each element was determined, specific indicators of the element were identified. Indicators are outward manifestations, such as behaviours, which show how an element may be displayed. So, for example, an indicator of the element *school support*, might be that the school provides time for
meetings to occur. For attitudinal elements such as team efficacy, the indicator might be that team members believe that what they do can make a difference to student learning. The indicators of each of the elements are described here.

**School Support**

The element of school support was defined as the school leadership team being aware of and valuing the work of the team. It includes providing support such as time for meetings and integrating the work that the PLT achieves.

The indicators of the element of school support were:

- Meeting time is scheduled
- The principal knows of the PLT work
- The leadership team values the PLT work
- The PLT leader is influential in the school
- PLT work influences the school’s strategic plan
- PLTs are integrated into the school structure

**Communication**

The element of communication was defined as the exchange of information between members within the team meetings. It refers to members being able to provide and receive information in an open and frank manner, to solve problems, and the extent to which team members provide and receive feedback and constructive support. Another aspect of communication in team meetings is the validity and accuracy of information exchanged. An important task within the team is to determine learning goals based on current demonstrated skill (both student and teacher skill). Therefore, a measure of communication in the group should include the extent to which statements are supported by evidence.

The indicators of the element of communication were:
The extent to which feedback is valued
Whether feedback is provided
Whether feedback is accepted
The way a team member responds to comments from another
The way that statements are accepted (without supporting evidence)

**Workload Sharing**

It was important to capture both the effort that team members contribute as well as the interdependence of their work in the construct of *workload sharing*. The first aspect refers to the effort that members exert in their team work – both within the meetings and in the work that should occur between meetings which is usually in the classroom and undertaking the work to their best ability. The second aspect refers to the way that team members work interdependently and take shared responsibility for the work. This may be by having an understanding of the work that other members are doing and coordinating their work to ensure it is all done to a high standard. This concept captures the interdependency of team work.

The indicators of the elements of *workload sharing* were:

- The contribution that team members make to meetings
- The effort that team members put into tasks
- Whether team members share the work
- The extent to which team members are aware of each other’s work

**Intergroup Processes**

The element of *intergroup processes* was defined as the team working with other groups (or people) to enhance the functioning of the team. This may be to gain resources, contribute to the team’s sustainability or to promote its approach to learning.
The indicators of the element of *intergroup processes* were:

- The extent to which the team uses other groups to build resources
- The extent to which the team promotes itself to others
- The extent to which the team works on its sustainability

**Team Efficacy**

Team efficacy, is defined as the team’s feeling of potency, or confidence in their ability to be successful.

Only one indicator of the element of team efficacy was described which was:

- The belief that the work of the PLT improves student learning

One indicator was deemed to be adequate to measure the construct of team efficacy due to the simple nature of the construct. Hair et al. (2006) note that single item measures can effectively be used to measure constructs that are not complex and Bergkvist and Rossiter (2007) showed that constructs measured by single items can be equally as valid as multiple-item measures. Single item measurement has the advantage of helping to keep the instrument shorter and simpler and reduce repetition frustration for the respondent (Petrescu, 2013). The construct of team efficacy is encompassed by the belief that the team is successful in its goal which is to improve student learning. Multiple ways of measuring this notion were not warranted although the decision was made with a trade-off in terms of reliability and measurement error.

**Supportiveness**

The element of *supportiveness* was defined as the respect and assistance granted to team members. This may involve listening to all views in a meeting and taking those views into account. It also covers positive interactions between team
members, members providing assistance, and valuing the team as a source of assistance so that team members accept offers of help.

The indicators of the element of supportiveness were:

- The meetings contributions of all members are valued
- The views of all members are equally taken into account
- Members help each other

**Facilitating Student Learning**

The element of facilitating student learning was defined as the work that the team undertakes with the goal of improving student learning outcomes. It is limited to the work of the team in the interpretation of assessment data, identifying current skills levels, setting learning goals, and planning teaching strategies.

The indicators of the element of facilitating student learning were:

- The leader focusing the team on facilitating student learning
- Use of assessment data to determine skills
- Synthesis of a range of sources of data
- Evaluation of effectiveness of assessment practices
- Setting learning goals for students
- Planning teaching strategies to reach learning goals
- Reporting of implementation of teaching strategies to the team

**Facilitating Teacher Learning**

The element of teacher learning was defined as the work that the team undertakes with the goal of improving teacher learning outcomes.

The indicators of the element of teacher learning are:

- Developing teaching practice
o Developing assessment practice

o Identifying professional development in the area of teaching practice

o Identifying professional development in the area of assessment practice

**Item Writing**

Each of these indicators formed the basis of a single item. The next step was to determine quality criteria for each indicator. Quality criteria represent a range of behaviours or attitudes of differing levels of functioning. Descriptions of functioning at a range of levels was determined – from very low functioning teams or team members to high functioning teams or team members. Generally, three or four quality criteria were described for each item. These three or four quality criteria represent three or four options for each item. Following the example of Gillis and Griffin (2004), the format of the items was multiple choice. Respondents were advised to select the best option. This process was repeated for each element.

To assist with creating the quality criteria for each item, two existing developmental frameworks were consulted. Items that relate to the obtainment of skill were based on the Five Stage Model of Mental Activities (Dreyfus & Dreyfus, 1980). This framework describes progressive changes in a performer’s way of seeing the task environment and categorises the stages as novice, competence, proficiency, expertise and mastery. Where possible, behaviours were selected that covered the spread of levels in the framework – that is a behaviour at novice and a behaviour at mastery, with at least one behaviour at one of the middle levels. For the teamwork aspects, the affective domain of Bloom’s taxonomy was used as a basis (Krathwohl, Bloom, & Masia, 1964). This domain describes stages or growth in emotional
response in attitudes, emotion or feelings. The stages are receiving, responding, valuing, organising and characterising.

For example, an indicator of the construct *workload sharing* is that team members coordinate their work. The statement “*Members coordinate PLT work*” became the item stem or the route of the question. The expert group determined that members of a high functioning team on this indicator would coordinate their work and members of a low functioning team on this indicator would act independently. A middle indicator represented a team between the low and the high extreme. The three response options were therefore created as:

- Members act independently
- Members discuss the ways in which PLT work will be completed
- Members coordinate actions to ensure PLT work is completed

Items were generally written in a positive manner to allow respondents to endorse a behaviour as a positive statement. However, despite efforts, it was not always possible to make a positive statement of a behaviour at the lowest level and in these cases a statement of absence was made. For example, the lowest level of the behaviour of using evidence of student learning was “My PLT does not discuss evidence of student learning”.

**Instrument Review**

A series of three panelling workshops was undertaken to review the items. The group consisted of 15 researchers with a range of experience in teaching, working with PLTs and assessment item writing. The purpose of these workshops was to check the face validity of the items, examine the items for any possible ambiguity, and determine whether the elements were adequately addressed by the items. Feedback from these three workshops resulted in changes to many items. One
suggestion that was incorporated was to make each response option a full sentence to reduce the need for respondents to constantly check the sentence stem for clarity. Other minor changes resulted in syntactical revisions for clarity purposes.

A small check of the items was undertaken with participants who represented the target group. A small group of team members was asked to complete the questionnaire and provide feedback. There were 23 Team Leaders working in Catholic Education Office (CEOM) schools who agreed to complete the questionnaire in a pen and paper format. These participants were asked to respond to each question and additional information was requested by way of comments on item clarity (“Is it clear what is being asked?”) and response differentiation (“Is there a response option that is applicable to you?”). Feedback from this stage was positive, and minor (mostly grammatical) changes ensued.

Schools who were part of the larger research project were invited to participate in this round of data collection. There were 198 team members who agreed to complete the questionnaires and gave their consent for their data to be analysed. This pilot data were analysed as part of another study within the project (Robertson, 2012).

To consider the reliability of the instrument, a range of statistics was examined using both Classical Test Theory and IRT. To examine the information provided by items, descriptive statistics were examined for distribution of responses. A consideration was to identify items with skewed distributions. It is accepted that most constructs are continuously distributed, and therefore it is to be expected that scores may be at any point along that dimension (Clark & Watson, 1995). Items with skewed distributions may be retained taking into consideration results from IRT analysis to examine the precise points along the continuum where an item is
optimally informative and in consultation with the panelling group for the theoretical importance of the item. Items were considered for review if greater than 80% or fewer than 20% of respondents endorsed one response (Priest, 1995).

Analysis of individual items and feedback from respondents and further input from the research team resulted in changes to some of the items, some deletions and some additions (Robertson, 2012). The piloting and revision stage resulted in a revised instrument which contained 48 items. The number of items measuring the elements across the two instruments were as follows:

6 items measuring *school support*

8 items measuring *communication*,

7 items measuring *workload sharing*,

3 items measuring *intergroup processes*,

1 item measuring *team efficacy*,

3 items measuring *supportiveness*,

13 items measuring *facilitating student learning*,

7 items measuring *facilitating teacher learning*

Each item represents one indicator of the element and each item has between two and four response options representing different levels of quality of an individual’s status on that indicator. Respondents are advised to select the highest level that pertains to them, with the assumption that each level subsumes all the levels below it. That is, by selecting response option 2, a respondent is indicating they have achieved option 1 and 2, and have not yet achieved option 3. A single numerical response was recorded for each item in an ordinal manner such that 1
indicates that the respondent selected the lowest level of functioning on an indicator, 2 the next level, etc.

These 48 items were divided into two separate questionnaires. This was done to reduce the amount of time that respondents spent completing any single questionnaire. The two questionnaires were termed PLT Activities and PLT Engagement. The instrument termed PLT Activities contained 18 items which were mainly concerned with the tasks that the team undertakes. The PLT Activities instrument can be seen in Appendix A. The instrument termed PLT Engagement contained 30 items which were mainly concerned with the way the team goes about their work. The PLT Engagement instrument can be seen in Appendix B. Appendix C shows the full 48 items that are grouped according to the construct that they were designed to measure.

**Instrument Analysis**

To analyse the functioning of the items, a pilot study was undertaken and analysed by Robertson (2012). Robertson reported that 508 respondents completed the PLT Activities instrument and 374 respondents completed the PLT Engagement instrument. Of these, 296 respondents completed both PLT Activities and PLT Engagement. Robertson (Robertson, 2012) fitted the data from PLT Activities instrument to a Rasch model and separately fitted the data from the PLT Engagement instrument to a Rasch model. That study concluded that the hypothesised order of quality criteria was supported by the data.

**Participants**

Ethics approval was granted for the collection of data from online questionnaires (HREC 1137200, 1136675 and 1137072). The Ethics Applications, Plain Language Statements and Consent Forms can be found in Appendix I. Consent
was sought from school principals of participating schools, and when granted, consent was sought from educators in those schools who were part of the ALP project. This group of participants was used because they were all participating in the ALP project which necessitated them working in a PLT and facilitating assessment of the learning of students under their care twice per year. The student data are valuable as it can serve as a measure of the effectiveness of the PLT. That student data were provided to the University of Melbourne for analysis as part of the ALP research project. No payment or incentive was provided for participation in the study. Participants were advised that their data were not anonymous, however would be kept confidential within the researching team. Participants understood that their responses would be linked to the assessment results of students in their class for whom data were collected on their reading comprehension progress.

Participants who provided consent to participate in the research were advised by email that two questionnaires were available for completion and information was provided to enable them to log into the project’s online system (ARCOTS) by using their Victorian Institute of Teaching (VIT) number and password. Once this information was submitted, the instruments were presented for completion. Responses were saved and automatically linked to the identifying information of VIT number so that data could be matched to each individual participant. All data were collected between March and December 2012.

The participants involved in this study (N=593) worked in schools which were taking part in the ALP research project and were either employees of Victoria’s Department of Employment and Early Childhood Development (DEECD) (n=372, 62.7%), the Catholic Education Office Melbourne (CEOM) (n=201, 33.9%) or an Independent school (n=20, 3.4%). All participants were employed in schools and
working either directly or indirectly with students between Year 3 and Year 6 of their school years.

Age

Participants’ ages ranged from 22 to 69 (mean = 42, SD = 11.7). Table 2 shows the frequency and percentage of participants in five year age ranges (20 declined to provide this information).

Table 2. Frequency of Participants in Age Ranges

<table>
<thead>
<tr>
<th>Age range</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;20</td>
<td>39</td>
<td>6.6</td>
</tr>
<tr>
<td>26-30</td>
<td>91</td>
<td>15.3</td>
</tr>
<tr>
<td>31-35</td>
<td>79</td>
<td>13.3</td>
</tr>
<tr>
<td>36-40</td>
<td>62</td>
<td>10.5</td>
</tr>
<tr>
<td>41-45</td>
<td>66</td>
<td>11.1</td>
</tr>
<tr>
<td>46-50</td>
<td>66</td>
<td>11.1</td>
</tr>
<tr>
<td>51-55</td>
<td>81</td>
<td>13.7</td>
</tr>
<tr>
<td>56-60</td>
<td>65</td>
<td>11.0</td>
</tr>
<tr>
<td>&gt;65</td>
<td>24</td>
<td>4.0</td>
</tr>
<tr>
<td>Undisclosed</td>
<td>20</td>
<td>3.4</td>
</tr>
<tr>
<td>Total</td>
<td>593</td>
<td>100</td>
</tr>
</tbody>
</table>

Teaching Experience

The teaching experience of those who completed the surveys ranged from less than one year to 50 years (mean = 16.99 years, SD = 13.18 years). Table 3 shows the frequency and percentage of participants in ranges of teaching experience (12 declined to provide this information).
### Table 3. Teaching Experience in Ranges

<table>
<thead>
<tr>
<th>Years Teaching Experience</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1</td>
<td>50</td>
<td>8.4</td>
</tr>
<tr>
<td>2-3</td>
<td>68</td>
<td>11.5</td>
</tr>
<tr>
<td>4-5</td>
<td>47</td>
<td>7.9</td>
</tr>
<tr>
<td>6-10</td>
<td>81</td>
<td>13.7</td>
</tr>
<tr>
<td>11-20</td>
<td>101</td>
<td>17.0</td>
</tr>
<tr>
<td>21-30</td>
<td>101</td>
<td>17.0</td>
</tr>
<tr>
<td>31-40</td>
<td>112</td>
<td>18.9</td>
</tr>
<tr>
<td>41-50</td>
<td>21</td>
<td>3.5</td>
</tr>
<tr>
<td>Undisclosed</td>
<td>12</td>
<td>2.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>593</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

**Gender**

Of the 593 participants who completed the survey, 460 (77.6%) were female and 122 were male (20.6%). Eleven participants (1.9%) declined to provide this information.

**Data Preparation**

The method of data collection in this study was by way of an online survey made available to participants. No data entry took place as all data were automatically recorded through the online presentation of the questionnaires. Where missing data occurred it was due to the respondent not completing an item. The data for this analysis was presented as two instruments, so it is possible that a respondent could choose to complete one instrument and not the other. In such cases, their data were retained for whatever items that were completed. Missing values were identified with the period (·). Analysis of missing values showed that no item had greater than 2% of missing data, therefore all data were retained for analysis.
Data Analysis

Structural equation modelling (SEM) was the analysis method selected to examine the relationships in the data. SEM is an analytical technique which estimates relationships between any combination of observed variables and latent variables. SEM estimates a series of multiple regression equations simultaneously. It allows confirmatory factor analysis to be conducted and measures the extent to which observed measures are ‘being caused’ by the proposed underlying construct, or latent variable. The relationships between latent constructs can also be analysed, making SEM a powerful modelling technique (Hair, Black, Babin, Anderson, & Tatham, 2006). These two aspects of SEM are termed the measurement model and the structural model respectively.

Given the ordinal categorical data and the skewed distribution of responses of the teacher level variables, the weighted least squares with means and variance adjusted (WLSMV) was used. Although maximum likelihood estimation is commonly used in CFA and SEM, it assumes that the observed variables follow a normal distribution (Dumenci & Achenbach, 2008). In contrast, the WLSMV estimator does not assume normally distributed variables and provides a robust solution for modelling categorical and ordinal variables (T. Brown, 2006). SEM analyses were conducted using the software Mplus Version 6.11 (L. K. Muthen & Muthen, 1998-2010).

The first analysis was to create a single level model containing teacher level data from the self-report questionnaires. The aim of this analysis was to examine the variances and covariances in the data that was obtained from the teachers’ self-report questionnaire.
Measurement Model

The first step in modelling is to identify the measurement model, which represents the relationship between the observed variables and their corresponding hypothesised latent variables. This stage can be thought of as confirmatory factor analysis. A set of observed variables, which are identified as theoretically being ‘caused by’ a latent variable, are grouped together as indicators of that latent variable. The measurement model specifies the correspondence between latent variables and their indicators to provide a measure of the reliability of the items in measuring that construct (Hair et al., 2006). The factor loadings of each of the indicator variables on to their respective latent variables were examined for magnitude.

The goal of establishing the measurement model is to provide an indication of the measurement of each of the constructs and determine whether the constructs are adequately measured by the observed variables. Three models were created to examine the measurement of each of the constructs.

As is the convention for displaying structural equation models, circles (or ovals) represent the unobserved or latent constructs. Square (or rectangles) represent the observed or manifest variables which in this case are the self-report questionnaire items.

The following models were created:

1. Model 1 considered the single factor of school support. The items that were written to measure school support were modelled to a single construct and termed Model 3 which is shown graphically in Figure 2.
2. Model 2 considered the constructs of communication, workload sharing, intergroup processes, supportiveness and team efficacy (observed variable because is measured by a single indicator) which are aspects of working in a team. As it was hypothesised that these five constructs will all be related to each other, a second order factor – termed teamwork was created. The model is depicted graphically in Figure 3.

3. Model 3 considered the constructs of facilitating student learning and facilitating teacher learning which are aspects of the work that teams undertake. Items that were written to measure each of these constructs were modelled onto the two separate constructs, and the model was termed Model 3. It can be seen graphically in Figure 4.
To examine the measurement of the constructs, the co-efficient of each indicator variable regressed onto the latent variable was reviewed. Standardised factor loadings (or regression co-efficients) are informative in providing information on the relationship between the indicator variables and the latent construct and the relative strength of the loadings. Bollen and Lennox (1991) differentiate between models in which it is assumed that indicators are causal, in the sense that the indicators determine the latent variable and models in which indicators are effects of the latent variable (or the latent variable causes the indicators). The indicator variables in the current study represent samples of the constructs, so this model is of the effect indicator type – where the latent construct is assumed to determine the indicator variables. This distinction has implications for determining the adequacy of the measurement model.

**Factor Loadings**

The factor loadings provide an indication of the relationship between the observed variables and the latent variable. Tabachnick and Fidell (2007) suggest factor loadings can be evaluated by the ratings of .32 (poor), .45 (fair), .63 (very
good) or .71 (excellent), although Stevens suggests that a cut off of .4 is appropriate for interpretive purposes (Field, 2005; Stevens, 1992). In this study, factor loadings above .4 were considered to be an adequate indicator of a construct. Once it was determined that the constructs were adequately measured, the relationships between the constructs was examined in the structural model.

**Structural Model**

The second step in an SEM model is to develop the structural model which represents the hypothesised relationships between the constructs in the model. This model is specified from theory and the research hypotheses. Relationships can be estimated between observed and/or latent variables. This separation of the measurement model from the structural model allows the error component of each construct to be estimated. Therefore the relationships between the constructs is corrected for the amount of error variance present in the set of indicators that represent each construct (Hair et al., 2006).

**Goodness of fit indices**

To examine the model fit, a range of fit indices is reported. Absolute fit indices compare the covariance matrix obtained from the theoretically defined model to the covariance matrix derived from the observed data and provide a measure of the similarity of these two matrices (Hair et al., 2006). They are not calculated on how well the proposed model compares to a baseline model, rather how well it compares to no model at all and provide the most fundamental indication of how well the model fits the data. The $\chi^2$ statistic is usually reported in SEM models, however there are some drawbacks to its use in determining model fit. The $\chi^2$ statistic is influenced both by the sample size and the number of parameters free to be estimated in the model. This leads to the tendency of $\chi^2$ towards producing a Type I error.
(erroneously significant) when the sample size is large (> 200), when there are many variables, and when the distribution of variables are not normally distributed. Hair et al. (Hair et al., 2006) suggest that where N > 250 and with between 12 and 30 variables in the model, it can be expected that a model with good fit would have a significant $\chi^2$ which should be ignored.

Another absolute fit index that attempts to correct for the limitations of the $\chi^2$ statistic for models with large sample size or a large number of parameters is the root mean square error of approximation (RMSEA). RMSEA explicitly corrects for both these aspects. Lower values of RMSEA represent a better fitting model, and values below .1 are generally considered good fit, and less than .06 are excellent fit (Hair et al., 2006) (Hu & Bentler, 1999). However, due to its compensation for large sample size, RMSEA may over-reject good models with a small sample size (< 200), so it is recommended that in such cases, RMSEA be used with caution, or to use higher values as indication of good fit (i.e. up to .11) (Hu & Bentler, 1999).

Comparative Fit Index (CFI) is a normed (values 0 -1) incremental fit index with higher values representing better fit. It is relatively immune to model complexity and is one of the most commonly used fit statistics for SEM. The Tucker Lewis Index (TLI) is similar to CFI, and the values are generally very similar, however as it is not normed so the values may exceed 1.

Weighted Root Mean Residual (WRMR) is a fit statistic that uses a variance weighted approach. It is suitable for non-normal continuous variables, those with widely varied variances and categorical variables. Guidance has been provided that values less than 1.0 (Yu & Muthen, 2002) or .90 (B.O. Muthen, 1998-2004) should be used to indicate good fit for models with categorical outcomes.
To evaluate each model and determine whether it is representative of the data, the following guidelines were used. In general, models with good fit will have RMSEA value less than .08 and CFI and TLI values greater than .90 (Hair et al., 2006). Hair et al. provide guidelines for each of these statistics which take into account sample size and number of variables in the model. For a sample size of over 250, and with greater than 30 observed variables, Hair et al (2006) suggest that for a model with a good fit a significant $\chi^2$ can be expected, CFI and TLI would be greater than .90, and RMSEA would be less than .07. WRMR less than 1.0 was also taken to indicative of good fit. These criteria were used in the current study to evaluate model fit.

Model Modifications
In the CFA modelling process, the proposed model is tested and an indication of the fit of the model to the data are provided. Suggestions for modifications to the model can be requested from the analysis which would improve the fit of the model to the data. Modifications should be made with caution and in keeping with theoretical underpinnings of the model. Such modifications could uncover relationships that the model did not predict and lead to new understanding of the model. However simply modifying the model without reference to theory could lead to a model which is a product of the specific data and of little substantive use. In this study, the modification indices provided by the software are consulted, and only where substantial improvement in model fit may be obtained by the proposed modification, and when the modification can be supported by theory are they implemented.
Results

Descriptive Statistics

Responses were received from 593 participants. Response options were considered to be ordered categorical. The distribution of data were examined for frequency in each category of an item. Where fewer than ten participants endorsed a category, that category was collapsed with the adjacent category that had fewer responses. Appendix D shows the frequency of responses for each category, and the frequency following recoding. Means, standard deviation and skewness of the data are reported in Appendix E.

Each item was negatively skewed, with the lowest level response criteria being endorsed by very few respondents in some cases. Where fewer than ten responses were received in one category (always at the lowest level of the response options), it was collapsed with the adjoining category. In total, eight variables were recoded to collapse response option one with response option two. The affected variables were: C5, WS6, WS7, S1, SL1, SL2, SL3 and SL12. The recoded version of these items were used in subsequent analyses. Appendix D shows each item along with the number of responses received in each category, and the subsequent recoded response frequencies.

The descriptive statistics in Appendix E show that many respondents rated themselves at the highest level. This may pose a problem in analysis as it reduces the variance available for discrimination between respondents.

Measurement Model

This section describes the analysis of the construct validity of the instrument via confirmatory factor analysis (CFA). A range of statistics was consulted to
examine the measurement of the constructs. They can be broken down to two main aspects – examining the overall model fit and examining the factor loadings of each of the items.

**Model 1: School Support**

Model 1 measures the construct of the support of that the school leadership provides to the team. Model 1 is depicted graphically Figure 5.

![Image](image.png)

**Figure 5. Graphical depiction of Model 1.**

It contains one construct termed *school support* which is measured by six observed variables as can be seen in Table 4.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS1</td>
<td>Time for my PLT to meet is scheduled.</td>
</tr>
<tr>
<td></td>
<td>1. Time for my PLT to meet is fitted around other priorities in the school’s schedule.</td>
</tr>
<tr>
<td></td>
<td>2. Time for my PLT to meet is found in the school’s schedule.</td>
</tr>
<tr>
<td></td>
<td>3. Time for my PLT to meet is prioritised within the school’s schedule.</td>
</tr>
<tr>
<td>SS2</td>
<td>The principal of my school knows about the work of my PLT.</td>
</tr>
<tr>
<td></td>
<td>1. The principal of my school is not aware of the work of my PLT</td>
</tr>
<tr>
<td></td>
<td>2. The principal of my school has an overview of the aims and accomplishments of my PLT.</td>
</tr>
<tr>
<td></td>
<td>3. The principal of has a knowledge of the decisions and actions of my PLT.</td>
</tr>
</tbody>
</table>
SS3 The work of my PLT is valued by the leadership of my school.
   1. The work of my PLT is not valued by the leadership of my school.
   2. The work of my PLT is valued by the leadership of my school.

SS4 The work of my PLT influences strategic planning at my school.
   1. The work of my PLT does not influence strategic planning at my school.
   2. The work of my PLT is incorporated in strategic planning at my school.
   3. The work of my PLT drives strategic planning at my school.

SS5 The role of PLT leader has a place in the leadership structure of our school.
   1. The role of PLT leader is considered peripheral to the leadership structure of our school.
   2. The role of the PLT leader is seen as significant in the leadership structure of our school.

SS6 PLTs are formalised in our school’s structure.
   1. PLTs are not part of the formal structure of our school.
   2. Our school is reviewing its structure to incorporate PLTs.
   3. PLTs are integrated into our school’s structure.

Cronbach’s alpha for these six items was 0.73. The standardised factor loadings for the items measuring the latent variable school support are reported in Table 5. The factor loadings are all significant and range from 0.66 to 0.83 and with an average of 0.73 which would be rated as excellent according to Tabachnick and Fidell (2007). This suggests that these six items have considerable overlap in their measurement and are good indicators of a single construct.
Table 5. Factor Loadings of the Items that Measure the Construct of School Support.

<table>
<thead>
<tr>
<th>Estimate</th>
<th>Std</th>
<th>Est/S.E.</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS1</td>
<td>0.68</td>
<td>0.04</td>
<td>17.60</td>
</tr>
<tr>
<td>SS2</td>
<td>0.66</td>
<td>0.04</td>
<td>15.57</td>
</tr>
<tr>
<td>SS3</td>
<td>0.83</td>
<td>0.07</td>
<td>12.77</td>
</tr>
<tr>
<td>SS4</td>
<td>0.75</td>
<td>0.03</td>
<td>25.28</td>
</tr>
<tr>
<td>SS5</td>
<td>0.73</td>
<td>0.04</td>
<td>16.70</td>
</tr>
<tr>
<td>SS6</td>
<td>0.72</td>
<td>0.04</td>
<td>16.87</td>
</tr>
</tbody>
</table>

The overall fit of Model 1, which was made up of the single latent variable of school support was examined. The $\chi^2$ value was 32.83 (df = 9, $p < .01$). RMSEA was 0.07, CFI was 0.98 and TLI was 0.96. WRMR was 0.92. These fit statistics suggest a good fit of the model to the data.

**Model 2 - Teamwork**

Model 2 considered the teamwork aspects which included the constructs of communication, workload sharing, intergroup processes, team efficacy, and supportiveness. Model 2 can be seen graphically in Figure 6.

Figure 6. Graphical depiction of Model 2.
To evaluate the measurement of these constructs, a model was specified as follows:

- A latent variable called *communication* was specified to be measured by eight observed variables

- A latent variable called *workload sharing* was specified to be measured by seven observed variables

- A latent variable called *intergroup processes* was specified to be measured by three observed variables

- A latent variable called *supportiveness* was specified to be measured by three observed variables

- A latent variable termed *teamwork* was created to be measured by *communication, workload sharing, intergroup processes, supportiveness* and the single observed indicator; *team efficacy*.

**Measurement of Communication**

Communication was measured by eight observed variables which can be seen in Table 6.

<table>
<thead>
<tr>
<th>CI</th>
<th>I seek to ensure statements made in PLT discussions are supported by evidence.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I accept statements made at face value.</td>
</tr>
<tr>
<td>2.</td>
<td>I ask questions to ascertain whether statements made in PLT discussions are supported by evidence.</td>
</tr>
<tr>
<td>3.</td>
<td>I consider statements from PLT members based on the supporting information they provide.</td>
</tr>
<tr>
<td>C2</td>
<td>I give feedback about PLT work to other team members when warranted.</td>
</tr>
<tr>
<td>----</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>1.</td>
<td>I keep my views about other team members’ PLT work to myself.</td>
</tr>
<tr>
<td>2.</td>
<td>I give feedback about PLT work to team members with whom I feel comfortable</td>
</tr>
<tr>
<td>3.</td>
<td>I give feedback about PLT work to all PLT members.</td>
</tr>
<tr>
<td>C3</td>
<td>I value feedback from PLT members.</td>
</tr>
<tr>
<td>1.</td>
<td>The feedback I get from team members generally is not helpful.</td>
</tr>
<tr>
<td>2.</td>
<td>I adjust my work based on feedback from team members.</td>
</tr>
<tr>
<td>3.</td>
<td>Feedback from team members has helped improve our students’ learning outcomes.</td>
</tr>
<tr>
<td>C4</td>
<td>I ask for feedback from team members.</td>
</tr>
<tr>
<td>1.</td>
<td>I do not ask for feedback on PLT tasks.</td>
</tr>
<tr>
<td>2.</td>
<td>I only ask for feedback on PLT tasks from members of my team with whom I feel comfortable.</td>
</tr>
<tr>
<td>3.</td>
<td>I ask for feedback on PLT tasks from members whose perspective or expertise would contribute to my understanding.</td>
</tr>
<tr>
<td>C5</td>
<td>I respond to comments from other team members.</td>
</tr>
<tr>
<td>1.</td>
<td>I respond defensively to feedback from PLT members.</td>
</tr>
<tr>
<td>2.</td>
<td>I accept feedback from PLT members.</td>
</tr>
<tr>
<td>3.</td>
<td>I respond to feedback from PLT members in terms of its usefulness in helping us enhance student learning.</td>
</tr>
<tr>
<td>C6</td>
<td>My PLT discusses difficult issues.</td>
</tr>
</tbody>
</table>
1. We avoid discussing difficult issues in case we give offence.

2. We endeavour to ensure our discussions of difficult issues do not cause offence.

3. Discussions of difficult issues in our team are frank and professional regardless of potential to upset members.

C7 Tension is managed in the PLT.

1. Tension between members is allowed to develop in the PLT.

2. Tension is managed in the PLT by maintaining interpersonal relationships.

3. Tension in the PLT is managed by remaining focused on the team's goals.

4. Tension in the PLT is managed by focusing on student learning.

C8 My PLT resolves disagreements.

1. When there is disagreement, we do not reach a consensus view.

2. When there is a disagreement, the view of one or two members usually prevails.

3. Disagreement is tolerated and evidence sought to support each view.

The standardised factor loadings for the items measuring the latent variable communication are reported in Table 7. All loadings are above .4 which is the criteria used for adequate measurement of a construct. The average loading is .72 which is rated as excellent (Tabachnick & Fidell, 2007). The loadings are consistently high and significant. This suggests that these eight items have considerable overlap in their measurement and are good indicators of a single construct.
Table 7. Factor Loadings of the Items that Measure Communication.

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>Std Error</th>
<th>Est/S.E.</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>0.51</td>
<td>0.04</td>
<td>12.39</td>
<td>0.00</td>
</tr>
<tr>
<td>C2</td>
<td>0.68</td>
<td>0.04</td>
<td>19.46</td>
<td>0.00</td>
</tr>
<tr>
<td>C3</td>
<td>0.76</td>
<td>0.03</td>
<td>24.04</td>
<td>0.00</td>
</tr>
<tr>
<td>C4</td>
<td>0.70</td>
<td>0.04</td>
<td>18.16</td>
<td>0.00</td>
</tr>
<tr>
<td>C5</td>
<td>0.70</td>
<td>0.04</td>
<td>17.99</td>
<td>0.00</td>
</tr>
<tr>
<td>C6</td>
<td>0.51</td>
<td>0.05</td>
<td>11.28</td>
<td>0.00</td>
</tr>
<tr>
<td>C7</td>
<td>0.57</td>
<td>0.04</td>
<td>15.32</td>
<td>0.00</td>
</tr>
<tr>
<td>C8</td>
<td>0.60</td>
<td>0.05</td>
<td>13.51</td>
<td>0.00</td>
</tr>
</tbody>
</table>

When describing a construct, it is appropriate to review the items with the highest factor loadings and look for commonality among those items (Fabrigar, Wegener, MacCallum, & Strahan, 1989). The items with the highest factor loadings in this construct are C3, C4 and C5, which all have factor loadings at 0.70 or higher. The first response option of the item labelled C5 was collapsed with the second option, thus making analysis of this item dichotomous. The two options analysed then were:

1. I respond defensively to feedback from PLT members / I accept feedback from PLT members, and

2. I respond to feedback from PLT members in terms of its usefulness in helping us enhance student learning
Measurement of Workload Sharing

Workload sharing was measured by seven observed variables which can be seen in Table 8.

Table 8. Items that Measure the Construct of Workload Sharing.

<table>
<thead>
<tr>
<th></th>
<th>Workload Sharing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WS1</strong></td>
<td>Members of my team complete their PLT work.</td>
</tr>
<tr>
<td>1.</td>
<td>PLT work is completed when other priorities allow.</td>
</tr>
<tr>
<td>2.</td>
<td>PLT work is prioritised over other school demands.</td>
</tr>
<tr>
<td><strong>WS2</strong></td>
<td>Members of my team contribute to PLT work.</td>
</tr>
<tr>
<td>1.</td>
<td>Not all members of my team prioritise PLT work.</td>
</tr>
<tr>
<td>2.</td>
<td>All members of my team prioritise PLT work.</td>
</tr>
<tr>
<td><strong>WS3</strong></td>
<td>My PLT is aware of the degree to which the PLT work is carried out by members.</td>
</tr>
<tr>
<td>1.</td>
<td>My PLT is not aware of the degree to which the PLT work is carried out by members.</td>
</tr>
<tr>
<td>2.</td>
<td>My PLT discusses evidence of the degree to which the PLT work is completed by members.</td>
</tr>
<tr>
<td><strong>WS4</strong></td>
<td>My PLT takes responsibility for the success of the PLT work.</td>
</tr>
<tr>
<td>1.</td>
<td>Each team member is responsible for their own PLT work.</td>
</tr>
<tr>
<td>2.</td>
<td>We take joint responsibility for success of the PLT work.</td>
</tr>
<tr>
<td><strong>WS5</strong></td>
<td>Members coordinate PLT work.</td>
</tr>
<tr>
<td>1.</td>
<td>Members act independently.</td>
</tr>
<tr>
<td>2.</td>
<td>Members discuss the ways in which PLT work will be completed.</td>
</tr>
<tr>
<td>3.</td>
<td>Members coordinate actions to ensure PLT work is completed.</td>
</tr>
<tr>
<td><strong>WS6</strong></td>
<td>I contribute to the PLT meetings to the best of my ability.</td>
</tr>
<tr>
<td>1.</td>
<td>I do not contribute to PLT meetings.</td>
</tr>
</tbody>
</table>
2. I contribute to PLT meetings.

3. I contribute to PLT meetings and encourage others to do so.

**WS7** I complete PLT work to the best of my ability.

1. I generally regard PLT work as none of my concern.

2. I complete PLT work depending on my priorities.

3. I complete all the PLT work to the best of my ability as part of my obligations to the team.

4. I complete PLT work to help improve the team’s overall performance in terms of enhanced student learning.

The factor loadings for the items measuring the latent variable *workload sharing* are reported in Table 9. All factor loadings are above .4 and significant. The average loading is 0.63 which is described in the *very good* range (Tabachnick & Fidell, 2007). The standard errors are in the range of .03 to .05. This suggests that these seven items have considerable overlap in their measurement and are good indicators of a single construct.

| Table 9. Factor Loadings of the Items that Measure the Construct of Workload Sharing. |
|-------------------------------|----------|----------|--------|------|
| WS1  | 0.53   | 0.05    | 11.21  | 0.00 |
| WS2  | 0.63   | 0.04    | 14.75  | 0.00 |
| WS3  | 0.66   | 0.05    | 14.32  | 0.00 |
| WS4  | 0.70   | 0.04    | 16.38  | 0.00 |
| WS5  | 0.67   | 0.04    | 18.42  | 0.00 |
The items with the highest factor loadings are WS4 and WS7. The item labelled WS4 is a dichotomous item measuring whether team members either take individual or joint responsibility for the success of the work of the PLT. The item WS7 was analysed as a three option item. However, looking at the frequency of responses (see Appendix D), relatively few respondents selected either the first or second options (1, 48 respectively) and the majority selected the final two options (220, 315 respectively). The item labelled WS7 was recoded to collapse the first response option with the second due to too few respondents selecting the first option.

The three options that were analysed were:

1. I generally regard PLT work as none of my concern. / I complete PLT work depending on my priorities.
2. I complete all the PLT work to the best of my ability as part of my obligations to the team.
3. I complete PLT work to help improve the team’s overall performance in terms of enhanced student learning.

*Measurement of Intergroup Processes*

The construct of *intergroup processes* was measured by three items which can be seen in Table 10.

**Table 10. Items that Measure the Construct of Intergroup Processes.**

<table>
<thead>
<tr>
<th>Intergroup Processes</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IP1</td>
<td>My PLT promotes its approach to improving student learning.</td>
</tr>
</tbody>
</table>
1. My PLT keeps its achievements to itself.

2. My PLT takes opportunities to promote its approach to improving student learning when they arise.

3. My PLT seeks opportunities to advocate its approach to improving student learning.

**IP2 My PLT uses links with people or organisations outside the PLT.**

1. My PLT focuses only on people and matters internal to the PLT.

2. My PLT uses people or organisations outside the PLT to build its resources.

3. My PLT uses its links with people or organisations outside the PLT to influence policies and structures to enhance the PLT’s work.

**IP3 My PLT works to ensure it is sustainable in the long term.**

1. My PLT does not have any long term plans.

2. My PLT makes plans to ensure the team is successful.

3. My PLT works with school leadership to ensure succession and longevity.

Cronbach’s alpha for these items was 0.64. The standardised factor loadings for the items measuring the latent variable *intergroup processes* are reported in Table 11. All loadings are above 0.6 and significant and the average loading is 0.69 which is in the *very good* to *excellent* range (Tabachnick & Fidell, 2007). This suggests that these three items have considerable overlap in their measurement and are good indicators of a single construct.

<table>
<thead>
<tr>
<th>Intergroup variables</th>
<th>Estimate</th>
<th>Std Error</th>
<th>Est/S.E.</th>
<th>P value</th>
</tr>
</thead>
</table>

Table 11. Factor Loadings of the Items that Measure the Construct of Intergroup Processes.
IP1 0.76 0.03 22.21 0.00
IP2 0.61 0.04 15.40 0.00
IP3 0.70 0.04 16.81 0.00

Measurement of Supportiveness
The construct of supportiveness was measured by three items which can be seen in Table 12.

Table 12. Factor Loadings of the Items that Measure the Construct of Supportiveness

<table>
<thead>
<tr>
<th></th>
<th>I receive help from other team members.</th>
<th>My PLT values contributions to meetings.</th>
<th>My PLT takes the views of others into account in discussions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>1. Team members do not offer to help me.</td>
<td>1. The value of contributions to meetings is based on who makes the contribution.</td>
<td>1. My PLT does not take members’ views into account.</td>
</tr>
<tr>
<td></td>
<td>2. I accept help from other team members when needed.</td>
<td>2. The value of contributions to meetings is based on the way in which they are delivered.</td>
<td>2. My PLT considers the views offered at meetings.</td>
</tr>
<tr>
<td></td>
<td>3. I seek and accept help from other team members when needed.</td>
<td>3. The value of contributions to meetings is based on supporting evidence supplied.</td>
<td>3. My PLT seeks the views of all members and considers them.</td>
</tr>
</tbody>
</table>
Cronbach’s alpha for these items was 0.63. The standardised factor loadings for the items measuring the latent variable *supportiveness* are reported in Table 13. All are above 0.6 and significant. The average loading is 0.72 which is described as *excellent* (Tabachnick & Fidell, 2007). This suggests that these three items have considerable overlap in their measurement and are good indicators of a single construct.

<table>
<thead>
<tr>
<th>Supportiveness</th>
<th>Estimate</th>
<th>Std Error</th>
<th>Est/S.E.</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>0.76</td>
<td>0.04</td>
<td>17.70</td>
<td>0.00</td>
</tr>
<tr>
<td>S2</td>
<td>0.69</td>
<td>0.04</td>
<td>17.59</td>
<td>0.00</td>
</tr>
<tr>
<td>S3</td>
<td>0.72</td>
<td>0.03</td>
<td>21.60</td>
<td>0.00</td>
</tr>
</tbody>
</table>

*Intercorrelations between teamwork constructs*

As hypothesised, the intercorrelations between the constructs of *communication, workload sharing, inter-group processes* and *supportiveness* were generally high – ranging from 0.72 to 0.91 and all significant as can be seen in
Table 14. It was expected that they would be correlated with each other as they are all measuring aspects of the way the team goes about its work.
Table 14. Intercorrelations among Teamwork Variables (standard error in parenthesis).

<table>
<thead>
<tr>
<th></th>
<th>Communication</th>
<th>Workload Sharing</th>
<th>Inter-group Processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workload Sharing</td>
<td>0.83 (.03)**</td>
<td>0.75 (.04) **</td>
<td>0.84 (0.04) **</td>
</tr>
<tr>
<td>Inter-group Processes</td>
<td>0.75 (.04) **</td>
<td>0.84 (0.04) **</td>
<td></td>
</tr>
<tr>
<td>Supportiveness</td>
<td>0.91 (0.03) **</td>
<td>0.76 (0.04) **</td>
<td>0.72 (0.05) **</td>
</tr>
</tbody>
</table>

** Significant at $p<.001$

The highest correlation is between supportiveness and communication at .91. Given the very similar focus of these two constructs, it is not surprising that they are highly correlated.

Because of these high intercorrelations among these constructs, a second order factor was established to group together the constructs measuring the different facets of teamwork.

*Second Order Factor – Teamwork*

A latent variable labelled teamwork was created to be measured by the four latent variables which have been described above and one additional observed variable – the single indicator variable that measures Team Efficacy. Table 15 shows the factor loadings of the four lower order factors and one observed variable on to the second order factor labelled teamwork.

Table 15. Standardised Factor Loadings of the Latent Variables Measuring Teamwork.

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>Std Error</th>
<th>Est/S.E.</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>0.97</td>
<td>0.02</td>
<td>46.32</td>
<td>0.00</td>
</tr>
<tr>
<td>Workload Sharing</td>
<td>0.91</td>
<td>0.02</td>
<td>39.82</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Chapter 3: Examining the Validity of the Proposed Framework
The second order factor *teamwork* is well measured by the four lower order factors and the observed variable *team efficacy*. The standardised factor loadings are all significant and generally very high – averaging 0.83. This again illustrates the high correlations between the constructs that make up *teamwork* and that the variances are better accounted for with a second order factor. The graphical depiction of Model 2 with the factor loadings can be seen in Figure 7

**Figure 7. Graphical depiction of Model 2 including factor loadings.**

**Fit of Model 2**

The overall fit of Model 2 was examined. The criteria for good fit in this study is that RMSEA to be less than 0.07, CFI and TLI to be greater than > 0.9 and WRMR to be less than 1. A significant $\chi^2$ value was not considered to indicate poor fit.

The $\chi^2$ value was significant, 578.93 (df = 206, $p < .01$). RMSEA was 0.06, CFI and TLI were both 0.93, WRMR was 1.33. Although CFI, TLI and RMSEA
were all in the range indicating a good model fit, the WRMR is outside the range of good fit. Taken together, the fit of Model 1 was considered to be adequate.

Model 2 contains all of the constructs identified that relate to the way the team members interact with each other and other to those outside of the team. The above analysis shows that each of the constructs is well-measured by the indicators that were written to measure them. The constructs are highly correlated with each other which justified the addition of a second order factor. The fit of Model 2 was good, indicating that the data fit such a model.

**Model 3: Facilitating Student Learning and Facilitating Teacher Learning**

Model 3 considered the work that the team undertakes. It is what is often referred to as task work – or the actual work of the team that leads to measureable outcomes. It incorporates the two main areas of facilitating student learning and facilitating teacher learning.

**Facilitating Student Learning**

To evaluate the measurement of facilitating student learning a latent variable was specified to be measured by 13 observed variables as can be seen in
Table 16.
Table 16. Factor Loadings of the Items that Measure Facilitate Student Learning

<table>
<thead>
<tr>
<th>Facilitate Student Learning</th>
<th>SL1</th>
<th>My PLT uses evidence of student learning.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.</td>
<td>My PLT does not discuss evidence of student learning.</td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td>My PLT discusses evidence which is collected for purposes other than the focus of the PLT.</td>
</tr>
<tr>
<td></td>
<td>3.</td>
<td>My PLT uses evidence which focuses on student learning needs.</td>
</tr>
<tr>
<td>SL2</td>
<td>My PLT identifies skills demonstrated by students.</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>My PLT does not try to interpret evidence of student learning.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>My PLT focuses a single source of evidence such as student test scores.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>My PLT combines many sources of evidence to identify student skills.</td>
<td></td>
</tr>
<tr>
<td>SL3</td>
<td>My PLT determines the suitability of data to inform teaching.</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>My PLT does not rely on data to inform teaching.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>My PLT assumes all data can be used to inform teaching.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>My PLT determines the suitability of data to inform teaching.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>My PLT reviews the suitability of assessment data in terms of the explicit consequences for student learning.</td>
<td></td>
</tr>
<tr>
<td>SL4</td>
<td>My PLT summarises evidence of student learning.</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>My PLT does not summarise evidence of student learning.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>My PLT summarises evidence of student learning against expectations.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>My PLT summarises evidence of student learning in terms of what the students are ready to learn.</td>
<td></td>
</tr>
<tr>
<td>SL5</td>
<td>My PLT makes teaching plans.</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Teaching plans are made by individual teachers.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Teaching plans are proposed by individual teachers and agreed to by the PLT.</td>
<td></td>
</tr>
</tbody>
</table>
3. Teaching plans are developed jointly by PLT members.

**SL6  My PLT sets learning goals for students.**

1. Learning goals are based on students’ year level curriculum.

2. Learning goals are based on evidence of student readiness to learn.

**SL7  My PLT selects teaching strategies and resources to meet learning goals.**

1. My PLT selects teaching strategies and resources based on familiarity with them.

2. My PLT selects teaching strategies and resources based on evidence of suitability for specific groups of students.

3. My PLT selects teaching strategies and resources based on evidence of success in helping students to meet learning goals.

**SL8  My PLT determines the effectiveness of teaching strategies and resources.**

1. My PLT assumes the effectiveness of teaching strategies and resources.

2. My PLT uses teacher opinion to justify the effectiveness of teaching strategies and resources.

3. My PLT reviews data to determine the effectiveness of teaching strategies and resources.

4. My PLT conducts action research to determine the effectiveness of teaching strategies and resources.

**SL9  My PLT determines the suitability of assessment approaches administered to students.**

1. My PLT does not determine the suitability of assessment approaches administered to students.

2. My PLT determines the suitability of assessment approaches in terms of the familiarity and ease of use.
3. My PLT determines the suitability of assessment approaches in terms the information provided for teaching.

4. My PLT reviews the suitability of assessment approaches in terms of the explicit consequences for student learning.

SL10  My PLT focuses its meeting time on evidence of student learning.

1. Meetings flow freely without structure.

2. My PLT focuses discussion on our assigned tasks.

3. My PLT discussion remains focused on evidence of impact on student learning throughout the meeting.

SL11  My PLT uses its meeting time.

1. My PLT uses its meeting time to deal with administration and the dissemination of information.

2. My PLT uses its meeting time to deal with any issues raised by its members.

3. My PLT uses its meeting time to deal with issues related to student learning.

SL12  Time spent in PLT meetings is productive.

1. Time spent in PLT meetings is not productive.

2. Some of the time spent in PLT meetings is productive.

3. Time spent in PLT meetings is productive.

SL13  I report to the PLT on my implementation of teaching plans.

1. I keep information about my implementation of teaching plans to myself.

2. I tell the PLT about implementation of teaching plans.

3. I report to the PLT on the effects on student learning of the teaching plans.
Cronbach’s alpha for these items was 0.76. The standardised factor loadings for the items measuring the latent variable *facilitating student learning* are reported in Table 17. All are significant and range between 0.49 and 0.73 with an average factor loading of 0.56 which is classified between *fair* and *very good* (Tabachnick & Fidell, 2007). This suggests that thirteen items have some overlap in their measurement and indicate a single construct.

| Table 17. Factor Loadings for the factor of Facilitating Student Learning. |
|--------------------------------------------------|------------------|-------------------|---------------|-------------|
| **Facilitating student learning variables**      | **Estimate**     | **Std Error**     | **Est/S.E.**  | **P value** |
| SL1                                              | 0.51             | 0.06              | 8.97          | 0.00        |
| SL2                                              | 0.52             | 0.06              | 8.28          | 0.00        |
| SL3                                              | 0.55             | 0.04              | 15.00         | 0.00        |
| SL4                                              | 0.59             | 0.04              | 15.89         | 0.00        |
| SL5                                              | 0.64             | 0.04              | 18.44         | 0.00        |
| SL6                                              | 0.56             | 0.06              | 9.62          | 0.00        |
| SL7                                              | 0.67             | 0.03              | 21.59         | 0.00        |
| SL8                                              | 0.73             | 0.03              | 25.94         | 0.00        |
| SL9                                              | 0.68             | 0.03              | 24.73         | 0.00        |
| SL10                                             | 0.67             | 0.03              | 19.89         | 0.00        |
| SL11                                             | 0.49             | 0.05              | 10.79         | 0.00        |
| SL12                                             | 0.52             | 0.05              | 11.25         | 0.00        |
| SL13                                             | 0.65             | 0.04              | 18.06         | 0.00        |
Facilitating Teacher Learning

To evaluate the measurement of facilitating teacher learning, a latent variable was specified to be measured by 7 observed variables as can be seen in Table 18.

Table 18. Factor Loadings of the Items Measuring Construct of Facilitating Teacher Learning

<table>
<thead>
<tr>
<th>Facilitating Teacher Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>TL1 My PLT supports team members to develop the effectiveness of their practices.</td>
</tr>
<tr>
<td>1. My PLT does not support team members to develop the effectiveness of their practices.</td>
</tr>
<tr>
<td>2. My PLT supports team members to develop the effectiveness of their practices when asked.</td>
</tr>
<tr>
<td>3. My PLT is proactive in supporting team members to develop the effectiveness of their practices.</td>
</tr>
<tr>
<td>TL2 My PLT makes plans for improving the professional practices of members.</td>
</tr>
<tr>
<td>1. Plans for improving the professional practices of members are made outside the PLT.</td>
</tr>
<tr>
<td>2. Plans for improving the professional practices of members are discussed by the PLT.</td>
</tr>
<tr>
<td>3. Plans for improving the professional practices of members are developed jointly by the PLT members.</td>
</tr>
<tr>
<td>TL3 My PLT determines professional development priorities for members in the area of teaching practice.</td>
</tr>
<tr>
<td>1. My PLT does not determine professional development priorities for members in the area of teaching practice.</td>
</tr>
<tr>
<td>2. My PLT uses evidence of student learning needs to determine professional development priorities for members in the area of teaching practice.</td>
</tr>
</tbody>
</table>


3. My PLT uses evidence of student learning needs and current teaching practices to determine professional development priorities for members in the area of teaching practice.

4. My PLT uses evidence of student learning needs and a developmental approach to teacher learning to determine professional development priorities for members in the area of teaching practice.

**TL4** My PLT makes decisions about professional development priorities for members in the area of assessment practice.

1. My PLT assumes our assessment practices are adequate and appropriate for teacher needs.

2. My PLT makes decisions about assessment practices based on our opinions of assessment procedures.

3. My PLT makes decisions about assessment practices based on data needed to inform teaching decisions.

**TL5** My PLT develops the teaching practices of its members.

1. My PLT does not develop the teaching practices of its members.

2. My PLT encourages members to consider a range of teaching practices.

3. My PLT assists members to implement relevant teaching practices.

4. My PLT facilitates members to develop the skills necessary to implement new teaching practices.

**TL6** My PLT develops the assessment practices of its members.

1. My PLT does not develop the assessment practices of its members.

2. My PLT exposes members to new assessment practices.

3. My PLT assists members to implement new assessment practices.

4. My PLT facilitates members to develop the skills necessary to implement new assessment practices.
My PLT discusses the suitability of possible strategies and resources for our professional development.

1. My PLT does not discuss the suitability of possible strategies and resources for our professional development.

2. My PLT discusses the suitability of possible strategies and resources for our professional development in terms of their familiarity or ease of access.

3. My PLT discusses the suitability of possible strategies and resources for our professional development in terms of the potential to achieve goals for teachers.

4. My PLT discusses the suitability of possible strategies and resources for our professional development in terms of the evidence to successfully achieve goals for teachers.

Cronbach’s alpha for these seven items is 0.87. The standard factor loadings for facilitating teacher learning are presented in Table 19. All are significant and range from 0.67 to 0.85, with an average of 0.81 which would be rated as excellent according to Tabachnick and Fidell (2007). This suggests that these seven items have considerable overlap in their measurement and are good indicators of a single construct.

<table>
<thead>
<tr>
<th>Facilitating teacher learning variables</th>
<th>Estimate</th>
<th>Std Error</th>
<th>Est/S.E.</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TL1</td>
<td>0.68</td>
<td>0.03</td>
<td>20.22</td>
<td>0.00</td>
</tr>
<tr>
<td>TL2</td>
<td>0.71</td>
<td>0.03</td>
<td>25.94</td>
<td>0.00</td>
</tr>
<tr>
<td>TL3</td>
<td>0.80</td>
<td>0.02</td>
<td>39.88</td>
<td>0.00</td>
</tr>
</tbody>
</table>
These two constructs were entered into a model which is shown graphically in Figure 8.

\begin{center}
\includegraphics[width=\textwidth]{model3.png}
\end{center}

\textit{Figure 8. Graphical depiction of Model 3.}

\textit{Intercorrelation between task work constructs}

The task work constructs of \textit{facilitating student learning} and \textit{facilitating teacher learning} represent the work that the team undertakes. As such, the correlation between the two was checked to determine if it was appropriate to include a second order factor to accommodate the shared variance between them.
The intercorrelation between facilitating student learning and facilitating teacher learning was 0.23 (S.E. 0.04, Est S.E. = 8.05, p = 0.00) indicating a small significant correlation between the two constructs. The relationship is shown graphically in Figure 9. Due to the low correlation, it was decided not to include a second order factor.

![Figure 9. Graphical depiction of relationship between the constructs in Model 3.](image)

**Fit of Model 3**

The overall fit of Model 3 which was made up of two latent variables was examined. The $\chi^2$ value was 427.77 (df = 169, $p < .01$). RMSEA was 0.05, CFI was 0.97 and TLI was 0.96. These indices suggest that the model is a good fit for the data.

**Summary of Measurement Model**

The analysis presented above describes the adequacy of the measurement of the constructs of interest in the study. To achieve this, the hypothesised model was broken down to three models of conceptually similar constructs. Model 1 represented the context in which the team operates which was termed school support. It was well measured by the six observed variables that were determined to measure it. The overall model fit was found to be good.

Model 2 represented the constructs that are concerned with the way that the team goes about their work. The constructs of teamwork were conceptualised as communication, workload sharing, intergroup processes, team efficacy, and
supportiveness. Each of the constructs was well measured by their respective observed variables.

The constructs analysed in Model 2 were highly correlated with each other and a second order factor was added to capture this shared variance. This second order construct was labelled teamwork and the overall model fit of that second order model was found to be good.

Model 3 represented the constructs of the tasks that the team undertakes. These were conceptualised as facilitating student learning and facilitating teacher learning. Each of the constructs was well measured by their respective observed variables. The constructs were not highly correlated with each other suggesting that these are separate constructs. The overall model fit was found to be good.

The measurement model has shown that each of the constructs identified was well-measured by the items that were written to measure them. The next step was to build a structural model to examine the relationships between the constructs.

**Structural Model**

The structural model describes the regression and correlational relationships between the latent variables. To examine the relationships, several possible models were explored. The first model established school support as an exogenous latent variable which has an effect on the second order latent variables of teamwork, and the two first order latent variables of supporting teaching and developing teaching practice. In this model teamwork is an endogenous latent variable which is measured by four latent variables: communication, workload sharing, intergroup processes, supportiveness and the single observed indicator variable – team efficacy. The two constructs labelled – facilitate student learning and facilitate teacher learning are conceptually related to each other as both represent the work that the team
undertakes. Therefore, a correlational relationship between the two was also estimated. The structural model tested – labelled Model 4 is represented graphically in Figure 10.

![Graphical depiction of Model 4.](image)

In this figure, a single headed arrow indicates a regression equation – that is the item to which the arrow points is regressed onto the item at the origin of the arrow. A double headed arrow represents a correlational relationship.

**Model 4**

Model 4 achieved good overall fit: the $\chi^2$ value was 2010.43 (df = 1071, $p < .01$). RMSEA was 0.04 (90% CI: 0.036 – 0.041), CFI and TLI were both 0.94. WRMR was 1.29 which is outside the range of good model fit.

**Error! Reference source not found.** displays the relationships and specifies the estimates. Standardised co-efficients are provided for comparative purposes. The numeric digit on the line indicates the estimate. A solid line indicates a significant relationship and a dashed line indicates a non-significant relationship.
Figure 11. Structural Estimates for Model 4

Table 20 shows the estimates, standard errors and significance of the relationships shown in Model 4.

Table 20. Estimates, Standard Error and Significance of the structural model for Model 4.

<table>
<thead>
<tr>
<th>Measurement of the latent construct teamwork</th>
<th>Estimate</th>
<th>Standard Error</th>
<th>Est/S.E</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>0.90</td>
<td>0.02</td>
<td>51.04</td>
<td>0.00</td>
</tr>
<tr>
<td>Workload sharing</td>
<td>0.91</td>
<td>0.02</td>
<td>46.14</td>
<td>0.00</td>
</tr>
<tr>
<td>Intergroup Processes</td>
<td>0.92</td>
<td>0.03</td>
<td>36.52</td>
<td>0.00</td>
</tr>
<tr>
<td>Supportiveness</td>
<td>0.86</td>
<td>0.03</td>
<td>26.50</td>
<td>0.00</td>
</tr>
<tr>
<td>Team efficacy</td>
<td>0.66</td>
<td>0.02</td>
<td>27.68</td>
<td>0.00</td>
</tr>
</tbody>
</table>
Regression estimates

Facilitate Student Learning on teamwork

<table>
<thead>
<tr>
<th>Model</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>t Value</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilitate Student Learning on teamwork</td>
<td>0.98</td>
<td>0.04</td>
<td>24.74</td>
<td>0.00</td>
</tr>
<tr>
<td>Facilitate Teacher Learning on teamwork</td>
<td>0.77</td>
<td>0.05</td>
<td>16.33</td>
<td>0.00</td>
</tr>
<tr>
<td>Teamwork on school support</td>
<td>0.64</td>
<td>0.04</td>
<td>15.57</td>
<td>0.00</td>
</tr>
<tr>
<td>Facilitate Student Learning on school support</td>
<td>-0.06</td>
<td>0.05</td>
<td>-1.22</td>
<td>0.22</td>
</tr>
<tr>
<td>Facilitate Teacher Learning on school support</td>
<td>0.09</td>
<td>0.06</td>
<td>1.54</td>
<td>0.12</td>
</tr>
</tbody>
</table>

Correlation estimates

Facilitate Student Learning with Facilitate Teacher Learning

<table>
<thead>
<tr>
<th>Model</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>t Value</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilitate Student Learning with Facilitate Teacher Learning</td>
<td>0.50</td>
<td>0.09</td>
<td>5.48</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Neither of the relationships facilitate student learning on school support nor the relationship facilitate teacher learning on school support were significant. Therefore, it was decided to remove these paths in the model.

**Model 5**

A model was specified without the regression of facilitate student learning on school support and facilitate teacher learning on school support. The fit of this model was very similar to that of model 4. The $\chi^2$ value was 2012.40 (df = 1073, $p < .01$). RMSEA was 0.04 (90% CI: 0.036 – 0.041). CFI and TLI were both 0.94 which together indicate excellent fit (Hair et al., 2006; Hu & Bentler, 1999). WRMR
was 1.30 which is greater than the guideline of 1.0 to indicate good fit. Overall these statistics indicate that the model fits the data well. The model is depicted graphically in Figure 12.

![Figure 12. Structural Estimates for Model 5.](image)

Table 21 shows the estimates, standard errors and significance of these relationships in Model 5. As can be seen, all of the estimates are significant.

<table>
<thead>
<tr>
<th>Measurement of the latent construct teamwork</th>
<th>Estimate</th>
<th>Standard Error</th>
<th>Est/S.E</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>0.90</td>
<td>0.03</td>
<td>36.86</td>
<td>0.00</td>
</tr>
<tr>
<td>Workload Sharing</td>
<td>0.91</td>
<td>0.02</td>
<td>45.96</td>
<td>0.00</td>
</tr>
<tr>
<td>Intergroup Processes</td>
<td>0.92</td>
<td>0.03</td>
<td>36.86</td>
<td>0.00</td>
</tr>
<tr>
<td>Supportiveness</td>
<td>0.86</td>
<td>0.03</td>
<td>26.25</td>
<td>0.00</td>
</tr>
<tr>
<td>Team Efficacy</td>
<td>0.66</td>
<td>0.02</td>
<td>27.83</td>
<td>0.00</td>
</tr>
</tbody>
</table>
Regression estimates

facilitating student learning on teamwork

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Standard Error</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.93</td>
<td>0.02</td>
<td>65.44</td>
<td>0.00</td>
</tr>
</tbody>
</table>

facilitating teacher learning on teamwork

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Standard Error</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.83</td>
<td>0.02</td>
<td>37.72</td>
<td>0.00</td>
</tr>
</tbody>
</table>

teamwork on school support

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Standard Error</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.65</td>
<td>0.04</td>
<td>15.57</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Correlation estimates

facilitating student learning with facilitating teacher learning

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Standard Error</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.44</td>
<td>0.83</td>
<td>5.35</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Conclusions

The goal of this study was to test the proposed hypothetical framework presented in Chapter Two and repeated in Figure 13 for ease.

Figure 13. Hypothesised model of team functioning.

A self-report instrument was developed to measure the identified characteristics in a way that is aligned to the way that PLTs operate. This instrument
underwent a process of refinement before being administered to a large group of educators working in PLTs.

Analysis of the data has shown that each of the constructs was adequately measured by the items that were designed to measure them. Examination of the relationships between the constructs deemed to be part of teamwork (communication, workload sharing, intergroup processes, supportiveness and team efficacy) showed considerable overlap as hypothesised and a second order factor termed teamwork was created to capture this shared variance.

It was hypothesised that school support would influence both the second order factor teamwork as well as two task work constructs (facilitate teacher learning and facilitate student learning).

The regression of the construct of teamwork on school support was significant, however neither of the regression coefficients of the two task work constructs (facilitating student learning and facilitating teacher learning) onto school support was significant.

Note that none of the relationships with student learning (as an output) has been examined in this study. In order to study that relationship, a multilevel model and a different teacher sample was required. That analysis was undertaken in Study 2 and is presented next.

Overall, this study has shown that the instrument created to study PLTs is an internally valid measure of the constructs identified. It provides a sound basis on which to examine PLT effectiveness which was achieved by examining the relationship between each of the constructs under investigation with a measure of student learning. The goal of that analysis is to identify which, if any, of the
constructs is more highly related to student learning, and as such a more important indicator of effective teams.

**Linking Elements of PLT Functioning to Student Learning**

Each of the elements that was measured by the instrument was then analysed to determine the relationship between each element and a measure of student learning. This analysis responds to Research Question Two: “What is the relationship between each of these elements and student achievement?”.

The previous section described the development of an instrument to measure the elements that were thought to be important in understanding team functioning. Analysis showed an internally valid instrument that measures the constructs of interest. This chapter describes Study Two which links the measure of the constructs of interest that were described in Study One with an outcome measure of team functioning. The outcome measure chosen was the achievement in reading comprehension of students under the care of teams over a six-month period.

This section outlines the method that was used and results of these relationships. In describing the method, first the outcome measure of student achievement and the way that literacy ability change was measured is explained. The method section then goes on to describe the steps taken to analyse the data in two levels – with students at level one and teachers at level two. The results section explores whether a two level modelling approach was justifiable in this case. The results are then presented, with the relationship between each of the constructs and student achievement in literacy being presented separately.
Method

Participants

There are some educator respondents in the project who are not teaching in a classroom, but work in a team – they may be support staff, literacy leaders or members of the school leadership team. These respondents do not have a class of students for whom they are directly responsible to teach literacy. Such data were analysed at the teacher level when individual and team variables were investigated, but cannot be linked to students as these team members are not teaching. Therefore, these participants’ data could not be analysed in the two level models. For this reason, the number of respondents in Study Two is fewer than that used in Study One. Participants in Study Two are a subset of those in Study One. The subset contained only those from Study One who were the classroom teachers of students who undertook ARCOTS online testing in literacy assessment at the two time points of March and October 2012.

The student participants in this sample were the students of classroom teachers who completed the research instruments. All students were in between Grade 3 and Grade 6 in primary school in Victoria Australia.

Teacher Age

The sample consisted of 242 teachers whose ages ranged from 23 to 65 (20 declined to provide age) (mean = 39.62, SD = 11.23).
Table 22 shows the frequency and percentage of participants in five year age ranges.
Table 22. Frequency of Participants in Study Two in Age Ranges

<table>
<thead>
<tr>
<th>Age range</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-25</td>
<td>19</td>
<td>7.9</td>
</tr>
<tr>
<td>26-30</td>
<td>50</td>
<td>20.7</td>
</tr>
<tr>
<td>31-35</td>
<td>43</td>
<td>17.8</td>
</tr>
<tr>
<td>36-40</td>
<td>20</td>
<td>8.3</td>
</tr>
<tr>
<td>41-45</td>
<td>28</td>
<td>11.6</td>
</tr>
<tr>
<td>46-50</td>
<td>30</td>
<td>12.4</td>
</tr>
<tr>
<td>51-55</td>
<td>22</td>
<td>9.1</td>
</tr>
<tr>
<td>56-60</td>
<td>25</td>
<td>10.3</td>
</tr>
<tr>
<td>&gt;60</td>
<td>5</td>
<td>2.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>242</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Teaching Experience

The teaching experience of those in Study Two ranged from less than one year to 45 years (mean = 13.91 years, SD = 12.48 years) as presented in .

Table 23. Teaching Experience of Participants in Study Two in Ranges.

<table>
<thead>
<tr>
<th>Years teaching experience</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1</td>
<td>29</td>
<td>12.0</td>
</tr>
<tr>
<td>2-3</td>
<td>37</td>
<td>15.3</td>
</tr>
<tr>
<td>4-5</td>
<td>25</td>
<td>20.3</td>
</tr>
<tr>
<td>6-10</td>
<td>39</td>
<td>16.1</td>
</tr>
<tr>
<td>11-20</td>
<td>34</td>
<td>14.0</td>
</tr>
<tr>
<td>21-30</td>
<td>40</td>
<td>16.5</td>
</tr>
<tr>
<td>31-40</td>
<td>35</td>
<td>14.5</td>
</tr>
<tr>
<td>41-50</td>
<td>3</td>
<td>1.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>242</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Teacher Gender

Of the 242 participants in this sample, 173 (71.5%) were female and 61 were male (25%). Eight participants (3%) declined to provide this information.
**Student Participants**

There were 5451 students in the sample, leading to an average cluster size (class grouping) of 22.53. The students were fairly evenly spread between Year 3 to Year 6 (with only 3 in Year 2) as can be seen in Table 24.

<table>
<thead>
<tr>
<th>Student Year Level</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
<td>0.00</td>
</tr>
<tr>
<td>3</td>
<td>1443</td>
<td>26.47</td>
</tr>
<tr>
<td>4</td>
<td>1376</td>
<td>25.24</td>
</tr>
<tr>
<td>5</td>
<td>1285</td>
<td>23.57</td>
</tr>
<tr>
<td>6</td>
<td>1344</td>
<td>24.65</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5451</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Students were linked to teachers by way of the teachers’ Victorian Institute of Teaching (VIT) number. As part of the larger ARCOTS project, students are tracked and each of their teachers’ VIT number is recorded against them for the school year for each subject. That is, in 2012, a student’s English teacher’s VIT number is recorded and the student’s Mathematics teacher’s VIT number is recorded. For this study, the English teacher’s data were accessed to analyse their impact on the student’s reading comprehension.

Two materials were used in Study Two. One is the self-report questionnaire which was developed to measure team members’ perception of their team’s standing on the aspects of team functioning that were described in Chapter 2: Literature Review. Analysis of that instrument was described above.

The second instrument used in this study is a set of tests to measure student reading comprehension. Student ability is tracked in the ALP project by a comprehensive assessment system which was designed to provide information for teachers to support instruction. One of the tenets of the ALP approach was that
student learning is supported by assessment data which can be used to identify the instructional needs of each student so that intervention can be targeted to each student’s ability level. To achieve this, the project provided feedback on student assessment that is linked to a developmental progression. Griffin (Griffin, 2007) showed how a probabilistic interpretation of competencies can provide the basis for linking assessment to teaching via a developmental continuum. The continua were developed by analysing large amounts of assessment data including the cognitive skills required to correctly respond to each item. Analysis with item response modelling determined the difficulty level for each item. Items of similar difficulty level were grouped together, and the descriptions of the individual skills for each item were merged to create a general description which encompassed the set of skills that underpin each group of items. These level descriptors represent a broad description of skills in order of increasing competence. Teachers in the project were provided with a developmental progression for each of the domains for which students are assessed (e.g. literacy).

Item response modelling also allowed student ability to be placed on the same scale, linking student ability to item difficulty through specifying the probability of a student answering correctly. This allowed each student to be placed on the continuum based on their ability as determined by their responses to items on the test (Pavlovic, Awwal, Mountain, & Hutchinson, 2014).

The purpose of such continua in this project was to map assessment data to a continuum to enable teachers to interpret assessment data using a criterion-referenced framework. This allowed teachers to link student progress to a position on an associated developmental continuum to inform targeted teaching interventions. It also allowed student growth to be monitored over time as assessments for each given
area of literacy, numeracy or problem solving were linked to a continuum. For research purposes, this provided a common measurement unit of student ability – namely the logit. This measure is independent of the specific test that the student undertook, and allowed tracking over a large ability range – equivalent to skills of students between Year 3 and Year 10 in this project.

A series of linked tests was developed for the ALP project and presented in an online environment called ARCOTS – Assessment Research Centre Online Testing System (Hutchinson, Francis, & Griffin, 2014). For each of the three domains – literacy, numeracy and problem solving – a bank of test items was developed and calibrated to the underlying continua so that each item’s difficulty level could be determined and linked to a continuum. Items were selected to create tests by considering their difficulty, content, and the processes and cognitive skills required to correctly respond.

Literacy tests consisted of a set of text passages, each with several comprehension questions. Each test was made up of 30 questions presented in a four-choice multiple choice format. To more accurately determine student ability, in cases where students correctly respond to most of the questions, an additional 10 items that were more difficult were automatically presented to the student.

The bank of items, which were all calibrated to the same developmental progression, allowed new tests to be created with known difficulty level as items can be drawn from the item bank. This meant that students could be assessed more than once at the same difficulty level or a pre-determined difficulty level, with different items to overcome practise effects. Students involved in the project generally completed assessments twice each year – in March and September.
For this study, student achievement was considered to be the difference in reading ability on the ARCOTS testing system between March 2012 and September 2012. It is operationalised as logit score obtained on the September 2012 test minus the logit score obtained on the March 2012 test. This variable was labelled LEARN.

The student testing system ARCOTS was made available for a two-week period prior to the testing period, during which time teachers enabled testing for their classes and supervised students to log into the system and complete a test. Teachers were provided with extensive information about the tests to enable them to select an appropriate test for each student, thus targeting the students’ ability level to the test content and difficulty level.

**Data Preparation**

A two-level model was created to link change in student literacy ability, as determined by students’ performance on tests of reading comprehension across a school year, to the teacher level team functioning model that was created in Study One. The goal of this analysis is to examine whether the aspects of team functioning that were identified were related to student learning outcomes.

The following questions were used to guide the analysis:

1. How much of the variance in reading comprehension learning can be attributed to differences between students, how much can be attributed to differences between their teachers’ rating of the teams in which they are a member?
2. Does each of the team-related elements contribute to differences in reading comprehension and to what degree?

To address these questions, a multi-level analysis is required as students are nested within classes. The method will only be described where it differs from that already explained in Study One.
To effectively examine the influence of teacher level factors on student achievement, a method which takes into account the clustering of the data were required. Students are clustered into classes which in this study are equated to teachers. Students within a class, with the same teacher and same group of peers share similar experiences compared to students in a different class taught by a different teacher. Such data are not independent of each other and as such do not make unique contributions to the analysis. Traditional single level analysis that ignores the clustering of the data violates a basic assumption of general linear modelling that observations are independent of each other. It can lead to biased parameter estimates, incorrect standard errors and consequently incorrect statistical tests and effect sizes. The appropriate way to analyse multi-level data are to use hierarchical linear modelling (Raudenbush & Bryk, 2002).

The first step was to determine the appropriateness of multi-level analysis. This step provided an indication of the amount of variance at the within (class) level compared to the amount of variance at the between (class) level. Two commonly used indices to analyse this variance are the intraclass and correlation (ICC) the design effect. The ICC shows the proportion of variance at the between level, with values ranging from 0.0 to 1.0.

The design effect takes into account the average cluster size (in this case the average number of student assessments for teachers). It shows the ratio of variance when clustered sampling is used compared to when clustering is not used (B. O. Muthen & Satorra, 1995; Quené & van den Bergh, 2004). It is calculated as follows:

Design effect = 1 + (average cluster size – 1) * ICC)

Small values for ICC and design effect suggest little variance located at the between level. That is, in this study, small values would indicate that a small
The proportion of variance in student achievement can be accounted for by the class that
the student is in. If this were to be the case, multilevel modelling would not be
warranted. Conversely, multilevel analysis would be warranted if the values were
large so that the between level and within level variance can be adequately
accommodated. Muthen and Satorra (1995) recommend that multilevel analysis is
warranted when the ICC is greater than 0.05 and that the design effect is greater than
2.0.

**Unconditional two level model**

The model that was created and described in Study One was adapted to be a
multilevel model. The first step in identifying whether the constructs identified in the
model are related to student achievement was to create an unconditional model
which identifies the partitioning of variance in the data. Also referred to as a null
model, this model contains only the dependent variable, which in this case is the
change in student reading comprehension ability, and no predictor variables. The null
model identifies the portion of variance in the dependent variable between clusters
(and conversely the proportion within clusters). In this case, the data were clustered
on teachers, so the null model allocates the variance in student achievement to that
which can be attributed to differences between teachers (or classes) and that which
can be attributed to differences between students (within ‘teachers’ or classes). This
analysis identifies the proportion of variance at each level and provides the basis for
explaining some of that variance with subsequent analysis. It was expected that the
portion of variance in student achievement that can be accounted for by the class that
the student was in would be small. This means that the variables measured in this
study can only affect a small portion of the of variance in student achievement. The
question then was to determine whether the elements in the proposed model explain some of that variance.

**Student-level Model**

Student achievement is modelled for each child as a function of class mean plus random error:

\[ Y_{ij} = \pi_{0j} + e_{ij} \]

where

- \( Y_{ij} \) is the achievement of student \( i \) in class \( j \)
- \( \pi_{0j} \) is the mean achievement of class \( j \)
- \( e_{ij} \) is a random ‘student effect’, that is the deviation of student \( ij \)’s score from the class mean. These effects are assumed normally distributed with a mean of 0 and a variance of \( \sigma^2 \) (Raudenbush & Bryk, 2002).

The indices \( i \) and \( j \) denote students and classes where there are:

- \( i = 1, 2, \ldots, n_j \) students within class \( j \);
- \( j = 1, 2, \ldots, J \) classes.

**Class-level Model**

Level 2 of the model can be depicted as:

\[ \pi_{0j} = \beta_{00} + r_{0j}, \]

where

- \( \beta_{00} \) is the mean achievement of students within a class;
- \( r_{0j} \) is a random ‘teacher effect’. These effects are assumed normally distributed with a mean of 0 and a variance of \( \tau_\pi \) (Raudenbush & Bryk, 2002).
This unconditional model analysis shows the proportion of variance in student achievement that can be attributed to factors related to the student and the proportion that can be attributed to the student’s class.

**Data Analysis**

The next step in the analysis was to examine the extent to which the constructs of interest in this study explain this variance in student achievement. One logical way to analyse this would be to enter all latent variables into a two level model, with student achievement regressed onto each.

For each of the constructs of team functioning under investigation, a two level model was created with student reading comprehension achievement at lowest (within) level and clustered on teacher at the second (between) level. Each construct was added individually to the model at the between level and regressed onto student achievement to ascertain the influence that each construct has on student achievement.

Multiple goodness of fit indices are reported as discussed above in Study One.

**Results**

This section describes the sample and the analysis used to examine the influence of the identified elements of team functioning on student learning.

**Descriptive Statistics**

The frequency of responses for 48 item instrument is presented in Appendix G. Although the data are a subset of the data which was analysed in Study One, as there are fewer respondents, the data again required checking and recoding where fewer than ten responses were received in one category. Recoding was performed where there were too few responses (less than ten) in any category. This only occurred in
the lowest response category, leading the lowest category to be collapsed with the second lowest category. In total, 14 variables were recoded to collapse response options one and two. The affected variables were: C3, C6, C7, C8, P1, S2, S3, SL4, SL8, SL9, SL10, SL13, TL1 and TL5. The recoded version of these items were used in all subsequent analyses. Appendix G shows each item along with the number of responses received in each category, and the subsequent recoded response frequencies.

This process resulted in one variable being excluded from the analysis. Variable SS3 was a dichotomous item which received 9 and 225 endorsements in category one and two respectively. The item asked about the support the team receives from school leadership. The majority endorsed that the school leadership supports the PLT. This item was removed from further analysis. The descriptive statistics are presented in Appendix H.

**Justifying Multilevel Analysis**

To warrant the use of multilevel analysis, the intraclass correlation was calculated on the dependent variable student achievement. The ICC represents the proportion of the variance in student achievement that can be explained by the class that the student belongs to. The threshold to warrant the use of multilevel analysis was that ICC be greater than 0.05. It was calculated to be 0.06 suggesting that enough variance exists at the between level for multilevel analysis to be justified.

The design effect takes into account the cluster size and shows the ratio of variance when clustered sampling is used compared to when clustering is not used (B. O. Muthen & Satorra, 1995). The threshold of the design effect to warrant the use of multilevel analysis was that it be greater than 2.0. It was also calculated as follows:
Design effect = 1 + (average cluster size – 1) * ICC

The average cluster size was 22.53 and the ICC was 0.06 which puts the design effect at 2.29.

Both these indices justify the use of multilevel analysis because a significant clustering effect is present in the student achievement data. This indicates that substantial variance in student achievement exists at the between (class) level. It would be inappropriate to ignore this clustering effect because the data are not independent of each other and as such do not make unique contributions to the analysis. Should the traditional single level analysis approach be taken, and the clustering of the data ignored, there would be a violation of a basic assumption of general linear modelling that observations be independent of each other. It can lead to biased parameter estimates, incorrect standard errors and consequently incorrect statistical tests and effect sizes. The appropriate way to analyse multi-level data are to use hierarchical linear modelling (Raudenbush & Bryk, 2002).

**Multilevel Analysis of the Relationships in the Model**

Each of the constructs, as they have been identified in this study, was entered into a model with student achievement as the dependent variable at the within level (level 1) and the construct at the between level (level 2). Each construct was regressed onto student achievement to evaluate whether individually, the constructs contribute to differences in student achievement.
### Table 25. Regression Co-efficients On Student Learning in Two Level Model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimate</th>
<th>Standard Error</th>
<th>Est/S.E.</th>
<th>Two tailed P</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Support</td>
<td>-0.02</td>
<td>0.04</td>
<td>-0.57</td>
<td>0.57</td>
</tr>
<tr>
<td>Communication</td>
<td>-0.16</td>
<td>0.09</td>
<td>-1.85</td>
<td>0.06</td>
</tr>
<tr>
<td>Team Efficacy</td>
<td>0.12</td>
<td>0.18</td>
<td>0.66</td>
<td>0.51</td>
</tr>
<tr>
<td>Supportiveness</td>
<td>-0.04</td>
<td>0.12</td>
<td>-0.31</td>
<td>0.75</td>
</tr>
<tr>
<td>Workload Sharing</td>
<td>0.01</td>
<td>0.11</td>
<td>0.09</td>
<td>0.93</td>
</tr>
<tr>
<td>Intergroup Processes</td>
<td>-0.01</td>
<td>0.06</td>
<td>-0.20</td>
<td>0.85</td>
</tr>
<tr>
<td>Facilitate Teacher Learning</td>
<td>0.07</td>
<td>0.10</td>
<td>0.712</td>
<td>0.47</td>
</tr>
<tr>
<td>Facilitate Student Learning</td>
<td>0.14</td>
<td>0.17</td>
<td>0.82</td>
<td>0.41</td>
</tr>
</tbody>
</table>

**Summary of Two Level Teacher Model**

In sum, this chapter applied multilevel analysis to examine the relationships between the constructs of interest that measure team functioning – that is school support, communication, team efficacy, supportiveness, workload sharing, intergroup processes, facilitate teacher learning and facilitate student learning – and the outcome variable of student literacy achievement. The two level model showed that 6% of the variance in student achievement is located at the teacher level. That is, 6% of the variance can be accounted for by the different classes to which the students belong. This amount of difference which can be explained at the class level necessitated the use of multilevel analysis. Student reading comprehension achievement was individually regressed on to each of the constructs identified in team functioning to
ascertain whether they make a significant contribution to the variance in student achievement. It was found none of the relationships was significant.
Schools are implementing professional learning teams in an effort to improve student learning outcomes. There is some evidence that such an approach has a positive influence on student learning, however the body of knowledge that exists to support that claim is scant. Without a body of research which explores the factors affecting PLT effectiveness, schools are faced with considerable effort to implement the approach with little empirical guidance as to what works or how to improve their current functioning. Perhaps one of the reasons that little theoretically-based research has been undertaken is that there has been little theory development in the area of PLT functioning. To fully understand how a PLT may make a difference in student learning outcomes, a body of research needs to accumulate, with subsequent studies replicating and extending work so that the ideas and variables can be fully explored.

The purpose of this study is to draw on existing research in organisational psychology and team theory on the use of collaborative teams, combined with a review of existing research into collaborative teams specifically within educational contexts to help develop, and then test, a conceptual framework to better understand the effectiveness of PLTs on student learning outcomes. This process necessarily required a review of existing frameworks which seek to measure team effectiveness, again in both non-educational and educational contexts.

A model of team functioning has been proposed based on this research into the existing literature. This model treats the support of school leadership as an important external influence on the functioning of the team. Within the workings of the team, as in many models of team functioning, the model differentiates between the way
that the team goes about its work (teamwork) and the work that it undertakes. The work of the PLT was considered to be two-fold – work that facilitates teacher learning and work that facilitates student learning. The ultimate outcome of the functioning of the team within the hypothesised model is student learning. The proposed model formed the basis of an empirical tool to begin to validate the model and to enable further research into the impact of PLTs in school settings, continuing to build the theoretical basis for this field of research.

This thesis has empirically investigated elements of team functioning in an educational setting. Chapter Two presented a review of the literature and identified the commonly researched elements that contribute to effective team functioning. Chapter Three described the development of an instrument to measure those elements in an educational setting, and described the data measuring these elements that was drawn from the responses of a group of educators. A model of team functioning was presented and the relationships between the elements was examined. The link between each of the team-based elements and student literacy achievement was then considered. This chapter aims to revisit the context in which this study has been undertaken to gain an understanding of the need of studies such as this. The key findings of the literature review will then be used to justify the hypothetical model of collaborative team functioning within an educational context which has been presented. An analysis of the results of Study One and Study Two will follow, with these results considered in relation to the established literature on organisational team theory and the use of collaborative PLTs in education settings.

This study considers two defining features of teams – that members see themselves and are seen by others as an entity, and that the work undertaken requires task-based interdependence among group members who work collaboratively
towards a common goal. These two criteria fit with descriptions of collaborative teams in education which is that members hold a shared vision to enhance student learning (Bolam et al., 2005; Hord et al., 1997; Newmann & Wehlage, 1996; Rosenholtz, 1989). Rosenholtz asserts that the core factor in the failure, mediocrity or success of a school lies within the school’s organisational goals, just as it does in any successful organisation. Within collaborative teams operating in schools, the agreed-upon goals provide a framework to guide the planning, motivating, justifying and evaluating of behaviour and shared decision making (Bolam et al., 2005; Rosenholtz, 1989a).

This study puts forward a hypothetical model of team functioning based on those developed in both organisational psychology and with reference to findings from the study of collaborative teams in education settings. Before the validity of the model is further explored, it is useful to reconfirm the legitimacy of the term, *professional learning team* (PLT) used within this hypothesis and compare characteristics of effective PLTs with those identified in historical studies of teams as outlined in the literature review contained within Chapter 2, and in relation to the results of Studies One and Two.

PLT is one of many broad descriptive terms that have been use in the literature for a group of individual teachers and/or education support staff who work together to reflect on their practice with the intent of increasing the efficacy of their teaching and therefore enhance student learning. Lee et al (1991), Louis and Marks (1998), McLaughlin and Talbert (2001), Newmann and Wehlage (1996) and Sleegers et al. (2013) all use various terms for this concept of a collaborative work unit or team within education settings. Whilst the choice of the term PLT is somewhat arbitrary, the use of this nomenclature is consistent with Hackman (2002), who makes no
distinction between the range of names used to describe teams within management and organisational theory. The critical element for Hackman is the intent to work collaboratively. This is also the case within this study’s definition of a PLT, and is supported by the work of Guzzo (1995) and Katzenbach and Smith (1993), who also identify that teams, by definition, work to a common goal and that team members are accountable to each other.

Many authors referenced in the Literature Review identify the importance of the interdependence of tasks within a team’s work (Campion et al., 1993; Cohen & Bailey, 1997; Coover et al., 1995; Driskell, Salas, et al., 1987; Gladstein, 1984; Guzzo & Shea, 1992; Klimoski & Mohammed, 1994; Lewin, 1951; Salas et al., 1992). This is also consistent with the proposed model, with a number of the identified elements within the second level construct of teamwork also reflective of this thinking. Specifically, the variables of communication, workload sharing, and intergroup processes all speak to the notion that individual members of the team are dependent on each other both in the work (or tasks) that they undertake and for support in doing so. This idea of interdependence of PLT members is also supported by the early work of Le Bon and Wundt who believed that members within a group influence each other’s behaviour and the internal processes established by the group (Le Bon, 1895 (2007); Wundt, 1916).

Further, Cohen and Bailey (1997) and Sundstrom et al. (1990) have identified that teams are a stable collection of individuals, responsible for producing goods or services. This is also consistent with the model proposed in this study, with the end product of an effective PLT being enhanced student learning. While the proposed model does not consider changes within the individuals who make-up the PLTs, the strong factor loading of the constructs of the variables supportiveness (0.89) and,
albeit to a lesser degree, team efficacy (0.56) onto the second order factor teamwork are indicative of stable teams, given the importance that authors such as Bolam et al. (2005), Berry et al. (2005), Hord et al. (1997) and Newmann and Wehlage (1996) place on the existence of mutual trust and support, and the implicit understanding that this is enhanced over time and is negatively impacted by changes in team make-up.

Unsurprisingly, the above is consistent with the approach taken by numerous authors in undertaking research into collaborative teams within education contexts. Bolam et al. (2005), Hord et al. (1997), Newmann and Wehlage (1996) and Rosenholtz (1989) all believe that the notion of collaboration, shared goals and reflective practice lie at the heart of successful PLTs. Further Bolam et al. (2005) also state that the interdependence of team members is defining feature of effective PLTs. Further studies of effective teams have identified a list of characteristics that are common throughout the broader organisational theory as well as that of teams within education contexts. This list includes, shared values and vision; a group approach to student learning; individual and collective professional learning; reflective professional enquiry; openness, networks and partnerships; inclusive membership; and mutual trust, respect and support. Whilst not suggesting that all these characteristics need to be present for a PLT to be effective, this study builds on these generic characteristics to create a hypothesised model of team effectiveness.

The collaboration within a PLT that is considered essential in leading to changes in student learning is characterised by a systematic process in which teachers work together to improve their classroom practice (Dufour, 2004). It is the act of integrating the perspective of others to critically reflect on one’s own practice, engaging in an ongoing cycle of questioning that seems to lead to deep team learning
and subsequent improvement in student learning (Dufour, 2004; G. Phillips, McNaughton, & MacDonald, 2004). Many educators and theorists note that often when teachers attempt to establish PLTs they do so without this true collaboration – instead working independently alongside each other and in a congenial atmosphere building camaraderie and sharing teaching materials (Dufour, 2004; Griffin et al., 2010). Griffin et al. are critical of this sharing culture and urge team members to challenge the inferences and assumptions of others so that all discussion is supported by evidence of student learning (Griffin et al., 2010). Thus, it appears that while collaborative work practices are universally embraced in organisational psychology and broader team theory, there are some authors who believe their effectiveness in teaching practice may be at question, or at least that internal processes within PLTs may be limiting their effectiveness.

The hypothesised model used in this study is based on a modified version of the IPO framework, first proposed by McGrath (1964), to understand the functioning of work teams. This foundational work established a three-staged linear process of input, process and output, and has been adopted as the basis of defining how teams work in both organisational and management theory as well as within education contexts, including works by Cannon-Bowers et al. (1995), Hackman & Oldham (1980), Mickan & Roger, (2000) and Tannenbaum et al. (1992).

As previously identified, some authors have criticised the IPO framework for its simplified interpretation of the processes that guide the work of team, including Cohen & Bailey (1997), Ilgin et al. (2005), Marks et al. (2001), Mathieu et al (2008) and Tannenbaum et al. (1992). This criticism has led to the development of a more nuanced understanding of these work process and the adoption of the term *throughput* to better differentiate between processes that are internal to the group,
such as psychological traits, and those which are clearly integral to the mechanism of transferal from input to output.

The overall acceptance and broad use of the IPO framework within the historic literature, and taking this criticism into account, indicates that it is a valid basis for the development of the hypothetical model of team effectiveness used in this study, with the acknowledged modification of the adoption of the use of *throughput* to describe the processes by which PLTs work with existing inputs to deliver enhanced learning outcomes for students. Adding to this validation is its use in a number of previous studies of collaborative teams in education settings. Although studies that have applied a quantitative framework to measure team effectiveness in education are limited in number, those that exist, such as Bolam et al. (2005) and Newmann and Wehlage (1996), also use models based on the IPO framework. As one of the aims of this study is to continue to build the field of research into the use of PLTs, it is pertinent to use similar methodologies to these studies in order to stimulate further comparison and research.

Given this validation of the overall approach to the development of the model, a more detailed exploration of each of its components is warranted, followed by a comparison of the proposed model to the seven existing frameworks of team functioning outlined in Chapter Two.

In developing the model, a set of core characteristics of effective teams was identified: school support, communication, workload sharing, intergroup processes, supportiveness, team efficacy, facilitating student learning and facilitating teacher learning. *School support* was thought to influence all aspects of team functioning, so this was considered an exogenous variable influencing all other variables in the model – including both the way the team goes about its work and the work that the
team undertakes. The way the team goes about its work was considered to be a second order construct made up of the set of variables: communication, workload sharing, intergroup processes, supportiveness and team efficacy. Facilitating student learning and facilitating teacher learning were considered to be outcomes of teamwork factors and also influenced by school support.

These elements of the model will now be discussed within the context of the modified IPO framework and in reference to the established literature on the effectiveness of collaborative teams.

The hypothesised model identifies school support as the primary input variable. This is in recognition of the fundamental role that the school environment plays upon the success of PLTs. The support structures provided by schools create the context within which PLTs operate. School leadership provides the imprimatur for the existence of PLTs within a school, is responsible for the broader culture within which the PLT operates and provides the necessary resources to ensure they can operate effectively. Such resources include time for meetings, relief teaching and resources and professional development opportunities. Bolam et al. (2005), Hord et al. (1997), Kleine-Kracht (1993) and Prestine (1993) have all identified additional resources that are consistent with the school support variable, including distributed leadership within the school, links with other schools, focused professional development coordination and physical site facilities that contribute to collaborative work. Numerous models of team effectiveness identify the importance of management support, including the level of autonomy and managerial input (Hackman & Oldham, 1980; Sundstrom et al.,1990) or what Cannon-Bowers et al. (1995) termed supervisory control. This approach has also be supported by the work of Gladstein (1984) and Tannenbaum et al. (1992).
This provision of resources to PLTs by the school leadership (and captured with the input variable school support) is supported by the work of Gladstein, (1984), Salas et al. (1992a); Sundstrom et al. (1990) Tannenbaum et al. (1992) who identify resources as important organisational environmental input variables, and Dufour (2004b) who stresses the importance of providing teachers the time to meet to adequately address the students’ learning issues. Of course, within an educational setting, a defining feature of successful teams is the focus on teacher learning, and for this to occur, resources are required from the school, either for the time for learning to occur with peers, or for external professional development to be undertaken. The acknowledgement of the importance of the school environment within the input variable is aligned with the findings of Cummings (1978), Gladstein (1984), Guzzo and Shea (1992) and Hackman (1987) who identify that teams are influenced by the context in which they operate. This can also be tied back to the early work of Lewin, whose field theory proposed that the functioning of individuals (and therefore teams) is impacted by how these individuals perceive themselves in relationship to their environment (Lewin, 1951).

The primacy given to school support within the proposed model is also consistent with the ecological framework of Sundstrom et al. (1990) which stresses that the organisational context can influence every facet of team functioning. Sundstrom et al. also espouse the use of context as an input variable within an IPO framework further supporting the use of school support.

Many studies of team effectiveness identify contextual inputs as critical to the process of team functioning. Some of these, including Gladstein’s General Model of Group Behaviour (Gladstein, 1984) and the Group Performance Model (Driskell, Salas, et al., 1987) also identify individual and group characteristics as input
variables. These were not considered as part of this study, however, there is a strong argument that the make-up of teams impacts team functioning regardless of the context within which they exist. Further research into the role of individual and group-based variables and their impact on team functioning, as well as their potential interdependence with environmental inputs is warranted.

This study has chosen to use the term throughput to describe the process by which a PLT converts the resources of the group into the desired outcome of enhanced student learning. As described, this draws on the work of Cohen and Bailey (1997), Marks et al. (2001) and Mathieu et al. (2008), who argue that psychological processes (termed emergent states by Mathieu et al. (2008)), such as collective energy and potency be kept distinct from task-oriented processes. The concept of throughput was made popular in the research by Ingin et al. (2005) and Tannenbaum et al. (1992). However, the term also acknowledges that regardless of how effective the emergent states of a team are, they will not be effective if they are not delivering against the tasks assigned to them, so ultimately, team effectiveness is dependent on both teamwork – how a team works together, and task work (the work they do) (Mathieu et al., 2008; McIntyre & Salas, 1995).

The literature review undertaken in Chapter 2, details the most commonly used throughput variables within studies on both teams in general and teams within education contexts. In doing so it acknowledges the work of many authors, including Campion et al. (1993), Gladstein (1984), Hackman and Oldham (1980), Klimoski & Jones (1995), McIntyre and Salas (1995) Tannenbaum et al. (1992) and Sundstrom et al. (1990). These authors have been responsible for the development of a range of frameworks or models used to gain a better understanding of the functioning of teams. A comparison of this study’s hypothesised model of team function against
these established frameworks follows later in this discussion. Firstly, however, the particular variables used in this research will be discussed.

Building on the work of Campion et al. (1993) whose study explored analogous variables of team effectiveness, including managerial support, potency, social support, communication/cooperation between groups, communication/cooperation within groups, the model proposed in this study set out to test five throughput variables that relate to teamwork – communication, workload sharing, intergroup processes, supportiveness and team efficacy. It has been proposed that when combined, these variables make up a second level construct known as Teamwork.

Frameworks of team functioning are designed to be adaptable to a range of teams which may be working in different areas – producing goods, working in sales or even defence teams. They do not explicitly state the tasks that the team works on which has the advantage of the framework being applicable to teams working in different areas. The framework proposed in this study is not intended to be applicable to teams working in any different context to that of education. Therefore, it was decided to include tasks that PLTs focus on and in this study task work variables have been included. The two major tasks of PLTs are to facilitate teacher learning and to facilitate student learning.

There appears to be two schools of thought within the established literature as to the goal of collaborative teams in education. The first group of authors believe that here is a single goal for PLTs, being to enhance student learning. The second group argue that PLTs exist to enhance student learning and build teacher capacity. Those who take the first approach which focuses on student learning puts students’ needs at the forefront and tends to rely on student assessment to understand student learning
needs, design teaching that fits with their needs and thus progress their learning (Dufour, 2004a; Griffin et al., 2010; Griffin, Robertson & Hutchinson, 2014).

The second approach proposes that moving from teacher autonomy to a collaborative team-based model is more likely to change their practice, allowing them more empowered to focus their learning on skills that their students need them to have and are more positive about staying in the profession (Darling-Hammond, 1996; Rosenholtz, 1989). It is assumed then, that when teacher learning is supported, improvements in student learning will follow.

The hypothesised model recognises both these aspects in the throughput variables of *facilitate teacher learning* and *facilitate student learning*. It is proposed that when combined, these variables make up a second level construct termed *task work*. Therefore, the throughput section of the proposed model recognises the dual role of PLTs in delivering both student learning and teacher learning outcomes.

It was hypothesised that the construct of teamwork would be related to the two constructs of task work that were identified. Each of these throughput variables is now validated with reference to variables identified in organisational psychology and research into collaborative teams in education.

Unsurprisingly, communication between team members is the most often cited throughput variable identified in the literature exploring the notion of teamwork and the effectiveness of teams (Campion et al., 1993; Gladstein, 1984; Klimoski & Mohammed, 1994; McIntyre & Salas, 1995; Tannenbaum et al., 1992). Similarly, it is also recognised in research undertaken into collaborative teams in education (Berry et al., 2005; Bolam et al., 2005; Dufour, 2004a; Griffin & Care, 2009; Hollins et al., 2004; Hord, 1997, Newmann & Wehlage, 1996; Strahan, 2003).
Both these fields of research acknowledge the importance of teams being able to communicate openly. Open and frank communication is seen to be critical to a team’s ability to build trust, solve problems, receive and deliver feedback, and manage the flow of tasks required to achieve the team’s goals. It is noted that this is critical within a PLT (Dufour, 2004; Phillips et al., 2004), in order to enable team members to open up their teaching practice to positive feedback as well as constructive criticism. The potential for feedback is critical in the development of new ways of teaching and in delivering enhanced student learning outcomes. (Hackman, 1987; McIntyre & Salas, 1995) link open communication to improvement in team performance and hence effectiveness. Campion et al. (1993), Gladstein (1984) and Tannenbaum et al. (1992) identify that communication is critical in the coordination of a team’s work and link this variable directly to enhanced collaboration, this supports the idea of Dufour (2004a) that collaboration is vital in leading to improvement in student learning and is enhanced through a structured process in which teachers work together to improve their practice.

Given the importance attributed to communication in the established literature as a component of team effectiveness, its inclusion as a throughput variable within the construct of teamwork in the model proposed by this study was deemed essential. The survey instrument used in Study One was designed on the basis of this theoretical grounding of the importance of open communication on team effectiveness. To this end, the variable communication was further defined as the exchange of information between members within the team meetings. The indicators chosen to investigate and measure the communication variable, were designed to measure the critical elements highlighted in the literature and spelled out above, namely whether feedback was provided and accepted, the extent to which feedback is
valued within the PLT, and the ways in which team members respond to receiving and giving feedback.

A further aspect of communication within PLTs and work teams in general is the extent to which information provided is evidence-based and accepted by other team members. This speaks not only to the notion of open communication, but specifically to Klimoski and Jones’s (1995) assertion that a team’s effectiveness is the result of positive interactions between its members and that maximum performance will not be achieved without the existence of trust and compatibility amongst team members. To this end an additional indicator was included which measured the extent to which statements are accepted without evidence.

The division of labour within a team through the distribution of tasks and how these tasks and the work that team members undertake is dependent on each other has been termed workload sharing, and is a key throughput variable identified in studies both on team functioning in general and in education settings (Campion et al., 1993; Harkins, 1987). Gladstein (1984), Sundstrom et al. (1990) and Campion et al. (1993) state that workload sharing is key to increasing team productivity. As mentioned previously the interdependency created through workload sharing is a defining feature of effective teams. McIntyre and Salas (1995) found that teams are more effective when team members recognise themselves as reliant on others for the completion of tasks. Bolam et al. (2005) and Newmann and Wehlage (1996) have identified that this is also the case within teams in educational setting, as team members take on a shared responsibility for student learning outcomes through collaborative work practices.

It may well be the case that working within a PLT positively influences teachers’ practice simply by working alongside others. In some ways this outcome
can be tied to both *communication* (outlined above) and the *supportiveness* variable, as these variables measure the extent of positive human interactions amongst PLT members. Open communication can lead to a greater degree of collaboration and interdependency and contribute to the supportive environment created within the PLT. This connection between variables was tested in Study Two and may well contribute to overall effectiveness of PLTs.

Given its standing in the literature as an identified element of team functioning, *workload sharing* has been included as one of the throughput variables to be tested within the hypothesised model. In developing indicators to measure this variable, it is deemed important to capture both the contribution of team members to the PLT and the interdependence of their work. In response to the historical literature regarding team work and interdependence, these indicators were developed to measure the contribution of team members to PLT meetings, the individual effort PLT members commit to tasks, whether or not PLT members shared work, and the extent to which team members were aware of each other’s work.

The next variable included in the proposed model is *intergroup processes*. This variable takes into account the criticality of PLTs working ‘across boundaries’, that is, beyond the confines of their group by forming relationships and networks with other groups, and beyond the school environment. This has been highlighted in the work of Gladstein (1984) who termed this notion ‘boundary management’ and included a team’s interaction with the broader organisational environment. This notion is supported in the work of Sundstrom et al (1990), Tannenbaum et al. (1992) and within education settings, by Bolam et al. (2004) who has identified that effective PLTs have an inclusive membership, sometimes extending beyond teachers and school leaders. The concept behind this variable is that teams should not only act
as a cohesive and collaborative unit in order to increase their effectiveness, but that management of their interactions and networks with external knowledge sources can also contribute to overall performance. This has been referred to by McIntyre and Salas (1995) as building team capital. This theoretical basis led to the development of indicators designed to measure this external resource gathering, such as the extent to which the team uses other groups to build resources, the extent of self-promotion of the group’s activities and the extent to which the group works on its own sustainability.

The model proposes that individual PLT members offer and receive emotional support through the process of working and collaborating with each other, and that this is a contributing factor to the overall effectiveness of the PLT. The theoretical backing for this proposition can be found in the work of Campion et al. (1993) and Gladstein (1984) who identified that social support and positive interactions can improve team effectiveness. Oser et al. (1989) extend this thinking to state that members of effective teams offer and receive assistance without the fear of being perceived as being weak. Additionally, teachers who are supported via PLTs or other teaching networks are more likely to adopt new classroom practices, more empowered to obtain the knowledge needed to support their students and more positive about staying in the profession (Darling-Hammond, 1996; Rosenholtz, 1989). The overall contribution of emotional support amongst team members to team effectiveness is also recognised by authors such as Guzzo (1995), Klimoski and Jones (1995), McIntyre and Salas (1995) and Tannenbaum et al., (1992).

The supportiveness variable was further articulated as the respect and assistance provided between members. The indicators developed included that meeting contributions by all members were valued, the views of members were
considered equally and that members help each other. These indicators all relate specifically the work of the authors mentioned above and enable the effective measurement of the variable. It is worth noting however, that Gladstein (1984) found that while supportiveness was related to the self-reported ratings of satisfaction and team effectiveness by team members, it had little or no impact on actual effectiveness.

Team efficacy or the belief by team members that their team is effective has been identified as an important characteristic of teams within organisational psychology literature. Bandura (1977) and Guzzo (1995) noted that the notion of team efficacy is similar to that of self-efficacy, and an individual’s belief in their ability to perform at the level required. Hackman (1987) uses the term potency in an analogous fashion to the idea of team efficacy and that when team members feel part of a potent team then this has positive influence on their commitment and willingness to work hard. Newmann and Wehlage (1996) refer to teacher’s self-efficacy being enhanced through the existence of a shared vision for enhanced student learning. Surprisingly, there is little mention of the efficacy of PLTs within the education literature reviewed as part of this study, although Hord (1997), Mintzes et al. (2013 and Strahan (2003) all note the positive impact on individual teacher efficacy of working in a team, and the work of Bruce and Flynn (2013) showed that the efficacy of PLTs increases with the development of collaborative practices and this is linked to increase student learning outcomes.

It is interesting to note that efficacy in the education literature is discussed at the teacher level and not at the team level. It is possible that even when working collaboratively in a team, a teacher’s work is still completed independently in their
own classrooms. As such, the individual’s sense of efficacy may be seen as more important than the idea of a team’s efficacy.

However, the prevalence of team efficacy as a characteristic of team functioning in the broader academic literature on teams warrants its inclusion in the hypothesised model of PLT functioning presented here. The single indicator, that the belief that the work of the PLT improves student learning was used to measure team efficacy. This indicator is reflective of Hackman’s notion of potency described above.

The throughput variables described above and contained within the proposed model all relate to the idea of teamwork and as such have been grouped within a second-level construct (and termed teamwork) within the model. However, as identified by Marks et al. (2001), Mathieu et al. (2008) and McIntyre and Salas (1995) amongst others, team effectiveness is made up of both teamwork and task work. The general nature of terms used to describe the work that PLTs do reflects the difficulty in identifying aspects of these tasks that may influence PLT effectiveness given the broad range of tasks that they may undertake. However, it has been noted that a teacher inquiry and knowledge-building cycle that encompasses both student learning and teacher learning needs is a critical part of the work of PLTs engage in (Birenbaum et al., 2009; Dufour & Marzano, 2009; Hord & Sommers, 2008; OECD, 2009; Timperley et al., 2007). Although all conceptualisations of PLTs would espouse the importance of both teacher and student learning, the balance across these may be different. Regardless, the work that PLTs do (the task work) can be defined as work that improves student learning and work that involves improving teaching practice through collaborative processes. As such two further throughput variables – facilitating student learning and facilitating teacher learning were included within
the model. Their inclusion is now validated against the established literature. Due to the relatedness of these tasks, it was hypothesised that the two would be correlated, so a second order factor (termed task work) was added to capture this shared variance.

The inclusion of facilitating student learning as a throughput variable within the proposed model, is deductive, given it has already been determined that the facilitation of student learning is one of the core deliverables of an effective PLT. Griffin and Robertson (2014) note that to be effective, collaborative teams in education should focus on facilitating student learning through exploring their existing skills to target teaching outcomes. These authors also note that this focus should be carried out concurrently with facilitating teacher learning that is matched to the needs of their students providing further validation that these two task-orientated variables should be identified within the model.

The throughput variable facilitating student learning was further defined as the work that the team undertakes with the goal of improving student learning outcomes. Specific indicators were developed to measure this variable. These included whether the PLT leader focused the team on facilitating student learning, the use of assessment data by the PLT to determine student skill levels, the synthesis of a range of data sources, evaluation of the effectiveness of assessment practices, the establishment of learning goals, planning appropriate teaching strategies to achieve these learning goals, and the reporting on implementation of these teaching strategies back to the PLT.

There is broad agreement within the literature relating to the use of collaborative teams in education that building capacity within teachers is critical in achieving student learning outcomes. As such, the facilitating teacher learning has
been identified as a task of PLTs and included as a throughput variable in the proposed model of PLT effectiveness. Griffin and Robertson (2014) state that teacher learning should be matched to student learning needs. Lee et al. (1991) argue that student learning is improved through changes in a teacher’s knowledge, skills, attitudes and classroom practice, and that these are achieved through active involvement in PLTs. Griffin et al. (2014) identify that teacher professional development should be matched with student learning needs.

Put simply, within the survey instrument, the variable of *facilitating teacher learning* has been defined as the work that the team undertakes with the goal of improving teacher learning outcomes. Indicators were developed including the development of teaching and assessment practices and identifying professional development opportunities in both teaching and assessment practice.

The hypothesised model puts forward a single output variable, *student learning* and proposes that this is the ultimate measure of effectiveness of a PLT. This is consistent with the notion of the production of goods or services within a typical IPO model and is the most commonly measured output variable according to Bommer et al. (1995) and Guzzo and Dickson (1996). Study Two uses the achievement in reading in students under the care of teams over a six-month period as the test for this output variable. The results of this testing was measured in quantifiable terms as the measure in which reading comprehension changed over the test period. Unlike many other studies of teams, the proposed model does not take into account other more qualitative or team-based outputs. Some authors, such as Sundstrom et al. (1990) argue that output of team functioning should also include variables such as team satisfaction. Similarly, Campion et al. (1993), Klimoski and Mohammed (1994), and Salas et al. (1992) take the approach that the way team performance
impacts its future performance and how team members impact each other should be included as output variables. It is the opinion of this author that while these variables may impact the ultimate outcome of the functioning of a PLT, they themselves are not a final outcome, as a negative team experience for teachers, for example, is likely to produce poorer academic results in students. Again, however, the correlation between these types of output variables and student achievement may warrant further research.

The literature review in Chapter 2 identified a range of frameworks used to study teams in both the general organisational literature and specifically within education contexts. These frameworks approach the nature and work of teams from numerous angles and are distinguished by the emphasis they place on various components of team functioning. Largely, however, they can be aligned to the IPO framework although great variety exists in the range of input, throughput and output variables. A comparison of the hypothesised model of team functioning against those established in the literature is useful as a further means to determine the validity of the model.

The models of team functioning presented in the literature include a range of input variables. These can broadly be classified as those internal to the team and those that are external, representing the context in which a team operates. The Group Performance Model proposed by Driskell, Salas, et al. (1987) identifies Individual, Group and Environmental factors. Similarly, Gladstein’s General Model of Group Behaviour (1984) recognises Group Composition and Structure (internal) and Resources Available Organisational Structure (external) and the Group Effectiveness Model from Salas et al. (1992) includes Organisational Context (external), Team Design and Team Synergy (internal). The models developed specifically to examine
teams in education contexts are less easily characterised in regards to their treatment of variables and their use of the IPO framework, with many of them not applying a linear process model, including Sigurðardóttir’s Processes involved in Professional Learning Communities (Sigurðardóttir, 2010) and Sleegers et al.’s conceptual model of a PLC (Sleegers et al., 2013). Crow and Pounder (2000), however adapted Hackman and Oldham’s model of self-managing work groups (Hackman & Oldham, 1980) to study teams within education. This model uses the IPO framework and also identifies a supportive organisational context as a key input variable.

Louis and Marks (1998) propose a model in which the social organisation of the school (external) influences the social support within the classroom and the technical process of teaching and analysed how this external input variable influences the establishment of a collaborative culture within the school combined with team level variables. Bolam et al. (2005) built on the model developed by Newmann and Wehlage (1996) to develop their Provisional Model of a School Operating as an Effective Professional Learning Community. This model identifies external factors as the primary inhibitors and enablers of the entire ecosystem of effective learning communities which also includes internal factors which influence process and outputs.

The hypothesised model put forward in this study uses a single input variable, \textit{school support}, to represent the environment in which a PLT operates. The model does not take into account the various internal inputs identified in some models of team effectiveness. As previously identified, \textit{school support} as in input variable encompasses resources made available to the PLT as well as a culture of support and endorsement from the school leadership for the activities of the PLT. While the use of a single input variable is somewhat inconsistent with established models of team
functioning in both general and educational contexts, it does equate to Bolam et al. (2005)’s notion of external inhibitors and enablers as well elements of the Group Effectiveness Model (Salas et al., 1992) and Gladstein’s General Model of Group Behaviour (Gladstein, 1984) as well as Louis and Marks (1998) proposed model. The use of a single input variable representative of the operational context of the team is also consistent with the work of Cummings (1978), Gladstein (1984), Guzzo and Shea (1992), and Hackman (1987) who claim that teams are influenced by the context in which they operate. Although not in the scope of this study, further exploration of PLT make-up as an input variable may be warranted given that many studies treat the notion of PLTs as homogenous. The individual skills and knowledge teachers bring to their work in teams is a variable that may well be important to consider, however, it may be a contentious issue to assess teacher skill. Team member homogeneity is another factor which could be fruitfully examined. Crow and Pounder (2000) found that teams in which members were more homogenous in regard educational philosophy progressed more quickly. Other factors such as team size and frequency of engagement may all impact the functioning of PLTs. Some of these factors may be deemed as being under the influence of the external context (as discussed by Bolam et al. (2005)), however, the further examination of the interdependence of external and internal input variables would add value to the understanding of team function in educational contexts.

The throughputs of the hypothesised model include a second level construct, teamwork, comprising five variables – communication, workload sharing, intergroup processes, supportiveness, and team efficacy, and two other first level variables facilitating student learning and facilitating teacher learning. The five variables within teamwork have been confirmed by the established literature on organisational team
theory as common elements reported by authors including Campion et al. (1993), Klimoski and Jones (1995), McIntyre and Salas (1995), Sundstrom et al. (1990), Tannenbaum et al. (1992) etc as identified in Table 1, page 51. The Job Characteristics Model of Hackman and Oldham (1980) was one of the first to use the IPO framework and identified three processes. These psychological states were considered to influence work outcomes but unlike most models which explore team effectiveness, the Job Characteristics Model does not consider how teams work together. As such while similar in their use of the IPO framework, the hypothesised model can be considered quite distinct from Hackman & Oldham’s model. It is more reflective of the thinking behind Gladstein’s General Model of Group Behaviour (Gladstein, 1984), which incorporates a construct throughput variable, Group Process, which includes Open Communication and Supportiveness. An additional construct within this model, Group Task includes a variable, interdependence, which is a concept incorporated into the hypothesised model’s intergroup processes and workload sharing. The model proposed in this study differs from the General Model of Group Behaviours in one important area, in that it considers both the work that the team undertakes and how they undertake it. Gladstein’s model, on the other hand, focuses on how the work is completed rather than on the tasks themselves.

The throughput variables of the hypothesised model have some overlap with those proposed in the Group Effectiveness Model put forward by Salas et al. (1992). This model also identifies the contribution of the level of effort brought to bear on the task and the appropriateness of task performance strategies. These are similar in nature to the variables used in this study of workload sharing, and the two variables, facilitating teacher learning and facilitating student learning, which make up the notion of task work in this study. Whilst these elements overlap, the hypothesised
model allows for more definition within the throughput variables and as such, may be more accurate in exploring their impact on team effectiveness.

Three final models from general team theory were considered, The Model of Team Effectiveness put forward by Tannenbaum et al. (1992), Themes and Characteristics Related to Work Group Effectiveness from Campion et al. (1993) and the Model of Team Effectiveness put forward by Klimoski and Jones (1995). In many ways the hypothesised model has considerable similarity to the intent and components identified in these models. The Model of Team Effectiveness (Tannenbaum et al., 1992), while far more complex, gives primacy to organisational and situational context in which a team operates. It uses the term *throughput*, and divides these into two areas, Team Processes and Team Interventions. Team Process contains variables relating directly to teamwork, such as communication, decision-making, conflict resolve, coordination, boundary spanning, and problem solving. Many of these are analogous with the five variables identified within the teamwork construct in the hypothesised model. Whilst Tannenbaum et al.’s model (1992) stops short of identifying task work as a second construct within the throughputs, it does identify professional development as a variable. This aligns with the notion put forward within the hypothesised model of facilitating teacher learning, that is developing capacity within the team members of the PLTs. Interestingly, while both models identify that this would have a positive impact on teamwork, only the proposed model recognises that this relationship might work both ways, that is, working in a collaborative team environment might also lead to professional development outcomes, as emphasised by Hord (1997), Rosenholtz (1985) and Timperley, Parr, and Bertaneees (2009).
While Campion et al.’s Themes and Characteristics Related to Work Group Effectiveness (Campion et al., 1993), is a simple input/output model, combining input and throughput variables, there is significant cross over with the variables used in the hypothesised model. It includes a construct called Interdependence which incorporates task interdependence and interdependence of feedback and rewards (workload sharing), as well as variables such as communication within (communication) and between groups (intergroup processes), workload sharing, social support (supportiveness) and potency (team efficacy). Klimonski and Jones’ Model of Team Effectiveness also uses potency as variable, as well as use of skills, and effort sharing and coordination (workload sharing) (Klimoski & Jones, 1995). It also reflects the hypothesised model in its use of a simple IPO framework, with single constructs across input and outputs realms.

The proposed model of PLT effectiveness within this study identifies a single output of student learning with a linear relationship between input and throughputs, and throughputs and output. This is consistent with Crow and Pounder (2000)’s adaptation of Hackman and Oldham’s model of self-managing work groups (Hackman & Oldham, 1980), which identifies Workgroup effectiveness as the solo output, as well as Gladstein’s General Model of Group Behaviour (Gladstein, 1984) and Driskell et al.’s Group Performance model (Driskell, Salas, et al., 1987) which also identifies Group Effectiveness as the single output. Whilst it is generally agreed that a team’s effectiveness can be measured by the production of goods and services (Bommer et al.1995; Guzzo & Dickson, 1996) and that therefore in the case of PLTs, the team’s effectiveness is measured by enhanced student learning, there exists an argument within the literature that PLTs can be considered to have two broad goals or outputs – improvement in teacher practice and improvement in student learning.
However, it would seem deductive that the end result of an improvement in teaching practice is ultimately an improvement of student learning, as by definition that act of teaching is only successful if students learn. This approach of identifying student learning as the ultimate output of a PLT is also reinforced by the work of Bruce and Flynn (2013) who applied an IPO framework to examine the effectiveness of a collaborative professional learning initiative and identified that although his lead to greater teacher efficacy, the ultimate output was an increase in student achievement.

The comparison of the hypothesised model of PLT effectiveness to existing frameworks that have been proposed and tested in the field of organisational team theory and more specifically, teams within education context therefore shows that the model is both consistent with the structure, intent and content of previous models and established theories, and yet it also contains points of difference that, if tested and proved valid, will contribute to the understanding of the use of teams within education contexts.

The proposed model contains a range of constructs and variables that have been deemed critical within the historical literature, as well as describing the anticipated relationships between each of these elements. In order to test the model, two separate studies were developed. Study One broke down the various elements of the second-level throughput construct, teamwork, into five separate variables that have been identified within the literature and described above. The notion of task work was represented by two variables, facilitating student learning and facilitating teacher learning, also described above. Study One also explored the relationship between the various throughput variables that make up teamwork, and between teamwork and task work, as well as between the input variable, school support and the higher-level construct Teamwork and the two task work variables. Study Two
was developed to test the impact of each of the throughput variables with the single output variable of student learning to help identify the contribution of each to enhancing student achievement. The results of these two studies are described below.

**Discussion of Results**

Study One was developed in response to the first research question posed in the Introduction. Research Question Two asked whether a model of team functioning could be created that is consistent with the functioning of teams in education. It was designed to assess the theoretical framework of the proposed model of PLT functioning by testing how effectively each of the model’s constructs is measured by a range of indicators. In order to do this, a self-report survey instrument consisting of a set of questions was developed to measure each of the constructs identified in the proposed model. The questionnaire was piloted and revised by Robertson (2012). The instrument was then administered to a group of educators working in PLTs. The PLTs were taking part in the Assessment and Learning Partnerships program. Teams within this program undertook a specific approach to their work, underpinned by teacher collaboration, with the overall aim of enhancing student learning outcomes. Data collected was analysed in three separate models. The data from this process has been presented both in quantifiable terms as well as descriptively. A range of statistical processes was used to assess this data and test for best fit in order to validate each of the three models. The methodology behind Study One and the results of this testing have been set out in Chapter 3: Examining the Validity of the Proposed Framework.

Study Two was developed to answer the second research question - *what is the relationship between each of these elements and between the elements and student achievement*, where the term ‘elements’ is used to describe the individual constructs
that make up the hypothesised model of PLT functioning. It applied a multilevel analysis which was necessary to account for the fact that students are in classes and as such, data collected are not independent because all students within a class have the same teacher. The clustering used in the multilevel analysis was class, which was operationalised as the students linked to each teacher. In this analysis, the relationship between each construct in the model was examined with the outcome measure of PLT functioning, student learning, measured in this study by the achievement in reading comprehension of students under the care of PLTs over a six-month period. The methodology, measurement instruments and data from Study Two have been presented in Chapter 3: Examining the Validity of the Proposed Framework.

This section analyses and interprets the results from each of these studies to establish the validity of the hypothesised model and propose any adjustments that are the result of this analysis.

Study One developed both a measurement model and structural model. The measurement models of the three separate models was developed to test how well each of the constructs was measured by the items developed to measure them. A full description of the process for the development of each model can be found in Chapter 3.

**Testing of the measurement model**

The three models within the measurement model are shown in and repeated here for ease of discussion.
Figure 14. Graphical depiction of Model 1.

Figure 15. Graphical depiction of Model 2.

Figure 16. Graphical depiction of Model 3.
Model 1 was designed to explore the veracity of school support as the input variable of the hypothesised model. As discussed above, the support provided to PLTs by the school is deemed as critical and foundational to their success. Without a positive authorising environment in which to operate, it is hard to imagine that PLTs could function effectively and influence either teacher capacity or student learning outcomes. As such, school support was seen as the single most important input variable for inclusion within the model.

Within the survey instrument, the element of school support was defined as the school leadership team being aware of and valuing the work of the team. Drawing on the work of the many authors identified above, the indicators developed to measure school support included whether meeting times were scheduled, whether the school principal is aware of the work of the PLT, and whether the leadership team values the PLT’s work. These indicators reflect the idea established in the literature of the importance of the school providing the necessary resources to teachers in order to make PLT effective. Critically it also establishes the authorising environment and organisational culture in which PLTs can flourish.

The items in the questionnaire that relate to the construct of school support were created to measure the extent to which the work of the PLTs was supported within the school and what the impact of PLTs were on school planning. It was considered as a single construct and measured by six items. As can be seen in Table 19, all items loaded significantly onto the hypothetical construct, with the top-ranking item (with a factor loading of .83) being SS3 - The work of my PLT is valued by the leadership of my school and the lowest (factor loading .66 being SS2 - The principal of my school knows about the work of my PLT. This suggests that the construct represents the value that school leadership places on the PLT, and is less
represented by the principal knowing about the PLT’s work. Regardless, the notion that the support provided by the school is critical to the establishment and functioning of a PLT is borne out by these results, and by the work of Gladstein (1984), Salas et al., (1992a), Sundstrom et al. (1990) and Tannenbaum et al. (1992) who identified that resources provided by the school were critical for the success of PLTs. Whilst this model identified the provision of time for PLT meetings within the construct, it did not go into further detail regarding other types of resources. This aligns with Dufour (2004b) who stated the importance of providing time to PLTs as key to their success. The provision of other types of resourcing, such as professional development opportunities, budget and relief teaching have also been identified as playing a role in supporting the work of PLTs (Bolam et al., 2005; Hord et al., 1997; Kleine-Kracht, 1993; Prestine, 1993). Further research may be undertaken to explore the role that each of these fills in contributing to PLT effectiveness, however, this point does not take away from the fact that an overarching environment of support is likely to be a precondition for a PLT to be effective.

Model 1 was developed to test the construct of school support, but not to examine whether there was a direct correlation between this construct and the desired outcome of enhanced student learning. This connection was tested as part of Study Two and will be discussed below. However, as the results show, the single construct of school support is deemed statistically valid and representative of a single construct. The high factor loading of all items to the construct suggest that the label school support is relevant and should be retained.

Model 2 was designed to consider the constructs of communication, workload sharing, intergroup processes, supportiveness and team efficacy which are aspects of teamwork associated with working within a PLT. It is hypothesised that these five
constructs will be related to each other and as such, a second order factor, teamwork, was created. The directional arrows represented in the figure suggest that the indicators are a result of the latent variable and as such this model can be deemed as an effect indicator type.

The results as detailed in Chapter 3 show that overall this model is valid, with the standardised factor loadings for all indicators being above the threshold of 0.4 established by Field (2005) and Stevens (1992) and used in this study to represent a fair indicator of a construct. Additionally, the standard errors for all constructs are in the range of .03 to .05. Tabachnick and Fidell (2007) suggest that standard errors of this magnitude indicate that all items within a construct have considerable overlap in their measurement and are therefore good indicators of a single construct.

This implies that within Model 2 all constructs hold true. This in turn confirms the work of many authors within the Literature Review who have identified these five characteristics of effective teams. These authors are drawn from the fields of organisational psychology and education and include Campion et al. (1993), Gladstein (1984), McIntyre and Salas (1995), (Bolam et al. 2005; Newmann & Wehlage, 1996 and Tannenbaum et al. (1992) amongst others. However, there was a range of responses against both indicators and individual indicator response options which have implications for the model. These include the necessary collapsing of response options in eight indicators, namely C5, WS6, WS7, S1, SL1, SL2, SL3 and SL12, all of which received less than 10 responses each. Whilst this necessitated a change in individual indicator response options, the impact on the validity of the model is negligible.

Of more significance was the weighting of factor loadings within each construct which, as indicated by (Fabrigar et al., 1989) may result in modifications to
the model. These authors recommend looking for commonalities within those indicators with the highest factor loadings as these may point to their relative importance within the construct. Similarly, indicators with a low factor loading are less significant. Each of the constructs that make up the second order factor teamwork are considered.

Considering each of the items that were written to measure the construct of communication, it can be seen that the items with the highest factor loadings are C3, C4 and C5, which all have factor loadings at 0.70 or higher. These three items relate to the way the individual values and makes use of feedback from team members. This suggests that the idea of giving and receiving feedback, and the usefulness of that feedback may be the best description of the construct. The items with the lowest factor loadings are C1, and C6. The item labelled C1 refers to statements being supported by evidence, and C6 refers to the propensity of the team to discuss difficult issues. The item labelled C8 has a fairly low factor loading, and it refers to the way that disagreement in the team is managed.

Given the magnitude of the factor loadings of indicators relating to feedback and the relatively low factor loading of those relating to other forms of communication as defined within this construct, it is more appropriate to label this construct feedback. This reflects the thinking of many authors who have studied teams in both education and non-educational contexts. (Hattie, 2009; Jensen et al., 2012; OECD, 2009) have identified that in effective teams, teachers undertake mentoring and provide each with constructive feedback which helps them develop their individual and group teaching practices. (Hackman, 1987; McIntyre & Salas, 1995) also link a team’s ability to provide feedback to overall performance.
*Workload sharing* was measured by eight different items and results are detailed within Table 7. Within this construct, the items with the highest factor loadings are WS4 and WS7, *My PLT takes responsibility for the success of the PLT work* and *I complete PLT work to the best of my ability*, respectively. The item with the lowest factor loading was WS6 which refers to the contribution members make in meetings. Taken together, this suggests that the construct is best described a commitment to the team and willingness to work for the benefit of the team. Given this, it is more appropriate that this construct is labelled, *team commitment*. Bolam et al., (2005), Griffin et al., (2010) and Newmann & Wehlage (1996) identify commitment to the team with collaboration and interdependency between members of a PLT, linking the term *team commitment* with workload sharing and providing a validation of this label from the established literature.

The construct of *Intergroup processes* was measured by three items and the results are recorded in Table 8. The highest factor loading was for item IP1 which refers to the extent to which the team promotes the approach to improving student learning. The second highest factor loading item was for item, IP3, which refers to the team’s long-term plans for continuation. The item with the lowest factor loading was IP2 which refers to links with other people or organisations outside of the team. On this basis, the label *intergroup processes* does not adequately describe this factor. Based on this analysis, the factor is better described as the propensity of the team to promote the work that it does. A more appropriate label could be *advocating*.

The *supportiveness* variable was measured within Model 1 by three items and returned an average factor loading of .72 indicating a strong fit. The items with the strongest factor loading are S1 - *I receive help from other team members* and S3 - *My PLT takes the views of others into account in discussions*. The lowest factor loading
of 0.69 was attributed to S2 - *My PLT values contributions to meetings* was only marginally below the average. The high scoring of all three items indicates that the label of *supportiveness* is an appropriate one and should be retained.

The construct of team efficacy consists of a single indicator (which has a *fair* loading of 0.56, lower than any of the other factor loadings onto the second order factor – teamwork). (Hayduk & Littvay, 2012) recommend the use of few indicators of a factor and suggest that the use of a single indicator is not only non-problematic but supports the development of theoretically sophisticated models. Therefore, given the importance of the construct of team efficacy in the literature, this construct should be included in the model.

The intercorrelations between the five constructs that make up the second order factor *teamwork* were all high, as was anticipated in the hypothesised model. This is not surprising given the nature of these constructs and their roles as components that potentially contribute to the notion of teamwork. The highest correlation is between *supportiveness* and *communication* (now termed *feedback*) at .91. Given the very similar focus of these two constructs, it is not surprising that they are highly correlated, as it is implicit that for a team to support each other, they must have established an environment of open communication, have built a culture of trust and be able to provide feedback to one another. This speaks to the work of many authors covered in Chapter 2: Literature Review who have argued for the importance of open and frank communication in team functioning, including Campion et al. (1993), Gladstein (1984), Klimoski and Jones (1995), McIntyre and Salas (1995) and Tannenbaum et al. (1992).

The data provided in Chapter 3, and the above analysis, indicate that Model 2 contains all of the constructs identified that relate to the way the team members
interact with each other. It shows that each of the constructs is well-measured by the indicators that were written to measure them. The constructs are highly correlated with each other which justified the addition of a second order factor. The fit of Model 2, which grouped the constructs together with a second order factor, teamwork, was good, indicating that the data fit such a model. The changes in construct names recommended above were made to more accurately reflect the representation of these constructs as evidenced by the data and should be incorporated into the hypothesised model of PLT functioning proposed in this study. It should be noted that the five separate constructs that are used to make up teamwork may not be the only constructs which could be considered as part of a model of teamwork, rather, they are the elements that have been identified as key components within the literature and tested within this study. Whilst the collected data confirms the validity of their inclusion, it does not preclude the inclusion of other constructs that may also be considered as part of teamwork, as this was not the intent of Study One. This is an area that may be further explored by other researchers, if deemed relevant for further study of the nature of teams in educational contexts.

The throughput variables described above and contained within the proposed model all relate to the idea of teamwork and as such have been grouped within a second-level construct (teamwork) within the model. However, as identified by Marks et al., (2001), Mathieu et al., (2008) and McIntyre and Salas (1995) amongst others, team effectiveness is made up of both teamwork and task work. The general nature of terms used to describe the work that PLTs do reflects the difficulty in identifying aspects of these tasks that may influence PLT effectiveness given the broad range of tasks that they may undertake. However, it has been noted that a
teacher inquiry and knowledge-building cycle that encompasses both student
learning and teacher learning needs is a critical part of the work of PLTs engage in
(Birenbaum et al., 2009; Dufour & Marzano, 2009; Hord & Sommers, 2008; OECD,
2009; Timperley et al., 2007).

Within Study One, facilitating student learning was measured by 13 separate
items which are recorded in Table 15. The analysis of data identified that these
thirteen items have some overlap in their measurement and indicate a single
construct. The items with the highest factor loading are SL7 - My PLT selects
teaching strategies and resources to meet learning goals, SL8 - My PLT determines
the effectiveness of teaching strategies and resources, SL9 - My PLT determines the
suitability of assessment approaches administered to students, and SL10 - My PLT
focuses its meeting time on evidence of student learning. The items with the lowest
factor loading are SL1 - My PLT uses evidence of student learning and SL11 - My
PLT uses its meeting time.

The review of established literature into the use of collaborative teams in
education context is rich with references to the role that teams play in enhancing
student learning outcomes as indicated above, but it would be fair to say that there
are divergent views as to whether the role of the team is to build teacher capacity or
directly impact student learning outcomes. Goddard et al. (2007); Johnson (2003)
and van Garderen et al. (2012) advocate for collaboration between teachers as a
method to build teaching capacity and therefore improve student learning. Bolam et
al. (2005); Dufour, (2004) and Hord (1997) agree that the focus of PLTs (or
equivalent collaborative approaches) should be to enhance teaching practice, under
the assumption that the outcome of this will be enhanced student learning. Dufour,
(2004) and Griffin et al., (2010), on the other hand, argue that teacher learning and
practice development are themselves an outcome of a team’s focus on delivering stronger learning outcomes.

Interestingly, within the testing of the facilitating student learning construct, those items with the highest factor loading are those which deal with enhancing teaching activities rather than facilitating student learning (although, of course, it can be assumed that better teaching strategies may facilitate student learning). The item with the highest factor loading is SL8 – My PLT determines the effectiveness of teaching strategies and resources and this is followed in factor loading magnitude by SL9 – My PLT determines the suitability of assessment approaches administered to students. The item SL1 – My PLT uses evidence of student learning has one of the lowest factor loadings. These factor loadings would imply that this construct is more concerned with supporting the act of teaching than it is with facilitating the act of student learning. Given this, a more appropriate label for this construct is supporting teaching.

It is therefore proposed to change the labelling of this construct within the hypothesised model from facilitating student learning to supporting teaching. This change supports the work of Bolam et al., (2005), Dufour, (2004), Hord (1997) Goddard et al., (2007); Johnson, (2003) and van Garderen et al. (2012) in identifying that the role of the PLT is to predominantly focus on developing teaching practice.

The construct of facilitating teacher learning was measured by seven observed variables as can been seen on Table 16. As anticipated the factor loadings for these variables are all significant, implying that they are strong measures of a single construct.

Considering the magnitude of the factor loadings, TL6 - My PLT develops the assessment practices of its members has the highest loading. The other items with
notably high factor loadings are TL3 - My PLT determines professional development priorities for members in the area of teaching practice, TL5 - My PLT develops the teaching practices of its members and TL7 - My PLT discusses the suitability of possible strategies and resources for our professional development. All of these items refer directly to mechanisms to develop teaching practice, therefore when taken together, this construct would be more appropriately labelled developing teaching practice. Again, this is supportive of the work of Bolam et al., (2005), Dufour, (2004), Hord (1997) Goddard et al., (2007); Johnson, (2003) and van Garderen et al. (2012) and many other authors who see the role of the PLT to advance teaching practice through a collaborative process of reflecting and adapting teaching methodology with the view to extending student learning.

Importantly, this construct differs and extends the previous construct, supporting teaching, which focusses on supporting the mechanisms or activities involved in teaching practice and whereas, developing teaching practice focusses on the development of capacity of individual teachers through building their knowledge base. This focus was not as expected. The two constructs were put forward to capture the two main foci of PLTs – building teacher capacity and focusing on student learning. The construct of facilitate student learning was designed to capture the goal of PLTs to improve student learning outcomes. It seems that teachers in these teams conceptualise their work in the PLT more as developing their own practice (which they may well do in order to improve student learning) rather than as focusing on lifting student achievement.

Thus, Model 3 consists of these two renamed constructs – supporting teaching and developing teaching practice. This focusses the task work of PLTs firmly on the development of teachers, rather than students. The theoretical underpinning of this
has been established by the work of Goddard et al. (2007) who state that “the most important outcome of teacher collaboration may be that teachers learn how to improve their instructional practice.” (p. 892). These authors identified that the establishment of PLTs builds a collaborative environment which allows teacher to exchange knowledge regarding teaching practices and process and thereby improve their teaching. It is worth noting though, that whilst this study did find a positive correlation between teacher collaboration and improved learning outcomes, the authors note that the evidence base is limited, and further work needs to be undertaken in order to definitively draw a connection between the two.

The revised hypothetical model is presented in Figure 17.

![Figure 17. Revised Hypothetical Model of PLT Functioning.](image)

**Examining the structural model**

Whereas the measurement model tested the validity of the constructs and associated variables within the hypothesised model, the structural model examined the relationship *between* the constructs. In order to do this, two further models were
created. Model 4 proposed that the exogenous construct *school support* influences both the second level construct *teamwork* and two first order constructs, now renamed *supporting teaching* and *developing teaching practice*. Model 4 also proposes that *teamwork* has a positive relationship with *supporting teaching* and *developing teaching practice*. The last relationship that Model 4 describes is the bi-directional relationship between these two constructs. As shown in Figure 18, a significant relationship between the exogenous *school support* and endogenous *teamwork* construct was found, as well as between *teamwork* and each of the variables that make up the construct of teamwork.

![Figure 18. Revised Hypothetical Model Showing Factor Loadings.](image)

As anticipated, the results show a positive correlation between the input variable, *school support*, and the second level throughput construct of *teamwork*. Additionally, it shows a very strong correlation between teamwork and its five components implying that this was an accurate depiction of elements that make up teamwork. Unsurprisingly, the structural model also shows a positive correlation between *teamwork* and *developing teaching practice* and *supporting teaching* and supports the proposed mutual beneficial relationship between these two task work-
related throughputs. The testing of the structural model did, however indicate that the proposed correlation between school support and these two variables was non-significant, implying that there is no relationship within this study between the school context in which PLTs operate and the way that PLTs go about their work. The correlation between school support and teamwork is to be expected, as the former creates the environment in which PLTs are allowed and resourced to operate. This relationship is supported by many studies previously discussed including Cummings (1978), Gladstein (1984), Guzzo and Shea (1992), Hackman (1987) and also within Sundstrom et al.’s ecological framework (Sundstrom et al. 1990). It is important to remember that whilst this study tested whether a relationship existed and the significance of this relationship, it did not set out to validate whether investing school resources into PLTs delivers stronger learning outcomes, although this is covered in Study 2. To this end, the structural model confirms what has been established in the literature and adds validity to the overall hypothesised model. The failure of the structural model to show a relationship between school support and the two task work variables, supporting teaching and developing teaching practice, does however, present a surprise – especially as a positive relationship between school support and teamwork is seen. Birenbaum et al. (2009), Hord and Sommers (2008) amongst others, describe a knowledge-building cycle in which teacher learning and student learning needs are recognised, and establish the notion of an iterative process in which enhancing teacher learning leads to enhanced student outcomes. It would therefore be thought that devoting school support and resources to elevating teacher learning outcomes would be in the interest of school leadership. It may be that the lack of positive correlation between input and task work throughputs is due more to a failing in the measurement instrument rather than and actual lack of connection. It
may also be a factor of the nature of this particular study. The development of this measurement tool and its use in this study will enable other researchers to undertake subsequent studies to try to replicate or repudiate this finding and further explore the relationship between school support and the development of teaching and teachers.

**Summation of Study One**

Study One set out to test the adequacy of the hypothetical model of team functioning put forward in Chapter 2. This model proposed a single input variable represented by the construct, *school support* plus three throughputs, a second level construct made up of five individual first level constructs, *communication*, *intergroup process*, *workload sharing*, *supportiveness* and *team efficacy*, and two additional constructs, *facilitating student learning* and *facilitating teacher learning*. These constructs were tested via a measurement model which broke the hypothesised model into three conceptually similar models in order to test the validity of their variables, and from this extrapolate the validity of the overall model.

Through this testing and the analysis of results it was found that all models were sound and well supported by their respective variables. However, the analysis also indicated that some of the labelling could better reflect the experience of teachers within the studied PLTs. To this end, a number of changes are recommended and summarised in Table 26 below.

Table 26. Construct Labels - Initial and Revised Labels.

<table>
<thead>
<tr>
<th>Initial Construct Label</th>
<th>Revised Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>Feedback</td>
</tr>
<tr>
<td>Workload sharing</td>
<td>Team Commitment</td>
</tr>
</tbody>
</table>
Intergroup Processes  | Advocacy
--- | ---
Supportiveness  | Supportiveness (unchanged)
Facilitating Student Learning  | Supporting Teaching
Facilitating Teacher learning  | Developing Teaching Practice
School Support  | School Support (unchanged)

The developing and testing of the measurement model has confirmed that, at least within the context of this study, the elements identified as making up the input and throughputs of the proposed model are valid measures of each construct. As flagged this does not mean that they are the definitive list of variables that determine team effectiveness. However, the statistical returns within this study for the measurement model were significant enough to confidently state that the variables identified do have a role to play in within the dynamic nature of a collaborative team within an education context.

The structural model was developed to test the relationship between the elements within the model, and largely supports the hypothesised model with the exception of not establishing a relationship between school support and the task work variables. This discrepancy between the hypothesised model and the results of testing requires further exploration and test-retesting to confirm whether the is actually no relationship between school support and supporting teaching and developing teaching practice, or whether this result was an aberration within this study.

Study One set out to respond to the first research question - *can a model of team functioning be created that is consistent with the functioning of teams in*
The results of this study would suggest that a model of team functioning in education contexts can be established. The analysis of these results has resulted in minor alterations to the labelling and dynamics of the hypothesised model, nonetheless, it remains a valid representation of the functioning of PLTs.

**Summation of Study Two**

Study Two was developed to explore the relationship between the constructs identified to measure team functioning and the single output variable, *student learning*. To do this, a subset of the data analysed in Study One was accessed. To measure the relationship between team functioning and student learning, a two-level model was created which linked changes in student reading comprehension over a six-month period with the constructs within the hypothesised model, and grouped by the class – that is the teacher who responded to the questionnaire and teaches the class. Specifically, Study Two examined how much of the variance in reading comprehension could be attributed to factors related to the individual students and how much is a result of teachers’ rating of their own teams, and how much each of the individual constructs that make up team functioning contribute to changes in reading comprehension, if at all.

Study Two found that none of the relationships between the individual constructs and student learning was significant, implying that there is no correlation between the work of PLTs and changes in student reading comprehension. At face value, this is at odds with both the literature and the validity of the model. It has previously been shown that the throughput variables identified in the hypothesised model were consistent with those used in previous studies both in education settings and in organisational psychology. Additionally, Study One has shown that these are valid both within the context of the second order construct, *teamwork* and within the
model as a whole. Given this, it was anticipated that Study Two would find a positive correlation between improvements in reading comprehension and individual attributes within the model. The following discussion outlines reasoning as to what may have led to this result. In doing so, areas of further research will be highlighted.

It is important to note that the results of Study Two did not indicate that there was no improvement in student learning, just that any improvement could not be statistically linked to the workings of the PLTs. It may be argued that improvements in individual learning are the result of the work of individual teachers, as teaching within the current school paradigm is still a largely solitary affair, with a single teacher per class of students, regardless of the amount of collaborative work they do in non-teaching time. We know that the single most significant contributor to student learning is the effectiveness of an individual teacher, rather than the PLT within which they may be a member. This study did not compare the impact of individual teachers and those that were part of a PLT. Establishing and quantifying the impact of a control of individual teachers may be a useful exercise in determining whether PLTs are actually making a positive impact on student learning above and beyond the factors related to a good teacher. If this is established, then replicating the current study may be warranted. Notwithstanding this, a valid instrument should be able to detect variance in the functioning of PLTs, and that variance should allow a relationship to be seen between the extent to which PLTs and PLT members are functioning as a team and student learning. It is possible that the instrument is not sensitive enough to detect enough variance in team functioning. It was noted that a large proportion of teachers gave themselves the highest rating on the instrument, thus reducing the variability (see Appendix D: Initial and Recoded Frequency of Responses for the Trial Instrument).
If it is proposed that the skill of the individual teacher is the driving determinant of student learning, perhaps it would be more appropriate for the model to measure an increase in individual teaching capacity as the main output of PLT effectiveness. This theory is supported by the findings within Study One which showed that two constructs associated with the notion of task work – originally, facilitating student learning and facilitating teacher learning have been altered within the revised model to reflect teacher and teaching practice development. It is also noted that very few studies of PLT effectiveness have used student learning as an outcome measure.

Goddard et al. (2007) note that not all schools provide an environment in which teachers can collaborate but that in those that do, teachers improve their practice, and student learning also improves. While Study Two did not provide further evidence of this, it did not seek to measure the impact of PLTs on teacher learning. There is an assumption inherent in the model that simply by working in PLTs, teachers become better at their craft. While this has some support in the literature, it was not tested within this study. It is therefore possible that whilst the teachers within the ALP project were working collaboratively, their skill level did not improve, and hence no correlation between student learning and the work of the PLT would be found. Or, possibly, that their teaching practice did not improve enough over the six-month period of this study to make an impact on the learning of their students.

Tannenbaum et al. (1996) note in the development of their Model of Team Effectiveness, that collaborative teams in education should only be used where an interdependency of task exists between the work of individual teachers. The implication here is that in situations where PLTs are established without an interdependency of task they may be ineffective. Dufour (2004) and Griffin et al.
(2010) note that in such situations, teachers within a PLT may just be operating from a perspective of congeniality to other members, providing emotional support but not actually developing each other’s practice. It is not known to what extent the tasks undertaken by teachers within the PLTs used in the ALP project were interdependent of each other. Certainly, teachers were working together to improve learning outcomes, but if the measure of team success is dependent on a mutuality within the relationship between tasks undertaken by teachers, it may be that the teachers within the PLTs in Study Two were actually working on tasks independently or were working interdependently with each other. This again may have resulted in minimising the statistical correlation between the throughout variables and the overall output of student learning.

Further, interdependence is a core criterion for the need to implement a team. The definition of a team used in this study, states that individuals ‘are interdependent because of the asks that they perform’. Tannenbaum et al. (1992) note that teams should only be implemented in work situations which require interdependence. It could be argued that the essential components of teaching can be completed independently and that collaboration is not essential. A measure of teacher skill would help tease out this relationship.

Additionally, in a case where working within a PLT does improve teaching practice, there may be a correlation between teacher learning and length of time that a PLT has been in operation. It can be assumed that improvement in individual practice increases over time and may even plateau after a period of time. The length of time that the PLTs that took part in Study Two had been in working together was not included in the analysis. As such, it is unclear whether this collaboration had sufficient time to result in an improvement of teaching practice. If improvement in
individual practice is limited by characteristics of the individual, it may also be the case that teachers within the PLTs were working at their maximum skill level. Either of these scenarios may have impacted the nature of the relationship between student learning and the constructs within the hypothesised model.

Study Two found that the intraclass correlation of the two level model (students at level 1 and teacher at level 2) was 0.06 meaning that 6% of the variance in student reading comprehension change (taken as learning in this study) can be attributed to the teacher level. It tells us that 94% of the variance in student learning change comes from influences at the student level. This may be due to a range of factors aligned to the individual students, such as practicing at home, their IQ, motivation and engagement etc. As indicated above, student learning may be influenced by their teacher’s capacity and a number of factors associated with their teaching ability, such as skill level, confidence, rapport with students, and ability to motivate students to learn. Student learning may also be impacted by broader school-based influences such as curriculum design, teaching resources, school policies (e.g. homework), and school culture.

With such a broad range of factors potentially influencing student learning, it makes sense that only a small proportion of the measured change in reading comprehension could be tagged to the work of PLTs within Study Two.

Studies One and Two examine both the structure of the hypothesised model of team functioning and the relationship between each element in order to validate this as a helpful model of team functioning within an education context. Through these studies, refinements to this model have been implemented. The resulting model of PLT functioning is highly consistent with those used in previous studies. The input variable of school support has been validated as an important contributor to the
effectiveness of PLTs and the proposed structure of the throughout variables, divided into both teamwork and task work, has been validated both by the literature, and statistically through the results of Study One. Study One has also shown that school support impacts the teamwork aspect of PLT functioning, and that the five variables within teamwork are both consistent with the literature and adequately represent the overarching construct. This is an important contribution to the knowledge of team functioning within education contexts as it provides a measurable framework for both other researchers and for schools themselves to assess the working of PLTs.

That no relationship was determined between the various constructs within the model and the output variable, student learning, may be explained by a number of factors specific to the design of Study Two and the fact that this was carried out on a single sample of PLTs all working in a similar fashion. Given the mitigating factors discussed, the findings of Study Two do not invalidate the model, but rather opens up opportunities for future research and exploration.

**Conclusions**

The pressure on schools to continue to find ways to improve student learning outcomes has led to a range of new approaches being trialled and implemented. It is recognised that schools have a role to play in producing students that can adapt to the current and future nature of employment, and that this is underpinned by continuing to improve student achievements. As such, pressure is put on the education system from governments who increasingly are recognising the Knowledge Economy as an important economic driver for future national productivity. Similarly, parents are increasingly looking to schools to ensure that their children are achieving the best possible academic results, leading to a competitive environment between schools, in which overall student results are a critical determinant for parents in deciding which
school their children will attend. This means that increasingly, schools are looking at ways to increase student performance.

The literature exploring opportunities to increase student learning has indicated that one of the most effective strategies is to increase the collective and individual capacity of teachers (Stoll et al., 2006). Within this context, educators have looked to strategies in other sectors to build individual productivity and capacity. Collaboration between individuals and the use of work units or teams has long been accepted practice in the broader business community. Supovitz (2002) has found that a team-based approach is more adaptive and responsive and leads to greater effectiveness in organisations. As such, academics and educators have advocated for the use of teams within the school environment as a way to improve student learning (Goddard et al., 2007; Johnson, 2003; van Garderen et al., 2012). A recent report by the Australian government’s Department of Education & Training has identified that every effort should be made to encourage teachers to collaborate in order to contemporise teaching practice and improve student outcomes (Department of Education & Training, 2018). Collaboration amongst teachers is argued to provide opportunities for reflective practice development, the identification of professional development opportunities, standardisation of effective teaching practices, and the development of a more student-centred approach to teaching practice (Newmann & Wehlage, 1996). Bolam et al. (2005), Dufour (2004), and Hord (1997) have identified that this collaboration builds teacher effectiveness and this leads to enhanced student learning. There is a diverse body of research into the impact of collaborative teams in education contexts which has been reviewed in Chapter 2. While this research tends to support the notion that teachers working within PLTs contributes to an increase in student achievement, there is a limited number of studies who have attempted to
measure this effectiveness in a quantifiable and replicable manner. There are also very few studies which have undertaken a systematic review of the current literature on the effectiveness of teams within education contexts.

It is within this context that this research was initiated. It has set out to answer two specific research questions:

1. Can a model of team functioning be created that is consistent with the functioning of teams in education?

2. What is the relationship between each of the elements of the model and between the elements and student achievement?

The historical literature was reviewed with the intent to determine the key characteristics of teams within the field of organisational psychology and general management theory and compare this with characteristics of teams within educational contexts. Similarly, a review of existing frameworks of team function in general was compared to those that have been developed to study collaborative teams in education. This process has identified a number of key variables in common that contribute to team effectiveness. These variables have been discussed against the three generalised types within the IPO framework, being input, process and output variables. In doing so, the use of throughput was adopted to replace the broader term of process, as suggested in research by Ilgin et al. (2005) and Tannenbaum et al. (1992). It was determined that the resources and support provided to PLTs by the executive leadership within a school established the most important contextual influence impacting PLT functioning, and as such a variable named school support was identified as the single input variable. The literature clearly articulates that team functioning is made up of two main components – teamwork or how team members work with each other, and task work, the work they undertake (Mathieu et al., 2008;
McIntyre & Salas, 1995). These areas of team functioning were then broken into component parts reflective of variables used in the literature. Within the context of a PLT, a range of contributing variables within teamwork and task work have been identified in the literature. However, in synthesising these, this author has refined these to five critical teamwork variables, communication, intergroup processes, workload sharing, supportiveness and team efficacy, and two within task work, facilitating student learning and facilitating teacher learning. There is disagreement within research into this area as to the goal of PLTs, with some authors arguing that their single goal is increased student learning (Dufour, 2004, Griffin et al., 2010; Griffin et al., 2014) whilst others, including (Darling-Hammond, 1996; Hord et al., 1997; Lee et al., 1991; Rosenholtz, 1985; Timperley et al., 2007) argue that an important role of PLTs is to increase teacher capacity. This study has argued that an increase in teaching capacity should ultimately lead to an increase in student achievement and as such, it is suggested that the output of team functioning is student learning. The finding of non-significant relationships between each of the constructs in the model and student learning suggests that other outcome variables should be considered.

The review of the literature and an analysis of characteristics of effective teams, combined with an examination of existing frameworks that have been developed to study the effectiveness of teams within both general and educational contexts, has therefore enabled this study to identify key elements of key functioning. These elements have been used to develop a hypothesised model of team functioning which is consistent with the established literature and yet distinctive within the context of the study of PLTs. This framework was further explored through two separate studies to further determine the validity of the model.
and the relationship between its component parts and specifically with the output variable of student learning. This included the development of self-assessment instruments which were distributed to teachers working in existing PLTs and the collection of data against these instruments.

The results of these studies have been discussed within the context of the literature. It has been shown that the structure of the hypothesised model is statistically valid and a good fit for the functioning of teams within education. Through this process it was identified that some of the labels used to describe a number of the throughput variables could be changed to more accurately reflect the data collected, and as such a number of name changes have been suggested and adopted. These include changing teamwork variables to communication to feedback, workload sharing to team commitment, intergroup processes to advocacy. Additionally, the two task work variables facilitating student learning and facilitating teacher learning have been changed to supporting teaching and supporting teacher development.

Further modelling of the relationship between the input variable of school support and the throughput constructs was examined and found to show a strong correlation between school support and the second-order construct of teamwork. However, this study could not establish a relationship between school support and the two task work variables, supporting teaching and developing teaching practice. The statistical analysis of results did find a strong relationship between teamwork and its five component variables and between teamwork and task work. Additionally, a bidirectional relationship was found to exist between the two task work variables.

Therefore, the review of the literature and the results of Study One have shown that the description of the input and throughput variables described within the model
of team functioning proposed by this study is valid and accurately reflects the working of teams within educational contexts (notwithstanding some minor changes).

The IPO framework used within the model implies a causal relationship between the three stages of variables. Study One explored the relationship between the input variable school support and the various throughput variables, as well as the relationships between throughput variables. Study Two was designed to explore the relationship between the throughput variables and the single output variable of student learning. The results of this component of the study were found to be inconclusive and failed to establish a positive correlation between the work of PLTs and the ultimate outcome of enhanced student learning as measured by an increase in reading comprehension within a specific cohort of students.

Numerous reasons as to why Study Two may not have validated the proposed model have been discussed including the impact of the timeframe over which increases in reading comprehension were measured, the sensitivity of the measurement instruments, the impact of other contributors to student learning, such as student motivation, teacher skill level and whether there was an improvement in teacher learning during the study. Given the theoretical validation provided by the literature review, and the number of mitigating factors that may have contributed to the findings of Study Two, it would be rash to conclude from this that the model of team functioning is invalid. Rather it offers other researchers a plethora of opportunities to replicate and extend this research, which will be further discussed at the end of this section. However, the findings of Study Two do raise whether there is support for the wholesale implementation of collaborative items within school settings. As identified within the discussion of this study, there is an opportunity cost
associated with the establishment and support of teams. Time dedicated to collaborative practices is time that teachers are not spending teaching students, and this equates to a real cost to schools in terms of replacement teachers etc. It also implies a reduced amount of face-to-face time that teachers could be spending developing and deepening relationships with students, and this too may have costs associated with it, in that the relationship between teacher and student is critical to the students learning outcomes. Tannenbaum et al. (1992) also identify that working collaboratively takes considerably more effort on the part of individual teachers, and therefore may have unwanted impacts on their teaching. These costs are amplified if the result of working collaboratively on learning outcomes is negligible. In their study to establish the Model of Team Effectiveness, Tannenbaum et al. (1992) state that collaborative teams should only be used if interdependence of task exists between team members. The implication of this is that schools should not implement collaborative teams for the sake of it, but only in situations where they can be effective.

This study, therefore, makes a number of significant contributions to the field of knowledge associated with the functioning of teams within education settings. Firstly, it has undertaken an extensive review of the historical literature, not only of the use of collaborative teams within education but also more broadly through an examination of teams drawn from organisational psychology. This in itself is a useful exercise and provides a significant resource for other researchers. Secondly, it has used this review to develop a model of PLT functioning built on key characteristics of team functioning identified in the literature to establish a robust and quantifiable framework which can be used in future studies to further explore the elements that contribute to effectiveness of teams and the relationship between these variables and
the outcome of enhanced student learning. Within this model, this study has established elements of team functioning which are critical to the success of teams. These findings alone are useful as both a starting point for future research and for executive leaderships and those involved in the establishment of PLTs to use as indicators of team success. The final contribution acts a caution to schools, that PLTs may not be uniformly effective in increasing student learning outcomes, and therefore schools need to ensure they have assessed the likelihood that PLTs can be effective within a given scenario and that interdependence of task exist between its members before implementing the use of PLTs.

**Limitations**

By their very nature, all hypothesised models have limitations as they attempt to rationalise highly dynamic situations in to ordered and measurable constructs. In the case of this study, the hypothesised model has attempted to identify, isolate and measure highly fluid variables such as teamwork, a notion of support offered by the school, the supportive nature of PLTs etc. All of these elements have subjective and qualitative aspects to them that may or may not be evident within a statistical analysis and are subject to a huge array of influencing factors which cannot be isolated from impacting test results. Further, modelling requires a researcher to nominate some features for inclusion to include and exclude others. Whilst this is necessary to establish a measurable model, it does not preclude that those factors outside the model that may impact its results.

The typical research process is to establish a research topic by reviewing a collection of known facts or information (in this case via a literature review of the collaborative team theory across the fields of organisational psychology and education), using this information to formulate hypotheses and/or research questions,
then designing a process by which to test these questions through research design, followed by an analysis of the results and then an evaluation of this analysis against the proposed hypotheses and known facts. However it has been noted that experimental or observational data derived to explore human behavioural outcomes (and particularly that which is obtained via the use of self-reporting instruments) is likely to be highly variable and produce results that are uncertain (Snijders, 2001). The analysis of results is typically done using a null hypothesis. Whilst this study has followed this approach.

There are a range of limitations that may impact the current study, and these are discussed below. The hypothesised model of PLT effectiveness has drawn on existing frameworks which have previously been used to study the effectiveness of teams and a review of those elements of team functioning that are most prevalent, or which have been identified as the most critical in contributing to the performance of collaborative teams. However, contained within this is an assumption that teams in educational contexts operate in a similar fashion to teams within a broader business environment. This may not necessarily be the case; as significant differences exist between these sectors. For example, within a business context, the use of collaborative teams has long been established with team members used to the idea and practice of collaboration. This may not be the case within schools, where the use of PLTs may be a relatively new concept and not uniformly embraced. This may result in a range of collaborative experience between teachers, impacting overall PLT functioning. Compounding this is the historical context of teaching as an individual pursuit, i.e. one in which teachers are used to working autonomously. Within this historical context, teachers may not view collaboration as beneficial and even may be resentful of being asked to work within a PLT.
There are other significant differences between business and education contexts, one of which is the existence of competition which is known to drive team performance. Performance-based incentives within a commercial context may be a strong influencer on the effectiveness of individuals and work teams. Hackman (1998) found that incentives tagged to individuals did not improve group performance, however, numerous authors note that when incentives are team-based, the performance of teams was enhanced (Beersma et al., 2003; Rosenbaum et al., 1980; Wageman, 1995). Whilst not unheard of within education contexts, merit-based pay schemes and performance bonuses are not common in countries outside the USA (Harvey-Beavis, 2003; Ingvarson, Kleinhenz, & Wilkinson, 2007), and as such, teachers and PLTs are less likely to be incentivised or to benefit financially from enhanced performance. Additionally, schools may not establish KPIs for individuals or PLTs that are linked directly to an increase in student learning leading teachers to either not be aware of their own or collective targets and even if they do, there may be no reward for meeting them or punitive measure for failing to reach these targets.

As mentioned, creating a measurable model requires active choices and the necessary exclusion of variables that may still be at play and may have some bearing on the results of a study. Within the proposed model, a single input variable, school support was chosen. However, the Study One and Two did not explore what level of support or resources each PLT had at their disposal. Differences from school to school in terms of executive leadership and leadership capacity may impact the effectiveness of school support, as might how well the school itself is resourced. There may also be other factors that influence a school’s capacity to support individual PLTs, such as the size of the school, the number of PLTs, the
socioeconomic context in which a school is operating, and the impact of other issues on school functioning, such as its geographical location and whether it belongs to the private, public or Catholic school sector.

The rationale for including school support as the single input variable has previously been outlined, however there are a range of other inputs that have been used in other studies that could have been included and may still be influencing the results of the testing in this study. School support can be considered as an external to the PLT in that it is a contextual or environmental factor. It is highly likely that PLT functioning may also be influenced by internal factors. Driskell, Salas, et al. (1987) and Gladstein (1984) identify elements such as team skills, team composition, size and experience, as well as team leadership as all having potential impact on team effectiveness. The skills, personality and work styles of individual teachers within a PLT may impact team dynamics and therefore performance. For example, experienced teachers may prefer to work more independently and may be resistant to working as part of a team or with less experienced teachers. Similarly, this study did not consider or take into account how many members each PLT had. Presumably, there may be an optimal size or size range of PLT membership. The performance of large teams may be enhanced due to their capacity to take on more tasks and from a having a broader range of teaching skills and diversity of practice than those which would be available within smaller teams but may suffer from greater difficulty in communicating, collaborating, task allocation and creating a supportive environment, however none of these factors have been explored within the current study, in which PLTs were treated as homogenous.

Further limitations of the model include the use of a single output variable in student learning to measure PLT effectiveness. Study Two did not show a
statistically significant correlation between the functioning of a PLT and enhanced student outcomes. In this case, an increase in student learning was measured by increments in reading comprehension over a six-month period, and the correlation between this and the various elements of the hypothesised model were tested. A limitation of this study might be whether this is an accurate and appropriate measure of student learning, or indeed, whether an array of learning measures should have been used.

Additionally, the six-month timeframe may have been too short to accurately measure a significant correlation between any increase in reading comprehension and the activities of the PLTs. Whilst the connection between the work of the PLTs and student an increase in student learning was not upheld in this study, this does not mean there are no positive outcomes of establishing and supporting the work of PLTs within schools. Whilst it has been argued that enhanced student learning is the ultimate aim of the work of a PLT, there are many other outcomes that may result from the work of collaborative teams in education. PLT effectiveness could also be measured by items such as a reduction in teacher workload and greater efficiency (achieved through the sharing or lesson preparation and development of teaching resources etc.), greater consistency of teaching across classes (through the creation of a uniformed approach to teaching across a given school), a reduction in teacher stress levels through the provision of social support between teachers within the PLT.

The PLTs in this study focused on the use of student assessment data to identify the student’s zone of proximal development – or the area between what the student can confidently achieve independently and what they cannot yet achieve (Griffin et al. 2010). It requires teachers to teach at student’s level of need and ensure that the content is neither too easy (what the student can already do) nor too hard (and thus inaccessible to the student). It is likely that this targeted teaching leads to greater engagement by the student. Greater student engagement could be a relevant and useful outcome measure for PLT effectiveness. It may lead to other benefits to
the students such as in improved wellbeing, improved self-esteem and sense of belongingness.

The two goals of successful PLTs that were identified in the literature were to focus on both improving student learning and developing teaching practice. The two constructs which were designed to assess these two tasks were renamed, and that renaming somewhat lost the focus on improving student learning. The teachers in these teams at least, seem to value developing their teaching practice and their professional development rather than focusing explicitly on student learning outcomes. Thus, the finding that the work of the PLT is not correlated with change in student learning outcomes then could be explained by this focus. It is recommended that the outcome measures of teaching practice and professional development be considered.

Another outcome measure that may be considered is the satisfaction of teachers with their work. Working collaboratively may reduce teacher isolation, provide emotional support and lead to greater job satisfaction and retention in the profession.

**Limitations of measurement instrument**

Results used in this study have been derived through the use of a self-report instruments. There are known limitations in using self-reporting resulting in response bias. These include factors such as social desirability – choosing answers that present themselves in a positive light, which are moderate or that they believe is what the survey is looking for (Huang, Liao, & Chang, 1998), understanding – there may be variances in how respondent interpret what the question is asking and what each of the responses mean and rating scales – how each respondent interprets levels on a scale may vary, with some respondents liking to be at the extreme ends of the scale and some preferring the middle ground (Austin, Deary, Gibson, McGregor, & Dent, 1998). In the case of this study, fixed responses were used for each item. This may
lead to respondents again over or under estimating their response according to their own personal biases. The use of a Likert scale to allow respondents to rate their responses have been effective possibly reducing the chance of ‘leading’ respondent, however, this is also subject to misreporting as mentioned above. Additionally, the use of fixed responses may not capture all possible responses or may interpret the function in of PLTs incorrectly forcing the respondent to choose an answer that may not accurately describe their situation.

One construct team efficacy, was measured by a single item. This is problematic for several reasons. A single item contains low content validity. It is very difficult to elicit a response which captures the full meaning of a construct with a single item. It is possible that respondents interpreted the question differently to each other and this could be mitigated with multiple items measuring the construct. A single item also has reduced sensitivity. The item in question had three points of differentiation – thus allowing for only three points of variation in the measurement of the construct. Whereas multiple items allow for greater discrimination and thus sensitivity in measuring the construct. Another issue with one item is that the reliability is not able to be measured. The use of a single item can be adequate in circumstances, however in general the predictive validity is low and it should be avoided (Diamantopoulos, Sarstedt, Fuchs, Wilczynski, Kaiser, 2012).

Validation of survey items

The validity of the items within the survey instrument was tested via a panel of 15 experts with experience in teaching, working within a PLT, or writing assessment items. A larger group with greater representation from each of the three fields of expertise would provide a more representative sample and therefore may have provided further refinement of the instrument.
Sample size and diversity

Only one sample was used within this research with both studies using the same participants, with Study Two participants being a subset of Study One participants. All participants were drawn from an existing project, the Assessments and Learning Partnerships (ALP). Teachers and students who were surveyed and assessed as part of Studies One and Two were participants within this project. The use of a single sample taken from the ALP project may have had some impact on results as all schools had already committed to the establishment of and support for PLTs within the project. A more representative sample could be derived by choosing PLTs at random from across schools, and across school sectors. Additionally, team member participants were only surveyed once, meaning that data collected was a ‘snap in time’. To ensure consistency and validity of the data, it is recommended that future studies undertake a test and retest reliability process to help negate any inconsistencies or aberrations brought on by incidental environmental, psychological or methodological processes (Polit, 2014).

Whilst Study One and Two both returned good statistical fits, there are additional measures that could reinforce the validity of the model, and which were not undertaken as part of this research. Validity is defined by how well an instrument measures what it has been designed to measure, and therefore the extent to which the analysis and interpretation of the results is justified. There are three main types of validity – construct validity, content validity and criterion-related validity (Kimberlin & Winterstein, 2008). Construct validity can be established by the repeated use of a measurement instrument and an evaluation of the data against variables that have been theoretically established and measured by the instrument. In this case, construct validity was established by deriving the variables from historical literature on team
functioning and was further upheld through the analysis of the results (with some minor changes within the labelling of constructs and variables). Content validity can be established through the validation of the instrument and its items of measurement by experts in the field, as was the case in this study (albeit the panel of experts chosen to review the instrument could have been larger, as discussed above). However, no criterion-related validity was established. Criterion-related validity refers to how well the measurements of a variable relate to measurements of a different variable thought to also be a valid measure of a construct. To establish criterion-related validity for the proposed model, further testing and comparison with a related variable should be undertaken. As an example, the measurement of increased reading comprehension could be validated by also measuring an improvement in exam results and establishing a correlation between the two.

This study has established a model of the functioning of teams within an education setting, however as previously identified, few such studies exist in the literature. This presents future researchers with an opportunity to build on the work established here to both further test the model and explore other areas of team functioning that may be at play within PLTs. A range of opportunities for further research have already been touched on and limitation with the current study have been established. The following section details avenues for further study as well as options to further validate the model established in this work.

It is recommended that further research be undertaken using the proposed model, but drawing its sample from a wider, more independent group of PLTs. As identified within the limitations of this study, the sample used for this Study Two was a subset of Study One. Whilst it is unclear what the impact (if any) of this approach was to the end results, replication of this study using different samples for
the two elements explored may provide greater reliability. Additionally, all PLTs used within this study were drawn from those already involved in the ALP project. This may have implications as they all employed a similar approach. The reliability of this study and its proposed model could be strengthened through repeating this study with a new sample drawn from PLTs working independently across a range of contexts. Results from this new research could then be compared to the current study to help validate or refute the model.

It is also recommended that future studies undertake a test-retest reliability process to strengthen the reliability of the model by establishing a consistency of results within the same sample, but across different points in time in order to eliminate extraneous variables that have the potential to impacting results.

Future studies should include methodology to further validate the model, such as the use of related criteria. Suggested criteria which could be explored include different measures related to student learning, such as student engagement or persistence with learning tasks.

It is recommended that further research be undertaken to explore additional contextual factors that may be influencing the effectiveness of PLTs and their potential inclusion or exclusion from the model. The current study used a single input variable. While it has been established that school support has a positive correlation with the aspects of teamwork that form part of PLT functioning, there is enough evidence within the established literature to warrant a further exploration of inputs that may influence the overall effectiveness of teams within education contexts. Within this study, school support has been used as a catchall which included notions such as acknowledgement and support of school leadership for the work of PLTs, as well as provision of the necessary research to enable them to carry
out their work. However other factors such as school culture and the school’s own operating context (e.g. its geographical location, socioeconomic environment and size of school) may also impact the effectiveness of teams and the ability of teachers to collaborate. Many authors including Berry et al. (2005), Bolam et al. (2005), Hollins et al. (2004) and Sundstrom et al. (1990) have identified culture as an important influence on the functioning of teams. However, little can be found in the literature on the impact of a school’s broader context on the effectiveness of team functioning, and this could be the subject of future research. Additionally, many authors within the broader study of teams have identified competition and reward structures as important environmental contributors to team success (Salas et al., 1992b; Tannenbaum et al., 1992). Whether or not these factors influence team effectiveness in education could be explored by other researchers.

Investigating factors internal to team make up could also extend on the model. This study does not take in to account potential internal input variables such as team size or members’ existing skills and experience which could also influence team effectiveness. These have been seen by some authors as important input variables in models of team functioning (Driskell, Salas, et al., 1987; Gladstein, 1984; Salas et al., 1992b) and their role in teams within education context could be further explored.

As outlined in Chapter 3, Study Two did not identify any statistically significant correlation between any of the variables of the model and the output variable, student learning. This may indicate that collaboration between teachers does not in fact have any meaningful impact on student learning, or at least in this case, on reading comprehension. This is contrary to both the hypothesise proposed as part of this study and many findings on the historical literature. It may also imply a
failure in the model or in the testing methodology. It is recommended that further research is undertaken to replicate or refine this study so as to either duplicate or repudiate this result.

Additionally, as indicated the exploration of established models of team functioning in education settings, there may be other outputs for the work of PLTs outside of those that were measured in this study. Improvement in team culture and teacher wellbeing may be one outcome that is of value, and yet may not result in an immediate increase in reading comprehension (student learning). Certainly, it is anticipated that PLTs contribute to building individual teaching capacity, as proposed by this study and many previous authors including Birenbaum et al. (2009), Dufour and Marzano (2009) and Timperley et al. (2007). Whilst it is implied that this should ultimately lead to enhanced student learning, this increase may only be seen over a longer timeframe than allowed within this study. Even within this brief discussion, it can be seen that the area of teacher collaboration and its impact on both teachers and students is an area that could attract a range of future enquiry.

This study set out to contribute to our understanding of how teams in educational settings may be effective, and to develop a framework that may encourage further research in this area. Considerable research has accumulated which examines the key characteristics of effective teams, and established frameworks from this body of work were drawn upon and considered alongside expert writing and research on teams in the educational sector to redress criticism that much educational research has been atheoretical (Crow & Pounder, 2000; Smylie, 1995). Through this work, a hypothetical model of PLT functioning was proposed to attempt to bring a theoretical understanding to the area on which future research can build.
Collaboration is being encouraged as a means to improve teacher capacity and subsequently improve student learning outcomes (Department of Education and Training, 2018). A component of the definition of a team, as used in this study, is that the individuals are interdependent because of the tasks they perform as members of a group and we know that the implementation of teams is warranted when the work requires some form of interdependency (Tannenbaum, et al. 1992). However, O’Neill (2003) argues that teams in education are different from teams in many other organisations. O’Neill makes a valuable point in noting that the role of teaching is always autonomous, and that although collaborative work has a role to play in some aspects of their work, it does not take away from the fact that their actual teaching work is completed independently (O’Neill, 2003). Perhaps information such as that presented in this study on what aspects of collaborative work contribute to better outcomes is even more important for teaching than for those working in other areas. Unlike other areas in which teams are implemented, teachers must also undertake their individual class teaching work, above and beyond the work they may do in the team. There is considerable evidence that the biggest contributor to a student’s learning outcome is their teacher (Rockoff, 2003, Stoll et al., 2006) and the work that is accomplished in the classroom is paramount. Although this study did not find a significant relationship between team-based work and student learning, that does not suggest that working in a team is not effective. Further research is needed to examine how collaborative work may enhance the education of our students. This study developed and then tested a conceptual framework to better understand the effectiveness of PLTs. It is hoped that this work has provided a helpful way that teams in education may be conceptualised and studied, thereby providing a basis upon which to build knowledge of PLT effectiveness.


OECD. (2016). *PISA 2015 Results (Volume I)*.


Bibliography

International Society of Quality of Life Research, 23(6), 1713-1720. doi:10.1007/s11136-014-0632-9


Strahan, D. (2003). Promoting a collaborative professional culture in three elementary schools that have beaten the odds. The Elementary School Journal, 104(2), 127-146.


Bibliography
Appendices

Appendix A
PLT Activities Instrument

1. My PLT uses evidence of student learning.
   1.1. My PLT does not discuss evidence of student learning.
   1.2. My PLT discusses evidence which is collected for purposes other than the focus of the PLT.
   1.3. My PLT uses evidence which focuses on student learning needs.

2. My PLT identifies skills demonstrated by students.
   2.1. My PLT does not try to interpret evidence of student learning.
   2.2. My PLT focuses a single source of evidence such as student test scores.
   2.3. My PLT combines many sources of evidence to identify student skills.

3. My PLT determines the suitability of data to inform teaching.
   3.1. My PLT does not rely on data to inform teaching.
   3.2. My PLT assumes all data can be used to inform teaching.
   3.3. My PLT determines the suitability of data to inform teaching.
   3.4. My PLT reviews the suitability of assessment data in terms of the explicit consequences for student learning.

   4.1. My PLT does not summarise evidence of student learning.
   4.2. My PLT summarises evidence of student learning against expectations.
   4.3. My PLT summarises evidence of student learning in terms of what the students are ready to learn.

5. My PLT makes teaching plans.
   5.1. Teaching plans are made by individual teachers.
   5.2. Teaching plans are proposed by individual teachers and agreed to by the PLT.
   5.3. Teaching plans are developed jointly by PLT members.

6. My PLT sets learning goals for students.
   6.1. Learning goals are based on students’ year level curriculum.
   6.2. Learning goals are based on evidence of student readiness to learn.

7. My PLT selects teaching strategies and resources to meet learning goals.
   7.1. My PLT selects teaching strategies and resources based on familiarity with them.
   7.2. My PLT selects teaching strategies and resources based on evidence of suitability for specific groups of students.
   7.3. My PLT selects teaching strategies and resources based on evidence of success in helping students to meet learning goals.

8. My PLT determines the effectiveness of teaching strategies and resources.
8.1. My PLT assumes the effectiveness of teaching strategies and resources.
8.2. My PLT uses teacher opinion to justify the effectiveness of teaching strategies and resources.
8.3. My PLT reviews data to determine the effectiveness of teaching strategies and resources.
8.4. My PLT conducts action research to determine the effectiveness of teaching strategies and resources.

9. My PLT determines the suitability of assessment approaches administered to students.
9.1. My PLT does not determine the suitability of assessment approaches administered to students.
9.2. My PLT determines the suitability of assessment approaches in terms of the familiarity and ease of use.
9.3. My PLT determines the suitability of assessment approaches in terms the information provided for teaching.
9.4. My PLT reviews the suitability of assessment approaches in terms of the explicit consequences for student learning.

10. My PLT discusses difficult issues.
10.1. We avoid discussing difficult issues in case we give offence.
10.2. We endeavour to ensure our discussions of difficult issues do not cause offence.
10.3. Discussions of difficult issues in our team are frank and professional regardless of potential to upset members.

11. Tension is managed in the PLT.
11.1. Tension between members is allowed to develop in the PLT.
11.2. Tension is managed in the PLT by maintaining interpersonal relationships.
11.3. Tension in the PLT is managed by remaining focused on the team's goals.
11.4. Tension in the PLT is managed by focusing on student learning.

12. My PLT resolves disagreements.
12.1. When there is disagreement, we do not reach a consensus view.
12.2. When there is a disagreement, the view of one or two members usually prevails.
12.3. Disagreement is tolerated and evidence sought to support each view.

13. My PLT makes plans for improving the professional practices of members.
13.1. Plans for improving the professional practices of members are made outside the PLT.
13.2. Plans for improving the professional practices of members are discussed by the PLT.
13.3. Plans for improving the professional practices of members are developed jointly by the PLT members.

14. My PLT determines professional development priorities for members in the area of teaching practice.
14.1. My PLT does not determine professional development priorities for members in the area of teaching practice.
14.2. My PLT uses evidence of student learning needs to determine professional development priorities for members in the area of teaching practice.
14.3. My PLT uses evidence of student learning needs and current teaching practices to determine professional development priorities for members in the area of teaching practice.
14.4. My PLT uses evidence of student learning needs and a developmental approach to teacher learning to determine professional development priorities for members in the area of teaching practice.

15. My PLT makes decisions about professional development priorities for members in the area of assessment practice.
15.1. My PLT assumes our assessment practices are adequate and appropriate for teacher needs.
15.2. My PLT makes decisions about assessment practices based on our opinions of assessment procedures.
15.3. My PLT makes decisions about assessment practices based on data needed to inform teaching decisions.

16. My PLT develops the teaching practices of its members.
16.1. My PLT does not develop the teaching practices of its members.
16.2. My PLT encourages members to consider a range of teaching practices.
16.3. My PLT assists members to implement relevant teaching practices.
16.4. My PLT facilitates members to develop the skills necessary to implement new teaching practices.

17. My PLT develops the assessment practices of its members.
17.1. My PLT does not develop the assessment practices of its members.
17.2. My PLT exposes members to new assessment practices.
17.3. My PLT assists members to implement new assessment practices.
17.4. My PLT facilitates members to develop the skills necessary to implement new assessment practices.

18. My PLT discusses the suitability of possible strategies and resources for our professional development.
18.1. My PLT does not discuss the suitability of possible strategies and resources for our professional development.
18.2. My PLT discusses the suitability of possible strategies and resources for our professional development in terms of their familiarity or ease of access.
18.3. My PLT discusses the suitability of possible strategies and resources for our professional development in terms of the potential to achieve goals for teachers.
18.4. My PLT discusses the suitability of possible strategies and resources for our professional development in terms of the evidence to successfully achieve goals for teachers.
Appendix B
PLT Engagement Instrument

1. My PLT values contributions to meetings.
   1.1. The value of contributions to meetings is based on who makes the contribution.
   1.2. The value of contributions to meetings is based on the way in which they are delivered.
   1.3. The value of contributions to meetings is based on supporting evidence supplied.
   1.4. The value of contributions to meetings is based on its potential to help enhance student learning.

2. My PLT takes the views of others into account in discussions.
   2.1. My PLT does not take members’ views into account.
   2.2. My PLT considers the views offered at meetings.
   2.3. My PLT seeks the views of all members and considers them.
   2.4. My PLT forms action plans based on an analysis of the views of all members.

3. Members of my team complete their PLT work.
   3.1. PLT work is completed when other priorities allow.
   3.2. PLT work is prioritised over other school demands.

4. Members of my team contribute to PLT work.
   4.1. Not all members of my team prioritise PLT work.
   4.2. All members of my team prioritise PLT work.

5. My PLT is aware of the degree to which the PLT work is carried out by members.
   5.1. My PLT is not aware of the degree to which the PLT work is carried out by members.
   5.2. My PLT discusses evidence of the degree to which the PLT work is completed by members.

6. My PLT supports team members to develop the effectiveness of their practices.
   6.1. My PLT does not support team members to develop the effectiveness of their practices.
   6.2. My PLT supports team members to develop the effectiveness of their practices when asked.
   6.3. My PLT is proactive in supporting team members to develop the effectiveness of their practices.

7. My PLT takes responsibility for the success of the PLT work.
   7.1. Each team member is responsible for their own PLT work.
   7.2. We take joint responsibility for success of the PLT work.

8. Members coordinate PLT work.
   8.1. Members act independently.
   8.2. Members discuss the ways in which PLT work will be completed.
8.3. Members coordinate actions to ensure PLT work is completed.

9. My PLT focuses its meeting time on evidence of student learning.
   9.1. Meetings flow freely without structure.
   9.2. My PLT focuses discussion on our assigned tasks.
   9.3. My PLT discussion remains focused on evidence of impact on student learning throughout the meeting.

10. My PLT promotes its approach to improving student learning.
    10.1. My PLT keeps its achievements to itself.
    10.2. My PLT takes opportunities to promote its approach to improving student learning when they arise.
    10.3. My PLT seeks opportunities to advocate its approach to improving student learning.

11. My PLT uses links with people or organisations outside the PLT.
    11.1. My PLT focuses only on people and matters internal to the PLT.
    11.2. My PLT uses people or organisations outside the PLT to build its resources.
    11.3. My PLT uses its links with people or organisations outside the PLT to influence policies and structures to enhance the PLT’s work.

12. My PLT works to ensure it is sustainable in the long term.
    12.1. My PLT does not have any long term plans.
    12.2. My PLT makes plans to ensure the team is successful.
    12.3. My PLT works with school leadership to ensure succession and longevity.

13. My PLT uses its meeting time.
    13.1. My PLT uses its meeting time to deal with administration and the dissemination of information.
    13.2. My PLT uses its meeting time to deal with any issues raised by its members.
    13.3. My PLT uses its meeting time to deal with issues related to student learning.

14. Time for my PLT to meet is scheduled.
    14.1. Time for my PLT to meet is fitted around other priorities in the school’s schedule.
    14.2. Time for my PLT to meet is found in the school’s schedule.
    14.3. Time for my PLT to meet is prioritised within the school’s schedule.

15. The principal of my school knows about the work of my PLT.
    15.1. The principal of my school is not aware of the work of my PLT.
    15.2. The principal of my school has an overview of the aims and accomplishments of my PLT.
15.3. The principal of has a knowledge of the decisions and actions of my PLT.

16. The work of my PLT is valued by the leadership of my school.
16.1. The work of my PLT is not valued by the leadership of my school.
16.2. The work of my PLT is valued by the leadership of my school.

17. The work of my PLT influences strategic planning at my school.
17.1. The work of my PLT does not influence strategic planning at my school.
17.2. The work of my PLT is incorporated in strategic planning at my school.
17.3. The work of my PLT drives strategic planning at my school.

18. The role of PLT leader has a place in the leadership structure of our school.
18.1. The role of PLT leader is considered peripheral to the leadership structure of our school.
18.2. The role of the PLT leader is seen as significant in the leadership structure of our school.

19. PLTs are formalised in our school’s structure.
19.1. PLTs are not part of the formal structure of our school.
19.2. Our school is reviewing its structure to incorporate PLTs.
19.3. PLTs are integrated into our school’s structure.

20. I contribute to the PLT meetings to the best of my ability.
20.1. I do not contribute to PLT meetings.
20.2. I contribute to PLT meetings.
20.3. I contribute to PLT meetings and encourage others to do so.
20.4.

21. I seek to ensure statements made in PLT discussions are supported by evidence.
21.1. I accept statements made at face value.
21.2. I ask questions to ascertain whether statements made in PLT discussions are supported by evidence.
21.3. I consider statements from PLT members based on the supporting information they provide.

22. I give feedback about PLT work to other team members when warranted.
22.1. I keep my views about other team members’ PLT work to myself.
22.2. I give feedback about PLT work to team members with whom I feel comfortable
22.3. I give feedback about PLT work to all PLT members.

23. I value feedback from PLT members.
23.1. The feedback I get from team members generally is not helpful.
23.2. I adjust my work based on feedback from team members.
23.3. Feedback from team members has helped improve our students’ learning outcomes.
23.4.
24. I ask for feedback from team members.
   24.1. I do not ask for feedback on PLT tasks.
   24.2. I only ask for feedback on PLT tasks from members of my team with whom I feel comfortable.
   24.3. I ask for feedback on PLT tasks from members whose perspective or expertise would contribute to my understanding.

25. Time spent in PLT meetings is productive.
   25.1. Time spent in PLT meetings is not productive.
   25.2. Some of the time spent in PLT meetings is productive.
   25.3. Time spent in PLT meetings is productive.
   25.4.

26. I respond to comments from other team members.
   26.1. I respond defensively to feedback from PLT members.
   26.2. I accept feedback from PLT members.
   26.3. I respond to feedback from PLT members in terms of its usefulness in helping us enhance student learning.

27. I report to the PLT on my implementation of teaching plans.
   27.1. I keep information about my implementation of teaching plans to myself.
   27.2. I tell the PLT about implementation of teaching plans.
   27.3. I report to the PLT on the effects on student learning of the teaching plans.

28. I receive help from other team members.
   28.1. Team members do not offer to help me.
   28.2. I accept help from other team members when needed.
   28.3. I seek and accept help from other team members when needed.

29. I complete PLT work to the best of my ability.
   29.1. I generally regard PLT work as none of my concern.
   29.2. I complete PLT work depending on my priorities.
   29.3. I complete all the PLT work to the best of my ability as part of my obligations to the team.
   29.4. I complete PLT work to help improve the team’s overall performance in terms of enhanced student learning.

30. My work in the PLT affects the outcomes of our students.
   30.1. My work in the PLT does not help improve outcomes for our students.
   30.2. My work in the PLT improves the outcomes for some students.
   30.3. My work in the PLT improves outcomes for all students.
Appendix C
Trial Instrument

Items are grouped under the sub-headings of their theorised underlying constructs. The variable name is shown first, with the corresponding pilot instrument name in brackets. Variables prefixed with the letter ‘A’ are from the pilot PLT A instrument, and variables prefixed with the letter ‘B’ are from the pilot PLT B instrument. The following number represents the item number on that instrument.

<table>
<thead>
<tr>
<th>Name</th>
<th>Item Stem and Response Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Support</td>
<td></td>
</tr>
<tr>
<td>SS1 (B14)</td>
<td>Time for my PLT to meet is scheduled.</td>
</tr>
<tr>
<td>4.</td>
<td>Time for my PLT to meet is fitted around other priorities in the school’s schedule.</td>
</tr>
<tr>
<td>5.</td>
<td>Time for my PLT to meet is found in the school’s schedule.</td>
</tr>
<tr>
<td>6.</td>
<td>Time for my PLT to meet is prioritised within the school’s schedule.</td>
</tr>
<tr>
<td>SS2 (B15)</td>
<td>The principal of my school knows about the work of my PLT.</td>
</tr>
<tr>
<td>4.</td>
<td>The principal of my school is not aware of the work of my PLT.</td>
</tr>
<tr>
<td>5.</td>
<td>The principal of my school has an overview of the aims and accomplishments of my PLT.</td>
</tr>
<tr>
<td>6.</td>
<td>The principal of has a knowledge of the decisions and actions of my PLT.</td>
</tr>
<tr>
<td>SS3 (B16)</td>
<td>The work of my PLT is valued by the leadership of my school.</td>
</tr>
<tr>
<td>3.</td>
<td>The work of my PLT is not valued by the leadership of my school.</td>
</tr>
<tr>
<td>4.</td>
<td>The work of my PLT is valued by the leadership of my school.</td>
</tr>
<tr>
<td>SS4 (B17)</td>
<td><strong>The work of my PLT influences strategic planning at my school.</strong></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>4.</td>
<td>The work of my PLT does not influence strategic planning at my school.</td>
</tr>
<tr>
<td>5.</td>
<td>The work of my PLT is incorporated in strategic planning at my school.</td>
</tr>
<tr>
<td>6.</td>
<td>The work of my PLT drives strategic planning at my school.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SS5 (B18)</th>
<th><strong>The role of PLT leader has a place in the leadership structure of our school.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>3.</td>
<td>The role of PLT leader is considered peripheral to the leadership structure of our school.</td>
</tr>
<tr>
<td>4.</td>
<td>The role of the PLT leader is seen as significant in the leadership structure of our school.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SS6 (B19)</th>
<th><strong>PLTs are formalised in our school’s structure.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>4.</td>
<td>PLTs are not part of the formal structure of our school.</td>
</tr>
<tr>
<td>5.</td>
<td>Our school is reviewing its structure to incorporate PLTs.</td>
</tr>
<tr>
<td>6.</td>
<td>PLTs are integrated into our school’s structure.</td>
</tr>
</tbody>
</table>

**Communication**

<table>
<thead>
<tr>
<th>C1 (B21)</th>
<th>I seek to ensure statements made in PLT discussions are supported by evidence.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.</td>
<td>I accept statements made at face value.</td>
</tr>
<tr>
<td>5.</td>
<td>I ask questions to ascertain whether statements made in PLT discussions are supported by evidence.</td>
</tr>
<tr>
<td>6.</td>
<td>I consider statements from PLT members based on the supporting information they provide.</td>
</tr>
</tbody>
</table>
C2 (B22) I give feedback about PLT work to other team members when warranted.

4. I keep my views about other team members’ PLT work to myself.

5. I give feedback about PLT work to team members with whom I feel comfortable

6. I give feedback about PLT work to all PLT members.

C3 (B23) I value feedback from PLT members.

4. The feedback I get from team members generally is not helpful.

5. I adjust my work based on feedback from team members.

6. Feedback from team members has helped improve our students’ learning outcomes.

C4 (B24) I ask for feedback from team members.

4. I do not ask for feedback on PLT tasks.

5. I only ask for feedback on PLT tasks from members of my team with whom I feel comfortable.

6. I ask for feedback on PLT tasks from members whose perspective or expertise would contribute to my understanding.

C5 (B26) I respond to comments from other team members.

4. I respond defensively to feedback from PLT members.

5. I accept feedback from PLT members.

6. I respond to feedback from PLT members in terms of its usefulness in helping us enhance student learning.
C6 (A10)  My PLT discusses difficult issues.
4. We avoid discussing difficult issues in case we give offence.
5. We endeavour to ensure our discussions of difficult issues do not cause offence.
6. Discussions of difficult issues in our team are frank and professional regardless of potential to upset members.

C7 (A11)  Tension is managed in the PLT.
5. Tension between members is allowed to develop in the PLT.
6. Tension is managed in the PLT by maintaining interpersonal relationships.
7. Tension in the PLT is managed by remaining focused on the team's goals.
8. Tension in the PLT is managed by focusing on student learning.

C8 (A12)  My PLT resolves disagreements.
4. When there is disagreement, we do not reach a consensus view.
5. When there is a disagreement, the view of one or two members usually prevails.
6. Disagreement is tolerated and evidence sought to support each view.

Workload Sharing

WS1 (B3)  Members of my team complete their PLT work.
3. PLT work is completed when other priorities allow.
4. PLT work is prioritised over other school demands.
<table>
<thead>
<tr>
<th>WS2 (B4)</th>
<th>Members of my team contribute to PLT work.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3. Not all members of my team prioritise PLT work.</td>
</tr>
<tr>
<td></td>
<td>4. All members of my team prioritise PLT work.</td>
</tr>
<tr>
<td>WS3 (B5)</td>
<td>My PLT is aware of the degree to which the PLT work is carried out by members.</td>
</tr>
<tr>
<td></td>
<td>3. My PLT is not aware of the degree to which the PLT work is carried out by members.</td>
</tr>
<tr>
<td></td>
<td>4. My PLT discusses evidence of the degree to which the PLT work is completed by members.</td>
</tr>
<tr>
<td>WS4 (B7)</td>
<td>My PLT takes responsibility for the success of the PLT work.</td>
</tr>
<tr>
<td></td>
<td>3. Each team member is responsible for their own PLT work.</td>
</tr>
<tr>
<td></td>
<td>4. We take joint responsibility for success of the PLT work.</td>
</tr>
<tr>
<td>WS5 (B8)</td>
<td>Members coordinate PLT work.</td>
</tr>
<tr>
<td></td>
<td>4. Members act independently.</td>
</tr>
<tr>
<td></td>
<td>5. Members discuss the ways in which PLT work will be completed.</td>
</tr>
<tr>
<td></td>
<td>6. Members coordinate actions to ensure PLT work is completed.</td>
</tr>
<tr>
<td>WS6 (B20)</td>
<td>I contribute to the PLT meetings to the best of my ability.</td>
</tr>
<tr>
<td></td>
<td>4. I do not contribute to PLT meetings.</td>
</tr>
<tr>
<td></td>
<td>5. I contribute to PLT meetings.</td>
</tr>
<tr>
<td></td>
<td>6. I contribute to PLT meetings and encourage others to do so.</td>
</tr>
</tbody>
</table>
WS7 (B29)  I complete PLT work to the best of my ability.

5. I generally regard PLT work as none of my concern.

6. I complete PLT work depending on my priorities.

7. I complete all the PLT work to the best of my ability as part of my obligations to the team.

8. I complete PLT work to help improve the team’s overall performance in terms of enhanced student learning.

Intergroup Processes

IP1 (B10)  My PLT promotes its approach to improving student learning.

4. My PLT keeps its achievements to itself.

5. My PLT takes opportunities to promote its approach to improving student learning when they arise.

6. My PLT seeks opportunities to advocate its approach to improving student learning.

IP2 (B11)  My PLT uses links with people or organisations outside the PLT.

4. My PLT focuses only on people and matters internal to the PLT.

5. My PLT uses people or organisations outside the PLT to build its resources.

6. My PLT uses its links with people or organisations outside the PLT to influence policies and structures to enhance the PLT’s work.
<table>
<thead>
<tr>
<th>IP3 (B12)</th>
<th>My PLT works to ensure it is sustainable in the long term.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.</td>
<td>My PLT does not have any long term plans.</td>
</tr>
<tr>
<td>5.</td>
<td>My PLT makes plans to ensure the team is successful.</td>
</tr>
<tr>
<td>6.</td>
<td>My PLT works with school leadership to ensure succession and longevity.</td>
</tr>
</tbody>
</table>

### Team Efficacy

<table>
<thead>
<tr>
<th>TE1 (B30)</th>
<th>My work in the PLT affects the outcomes of our students.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>My work in the PLT does not help improve outcomes for our students.</td>
</tr>
<tr>
<td>2.</td>
<td>My work in the PLT improves the outcomes for some students.</td>
</tr>
<tr>
<td>3.</td>
<td>My work in the PLT improves outcomes for all students.</td>
</tr>
</tbody>
</table>

### Supportiveness

<table>
<thead>
<tr>
<th>S1 (B28)</th>
<th>I receive help from other team members.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.</td>
<td>Team members do not offer to help me.</td>
</tr>
<tr>
<td>5.</td>
<td>I accept help from other team members when needed.</td>
</tr>
<tr>
<td>6.</td>
<td>I seek and accept help from other team members when needed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S2 (B1)</th>
<th>My PLT values contributions to meetings.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.</td>
<td>The value of contributions to meetings is based on who makes the contribution.</td>
</tr>
<tr>
<td>6.</td>
<td>The value of contributions to meetings is based on the way in which they are delivered.</td>
</tr>
<tr>
<td>7.</td>
<td>The value of contributions to meetings is based on supporting evidence supplied.</td>
</tr>
<tr>
<td>8.</td>
<td>The value of contributions to meetings is based on its potential to help enhance student learning.</td>
</tr>
</tbody>
</table>
### S3 (B2)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>My PLT takes the views of others into account in discussions.</strong></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>My PLT does not take members’ views into account.</td>
</tr>
<tr>
<td>6.</td>
<td>My PLT considers the views offered at meetings.</td>
</tr>
<tr>
<td>7.</td>
<td>My PLT seeks the views of all members and considers them.</td>
</tr>
<tr>
<td>8.</td>
<td>My PLT forms action plans based on an analysis of the views of all members.</td>
</tr>
</tbody>
</table>

### Facilitates Student Learning

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SL1 (A1)</strong></td>
<td><strong>My PLT uses evidence of student learning.</strong></td>
</tr>
<tr>
<td>4.</td>
<td>My PLT does not discuss evidence of student learning.</td>
</tr>
<tr>
<td>5.</td>
<td>My PLT discusses evidence which is collected for purposes other than the focus of the PLT.</td>
</tr>
<tr>
<td>6.</td>
<td>My PLT uses evidence which focuses on student learning needs.</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SL2 (A2)</strong></td>
<td><strong>My PLT identifies skills demonstrated by students.</strong></td>
</tr>
<tr>
<td>4.</td>
<td>My PLT does not try to interpret evidence of student learning.</td>
</tr>
<tr>
<td>5.</td>
<td>My PLT focuses a single source of evidence such as student test scores.</td>
</tr>
<tr>
<td>6.</td>
<td>My PLT combines many sources of evidence to identify student skills.</td>
</tr>
<tr>
<td>SL3 (A3)</td>
<td>My PLT determines the suitability of data to inform teaching.</td>
</tr>
<tr>
<td>----------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>5.</td>
<td>My PLT does not rely on data to inform teaching.</td>
</tr>
<tr>
<td>6.</td>
<td>My PLT assumes all data can be used to inform teaching.</td>
</tr>
<tr>
<td>7.</td>
<td>My PLT determines the suitability of data to inform teaching.</td>
</tr>
<tr>
<td>8.</td>
<td>My PLT reviews the suitability of assessment data in terms of the explicit consequences for student learning.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SL4 (A4)</th>
<th>My PLT summarises evidence of student learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.</td>
<td>My PLT does not summarise evidence of student learning.</td>
</tr>
<tr>
<td>5.</td>
<td>My PLT summarises evidence of student learning against expectations.</td>
</tr>
<tr>
<td>6.</td>
<td>My PLT summarises evidence of student learning in terms of what the students are ready to learn.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SL5 (A5)</th>
<th>My PLT makes teaching plans.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.</td>
<td>Teaching plans are made by individual teachers.</td>
</tr>
<tr>
<td>5.</td>
<td>Teaching plans are proposed by individual teachers and agreed to by the PLT.</td>
</tr>
<tr>
<td>6.</td>
<td>Teaching plans are developed jointly by PLT members.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SL6 (A6)</th>
<th>My PLT sets learning goals for students.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.</td>
<td>Learning goals are based on students’ year level curriculum.</td>
</tr>
<tr>
<td>4.</td>
<td>Learning goals are based on evidence of student readiness to learn.</td>
</tr>
</tbody>
</table>
SL7 (A7)  My PLT selects teaching strategies and resources to meet learning goals.

4.  My PLT selects teaching strategies and resources based on familiarity with them.

5.  My PLT selects teaching strategies and resources based on evidence of suitability for specific groups of students.

6.  My PLT selects teaching strategies and resources based on evidence of success in helping students to meet learning goals.

SL8 (A8)  My PLT determines the effectiveness of teaching strategies and resources.

5.  My PLT assumes the effectiveness of teaching strategies and resources.

6.  My PLT uses teacher opinion to justify the effectiveness of teaching strategies and resources.

7.  My PLT reviews data to determine the effectiveness of teaching strategies and resources.

8.  My PLT conducts action research to determine the effectiveness of teaching strategies and resources.
SL9 (A9) My PLT determines the suitability of assessment approaches administered to students.

5. My PLT does not determine the suitability of assessment approaches administered to students.

6. My PLT determines the suitability of assessment approaches in terms of the familiarity and ease of use.

7. My PLT determines the suitability of assessment approaches in terms the information provided for teaching.

8. My PLT reviews the suitability of assessment approaches in terms of the explicit consequences for student learning.

SL10 (B9) My PLT focuses its meeting time on evidence of student learning.

4. Meetings flow freely without structure.

5. My PLT focuses discussion on our assigned tasks.

6. My PLT discussion remains focused on evidence of impact on student learning throughout the meeting.

SL11 (B13) My PLT uses its meeting time.

4. My PLT uses its meeting time to deal with administration and the dissemination of information.

5. My PLT uses its meeting time to deal with any issues raised by its members.

6. My PLT uses its meeting time to deal with issues related to student learning.

SL12 (B25) Time spent in PLT meetings is productive.

4. Time spent in PLT meetings is not productive.

5. Some of the time spent in PLT meetings is productive.

6. Time spent in PLT meetings is productive.
### Facilitates Teacher Learning

<table>
<thead>
<tr>
<th>SL13 (B27)</th>
<th>I report to the PLT on my implementation of teaching plans.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4. I keep information about my implementation of teaching plans to myself.</td>
</tr>
<tr>
<td></td>
<td>5. I tell the PLT about implementation of teaching plans.</td>
</tr>
<tr>
<td></td>
<td>6. I report to the PLT on the effects on student learning of the teaching plans.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Facilitates Teacher Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>TL1 (B6)</td>
</tr>
<tr>
<td>My PLT supports team members to develop the effectiveness of their practices.</td>
</tr>
<tr>
<td>4. My PLT does not support team members to develop the effectiveness of their practices.</td>
</tr>
<tr>
<td>5. My PLT supports team members to develop the effectiveness of their practices when asked.</td>
</tr>
<tr>
<td>6. My PLT is proactive in supporting team members to develop the effectiveness of their practices</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TL2 (A13)</th>
<th>My PLT makes plans for improving the professional practices of members.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Plans for improving the professional practices of members are made outside the PLT.</td>
<td></td>
</tr>
<tr>
<td>5. Plans for improving the professional practices of members are discussed by the PLT.</td>
<td></td>
</tr>
<tr>
<td>6. Plans for improving the professional practices of members are developed jointly by the PLT members.</td>
<td></td>
</tr>
<tr>
<td>TL3 (A14)</td>
<td><strong>My PLT determines professional development priorities for members in the area of teaching practice.</strong></td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>5. My PLT does not determine professional development priorities for members in the area of teaching practice.</td>
</tr>
<tr>
<td></td>
<td>6. My PLT uses evidence of student learning needs to determine professional development priorities for members in the area of teaching practice</td>
</tr>
<tr>
<td></td>
<td>7. My PLT uses evidence of student learning needs and current teaching practices to determine professional development priorities for members in the area of teaching practice</td>
</tr>
<tr>
<td></td>
<td>8. My PLT uses evidence of student learning needs and a developmental approach to teacher learning to determine professional development priorities for members in the area of teaching practice</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TL4 (A15)</th>
<th><strong>My PLT makes decisions about professional development priorities for members in the area of assessment practice.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4. My PLT assumes our assessment practices are adequate and appropriate for teacher needs.</td>
</tr>
<tr>
<td></td>
<td>5. My PLT makes decisions about assessment practices based on our opinions of assessment procedures.</td>
</tr>
<tr>
<td></td>
<td>6. My PLT makes decisions about assessment practices based on data needed to inform teaching decisions.</td>
</tr>
</tbody>
</table>
TL5 (A16)  My PLT develops the teaching practices of its members.
5. My PLT does not develop the teaching practices of its members.
6. My PLT encourages members to consider a range of teaching practices.
7. My PLT assists members to implement relevant teaching practices.
8. My PLT facilitates members to develop the skills necessary to implement new teaching practices.

TL6 (A17)  My PLT develops the assessment practices of its members.
5. My PLT does not develop the assessment practices of its members.
6. My PLT exposes members to new assessment practices.
7. My PLT assists members to implement new assessment practices.
8. My PLT facilitates members to develop the skills necessary to implement new assessment practices.
<table>
<thead>
<tr>
<th>TL7 (A18)</th>
<th><strong>My PLT discusses the suitability of possible strategies and resources for our professional development.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>5.</td>
<td>My PLT does not discuss the suitability of possible strategies and resources for our professional development.</td>
</tr>
<tr>
<td>6.</td>
<td>My PLT discusses the suitability of possible strategies and resources for our professional development in terms of their familiarity or ease of access.</td>
</tr>
<tr>
<td>7.</td>
<td>My PLT discusses the suitability of possible strategies and resources for our professional development in terms of the potential to achieve goals for teachers.</td>
</tr>
<tr>
<td>8.</td>
<td>My PLT discusses the suitability of possible strategies and resources for our professional development in terms of the evidence to successfully achieve goals for teachers.</td>
</tr>
</tbody>
</table>
Appendix D
Initial and Recoded Frequency of Responses for the Trial Instrument

<table>
<thead>
<tr>
<th>Name</th>
<th>Item</th>
<th>Initial Freq</th>
<th>Recode Freq</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Pilot item)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**School Support**

**SS1  Time for my PLT to meet is scheduled.**
(B14)  Total: 587 Missing:6

- Time for my PLT to meet is fitted around other priorities in the school’s schedule.  62  62
- Time for my PLT to meet is found in the school’s schedule.  174  174
- Time for my PLT to meet is prioritised within the school’s schedule.  351  351

**SS2  The principal of my school knows about the work of my PLT.**
(B15)  Total: 586 Missing:7

- The principal of my school is not aware of the work of my PLT  28  28
- The principal of my school has an overview of the aims and accomplishments of my PLT.  198  198
- The principal of has a knowledge of the decisions and actions of my PLT.  360  360

**SS3  The work of my PLT is valued by the leadership of my school.**
(B16)  Total: 585 Missing:8

- The work of my PLT is not valued by the leadership of my school.  24  24
The work of my PLT is valued by the leadership of my school. 561 561

SS4 The work of my PLT influences strategic planning at my school. (B17) Total: 585 Missing 8
The work of my PLT does not influence strategic planning at my school. 73 73
The work of my PLT is incorporated in strategic planning at my school. 361 361
The work of my PLT drives strategic planning at my school. 151 151

SS5 The role of PLT leader has a place in the leadership structure of our school. (B18) Total: 585 Missing 8
The role of PLT leader is considered peripheral to the leadership structure of our school. 147 147
The role of the PLT leader is seen as significant in the leadership structure of our school. 438 438

SS6 PLTs are formalised in our school’s structure. (B19) Total: 585 Missing 8
PLTs are not part of the formal structure of our school. 22 22
Our school is reviewing its structure to incorporate PLTs. 81 81
PLTs are integrated into our school’s structure. 482 482

Communication

C1 I seek to ensure statements made in PLT discussions are supported by evidence. (B21) Total: 584 Missing 9
<table>
<thead>
<tr>
<th>Category (B)</th>
<th>Statement</th>
<th>Responses</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2 (B22)</td>
<td>I give feedback about PLT work to other team members when warranted.</td>
<td>Total: 584</td>
<td>Missing: 9</td>
</tr>
<tr>
<td></td>
<td>I keep my views about other team members’ PLT work to myself.</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>I give feedback about PLT work to team members with whom I feel comfortable</td>
<td>175</td>
<td>175</td>
</tr>
<tr>
<td></td>
<td>I give feedback about PLT work to all PLT members.</td>
<td>379</td>
<td>379</td>
</tr>
<tr>
<td>C3 (B23)</td>
<td>I value feedback from PLT members.</td>
<td>Total: 584</td>
<td>Missing: 9</td>
</tr>
<tr>
<td></td>
<td>The feedback I get from team members generally is not helpful.</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>I adjust my work based on feedback from team members.</td>
<td>178</td>
<td>178</td>
</tr>
<tr>
<td></td>
<td>Feedback from team members has helped improve our students’ learning outcomes.</td>
<td>395</td>
<td>395</td>
</tr>
<tr>
<td>C4 (B24)</td>
<td>I ask for feedback from team members.</td>
<td>Total: 584</td>
<td>Missing: 9</td>
</tr>
<tr>
<td></td>
<td>I do not ask for feedback on PLT tasks.</td>
<td>32</td>
<td>32</td>
</tr>
</tbody>
</table>
I only ask for feedback on PLT tasks from members of my team with whom I feel comfortable.  
I ask for feedback on PLT tasks from members whose perspective or expertise would contribute to my understanding.

<table>
<thead>
<tr>
<th>C5</th>
<th><strong>I respond to comments from other team members.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>(B26)</td>
<td>Total: 584 Missing 9</td>
</tr>
<tr>
<td></td>
<td>I respond defensively to feedback from PLT members.</td>
</tr>
<tr>
<td></td>
<td>I accept feedback from PLT members.</td>
</tr>
<tr>
<td></td>
<td>I respond to feedback from PLT members in terms of its usefulness in helping us enhance student learning.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C6</th>
<th><strong>My PLT discusses difficult issues.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>(A10)</td>
<td>Total: 585 Missing 8</td>
</tr>
<tr>
<td></td>
<td>We avoid discussing difficult issues in case we give offence.</td>
</tr>
<tr>
<td></td>
<td>We endeavour to ensure our discussions of difficult issues do not cause offence.</td>
</tr>
<tr>
<td></td>
<td>Discussions of difficult issues in our team are frank and professional regardless of potential to upset members.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C7</th>
<th><strong>Tension is managed in the PLT.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>(A11)</td>
<td>Total: 585 Missing 8</td>
</tr>
<tr>
<td></td>
<td>Tension between members is allowed to develop in the PLT.</td>
</tr>
<tr>
<td>Appendix</td>
<td>Description</td>
</tr>
<tr>
<td>----------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>A12</td>
<td>My PLT resolves disagreements.</td>
</tr>
<tr>
<td></td>
<td>When there is disagreement, we do not reach a consensus view.</td>
</tr>
<tr>
<td></td>
<td>When there is a disagreement, the view of one or two members usually prevails.</td>
</tr>
<tr>
<td></td>
<td>Disagreement is tolerated and evidence sought to support each view.</td>
</tr>
</tbody>
</table>

**Workload Sharing**

<table>
<thead>
<tr>
<th>Appendix</th>
<th>Description</th>
<th>Code</th>
<th>Total</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>B3</td>
<td>Members of my team complete their PLT work.</td>
<td>WS1</td>
<td>593</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>PLT work is completed when other priorities allow.</td>
<td></td>
<td>297</td>
<td>297</td>
</tr>
<tr>
<td></td>
<td>PLT work is prioritised over other school demands.</td>
<td></td>
<td>296</td>
<td>296</td>
</tr>
<tr>
<td>B4</td>
<td>Members of my team contribute to PLT work.</td>
<td>WS2</td>
<td>593</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Not all members of my team prioritise PLT work.</td>
<td></td>
<td>233</td>
<td>233</td>
</tr>
<tr>
<td></td>
<td>All members of my team prioritise PLT work.</td>
<td></td>
<td>360</td>
<td>360</td>
</tr>
<tr>
<td>B5</td>
<td>My PLT is aware of the degree to which the PLT work is carried out by members.</td>
<td>WS3</td>
<td>593</td>
<td>0</td>
</tr>
</tbody>
</table>
Total: 592 Missing: 1
My PLT is not aware of the degree to which the PLT work is carried out by members. 120 120
My PLT discusses evidence of the degree to which the PLT work is completed by members. 472 472

WS4  My PLT takes responsibility for the success of the PLT work.
(B7)  Total: 590 Missing 3
Each team member is responsible for their own PLT work. 121 121
We take joint responsibility for success of the PLT work. 469 469

WS5  Members coordinate PLT work.
(B8)  Total: 590 Missing: 3
Members act independently. 32 32
Members discuss the ways in which PLT work will be completed. 283 283
Members coordinate actions to ensure PLT work is completed. 275 275

WS6  I contribute to the PLT meetings to the best of my ability.
(B20) Total: 585 Missing 8
I do not contribute to PLT meetings. 5 N/A
I contribute to PLT meetings. 206 211
I contribute to PLT meetings and encourage others to do so. 374 374

WS7  I complete PLT work to the best of my ability.
(B29) Total: 584 Missing: 9
I generally regard PLT work as none of my concern.

I complete PLT work depending on my priorities.

I complete all the PLT work to the best of my ability as part of my obligations to the team.

I complete PLT work to help improve the team’s overall performance in terms of enhanced student learning.

**Intergroup Processes**

**IP1**

*My PLT promotes its approach to improving student learning.*

<table>
<thead>
<tr>
<th>Description</th>
<th>Total: 588</th>
<th>Missing</th>
<th>1</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>My PLT keeps its achievements to itself.</td>
<td></td>
<td></td>
<td>63</td>
<td>63</td>
</tr>
<tr>
<td>My PLT takes opportunities to promote its approach to improving student learning when they arise.</td>
<td></td>
<td></td>
<td>312</td>
<td>312</td>
</tr>
<tr>
<td>My PLT seeks opportunities to advocate its approach to improving student learning.</td>
<td></td>
<td></td>
<td>213</td>
<td>213</td>
</tr>
</tbody>
</table>

**IP2**

*My PLT uses links with people or organisations outside the PLT.*

<table>
<thead>
<tr>
<th>Description</th>
<th>Total: 587</th>
<th>Missing</th>
<th>167</th>
<th>167</th>
</tr>
</thead>
<tbody>
<tr>
<td>My PLT focuses only on people and matters internal to the PLT.</td>
<td></td>
<td></td>
<td>167</td>
<td>167</td>
</tr>
<tr>
<td>My PLT uses people or organisations outside the PLT to build its resources.</td>
<td></td>
<td></td>
<td>278</td>
<td>278</td>
</tr>
<tr>
<td>My PLT uses its links with people or organisations outside the PLT to influence policies and structures to enhance the PLT’s work.</td>
<td></td>
<td></td>
<td>142</td>
<td>142</td>
</tr>
</tbody>
</table>

**IP3**

*My PLT works to ensure it is sustainable in the long term.*
<table>
<thead>
<tr>
<th>(B12)</th>
<th>Total: 587 Missing: 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>My PLT does not have any long term plans.</td>
<td>66</td>
</tr>
<tr>
<td>My PLT makes plans to ensure the team is successful.</td>
<td>218</td>
</tr>
<tr>
<td>My PLT works with school leadership to ensure succession and longevity.</td>
<td>303</td>
</tr>
</tbody>
</table>

**Team Efficacy**

<table>
<thead>
<tr>
<th>(B30)</th>
<th>Total: 584 Missing 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>My work in the PLT affects the outcomes of our students.</td>
<td></td>
</tr>
<tr>
<td>My work in the PLT does not help improve outcomes for our students.</td>
<td>16</td>
</tr>
<tr>
<td>My work in the PLT improves the outcomes for some students.</td>
<td>29</td>
</tr>
<tr>
<td>My work in the PLT improves outcomes for all students.</td>
<td>27</td>
</tr>
</tbody>
</table>

**Supportiveness**

<table>
<thead>
<tr>
<th>(B28)</th>
<th>Total: 584 Missing 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>I receive help from other team members.</td>
<td></td>
</tr>
<tr>
<td>Team members do not offer to help me.</td>
<td>8</td>
</tr>
<tr>
<td>I accept help from other team members when needed.</td>
<td>10</td>
</tr>
<tr>
<td>I seek and accept help from other team members when needed.</td>
<td>47</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(B1)</th>
<th>Total: 593 Missing 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>My PLT values contributions to meetings.</td>
<td></td>
</tr>
<tr>
<td>The value of contributions to meetings is based on who makes the contribution.</td>
<td>26</td>
</tr>
</tbody>
</table>
The value of contributions to meetings is based on the way in which they are delivered.

The value of contributions to meetings is based on supporting evidence supplied.

The value of contributions to meetings is based on its potential to help enhance student learning.

### S3  My PLT takes the views of others into account in discussions.

<table>
<thead>
<tr>
<th>(B2)</th>
<th>Total 593 Missing 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>My PLT does not take members’ views into account.</td>
<td>10 10</td>
</tr>
<tr>
<td>My PLT considers the views offered at meetings.</td>
<td>72 72</td>
</tr>
<tr>
<td>My PLT seeks the views of all members and considers them.</td>
<td>328 328</td>
</tr>
<tr>
<td>My PLT forms action plans based on an analysis of the views of all members.</td>
<td>183 183</td>
</tr>
</tbody>
</table>

### Facilitates Student Learning

#### SL1  My PLT uses evidence of student learning.

<table>
<thead>
<tr>
<th>(A1)</th>
<th>Total: 593 Missing: 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>My PLT does not discuss evidence of student learning.</td>
<td>7 N/A</td>
</tr>
<tr>
<td>My PLT discusses evidence which is collected for purposes other than the focus of the PLT.</td>
<td>10 2</td>
</tr>
<tr>
<td>My PLT uses evidence which focuses on student learning needs.</td>
<td>48 484</td>
</tr>
</tbody>
</table>

#### SL2  My PLT identifies skills demonstrated by students.

<table>
<thead>
<tr>
<th>(A2)</th>
<th>Total: 593 Missing: 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>My PLT does not try to interpret evidence of student learning.</td>
<td>9 N/A</td>
</tr>
</tbody>
</table>
My PLT focuses a single source of evidence such as student test scores.  
My PLT combines many sources of evidence to identify student skills.

<table>
<thead>
<tr>
<th>SL3</th>
<th><strong>My PLT determines the suitability of data to inform teaching.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>(A3)</td>
<td>Total: 592 Missing: 1</td>
</tr>
<tr>
<td></td>
<td>My PLT does not rely on data to inform teaching.</td>
</tr>
<tr>
<td></td>
<td>My PLT assumes all data can be used to inform teaching.</td>
</tr>
<tr>
<td></td>
<td>My PLT determines the suitability of data to inform teaching.</td>
</tr>
<tr>
<td></td>
<td>My PLT reviews the suitability of assessment data in terms of the explicit consequences for student learning.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SL4</th>
<th><strong>My PLT summarises evidence of student learning.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>(A4)</td>
<td>Total: 590 Missing: 3</td>
</tr>
<tr>
<td></td>
<td>My PLT does not summarise evidence of student learning.</td>
</tr>
<tr>
<td></td>
<td>My PLT summarises evidence of student learning against expectations.</td>
</tr>
<tr>
<td></td>
<td>My PLT summarises evidence of student learning in terms of what the students are ready to learn.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SL5</th>
<th><strong>My PLT makes teaching plans.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>(A5)</td>
<td>Total: 589 Missing: 4</td>
</tr>
<tr>
<td></td>
<td>Teaching plans are made by individual teachers.</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SL6</td>
<td>My PLT sets learning goals for students.</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>(A6)</td>
<td>Total: 589 Missing 4</td>
</tr>
<tr>
<td></td>
<td>Learning goals are based on students’ year level curriculum.</td>
</tr>
<tr>
<td></td>
<td>Learning goals are based on evidence of student readiness to learn.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SL7</th>
<th>My PLT selects teaching strategies and resources to meet learning goals.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A7)</td>
<td>Total: 586 Missing:7</td>
</tr>
<tr>
<td></td>
<td>My PLT selects teaching strategies and resources based on familiarity with them.</td>
</tr>
<tr>
<td></td>
<td>My PLT selects teaching strategies and resources based on evidence of suitability for specific groups of students.</td>
</tr>
<tr>
<td></td>
<td>My PLT selects teaching strategies and resources based on evidence of success in helping students to meet learning goals.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SL8</th>
<th>My PLT determines the effectiveness of teaching strategies and resources.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A8)</td>
<td>Total: 586 Missing 7</td>
</tr>
<tr>
<td></td>
<td>My PLT assumes the effectiveness of teaching strategies and resources.</td>
</tr>
</tbody>
</table>
My PLT uses teacher opinion to justify the effectiveness of teaching strategies and resources.

My PLT reviews data to determine the effectiveness of teaching strategies and resources.

My PLT conducts action research to determine the effectiveness of teaching strategies and resources.

My PLT determines the suitability of assessment approaches administered to students.

My PLT does not determine the suitability of assessment approaches administered to students.

My PLT determines the suitability of assessment approaches in terms of the familiarity and ease of use.

My PLT determines the suitability of assessment approaches in terms the information provided for teaching.

My PLT reviews the suitability of assessment approaches in terms of the explicit consequences for student learning.

My PLT focuses its meeting time on evidence of student learning.

Meetings flow freely without structure.

My PLT focuses discussion on our assigned tasks.

My PLT discussion remains focused on evidence of impact on student learning throughout the meeting.

My PLT uses its meeting time.
<table>
<thead>
<tr>
<th>(B13) Total: 587 Missing: 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>My PLT uses its meeting time to deal with administration and the dissemination of information.</td>
</tr>
<tr>
<td>My PLT uses its meeting time to deal with any issues raised by its members.</td>
</tr>
<tr>
<td>My PLT uses its meeting time to deal with issues related to student learning.</td>
</tr>
</tbody>
</table>

**SL12**  
**Time spent in PLT meetings is productive.**

<table>
<thead>
<tr>
<th>(B25) Total: 584 Missing: 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time spent in PLT meetings is not productive.</td>
</tr>
<tr>
<td>Some of the time spent in PLT meetings is productive.</td>
</tr>
<tr>
<td>Time spent in PLT meetings is productive.</td>
</tr>
</tbody>
</table>

**SL13**  
**I report to the PLT on my implementation of teaching plans.**

<table>
<thead>
<tr>
<th>(B27) Total: 584 Missing: 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>I keep information about my implementation of teaching plans to myself.</td>
</tr>
<tr>
<td>I tell the PLT about implementation of teaching plans.</td>
</tr>
<tr>
<td>I report to the PLT on the effects on student learning of the teaching plans.</td>
</tr>
</tbody>
</table>

**Facilitates Teacher Learning**

**TL1**  
**My PLT supports team members to develop the effectiveness of their practices.**

<table>
<thead>
<tr>
<th>(B6) Total: 590 Missing: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>My PLT does not support team members to develop the effectiveness of their practices.</td>
</tr>
</tbody>
</table>
My PLT supports team members to develop the effectiveness of their practices when asked.  

My PLT is proactive in supporting team members to develop the effectiveness of their practices

---

**TL2**  
My PLT makes plans for improving the professional practices of members.  

Total: 584 Missing: 9

- Plans for improving the professional practices of members are made outside the PLT.  
  - 1  
  - 121  

- Plans for improving the professional practices of members are discussed by the PLT.  
  - 1  
  - 235  

- Plans for improving the professional practices of members are developed jointly by the PLT members.  
  - 1  
  - 228  

---

**TL3**  
My PLT determines professional development priorities for members in the area of teaching practice.  

Total: 583 Missing: 10

- My PLT does not determine professional development priorities for members in the area of teaching practice.  
  - 138  
  - 138  

- My PLT uses evidence of student learning needs to determine professional development priorities for members in the area of teaching practice.  
  - 82  
  - 82  

- My PLT uses evidence of student learning needs and current teaching practices to determine professional development priorities for members in the area of teaching practice.  
  - 222  
  - 222
My PLT uses evidence of student learning needs and a developmental approach to teacher learning to determine professional development priorities for members in the area of teaching practice.

**TL4**  
**My PLT makes decisions about professional development priorities for members in the area of assessment practice.**  
(A15)  
Total: 583 Missing: 10  
My PLT assumes our assessment practices are adequate and appropriate for teacher needs.  
My PLT makes decisions about assessment practices based on our opinions of assessment procedures.  
My PLT makes decisions about assessment practices based on data needed to inform teaching decisions.

**TL5**  
**My PLT develops the teaching practices of its members.**  
(A16)  
Total: 583 Missing: 10  
My PLT does not develop the teaching practices of its members.  
My PLT encourages members to consider a range of teaching practices.  
My PLT assists members to implement relevant teaching practices.  
My PLT facilitates members to develop the skills necessary to implement new teaching practices.

**TL6**  
**My PLT develops the assessment practices of its members.**  
(A17)  
Total: 583 Missing: 10  
My PLT does not develop the assessment practices of its members.
<table>
<thead>
<tr>
<th><strong>My PLT exposes members to new assessment practices.</strong></th>
<th>1</th>
<th>128</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td><strong>My PLT assists members to implement new assessment</strong></td>
<td>2</td>
<td>228</td>
</tr>
<tr>
<td><strong>practices.</strong></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td><strong>My PLT facilitates members to develop the skills</strong></td>
<td>1</td>
<td>198</td>
</tr>
<tr>
<td><strong>necessary to implement new assessment practices.</strong></td>
<td>9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td><strong>TL7</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>My PLT discusses the suitability of possible strategies and resources for our professional development.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>My PLT does not discuss the suitability of possible</strong></td>
<td>5</td>
<td>52</td>
</tr>
<tr>
<td><strong>strategies and resources for our professional</strong></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><strong>development.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>My PLT discusses the suitability of possible strategies</strong></td>
<td>1</td>
<td>111</td>
</tr>
<tr>
<td><strong>and resources for our professional development in terms</strong></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>of their familiarity or ease of access.</strong></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>My PLT discusses the suitability of possible strategies</strong></td>
<td>2</td>
<td>235</td>
</tr>
<tr>
<td><strong>and resources for our professional development in terms</strong></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>of the potential to achieve goals for teachers.</strong></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>My PLT discusses the suitability of possible strategies</strong></td>
<td>1</td>
<td>184</td>
</tr>
<tr>
<td><strong>and resources for our professional development in terms</strong></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td><strong>of the evidence to successfully achieve goals for</strong></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td><strong>teachers.</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Appendix E
## Trial Instrument Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Median</th>
<th>Mode</th>
<th>Std. Dev</th>
<th>Skew</th>
<th>Std. Error of skew</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>School Support</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS1</td>
<td>587</td>
<td>1</td>
<td>3</td>
<td>2.49</td>
<td>3</td>
<td>3</td>
<td>.68</td>
<td>-.99</td>
<td>.10</td>
</tr>
<tr>
<td>SS2</td>
<td>586</td>
<td>1</td>
<td>3</td>
<td>2.57</td>
<td>3</td>
<td>3</td>
<td>.58</td>
<td>-.98</td>
<td>.10</td>
</tr>
<tr>
<td>SS3</td>
<td>585</td>
<td>1</td>
<td>2</td>
<td>1.96</td>
<td>2</td>
<td>2</td>
<td>.20</td>
<td>-4.64</td>
<td>.10</td>
</tr>
<tr>
<td>SS4</td>
<td>585</td>
<td>1</td>
<td>3</td>
<td>2.13</td>
<td>2</td>
<td>2</td>
<td>.60</td>
<td>-.07</td>
<td>.10</td>
</tr>
<tr>
<td>SS5</td>
<td>585</td>
<td>1</td>
<td>2</td>
<td>1.75</td>
<td>2</td>
<td>2</td>
<td>.43</td>
<td>-1.15</td>
<td>.10</td>
</tr>
<tr>
<td>SS6</td>
<td>585</td>
<td>1</td>
<td>3</td>
<td>2.79</td>
<td>3</td>
<td>3</td>
<td>.49</td>
<td>-2.29</td>
<td>.10</td>
</tr>
<tr>
<td><strong>Communication</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C1</td>
<td>584</td>
<td>1</td>
<td>3</td>
<td>2.48</td>
<td>3</td>
<td>3</td>
<td>.59</td>
<td>-.69</td>
<td>.10</td>
</tr>
<tr>
<td>C2</td>
<td>584</td>
<td>1</td>
<td>3</td>
<td>2.60</td>
<td>3</td>
<td>3</td>
<td>.59</td>
<td>-1.15</td>
<td>.10</td>
</tr>
<tr>
<td>C3</td>
<td>584</td>
<td>1</td>
<td>3</td>
<td>2.66</td>
<td>3</td>
<td>3</td>
<td>.51</td>
<td>-1.08</td>
<td>.10</td>
</tr>
<tr>
<td>C4</td>
<td>584</td>
<td>1</td>
<td>3</td>
<td>2.72</td>
<td>3</td>
<td>3</td>
<td>.56</td>
<td>-1.86</td>
<td>.10</td>
</tr>
<tr>
<td>C5</td>
<td>584</td>
<td>1</td>
<td>3</td>
<td>2.72</td>
<td>3</td>
<td>3</td>
<td>.46</td>
<td>-1.07</td>
<td>.10</td>
</tr>
<tr>
<td>C6</td>
<td>585</td>
<td>1</td>
<td>3</td>
<td>2.44</td>
<td>2</td>
<td>2</td>
<td>.54</td>
<td>-.22</td>
<td>.10</td>
</tr>
<tr>
<td>C7</td>
<td>585</td>
<td>1</td>
<td>4</td>
<td>3.28</td>
<td>4</td>
<td>4</td>
<td>.83</td>
<td>-.77</td>
<td>.10</td>
</tr>
<tr>
<td>C8</td>
<td>584</td>
<td>1</td>
<td>3</td>
<td>2.72</td>
<td>3</td>
<td>3</td>
<td>.50</td>
<td>-1.54</td>
<td>.10</td>
</tr>
<tr>
<td><strong>Workload Sharing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WS1</td>
<td>593</td>
<td>1</td>
<td>2</td>
<td>1.50</td>
<td>1</td>
<td>1</td>
<td>.50</td>
<td>.00</td>
<td>.10</td>
</tr>
<tr>
<td>WS2</td>
<td>593</td>
<td>1</td>
<td>2</td>
<td>1.61</td>
<td>2</td>
<td>2</td>
<td>.49</td>
<td>-.44</td>
<td>.10</td>
</tr>
<tr>
<td>WS3</td>
<td>592</td>
<td>1</td>
<td>2</td>
<td>1.80</td>
<td>2</td>
<td>2</td>
<td>.40</td>
<td>-1.48</td>
<td>.10</td>
</tr>
<tr>
<td>WS4</td>
<td>590</td>
<td>1</td>
<td>2</td>
<td>1.79</td>
<td>2</td>
<td>2</td>
<td>.40</td>
<td>-1.47</td>
<td>.10</td>
</tr>
<tr>
<td>WS5</td>
<td>590</td>
<td>1</td>
<td>3</td>
<td>2.41</td>
<td>2</td>
<td>2</td>
<td>.59</td>
<td>-.44</td>
<td>.10</td>
</tr>
<tr>
<td>WS6</td>
<td>585</td>
<td>1</td>
<td>3</td>
<td>2.63</td>
<td>3</td>
<td>3</td>
<td>.50</td>
<td>-.75</td>
<td>.10</td>
</tr>
<tr>
<td>WS7</td>
<td>584</td>
<td>1</td>
<td>4</td>
<td>3.45</td>
<td>4</td>
<td>4</td>
<td>.65</td>
<td>-.82</td>
<td>.10</td>
</tr>
<tr>
<td><strong>Intergroup Processes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IP1</td>
<td>588</td>
<td>1</td>
<td>3</td>
<td>2.26</td>
<td>2</td>
<td>2</td>
<td>.64</td>
<td>-.28</td>
<td>.10</td>
</tr>
<tr>
<td>IP2</td>
<td>587</td>
<td>1</td>
<td>3</td>
<td>1.96</td>
<td>2</td>
<td>2</td>
<td>.72</td>
<td>.07</td>
<td>.10</td>
</tr>
<tr>
<td>IP3</td>
<td>587</td>
<td>1</td>
<td>3</td>
<td>2.40</td>
<td>3</td>
<td>3</td>
<td>.68</td>
<td>-.71</td>
<td>.10</td>
</tr>
<tr>
<td><strong>Team Efficacy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE1</td>
<td>584</td>
<td>1</td>
<td>3</td>
<td>2.44</td>
<td>2</td>
<td>2</td>
<td>.55</td>
<td>-.27</td>
<td>.10</td>
</tr>
<tr>
<td><strong>Support</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S1</td>
<td>584</td>
<td>1</td>
<td>3</td>
<td>2.79</td>
<td>3</td>
<td>3</td>
<td>.44</td>
<td>-1.92</td>
<td>.10</td>
</tr>
<tr>
<td>S2</td>
<td>593</td>
<td>1</td>
<td>4</td>
<td>3.57</td>
<td>4</td>
<td>4</td>
<td>.78</td>
<td>-1.92</td>
<td>.10</td>
</tr>
<tr>
<td>S3</td>
<td>593</td>
<td>1</td>
<td>4</td>
<td>3.15</td>
<td>3</td>
<td>3</td>
<td>.69</td>
<td>-1.52</td>
<td>.10</td>
</tr>
</tbody>
</table>
### Student Learning

|   |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|
| SL1 | 593 | 1 | 3 | 2.80 | 3 | .43 | -1.99 | .10 |
| SL2 | 593 | 1 | 3 | 2.88 | 3 | .37 | -3.14 | .10 |
| SL3 | 592 | 1 | 4 | 3.23 | 3 | .66 | -.40 | .10 |
| SL4 | 590 | 1 | 3 | 2.55 | 3 | .57 | -.83 | .10 |
| SL5 | 589 | 1 | 3 | 2.30 | 3 | .83 | -.60 | .10 |
| SL6 | 589 | 1 | 2 | 1.87 | 2 | .34 | -2.17 | .10 |
| SL7 | 586 | 1 | 3 | 2.34 | 2 | .64 | -.44 | .10 |
| SL8 | 586 | 1 | 4 | 2.79 | 3 | .71 | -.32 | .10 |
| SL9 | 585 | 1 | 4 | 3.16 | 3 | .71 | -.65 | .10 |
| SL10 | 590 | 1 | 3 | 2.42 | 2 | .55 | -.22 | .10 |
| SL11 | 587 | 1 | 3 | 2.62 | 3 | .64 | -1.47 | .10 |
| SL12 | 584 | 1 | 3 | 2.61 | 3 | .52 | -.78 | .10 |
| SL13 | 584 | 1 | 3 | 2.54 | 3 | .60 | -.90 | .10 |

### Teacher Learning

|   |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|
| TL1 | 590 | 1 | 3 | 2.48 | 2.5 | .55 | -.35 | .10 |
| TL2 | 584 | 1 | 3 | 2.18 | 2 | .75 | -.32 | .10 |
| TL3 | 583 | 1 | 4 | 2.63 | 3 | 1.09 | -.32 | .10 |
| TL4 | 583 | 1 | 3 | 2.53 | 3 | .65 | -1.06 | .10 |
| TL5 | 583 | 1 | 4 | 3.04 | 3 | .88 | -.37 | .10 |
| TL6 | 583 | 1 | 4 | 3.02 | 3 | .87 | -.49 | .10 |
| TL7 | 582 | 1 | 4 | 2.95 | 3 | .93 | -.57 | .10 |

Valid N (listwise) | 574
### Appendix F

#### Missing Values

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Missing Count</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS1</td>
<td>587</td>
<td>6</td>
<td>1.0</td>
</tr>
<tr>
<td>SS2</td>
<td>586</td>
<td>7</td>
<td>1.2</td>
</tr>
<tr>
<td>SS3</td>
<td>585</td>
<td>8</td>
<td>1.3</td>
</tr>
<tr>
<td>SS4</td>
<td>585</td>
<td>8</td>
<td>1.3</td>
</tr>
<tr>
<td>SS5</td>
<td>585</td>
<td>8</td>
<td>1.3</td>
</tr>
<tr>
<td>SS6</td>
<td>585</td>
<td>8</td>
<td>1.3</td>
</tr>
<tr>
<td>C1</td>
<td>584</td>
<td>9</td>
<td>1.5</td>
</tr>
<tr>
<td>C2</td>
<td>584</td>
<td>9</td>
<td>1.5</td>
</tr>
<tr>
<td>C3</td>
<td>584</td>
<td>9</td>
<td>1.5</td>
</tr>
<tr>
<td>C4</td>
<td>584</td>
<td>9</td>
<td>1.5</td>
</tr>
<tr>
<td>C5</td>
<td>584</td>
<td>9</td>
<td>1.5</td>
</tr>
<tr>
<td>C6</td>
<td>585</td>
<td>8</td>
<td>1.3</td>
</tr>
<tr>
<td>C7</td>
<td>585</td>
<td>8</td>
<td>1.3</td>
</tr>
<tr>
<td>C8</td>
<td>584</td>
<td>9</td>
<td>1.5</td>
</tr>
<tr>
<td>WS1</td>
<td>593</td>
<td>0</td>
<td>.0</td>
</tr>
<tr>
<td>WS2</td>
<td>593</td>
<td>0</td>
<td>.0</td>
</tr>
<tr>
<td>WS3</td>
<td>592</td>
<td>1</td>
<td>.2</td>
</tr>
<tr>
<td>WS4</td>
<td>590</td>
<td>3</td>
<td>.5</td>
</tr>
<tr>
<td>WS5</td>
<td>590</td>
<td>3</td>
<td>.5</td>
</tr>
<tr>
<td>WS6</td>
<td>585</td>
<td>8</td>
<td>1.3</td>
</tr>
<tr>
<td>WS7</td>
<td>584</td>
<td>9</td>
<td>1.5</td>
</tr>
<tr>
<td>IP1</td>
<td>588</td>
<td>5</td>
<td>.8</td>
</tr>
<tr>
<td>IP2</td>
<td>587</td>
<td>6</td>
<td>1.0</td>
</tr>
<tr>
<td>IP3</td>
<td>587</td>
<td>6</td>
<td>1.0</td>
</tr>
<tr>
<td>TE1</td>
<td>584</td>
<td>9</td>
<td>1.5</td>
</tr>
<tr>
<td>S1</td>
<td>584</td>
<td>9</td>
<td>1.5</td>
</tr>
<tr>
<td>S2</td>
<td>593</td>
<td>0</td>
<td>.0</td>
</tr>
<tr>
<td>S3</td>
<td>593</td>
<td>0</td>
<td>.0</td>
</tr>
<tr>
<td>SL1</td>
<td>593</td>
<td>0</td>
<td>.0</td>
</tr>
<tr>
<td>SL2</td>
<td>593</td>
<td>0</td>
<td>.0</td>
</tr>
<tr>
<td>SL3</td>
<td>592</td>
<td>1</td>
<td>.2</td>
</tr>
<tr>
<td>SL4</td>
<td>590</td>
<td>3</td>
<td>.5</td>
</tr>
<tr>
<td>SL5</td>
<td>589</td>
<td>4</td>
<td>.7</td>
</tr>
<tr>
<td>SL6</td>
<td>589</td>
<td>4</td>
<td>.7</td>
</tr>
<tr>
<td>SL7</td>
<td>586</td>
<td>7</td>
<td>1.2</td>
</tr>
<tr>
<td>SL8</td>
<td>586</td>
<td>7</td>
<td>1.2</td>
</tr>
<tr>
<td>SL9</td>
<td>585</td>
<td>8</td>
<td>1.3</td>
</tr>
<tr>
<td>SL10</td>
<td>590</td>
<td>3</td>
<td>.5</td>
</tr>
<tr>
<td>SL11</td>
<td>587</td>
<td>6</td>
<td>1.0</td>
</tr>
<tr>
<td>------</td>
<td>-----</td>
<td>----</td>
<td>-----</td>
</tr>
<tr>
<td>SL12</td>
<td>584</td>
<td>9</td>
<td>1.5</td>
</tr>
<tr>
<td>SL13</td>
<td>584</td>
<td>9</td>
<td>1.5</td>
</tr>
<tr>
<td>TL1</td>
<td>590</td>
<td>3</td>
<td>.5</td>
</tr>
<tr>
<td>TL2</td>
<td>584</td>
<td>9</td>
<td>1.5</td>
</tr>
<tr>
<td>TL3</td>
<td>583</td>
<td>10</td>
<td>1.7</td>
</tr>
<tr>
<td>TL4</td>
<td>583</td>
<td>10</td>
<td>1.7</td>
</tr>
<tr>
<td>TL5</td>
<td>583</td>
<td>10</td>
<td>1.7</td>
</tr>
<tr>
<td>TL6</td>
<td>583</td>
<td>10</td>
<td>1.7</td>
</tr>
<tr>
<td>TL7</td>
<td>582</td>
<td>11</td>
<td>1.9</td>
</tr>
</tbody>
</table>
## Appendix G
### Frequencies for Study Two

<table>
<thead>
<tr>
<th>Name</th>
<th>Item</th>
<th>Initial Freq</th>
<th>Recode Freq</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>School Support</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SS1</strong></td>
<td><strong>Time for my PLT to meet is scheduled.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(B14)</td>
<td>Total: 234 Missing:8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time for my PLT to meet is fitted around other priorities in the school’s schedule.</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>Time for my PLT to meet is found in the school’s schedule.</td>
<td>79</td>
<td>79</td>
</tr>
<tr>
<td></td>
<td>Time for my PLT to meet is prioritised within the school’s schedule.</td>
<td>126</td>
<td>126</td>
</tr>
<tr>
<td><strong>SS2</strong></td>
<td><strong>The principal of my school knows about the work of my PLT.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(B15)</td>
<td>Total: 242 Missing:8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The principal of my school is not aware of the work of my PLT</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>The principal of my school has an overview of the aims and accomplishments of my PLT.</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>The principal of has a knowledge of the decisions and actions of my PLT.</td>
<td>132</td>
<td>132</td>
</tr>
<tr>
<td><strong>SS3</strong></td>
<td><strong>The work of my PLT is valued by the leadership of my school.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(B16)</td>
<td>Total: 242 Missing:8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The work of my PLT is not valued by the leadership of my school.</td>
<td>9</td>
<td>N/A</td>
</tr>
</tbody>
</table>
### SS4  The work of my PLT influences strategic planning at my school.

<table>
<thead>
<tr>
<th></th>
<th>Total: 242 Missing:8</th>
</tr>
</thead>
<tbody>
<tr>
<td>The work of my PLT does not influence strategic planning at my school.</td>
<td>35 35</td>
</tr>
<tr>
<td>The work of my PLT is incorporated in strategic planning at my school.</td>
<td>143 143</td>
</tr>
<tr>
<td>The work of my PLT drives strategic planning at my school.</td>
<td>56 56</td>
</tr>
</tbody>
</table>

### SS5  The role of PLT leader has a place in the leadership structure of our school.

<table>
<thead>
<tr>
<th></th>
<th>Total: 242 Missing:8</th>
</tr>
</thead>
<tbody>
<tr>
<td>The role of PLT leader is considered peripheral to the leadership structure of our school.</td>
<td>60 60</td>
</tr>
<tr>
<td>The role of the PLT leader is seen as significant in the leadership structure of our school.</td>
<td>174 174</td>
</tr>
</tbody>
</table>

### SS6  PLTs are formalised in our school’s structure.

<table>
<thead>
<tr>
<th></th>
<th>Total: 242 Missing:8</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLTs are not part of the formal structure of our school.</td>
<td>10 10</td>
</tr>
<tr>
<td>Our school is reviewing its structure to incorporate PLTs.</td>
<td>36 36</td>
</tr>
<tr>
<td>PLTs are integrated into our school’s structure.</td>
<td>188 188</td>
</tr>
</tbody>
</table>

### Communication/Cooperation

### C1  I seek to ensure statements made in PLT discussions are supported by evidence.

<table>
<thead>
<tr>
<th></th>
<th>Total: 234 Missing:8</th>
</tr>
</thead>
<tbody>
<tr>
<td>I accept statements made at face value.</td>
<td>14</td>
</tr>
<tr>
<td>I ask questions to ascertain whether statements made in PLT discussions are supported by evidence.</td>
<td>91</td>
</tr>
<tr>
<td>I consider statements from PLT members based on the supporting information they provide.</td>
<td>129</td>
</tr>
<tr>
<td><strong>C2</strong></td>
<td><strong>I give feedback about PLT work to other team members when warranted.</strong></td>
</tr>
<tr>
<td><strong>(B22)</strong></td>
<td>Total: 242 Missing:8</td>
</tr>
<tr>
<td>I keep my views about other team members’ PLT work to myself.</td>
<td>10</td>
</tr>
<tr>
<td>I give feedback about PLT work to team members with whom I feel comfortable</td>
<td>67</td>
</tr>
<tr>
<td>I give feedback about PLT work to all PLT members.</td>
<td>157</td>
</tr>
<tr>
<td><strong>C3</strong></td>
<td><strong>I value feedback from PLT members.</strong></td>
</tr>
<tr>
<td><strong>(B23)</strong></td>
<td>Total: 232 Missing:10</td>
</tr>
<tr>
<td>The feedback I get from team members generally is not helpful.</td>
<td>5 N/A</td>
</tr>
<tr>
<td>I adjust my work based on feedback from team members.</td>
<td>71</td>
</tr>
<tr>
<td>Feedback from team members has helped improve our students’ learning outcomes.</td>
<td>156</td>
</tr>
<tr>
<td><strong>C4</strong></td>
<td><strong>I ask for feedback from team members.</strong></td>
</tr>
<tr>
<td><strong>(B24)</strong></td>
<td>Total: 234 Missing:8</td>
</tr>
<tr>
<td>I do not ask for feedback on PLT tasks.</td>
<td>15</td>
</tr>
<tr>
<td>I only ask for feedback on PLT tasks from members of my team with whom I feel comfortable.</td>
<td>37</td>
</tr>
</tbody>
</table>
I ask for feedback on PLT tasks from members whose perspective or expertise would contribute to my understanding.

<table>
<thead>
<tr>
<th>C5</th>
<th>I respond to comments from other team members.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(B26) Total: 234 Missing:8</td>
</tr>
<tr>
<td></td>
<td>I respond defensively to feedback from PLT members.</td>
</tr>
<tr>
<td></td>
<td>I accept feedback from PLT members.</td>
</tr>
<tr>
<td></td>
<td>I respond to feedback from PLT members in terms of its usefulness in helping us enhance student learning.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C6</th>
<th>My PLT discusses difficult issues.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(A10) Total: 240 Missing:2</td>
</tr>
<tr>
<td></td>
<td>We avoid discussing difficult issues in case we give offence.</td>
</tr>
<tr>
<td></td>
<td>We endeavour to ensure our discussions of difficult issues do not cause offence.</td>
</tr>
<tr>
<td></td>
<td>Discussions of difficult issues in our team are frank and professional regardless of potential to upset members.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C7</th>
<th>Tension is managed in the PLT.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(A11) Total: 240 Missing:2</td>
</tr>
<tr>
<td></td>
<td>Tension between members is allowed to develop in the PLT.</td>
</tr>
<tr>
<td></td>
<td>Tension is managed in the PLT by maintaining interpersonal relationships.</td>
</tr>
</tbody>
</table>
Tension in the PLT is managed by remaining focused on the team's goals.

65

Tension in the PLT is managed by focusing on student learning.

127

C8 **My PLT resolves disagreements.**

(A12) Total: 240 Missing:2

When there is disagreement, we do not reach a consensus view.

2 N/A

When there is a disagreement, the view of one or two members usually prevails.

57 59

Disagreement is tolerated and evidence sought to support each view.

181 181

**Workload Sharing**

**WS1** **Members of my team complete their PLT work.**

(B3) Total: 235 Missing:7

PLT work is completed when other priorities allow.

124 124

PLT work is prioritised over other school demands.

111 111

**WS2** **Members of my team contribute to PLT work.**

(B4) Total: 235 Missing:7

Not all members of my team prioritise PLT work.

84 84

All members of my team prioritise PLT work.

151 151

**WS3** **My PLT is aware of the degree to which the PLT work is carried out by members.**

(B5) Total: 235 Missing:7

My PLT is not aware of the degree to which the PLT work is carried out by members.

41 41
My PLT discusses evidence of the degree to which the PLT work is completed by members. 194

**WS4** My PLT takes responsibility for the success of the PLT work. (B7) Total: Total: 235 Missing:7

- Each team member is responsible for their own PLT work. 41
- We take joint responsibility for success of the PLT work. 194

**WS5** Members coordinate PLT work. (B8) Total: 235 Missing:7

- Members act independently. 11
- Members discuss the ways in which PLT work will be completed. 112
- Members coordinate actions to ensure PLT work is completed. 112

**WS6** I contribute to the PLT meetings to the best of my ability. (B20) Total: 234 Missing:8

- I do not contribute to PLT meetings. 57
- I contribute to PLT meetings. 150
- I contribute to PLT meetings and encourage others to do so. 27

**WS7** I complete PLT work to the best of my ability. (B29) Total: 234 Missing:8

- I generally regard PLT work as none of my concern. 14
- I generally regard PLT work as none of my concern./ I complete PLT work depending on my priorities. 76
I complete all the PLT work to the best of my ability as part of my obligations to the team.  
I complete PLT work to help improve the team’s overall performance in terms of enhanced student learning.

### Intergroup Processes

<table>
<thead>
<tr>
<th>IP1</th>
<th><strong>My PLT promotes its approach to improving student learning.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>(B10)</td>
<td>Total: 235 Missing:7</td>
</tr>
<tr>
<td></td>
<td>My PLT keeps its achievements to itself.</td>
</tr>
<tr>
<td></td>
<td>19 19</td>
</tr>
<tr>
<td></td>
<td>My PLT takes opportunities to promote its approach to improving student learning when they arise.</td>
</tr>
<tr>
<td></td>
<td>129 129</td>
</tr>
<tr>
<td></td>
<td>My PLT seeks opportunities to advocate its approach to improving student learning.</td>
</tr>
<tr>
<td></td>
<td>87 87</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IP2</th>
<th><strong>My PLT uses links with people or organisations outside the PLT.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>(B11)</td>
<td>Total: 234 Missing:8</td>
</tr>
<tr>
<td></td>
<td>My PLT focuses only on people and matters internal to the PLT.</td>
</tr>
<tr>
<td></td>
<td>62 62</td>
</tr>
<tr>
<td></td>
<td>My PLT uses people or organisations outside the PLT to build its resources.</td>
</tr>
<tr>
<td></td>
<td>110 110</td>
</tr>
<tr>
<td></td>
<td>My PLT uses its links with people or organisations outside the PLT to influence policies and structures to enhance the PLT’s work.</td>
</tr>
<tr>
<td></td>
<td>62 62</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IP3</th>
<th><strong>My PLT works to ensure it is sustainable in the long term.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>(B12)</td>
<td>Total: 234 Missing:8</td>
</tr>
<tr>
<td></td>
<td>My PLT does not have any long term plans.</td>
</tr>
<tr>
<td></td>
<td>30 30</td>
</tr>
<tr>
<td></td>
<td>My PLT makes plans to ensure the team is successful.</td>
</tr>
<tr>
<td></td>
<td>87 87</td>
</tr>
</tbody>
</table>
My PLT works with school leadership to ensure succession and longevity.

### Potency

<table>
<thead>
<tr>
<th>P1</th>
<th>My work in the PLT affects the outcomes of our students.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(B30)</td>
<td>Total: 234 Missing:8</td>
</tr>
<tr>
<td></td>
<td>My work in the PLT does not help improve outcomes for our students. 8 N/A</td>
</tr>
<tr>
<td></td>
<td>My work in the PLT improves the outcomes for some students. 107 115</td>
</tr>
<tr>
<td></td>
<td>My work in the PLT improves outcomes for all students. 119 119</td>
</tr>
</tbody>
</table>

### Supportiveness

<table>
<thead>
<tr>
<th>S1</th>
<th>I receive help from other team members.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(B28)</td>
<td>Total: 234 Missing:8</td>
</tr>
<tr>
<td></td>
<td>Team members do not offer to help me. 29 29</td>
</tr>
<tr>
<td></td>
<td>I accept help from other team members when needed. 164 164</td>
</tr>
<tr>
<td></td>
<td>I seek and accept help from other team members when needed. 41 41</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S2</th>
<th>My PLT values contributions to meetings.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(B1)</td>
<td>Total: 235 Missing 7</td>
</tr>
<tr>
<td></td>
<td>The value of contributions to meetings is based on who makes the contribution. 7 N/A</td>
</tr>
<tr>
<td></td>
<td>The value of contributions to meetings is based on the way in which they are delivered. 11 18</td>
</tr>
<tr>
<td></td>
<td>The value of contributions to meetings is based on supporting evidence supplied. 44 44</td>
</tr>
</tbody>
</table>
The value of contributions to meetings is based on its potential to help enhance student learning.

<table>
<thead>
<tr>
<th>S3</th>
<th>My PLT takes the views of others into account in discussions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(B2)</td>
<td>Total: 235 Missing 7</td>
</tr>
<tr>
<td></td>
<td>My PLT does not take members’ views into account.</td>
</tr>
<tr>
<td></td>
<td>3 N/A</td>
</tr>
<tr>
<td></td>
<td>My PLT considers the views offered at meetings.</td>
</tr>
<tr>
<td></td>
<td>17 20</td>
</tr>
<tr>
<td></td>
<td>My PLT seeks the views of all members and considers them.</td>
</tr>
<tr>
<td></td>
<td>138 138</td>
</tr>
<tr>
<td></td>
<td>My PLT forms action plans based on an analysis of the views</td>
</tr>
<tr>
<td></td>
<td>of all members.</td>
</tr>
<tr>
<td></td>
<td>77 77</td>
</tr>
</tbody>
</table>

**Facilitates Student Learning**

<table>
<thead>
<tr>
<th>SL1</th>
<th>My PLT uses evidence of student learning.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A1)</td>
<td>Total: 241 Missing 1</td>
</tr>
<tr>
<td></td>
<td>My PLT does not discuss evidence of student learning.</td>
</tr>
<tr>
<td></td>
<td>24 24</td>
</tr>
<tr>
<td></td>
<td>My PLT discusses evidence which is collected for purposes</td>
</tr>
<tr>
<td></td>
<td>other than the focus of the PLT.</td>
</tr>
<tr>
<td></td>
<td>168 168</td>
</tr>
<tr>
<td></td>
<td>My PLT uses evidence which focuses on student learning needs.</td>
</tr>
<tr>
<td></td>
<td>49 49</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SL2</th>
<th>My PLT identifies skills demonstrated by students.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A2)</td>
<td>Total: 241 Missing 1</td>
</tr>
<tr>
<td></td>
<td>My PLT does not try to interpret evidence of student</td>
</tr>
<tr>
<td></td>
<td>learning.</td>
</tr>
<tr>
<td></td>
<td>20 20</td>
</tr>
<tr>
<td></td>
<td>My PLT focuses a single source of evidence such as student</td>
</tr>
<tr>
<td></td>
<td>test scores.</td>
</tr>
<tr>
<td></td>
<td>164 164</td>
</tr>
<tr>
<td></td>
<td>My PLT combines many sources of evidence to identify student</td>
</tr>
<tr>
<td></td>
<td>skills.</td>
</tr>
<tr>
<td></td>
<td>57 57</td>
</tr>
</tbody>
</table>

| SL3        | My PLT determines the suitability of data to inform teaching.|

---

Appendices 343
<table>
<thead>
<tr>
<th>SL4</th>
<th>My PLT summarises evidence of student learning.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A4)</td>
<td>Total: 241 Missing 1</td>
</tr>
<tr>
<td>My PLT does not summarise evidence of student learning.</td>
<td>7</td>
</tr>
<tr>
<td>My PLT summarises evidence of student learning against expectations.</td>
<td>79</td>
</tr>
<tr>
<td>My PLT summarises evidence of student learning in terms of what the students are ready to learn.</td>
<td>155</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SL5</th>
<th>My PLT makes teaching plans.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A5)</td>
<td>Total: 241 Missing 1</td>
</tr>
<tr>
<td>Teaching plans are made by individual teachers.</td>
<td>57</td>
</tr>
<tr>
<td>Teaching plans are proposed by individual teachers and agreed to by the PLT.</td>
<td>51</td>
</tr>
<tr>
<td>Teaching plans are developed jointly by PLT members.</td>
<td>133</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SL6</th>
<th>My PLT sets learning goals for students.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A6)</td>
<td>Total: 241 Missing 1</td>
</tr>
<tr>
<td>Learning goals are based on students’ year level curriculum.</td>
<td>23</td>
</tr>
</tbody>
</table>
Learning goals are based on evidence of student readiness to learn.

**SL7**  
**My PLT selects teaching strategies and resources to meet learning goals.**

Total: 241 Missing 1

- My PLT selects teaching strategies and resources based on familiarity with them.  
  16  
- My PLT selects teaching strategies and resources based on evidence of suitability for specific groups of students.  
  116  
- My PLT selects teaching strategies and resources based on evidence of success in helping students to meet learning goals.  
  109

**SL8**  
**My PLT determines the effectiveness of teaching strategies and resources.**

Total: 241 Missing 1

- My PLT assumes the effectiveness of teaching strategies and resources.  
  7  
  N/A
- My PLT uses teacher opinion to justify the effectiveness of teaching strategies and resources.  
  60  
  67
- My PLT reviews data to determine the effectiveness of teaching strategies and resources.  
  144  
  144
- My PLT conducts action research to determine the effectiveness of teaching strategies and resources.  
  30  
  30

**SL9**  
**My PLT determines the suitability of assessment approaches administered to students.**

Total: 240 Missing 2

- My PLT does not determine the suitability of assessment approaches administered to students.  
  5  
  N/A
My PLT determines the suitability of assessment approaches in terms of the familiarity and ease of use. 22 27

My PLT determines the suitability of assessment approaches in terms the information provided for teaching. 123 123

My PLT reviews the suitability of assessment approaches in terms of the explicit consequences for student learning. 90 90

<table>
<thead>
<tr>
<th>SL10</th>
<th>My PLT focuses its meeting time on evidence of student learning.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total: 235 Missing 7</td>
</tr>
<tr>
<td></td>
<td>Meetings flow freely without structure. 4  N/A</td>
</tr>
<tr>
<td></td>
<td>My PLT focuses discussion on our assigned tasks. 121 125</td>
</tr>
<tr>
<td></td>
<td>My PLT discussion remains focused on evidence of impact on student learning throughout the meeting. 110 110</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SL11</th>
<th>My PLT uses its meeting time.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total: 234, Missing 8</td>
</tr>
<tr>
<td></td>
<td>My PLT uses its meeting time to deal with administration and the dissemination of information. 22 22</td>
</tr>
<tr>
<td></td>
<td>My PLT uses its meeting time to deal with any issues raised by its members. 52 52</td>
</tr>
<tr>
<td></td>
<td>My PLT uses its meeting time to deal with issues related to student learning. 160 160</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SL12</th>
<th>Time spent in PLT meetings is productive.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total: 234, Missing 8</td>
</tr>
<tr>
<td></td>
<td>Time spent in PLT meetings is not productive. 67 67</td>
</tr>
<tr>
<td></td>
<td>Some of the time spent in PLT meetings is productive. 140 140</td>
</tr>
<tr>
<td></td>
<td>Time spent in PLT meetings is productive. 27 27</td>
</tr>
<tr>
<td>SL13</td>
<td>I report to the PLT on my implementation of teaching plans.</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Total: 234, Missing 8</td>
</tr>
<tr>
<td></td>
<td>I keep information about my implementation of teaching</td>
</tr>
<tr>
<td></td>
<td>plans to myself.</td>
</tr>
<tr>
<td></td>
<td>8 N/A</td>
</tr>
<tr>
<td></td>
<td>I tell the PLT about implementation of teaching plans.</td>
</tr>
<tr>
<td></td>
<td>72 80</td>
</tr>
<tr>
<td></td>
<td>I report to the PLT on the effects on student learning of</td>
</tr>
<tr>
<td></td>
<td>the teaching plans.</td>
</tr>
<tr>
<td></td>
<td>154 154</td>
</tr>
</tbody>
</table>

**Facilitates Teacher Learning**

<table>
<thead>
<tr>
<th>TL1</th>
<th>My PLT supports team members to develop the effectiveness of their practices.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total: 235 Missing 7</td>
</tr>
<tr>
<td></td>
<td>My PLT does not support team members to develop the effectiveness of their practices.</td>
</tr>
<tr>
<td></td>
<td>5 N/A</td>
</tr>
<tr>
<td></td>
<td>My PLT supports team members to develop the effectiveness of their practices when asked.</td>
</tr>
<tr>
<td></td>
<td>105 110</td>
</tr>
<tr>
<td></td>
<td>My PLT is proactive in supporting team members to develop the effectiveness of their practices</td>
</tr>
<tr>
<td></td>
<td>125 125</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TL2</th>
<th>My PLT makes plans for improving the professional practices of members.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total: 239 Missing 3</td>
</tr>
<tr>
<td></td>
<td>Plans for improving the professional practices of members are made outside the PLT.</td>
</tr>
<tr>
<td></td>
<td>45 45</td>
</tr>
<tr>
<td></td>
<td>Plans for improving the professional practices of members are discussed by the PLT.</td>
</tr>
<tr>
<td></td>
<td>99 99</td>
</tr>
<tr>
<td></td>
<td>Plans for improving the professional practices of members are developed jointly by the PLT members.</td>
</tr>
<tr>
<td></td>
<td>95 95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TL3</th>
<th>My PLT determines professional development priorities for members in the area of teaching practice.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total: 239 Missing 3</td>
</tr>
<tr>
<td>TL4</td>
<td>My PLT makes decisions about professional development priorities for members in the area of assessment practice.</td>
</tr>
<tr>
<td>----------</td>
<td>------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>(A15)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total: 239 Missing 3</td>
</tr>
<tr>
<td>My PLT makes decisions about assessment practices based on our opinions of assessment procedures.</td>
<td>43 43</td>
</tr>
<tr>
<td>My PLT makes decisions about assessment practices based on data needed to inform teaching decisions.</td>
<td>144 144</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TL5</th>
<th>My PLT develops the teaching practices of its members.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A16)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total: 239 Missing 3</td>
</tr>
<tr>
<td>My PLT does not develop the teaching practices of its members.</td>
<td>4 N/A</td>
</tr>
<tr>
<td>My PLT encourages members to consider a range of teaching practices.</td>
<td>70 74</td>
</tr>
</tbody>
</table>
My PLT assists members to implement relevant teaching practices.  

My PLT facilitates members to develop the skills necessary to implement new teaching practices.

**TL6  My PLT develops the assessment practices of its members.**

(A17) Total: 239 Missing 3

My PLT does not develop the assessment practices of its members.  

My PLT exposes members to new assessment practices.  

My PLT assists members to implement new assessment practices.  

My PLT facilitates members to develop the skills necessary to implement new assessment practices.

**TL7  My PLT discusses the suitability of possible strategies and resources for our professional development.**

(A18) Total: 239 Missing 3

My PLT does not discuss the suitability of possible strategies and resources for our professional development.

My PLT discusses the suitability of possible strategies and resources for our professional development in terms of their familiarity or ease of access.

My PLT discusses the suitability of possible strategies and resources for our professional development in terms of the potential to achieve goals for teachers.

My PLT discusses the suitability of possible strategies and resources for our professional development in terms...
of the evidence to successfully achieve goals for teachers.
### Appendix H
**Descriptive Statistics for Study Two**

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Median</th>
<th>Mode</th>
<th>Std. Dev</th>
<th>Skew</th>
<th>Std. Error of skew</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>School Support</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS1</td>
<td>238</td>
<td>1</td>
<td>3</td>
<td>2.44</td>
<td>3</td>
<td>3</td>
<td>0.70</td>
<td>-0.85</td>
<td>0.16</td>
</tr>
<tr>
<td>SS2</td>
<td>238</td>
<td>1</td>
<td>3</td>
<td>2.50</td>
<td>3</td>
<td>3</td>
<td>0.58</td>
<td>-0.66</td>
<td>0.16</td>
</tr>
<tr>
<td>SS4</td>
<td>238</td>
<td>1</td>
<td>3</td>
<td>2.10</td>
<td>2</td>
<td>2</td>
<td>0.64</td>
<td>-0.09</td>
<td>0.16</td>
</tr>
<tr>
<td>SS5</td>
<td>238</td>
<td>1</td>
<td>2</td>
<td>1.76</td>
<td>2</td>
<td>2</td>
<td>0.43</td>
<td>-1.23</td>
<td>0.16</td>
</tr>
<tr>
<td>SS6</td>
<td>238</td>
<td>1</td>
<td>3</td>
<td>2.76</td>
<td>3</td>
<td>3</td>
<td>0.52</td>
<td>-2.18</td>
<td>0.16</td>
</tr>
<tr>
<td><strong>Communication</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C1</td>
<td>238</td>
<td>1</td>
<td>3</td>
<td>2.50</td>
<td>3</td>
<td>3</td>
<td>0.61</td>
<td>-0.78</td>
<td>0.16</td>
</tr>
<tr>
<td>C2</td>
<td>238</td>
<td>1</td>
<td>3</td>
<td>2.62</td>
<td>3</td>
<td>3</td>
<td>0.57</td>
<td>-1.17</td>
<td>0.16</td>
</tr>
<tr>
<td>C3</td>
<td>238</td>
<td>2</td>
<td>3</td>
<td>2.71</td>
<td>3</td>
<td>3</td>
<td>0.47</td>
<td>-1.15</td>
<td>0.16</td>
</tr>
<tr>
<td>C4</td>
<td>238</td>
<td>1</td>
<td>3</td>
<td>2.73</td>
<td>3</td>
<td>3</td>
<td>0.55</td>
<td>-1.97</td>
<td>0.16</td>
</tr>
<tr>
<td>C5</td>
<td>238</td>
<td>1</td>
<td>2</td>
<td>1.73</td>
<td>2</td>
<td>2</td>
<td>0.44</td>
<td>-1.05</td>
<td>0.16</td>
</tr>
<tr>
<td>C6</td>
<td>240</td>
<td>1</td>
<td>3</td>
<td>2.46</td>
<td>2</td>
<td>2</td>
<td>0.52</td>
<td>-0.10</td>
<td>0.16</td>
</tr>
<tr>
<td>C7</td>
<td>240</td>
<td>1</td>
<td>4</td>
<td>3.32</td>
<td>4</td>
<td>4</td>
<td>0.82</td>
<td>-0.78</td>
<td>0.16</td>
</tr>
<tr>
<td>C8</td>
<td>238</td>
<td>1</td>
<td>3</td>
<td>2.50</td>
<td>3</td>
<td>3</td>
<td>0.46</td>
<td>-1.47</td>
<td>0.18</td>
</tr>
<tr>
<td><strong>Workload Sharing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WS1</td>
<td>239</td>
<td>1</td>
<td>2</td>
<td>1.49</td>
<td>1</td>
<td>1</td>
<td>0.50</td>
<td>0.04</td>
<td>0.16</td>
</tr>
<tr>
<td>WS2</td>
<td>239</td>
<td>1</td>
<td>2</td>
<td>1.61</td>
<td>2</td>
<td>2</td>
<td>0.49</td>
<td>-0.46</td>
<td>0.16</td>
</tr>
<tr>
<td>WS3</td>
<td>239</td>
<td>1</td>
<td>2</td>
<td>1.82</td>
<td>2</td>
<td>2</td>
<td>0.39</td>
<td>-1.64</td>
<td>0.16</td>
</tr>
<tr>
<td>WS4</td>
<td>239</td>
<td>1</td>
<td>2</td>
<td>1.83</td>
<td>2</td>
<td>2</td>
<td>0.38</td>
<td>-1.75</td>
<td>0.16</td>
</tr>
<tr>
<td>WS5</td>
<td>239</td>
<td>1</td>
<td>3</td>
<td>2.41</td>
<td>2</td>
<td>3</td>
<td>0.60</td>
<td>-0.48</td>
<td>0.16</td>
</tr>
<tr>
<td>WS6</td>
<td>238</td>
<td>1</td>
<td>2</td>
<td>1.66</td>
<td>2</td>
<td>2</td>
<td>0.48</td>
<td>-0.66</td>
<td>0.16</td>
</tr>
<tr>
<td>WS7</td>
<td>238</td>
<td>1</td>
<td>3</td>
<td>2.45</td>
<td>3</td>
<td>3</td>
<td>0.65</td>
<td>-0.78</td>
<td>0.16</td>
</tr>
<tr>
<td><strong>Intergroup Processes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IP1</td>
<td>239</td>
<td>1</td>
<td>3</td>
<td>2.31</td>
<td>2</td>
<td>2</td>
<td>0.61</td>
<td>-0.29</td>
<td>0.16</td>
</tr>
<tr>
<td>IP2</td>
<td>238</td>
<td>1</td>
<td>3</td>
<td>2.01</td>
<td>2</td>
<td>2</td>
<td>0.75</td>
<td>-0.01</td>
<td>0.16</td>
</tr>
<tr>
<td>IP3</td>
<td>238</td>
<td>1</td>
<td>3</td>
<td>2.40</td>
<td>3</td>
<td>3</td>
<td>0.69</td>
<td>-0.73</td>
<td>0.16</td>
</tr>
<tr>
<td><strong>Team</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Efficacy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE1</td>
<td>238</td>
<td>1</td>
<td>3</td>
<td>2.50</td>
<td>3</td>
<td>3</td>
<td>0.56</td>
<td>-0.55</td>
<td>0.16</td>
</tr>
<tr>
<td>Variable</td>
<td>N</td>
<td>Min</td>
<td>Max</td>
<td>Mean</td>
<td>Median</td>
<td>Mode</td>
<td>Std. Dev</td>
<td>Skew</td>
<td>Std. Error of skew</td>
</tr>
<tr>
<td>-----------------</td>
<td>----</td>
<td>-----</td>
<td>-----</td>
<td>------</td>
<td>--------</td>
<td>------</td>
<td>----------</td>
<td>------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S1</td>
<td>238</td>
<td>1</td>
<td>2</td>
<td>1.84</td>
<td>2</td>
<td>2</td>
<td>0.37</td>
<td>-1.83</td>
<td>0.16</td>
</tr>
<tr>
<td>S2</td>
<td>239</td>
<td>1</td>
<td>4</td>
<td>3.67</td>
<td>4</td>
<td>4</td>
<td>0.66</td>
<td>-2.18</td>
<td>0.16</td>
</tr>
<tr>
<td>S3</td>
<td>239</td>
<td>1</td>
<td>4</td>
<td>3.22</td>
<td>3</td>
<td>3</td>
<td>0.62</td>
<td>-0.61</td>
<td>0.16</td>
</tr>
<tr>
<td>Student Learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SL1</td>
<td>241</td>
<td>1</td>
<td>2</td>
<td>1.85</td>
<td>2</td>
<td>2</td>
<td>0.35</td>
<td>-2.03</td>
<td>0.16</td>
</tr>
<tr>
<td>SL2</td>
<td>241</td>
<td>1</td>
<td>2</td>
<td>1.90</td>
<td>2</td>
<td>2</td>
<td>0.29</td>
<td>-2.77</td>
<td>0.16</td>
</tr>
<tr>
<td>SL3</td>
<td>241</td>
<td>1</td>
<td>3</td>
<td>2.29</td>
<td>2</td>
<td>2</td>
<td>0.64</td>
<td>-0.33</td>
<td>0.16</td>
</tr>
<tr>
<td>SL4</td>
<td>241</td>
<td>1</td>
<td>3</td>
<td>2.61</td>
<td>3</td>
<td>3</td>
<td>0.54</td>
<td>-1.01</td>
<td>0.16</td>
</tr>
<tr>
<td>SL5</td>
<td>241</td>
<td>1</td>
<td>3</td>
<td>2.32</td>
<td>3</td>
<td>3</td>
<td>0.83</td>
<td>-0.65</td>
<td>0.16</td>
</tr>
<tr>
<td>SL6</td>
<td>241</td>
<td>1</td>
<td>2</td>
<td>1.90</td>
<td>2</td>
<td>2</td>
<td>0.29</td>
<td>-2.77</td>
<td>0.16</td>
</tr>
<tr>
<td>SL7</td>
<td>241</td>
<td>1</td>
<td>3</td>
<td>2.39</td>
<td>2</td>
<td>2</td>
<td>0.61</td>
<td>-0.45</td>
<td>0.16</td>
</tr>
<tr>
<td>SL8</td>
<td>241</td>
<td>1</td>
<td>4</td>
<td>2.82</td>
<td>3</td>
<td>3</td>
<td>0.68</td>
<td>-0.33</td>
<td>0.16</td>
</tr>
<tr>
<td>SL9</td>
<td>240</td>
<td>1</td>
<td>4</td>
<td>3.24</td>
<td>3</td>
<td>3</td>
<td>0.70</td>
<td>-0.74</td>
<td>0.16</td>
</tr>
<tr>
<td>SL10</td>
<td>239</td>
<td>1</td>
<td>3</td>
<td>2.46</td>
<td>2</td>
<td>2</td>
<td>0.53</td>
<td>-0.16</td>
<td>0.16</td>
</tr>
<tr>
<td>SL11</td>
<td>238</td>
<td>1</td>
<td>3</td>
<td>2.61</td>
<td>3</td>
<td>3</td>
<td>0.66</td>
<td>-1.46</td>
<td>0.16</td>
</tr>
<tr>
<td>SL12</td>
<td>238</td>
<td>1</td>
<td>2</td>
<td>1.62</td>
<td>2</td>
<td>2</td>
<td>0.49</td>
<td>-0.49</td>
<td>0.16</td>
</tr>
<tr>
<td>SL13</td>
<td>238</td>
<td>1</td>
<td>3</td>
<td>2.59</td>
<td>3</td>
<td>3</td>
<td>0.56</td>
<td>-0.94</td>
<td>0.16</td>
</tr>
<tr>
<td>Teacher Learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL1</td>
<td>239</td>
<td>1</td>
<td>3</td>
<td>2.49</td>
<td>3</td>
<td>3</td>
<td>0.54</td>
<td>-0.38</td>
<td>0.16</td>
</tr>
<tr>
<td>TL2</td>
<td>239</td>
<td>1</td>
<td>3</td>
<td>2.21</td>
<td>2</td>
<td>2</td>
<td>0.74</td>
<td>-0.35</td>
<td>0.16</td>
</tr>
<tr>
<td>TL3</td>
<td>239</td>
<td>1</td>
<td>4</td>
<td>2.62</td>
<td>3</td>
<td>3</td>
<td>1.10</td>
<td>-0.32</td>
<td>0.16</td>
</tr>
<tr>
<td>TL4</td>
<td>239</td>
<td>1</td>
<td>3</td>
<td>2.38</td>
<td>3</td>
<td>3</td>
<td>0.82</td>
<td>-0.82</td>
<td>0.16</td>
</tr>
<tr>
<td>TL5</td>
<td>239</td>
<td>1</td>
<td>4</td>
<td>3.05</td>
<td>3</td>
<td>4</td>
<td>0.86</td>
<td>-0.25</td>
<td>0.16</td>
</tr>
<tr>
<td>TL6</td>
<td>239</td>
<td>1</td>
<td>4</td>
<td>3.06</td>
<td>3</td>
<td>3</td>
<td>0.86</td>
<td>-0.56</td>
<td>0.16</td>
</tr>
<tr>
<td>TL7</td>
<td>239</td>
<td>1</td>
<td>4</td>
<td>3.05</td>
<td>3</td>
<td>3</td>
<td>0.86</td>
<td>-0.59</td>
<td>0.16</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>226</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix I

Ethics Applications, Plain Language Statements and Consent Forms
10 February 2012

Prof. Patrick Griffin
Assessment Research Centre
Melbourne Graduate School of Education
The University of Melbourne

Dear Prof. Griffin

I am pleased to advise that the Melbourne Graduate School of Education Human Ethics Advisory Group (MGSE HEAG) has approved the following Project-within-Program application:

Project-within-Program
Project title: The influence on student achievement in reading comprehension of evidence-based decisions by collaborative teacher teams in Catholic Education Office Melbourne schools.
Researchers: Patrick Griffin, Judith Crigan, Leanne Murray, Masa Pavlovic, Esther Care and Pamela Robertson.
Ethics ID: 1136675
MGSE HEAG ID: 15/12

Related Program
Project title: The influence on student achievement of evidence-based decisions by collaborative teacher teams.
Ethics ID: 0830929

The project has been approved for the period: 10 February 2012 to 31 December 2012.

It is your responsibility to ensure that all people associated with the Project-within-Program are made aware of what has actually been approved.

A Project-within-Program is normally approved to 31 December of the year of approval and may be renewed yearly for up to a total of three years upon receipt of a satisfactory annual report. If a Project-within-Program is to continue beyond three years a new application will normally need to be submitted.

Please note that the following conditions apply to your approval. Failure to abide by these conditions may result in suspension or discontinuation of approval and/or disciplinary action.

(a) Limit of Approval: Approval is limited strictly to the research as submitted in your Project application.

(b) Amendments to Project: Any subsequent variations or modifications you might wish to make to the Project must be notified formally to the Human Ethics Advisory Group for further consideration and approval before the revised Project can commence. If the Human Ethics Advisory Group considers that the proposed amendments are significant, you may be required to submit a new application for approval of the revised Project.

(c) Incidents or adverse affects: Researchers must report immediately to the Advisory Group and the relevant Sub-Committee anything which might affect the ethical acceptance of the protocol including adverse effects on participants or unforeseen events that might affect continued ethical acceptability of the Project. Failure to do so may result in suspension or cancellation of approval.

(d) Monitoring: All projects are subject to monitoring at any time by the Human Research Ethics Committee.

(e) Annual Report: Please be aware that the Human Research Ethics Committee requires that researchers submit an annual report on each of their projects at the end of the year, or at the conclusion of a project if it continues for less than this time. Failure to submit an annual report will mean that ethics approval will lapse.

(f) Auditing: All projects may be subject to audit by members of the Sub-Committee.

Please quote the ethics registration number and the name of the Project in any future correspondence.

On behalf of the Ethics Committee I wish you well in your research.

Yours sincerely

Associate Professor Leo Goedegebure
Chairperson, Melbourne Graduate School of Education Human Ethics Advisory Group
Phone: 8340619, Email: leo.g@unimelb.edu.au

cc: Judith Crigan, Leanne Murray, Masa Pavlovic, Esther Care, Pamela Robertson and Human Research Ethics Committee, Melbourne Research Office.

Melbourne Education Research Institute (MERI)
Melbourne Graduate School of Education | The University of Melbourne
Level 9 | 100 Leicester Street | Carlton Victoria 3053 | Australia
## D. PERSON DETAILS

<table>
<thead>
<tr>
<th>Role</th>
<th>Full Name</th>
<th>Person Type</th>
<th>Department Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsible</td>
<td>Griffin, Prof P</td>
<td>Staff</td>
<td>460 - Melbourne Graduate School Of Education</td>
</tr>
<tr>
<td>Researcher</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Centre Name:**

**Phone Number:**

**Email Address:**

**Qualifications:**

- Bachelors Degree, University of Melbourne
- Masters (Coursework), University of Melbourne
- Other (Qualification), University of Melbourne
- PhD, Florida State University

**Experience and Skills Relevant to Project:**

From the mid 1980s, Professor Griffin has been developing criterion referenced frameworks for assessment. His work led to the development of the national profiles and curriculum frameworks and a new direction for Australian school education. These profiles were modeled on his work in developing the Victorian Literacy and Numeracy Profiles for which he was awarded the John Smyth medal for education research. Professor Griffin’s recent work has included developing techniques for teachers to adopt the logic of item response modelling. This process has been adopted by Professor Griffin internationally, in Hong Kong in basic competency assessment and evaluation of students’ second language acquisition, in Vietnam in the assessment of primary teachers’ competencies, and locally in the development of learning pathways for students with additional needs. He has established procedures for teams of teachers in special education and mainstream schools to collaborate in the use of developmental frameworks to inform their teaching of foundational learning domains.

**Additional Training Required:**

N/A

**Ethics Training already undertaken:**

Professor Griffin has participated at Graduate School level in the review of ethics applications.

**Student Supervisor (if applicable):**

<table>
<thead>
<tr>
<th>Role</th>
<th>Full Name</th>
<th>Student Type</th>
<th>Department Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student</td>
<td>Crigan, J</td>
<td></td>
<td>460 - Melbourne Graduate School Of Education</td>
</tr>
</tbody>
</table>

**Centre Name:**

**Phone Number:**

**Email Address:**

**Qualifications:**

Ms Crigan has an honours degree in psychology and has experience in project management.

**Experience and Skills Relevant to Project:**

Ms Crigan has read the National Statement on Ethical Conduct in Research involving Humans.

**Additional Training Required:**

N/A

**Ethics Training already undertaken:**

Murray, Ms Leanne

**Student Supervisor (if applicable):**

Murray, Ms Leanne

**Centre Name:**

**Phone Number:**

**Email Address:**

l.murray@ceomelb.catholic.edu.au
E. ADDITIONAL QUESTIONS

a) Sponsored Projects

Source of Funding
External Sponsors Identified
Sponsors
Participant to be informed

b) Clinical Trials

Registered in public trials registry?
Registry Name
Registry Number
Date of Registration
Project name recorded in registry
Name of researcher in whose name the project is registered

c) Drug Trials

Type of trial
Phase (if applicable)

d) Research Involving Aboriginal and Torres Strait Islanders

Reference group appointed?
Details/Explanation
Type of approval

e) Location of Research

Where research to be carried out
University of Melbourne
External sites within Australia
Category of external location
Schools

f) Other Approvals Required (other than ethics clearances)

Approvals required? Required
1136675.1
The influence on student achievement in reading comprehension of evidence-based decisions by collaborative teacher teams in Catholic Education Office Melbourne schools.
Prof. Patrick Griffin

1. PROJECT DETAILS

1.1 EXECUTIVE SUMMARY IN PLAIN ENGLISH: Provide a brief outline of the project in everyday language. Include a description of how the Project relates to the approved Program, along with a summary of the proposed methodology, an explanation of what participants will be required to do specifically in this project and a description of any procedure which is beyond already established and accepted techniques. Please provide a description of the participant population, including anticipated number and age-range, along with information as to how participants are to be recruited. If the Project does not require use of a plain language statement or consent form, please provide additional details about how the informed consent of participants will be obtained and documented. [No more than 500 words]

This project is designed to identify how teachers’ knowledge of how to use student data can improve student outcomes. Participants are teachers from 90 Catholic Education Office Melbourne (CEOM) schools involved in the overarching program of research (Ethics ID 0830929). The project will systematically examine teachers' collaborative use of assessment data to inform teaching in reading comprehension over the next three years.

Teachers will be recruited for inclusion in this research from those schools that have participated in, are currently participating in, or have requested future participation in the project. Principals will be emailed regarding the purpose of the research and procedures. Following consent for the school to participate, teachers will be invited to take part in the research. The teachers will have roles within the school as Literacy Leaders/Professional Learning Team (PLT) Leaders or Professional Learning Team Members.

Permission is sought from principals to involve the school in the research in the following ways:
- To collect data about the school’s leadership, resourcing and support of professional learning teams.
- To access CEOM data regarding school demographics
- To use de-identified student background data routinely collected by schools and student assessment data collected by teachers as part of their participation in this project
- To approach teachers from the school who are members of professional learning teams seeking their participation in the collection of data relating to teacher beliefs and attitudes, knowledge and practice as well as data relating to professional learning team meetings and leadership
- To link student, teacher, professional learning team and school data via de-identified codes to examine the influence of evidence-based decisions by collaborative teacher teams on student outcomes in reading comprehension
2. **PLAIN LANGUAGE STATEMENT (IF APPLICABLE)**

**CONFIRM THAT THE PLAIN LANGUAGE STATEMENT WILL:**

<table>
<thead>
<tr>
<th></th>
<th>YES</th>
<th>NOT</th>
<th>APPLICABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>2.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>3.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>4.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>5.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>6.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>7.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>8.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>9.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>10.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>11.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>12.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>13.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
</tbody>
</table>

[**Re 10 – it is possible for data to be subject to subpoena, freedom of information request or mandated reporting by some professions. Depending on the research proposal you may need to specifically state these limitations**]

**PLEASE ATTACH A COPY OF THE PLAIN LANGUAGE STATEMENT TO YOUR APPLICATION**

3. **CONSENT FORM (IF APPLICABLE)**

**CONFIRM THAT THE CONSENT FORM WILL:**

<table>
<thead>
<tr>
<th></th>
<th>YES</th>
<th>NOT</th>
<th>APPLICABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>2.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>3.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>4.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>5.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>6.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>7.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>8.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
<tr>
<td>9.</td>
<td>⬜️</td>
<td>⬜️</td>
<td>⬜️</td>
</tr>
</tbody>
</table>
5. DECLARATION BY DEPARTMENTAL HUMAN ETHICS ADVISORY GROUP (HEAG)

DATE APPLICATION RECEIVED: 19-JAN-12  HEAG NO: 15/12

☑ TECHNICAL REVIEW COMPLETED  ☐ ETHICAL REVIEW COMPLETED

<table>
<thead>
<tr>
<th>CHECKLIST</th>
<th>YES</th>
<th>NO</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has the HEAG reviewed the related Program Application?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Is the HEAG satisfied that this project fits within the approved program? (If not, please ensure that either an amendment to the Program is submitted to the HESC or the researchers submit a separate Form 1 Project application)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Are there any minor differences between the Project and Program applications?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>If yes:</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>- have these been addressed in the Project application?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>- do any of these differences need HESC approval?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Have the following documents been attachments if applicable:

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>N/A</th>
<th>YES</th>
<th>NO</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>evidence of external approvals</td>
<td>☒</td>
<td>☐</td>
<td>☐</td>
<td>evidence of debriefing statement</td>
<td>☒</td>
</tr>
<tr>
<td>recruitment advertisement</td>
<td>☒</td>
<td>☐</td>
<td>☐</td>
<td>plain language statement</td>
<td>☒</td>
</tr>
<tr>
<td>questionnaire</td>
<td>☒</td>
<td>☐</td>
<td>☐</td>
<td>consent form</td>
<td>☐</td>
</tr>
<tr>
<td>list of interview questions</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

COMMENTS FOR INFORMATION/ACTION OF HESC:

The HEAG has reviewed this project and considers the methodological/technical and ethical aspects of the proposal to be appropriate to the tasks proposed and recommends approval of the project. The HEAG considers that the researcher(s) has/have the necessary qualifications, experience and facilities to conduct the research set out in the attached application, and to deal with any emergencies and contingencies that may arise. [Note: If the HEAG Chair is also a principal researcher for this project, the declaration should be signed by another authorised member of the HEAG]

Comments/Provisos:

Name of HEAG Chair (in BLOCK LETTERS) | LEO GORDON BURK
Signature | 
Date | 1/2/12

6. DECLARATION BY HEAD OF DEPARTMENT

DATE APPLICATION RECEIVED: 19-JAN-12  HEAG NO: 15/12

☑ TECHNICAL REVIEW COMPLETED  ☐ ETHICAL REVIEW COMPLETED

I have reviewed this project and consider the methodological, technical and ethical aspects of the proposal to be appropriate to the tasks proposed and recommend approval of the project. I consider that the researcher(s) has/have the necessary qualifications, experience and facilities to conduct the research set out in the attached application, and to deal with any emergencies and contingencies that may arise. [If the Head of Department is also a principal researcher for this project, the declaration should be signed by another authorised member of the Department]

This project has the approval and support of this Department/School/Centre.

Name of Head (in BLOCK LETTERS) | JULIE MCUOY
Signature | 
Date | 9-2-2012

11. WHEN COMPLETE

When this form has been completed and finalised it should be attached to the coversheet section of the application completed in Themis Research and then submitted to the nominated Human Ethics Advisory Group for review.
Your decision regarding your school’s participation in the research will not in any way affect your employment opportunities or those of teachers at your school, or the educational experiences of your students. Your participation and the participation of your teachers will only be used to help improve teachers’ ability to use student assessment data and to work collaboratively in teams to improve learning outcomes for all students.

How will confidentiality be protected?

Participation in this study is completely voluntary, and anonymity and confidentiality of student assessment data, team logs of teaching decisions, observations, interviews, focus groups and questionnaire responses will be ensured to the fullest possible extent. Confidentiality of all data will be preserved through a protocol in which names are replaced by codes. Those subsequently handling the data will do so using only codes. Schools and participants will not be named in any report arising from this research. The information we obtain will be included in reports of the study at a summary level only. Should you wish to withdraw yourself or your school from the study at any time, or to withdraw unprocessed information that has been collected, you are free to do so. All information will be treated in the strictest confidence subject to any legal limitations. It will be stored in secure files at the University of Melbourne under the University’s guidelines for the management of research data and records, and destroyed five years after publication of findings.

How will you receive feedback?

On completion of the research, a summary of findings will be made available to you. It is expected that the results will be presented at workshops for teachers and academic conferences.

This project has the clearance of The University of Melbourne’s Human Research Ethics Committee (HREC project number: 1136675.1). Should you have any concerns about the conduct of the research, contact the Executive Officer, Human Research Ethics, the University of Melbourne, on 8344 2073 (phone) or 9347 6739 (fax).

If you have any further questions about the project, please do not hesitate to contact us as chief investigators of the study.

Yours sincerely,

[Signature]

Professor Patrick Griffin
Director
Assessment Research Centre
Melbourne Graduate School of Education
The University of Melbourne
p.griffin@unimelb.edu.au
Ph: 8344 2898

[Signature]

Associate Professor Esther Care
Deputy Director
Assessment Research Centre
Melbourne Graduate School of Education
The University of Melbourne
e.care@unimelb.edu.au
Ph: 8344 0975
The Influence of Evidence-Based Decisions by Collaborative Teacher Teams on Student Literacy Achievement in Catholic Education Office Melbourne Schools

We invite you to participate in a research project, which is being conducted under the leadership of Professor Patrick Griffin and Associate Professor Esther Care of the Melbourne Graduate School of Education at the University of Melbourne. The research is a joint project of the University of Melbourne and the Catholic Education Office Melbourne.

What are the aims of the study?

This study investigates how teachers’ collaborative use of data to plan teaching interventions within a developmental framework affects student achievement in reading comprehension. Relationships between a range of teacher, professional learning team (PLT), school and student variables on student achievement in the area of reading comprehension are addressed in this research.

What will you be asked to do?

In this phase of the project, you will be asked to complete online questionnaires relating to teacher beliefs and attitudes, knowledge and practice as well as PLT meetings at intervals throughout 2012-2014. No student, teacher, PLT or school will be identified as part of this research. No questionnaire will take more than 15 minutes to complete and in total, no more than 2 hours will be required staggered across a year. These data will be linked to school data and student assessment data across the duration of the research.

Your decision regarding your participation in the research will not in any way affect your employment opportunities, or the educational experiences of your students. Your participation will only be used to help improve teachers’ ability to use student assessment data and to work collaboratively in teams to improve learning outcomes for all students.

How will confidentiality be protected?

Participation in this study is completely voluntary, and anonymity and confidentiality of student assessment data, team logs of teaching decisions, observations, interviews, focus groups and questionnaire responses will be ensured to the fullest possible extent. Confidentiality of all data will be preserved through a protocol in which names are replaced by codes. Those subsequently handling the data will do so using only codes. Schools and participants will not be named in any report arising from this research. The information we obtain will be included in reports of the study at a summary level only. Should you wish to withdraw from the study at any time, or to withdraw unprocessed information that has been collected, you are free to do so. All information will be treated in the strictest confidence subject to any legal limitations. It will be stored in secure files at the University of Melbourne under the University’s guidelines for the management of research data and records, and destroyed five years after publication of findings.

HREC: Project No 113675.1; Date: 18/11/11; Version: CEO7 Teacher

Melbourne Graduate School of Education
The University of Melbourne Victoria 3010 Australia
T: +61 3 8344 8285 F: +61 3 8344 8529 W: www.edfac.unimelb.edu.au
The Influence of Evidence-Based Decisions by Collaborative Teacher Teams on Student Literacy Achievement in Catholic Education Office Melbourne Schools

Name of teacher: .................................................................................................................................

School name: .................................................................................................................................

School suburb: .................................................................................................................................

Name of Investigators: Professor Patrick Griffin and Associate Professor Esther Care

1. I consent to my participation in the above research study, the particulars of which – including details of procedures – have been explained to me in the Plain Language Statement and I have been given a copy of that explanation to keep.

2. I authorize the investigators in the above study to implement the procedures referred to under (1) above.

3. I acknowledge that:
   (a) the possible uses of the information arising from the study have been explained to me to my satisfaction;
   (b) I have been informed that my participation in this research is voluntary, and that I am free to withdraw from the study at any time and to withdraw any unprocessed information that has been supplied;
   (c) the study is for the purpose of research and development only;
   (d) once signed and returned, a copy of this consent form will be retained by the principal researcher; and
   (e) I have been informed that the confidentiality of the information provided by myself will be safeguarded, subject to any legal requirements (subpoena, freedom of information, mandated reporting), and in the following ways:
      • no names or personal details of individual participants or schools will be revealed in any report of the study, and any contextual details that might reveal their identity will be removed;
      • data will be stored in secure files at the University of Melbourne under the University’s guidelines for the management of research data and records, and destroyed five years after publication of findings.

Signature: .................................................................................................................................

Date: .................................................................................................................................

HREC: Project No 1136675.1; Date: 18/11/11; Version: CEGM Teacher
My PLT interprets inconsistencies in student assessment data.*
- My PLT does not interpret student assessment data.
- My PLT tries to understand why there are inconsistencies in student assessment data.
- My PLT interprets inconsistencies in student assessment data.
- My PLT uses our interpretation of inconsistencies in student assessment data to make adjustments in assessment and/or teaching practices.

My PLT summarises evidence of student learning.*
- My PLT does not summarise evidence of student learning.
- My PLT summarises evidence of student learning against curriculum expectations.
- My PLT summarises evidence of student learning by identifying what the students are ready to learn.

My PLT sets learning goals for students.*
- Learning goals are based on the student's year level curriculum.
- Learning goals are related to the curriculum and classroom behaviour of the student.
- Learning goals build on areas where students have shown they are proficient.
- Evidence of the zone of proximal development is used to identify readiness to learn.

My PLT determines the effectiveness of teaching strategies and resources.*
- My PLT assumes the effectiveness of teaching strategies and resources.
- My PLT uses teacher opinion to justify the effectiveness of teaching strategies and resources.
- My PLT reviews PLT records and progress data from students to determine the effectiveness of teaching strategies and resources.
- My PLT conducts action research to determine the effectiveness of teaching strategies and resources.

My PLT selects teaching strategies and resources to meet learning goals.*
- My PLT selects teaching strategies and resources based on familiarity with them.
- My PLT selects teaching strategies and resources based on our perceptions of their ability to help students meet learning goals.
- My PLT selects teaching strategies and resources based on evidence of their ability to help students meet learning goals.
- My PLT selects teaching strategies and resources based on evidence of their ability to meet learning goals for students with similar characteristics.

My PLT determines the effectiveness of assessment practices.*
- My PLT assumes the effectiveness of assessment practices.
- My PLT uses past and current practices of the PLT to determine the effectiveness of assessment practices.
- My PLT incorporates information about best practice from external sources to determine the effectiveness of assessment practices.

My PLT determines professional development priorities for members in the area of teaching practice.*
- My PLT uses available PD to help develop members' teaching practices.
- My PLT determines teaching practices for development based on perceptions of need.
- My PLT determines teaching practices for development based on evidence of student learning needs.
Tension in the PLT is managed by remaining focused on the team's goals.
Tension in the PLT is managed by focusing on the team's goals while maintaining positive relationships.

**My PLT resolves disagreements.**
- When there is a disagreement, we do not reach a consensus view.
- When there is a disagreement, one or two members' views usually prevail.
- Disagreement is tolerated and evidence sought to support each view.

**My PLT monitors whether team members carry out the agreed tasks.**
- My PLT assumes team members are carrying out the agreed tasks.
- My PLT checks with members whether they are carrying out their tasks.

**My PLT leader's tasks are known to members.**
- I don't know what the PLT leader's tasks are.
- I know what the PLT leader's tasks are.
- I know if the PLT leader's tasks have been carried out.

**My PLT leader keeps the PLT focused on the tasks necessary to achieve our goals.**
- My PLT leader's role is no different to that of any other team member.
- My PLT leader facilitates the team's tasks.
- My PLT leader keeps the PLT focused on tasks.

**My PLT leader supports team members to achieve the team goals.**
- My PLT leader does not support other team members to achieve team goals.
- My PLT leader supports members to achieve team goals when asked.
- My PLT leader is proactive in supporting team members to achieve goals.

**My PLT uses links with people or organisations outside the PLT.**
- My PLT does not use links with people or organisations outside the PLT.
- My PLT shares information with people or organisations outside the PLT.
- My PLT uses people or organisations outside the PLT to build its resources.

**My PLT actively promotes itself to others.**
- My PLT does not have the opportunity to showcase the work we do.
- My PLT takes opportunities to showcase our work when they arise.
- My PLT shares aspects of our work with stakeholders.
- My PLT promotes evidence of student learning to stakeholders.

**My PLT works to ensure it is sustainable in the long term.**
- My PLT does not have any long term plans.
- My PLT makes plans to ensure the team is successful.
- My PLT works with school leadership to ensure succession and longevity.

If you would like to provide any comments regarding the questions in this section or include any additional information, please enter them in the text box below:

**Your experience in the PLT**
This section contains questions about your experience being part of the PLT.
I offer to help other team members. *
- I do not offer to help other team members.
- I offer to help other team members.
- It is my responsibility to help any team member to ensure team tasks are carried out well.

I receive help from other team members. *
- Team members do not offer to help me.
- In some circumstances I reject offers of help from team members, even though I need it.
- I accept help from other team members when needed.
- I seek and accept help from other team members when needed.

I contribute to team goals. *
- I carry out actions which contribute to my PLT’s goals when I can.
- I prioritise actions that contribute to my PLT’s goals.

I can rely on other members of my PLT to accomplish the team’s goals. *
- I cannot rely on everyone in the team to accomplish team goals.
- I can rely on other members of my PLT to accomplish the team’s goals.

My work in the PLT affects the outcomes of my students. *
- My work in the PLT does not help improve outcomes for my students.
- My work in the PLT improves the outcomes for my students.
- My work in the PLT improves outcomes for the students of all PLT members.

If you would like to provide any comments regarding the questions in this section or include any additional information, please enter them in the text box below:

Display text only

This is the end of the questionnaire. Click Finished to submit your responses and exit the questionnaire.
11 February 2012

Prof. Patrick Griffin
Assessment Research Centre
Melbourne Graduate School of Education
The University of Melbourne

Dear Prof. Griffin

I am pleased to advise that the Melbourne Graduate School of Education Human Ethics Advisory Group (MGSE HEAG) has approved the following Project-within-Program application:

Project-within-Program
Project title: The influence on student achievement in reading comprehension, numeracy and problem solving of evidence-based decisions by collaborative teacher teams in Department of Education and Early Childhood Development schools.
Researchers: Patrick Griffin, Alejandra Arratia-Martinez, Masa Pavlovic, Zuraimi Zakaria, Judith Crigan, Esther Care and Pamela Robertson.
Ethics ID: 1137072
MGSE HEAG ID: 16/12

Related Program
Project title: The influence on student achievement of evidence-based decisions by collaborative teacher teams.
Ethics ID: 0830929

The project has been approved for the period: 11 February 2012 to 31 December 2012.

It is your responsibility to ensure that all people associated with the Project-within-Program are made aware of what has actually been approved.

A Project-within-Program is normally approved to 31 December of the year of approval and may be renewed yearly for up to a total of three years upon receipt of a satisfactory annual report. If a Project-within-Program is to continue beyond three years a new application will normally need to be submitted.

Please note that the following conditions apply to your approval. Failure to abide by these conditions may result in suspension or discontinuation of approval and/or disciplinary action.

(a) Limit of Approval: Approval is limited strictly to the research as submitted in your Project application.

(b) Amendments to Project: Any subsequent variations or modifications you might wish to make to the Project must be notified formally to the Human Ethics Advisory Group for further consideration and approval before the revised Project can commence. If the Human Ethics Advisory Group considers that the proposed amendments are significant, you may be required to submit a new application for approval of the revised Project.

(c) Incidents or adverse effects: Researchers must report immediately to the Advisory Group and the relevant Sub-Committee anything which might affect the ethical acceptability of the protocol including adverse effects on participants or unforeseen events that might affect continued ethical acceptability of the Project. Failure to do so may result in suspension or cancellation of approval.

(d) Monitoring: All projects are subject to monitoring at any time by the Human Research Ethics Committee.

(e) Annual Report: Please be aware that the Human Research Ethics Committee requires that researchers submit an annual report on each of their projects at the end of the year, or at the conclusion of a project if it continues for less than this time. Failure to submit an annual report will mean that ethics approval will lapse.

(f) Auditing: All projects may be subject to audit by members of the Sub-Committee.

Please quote the ethics registration number and the name of the Project in any future correspondence.

On behalf of the Ethics Committee I wish you well in your research.

Yours sincerely

Associate Professor Leo Goedgebuure
Chairperson, Melbourne Graduate School of Education Human Ethics Advisory Group
Phone: 83448619, Email: leo.g@unimelb.edu.au

cc: Alejandra Arratia-Martinez, Masa Pavlovic, Zuraimi Zakaria, Judith Crigan, Esther Care, Pamela Robertson and Human Research Ethics Committee, Melbourne Research Office.

Melbourne Education Research Institute (MERI)
Melbourne Graduate School of Education | The University of Melbourne
Level 9 | 100 Leicester Street | Carlton Victoria 3053 | Australia
### D. PERSON DETAILS

<table>
<thead>
<tr>
<th>Role</th>
<th>Full Name</th>
<th>Person Type</th>
<th>Department Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsible Researcher</td>
<td>Griffin, Prof Patrick</td>
<td>Staff</td>
<td>480 - Melbourne Graduate School Of Education</td>
</tr>
</tbody>
</table>

- **Centre Name:** Assessment Research Centre
- **Phone Number:** 8344 2898
- **Email Address:** p.griffin@unimelb.edu.au
- **Qualifications:** Bachelor's Degree, University of Melbourne; Masters (Coursework), University of Melbourne; Doctorate (Qualification), University of Melbourne; PhD, Florida State University
- **Experience and Skills Relevant to Project:** From the mid 1980s, Professor Griffin has been developing criterion referenced frameworks for assessment. His work led to the development of the national profiles and curriculum frameworks and a new direction for Australian school education. These profiles were modeled on his work in developing the Victorian Literacy and Numeracy Profiles for which he was awarded the John Smyth medal for education research. Professor Griffin's recent work has included developing techniques for teachers to adopt the logic of item response modelling. This process has been adopted by Professor Griffin internationally, in Hong Kong in basic competency assessment and evaluation of students' second language acquisition, in Vietnam in the assessment of primary teachers' competencies, and locally in the development of learning pathways for students with additional needs. He has established procedures for teams of teachers in special education and mainstream schools to collaborate in the use of developmental frameworks to inform their teaching of foundational learning domains.
- **Additional Training Required:** N/A
- **Ethics Training already undertaken:** Professor Griffin has participated at Graduate School level in the review of ethics applications.
- **Student Supervisor (if applicable):**

<table>
<thead>
<tr>
<th>Student Researcher</th>
<th>Arratia Martinez, Alejandra</th>
<th>Student</th>
<th>480 - Melbourne Graduate School Of Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centre Name:</td>
<td>Assessment Research Centre</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phone Number:</td>
<td>03 98417627</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Email Address:</td>
<td><a href="mailto:a.arratiamartinez@student.unimelb.edu.au">a.arratiamartinez@student.unimelb.edu.au</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Qualifications:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience and Skills Relevant to Project:</td>
<td>Ms Arratia Martinez is an educational psychologist and has worked with teachers for 15 years in the areas of curriculum development and teacher training.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional Training Required:</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethics Training already undertaken:</td>
<td>Ms Arratia Martinez has read the National Statement on Ethical Conduct in Research involving Humans.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Supervisor (if applicable):</td>
<td>Prof Patrick Griffin, Assoc Prof Esther Care</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Student Researcher</th>
<th>Pavlovic, Masa</th>
<th>Student</th>
<th>480 - Melbourne Graduate School Of Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centre Name:</td>
<td>Assessment Research Centre</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phone Number:</td>
<td>03922210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Email Address:</td>
<td><a href="mailto:m.pavlovic@student.unimelb.edu.au">m.pavlovic@student.unimelb.edu.au</a>/Alt: <a href="mailto:m.pavlovic@unimelb.edu.au">m.pavlovic@unimelb.edu.au</a></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Qualifications: Bachelors Degree, University of Melbourne
Graduate Certificate, University of Melbourne
Graduate Diploma, Caulfield Institute of Technology
Graduate Diploma, University of Melbourne
PhD, University of Melbourne

Experience and Skills Relevant to Project: Assoc Professor Care has extensive experience in liaising with schools for the purpose of assessment and intervention projects, and supervision of staff and students researching in schools. Assoc Professor Care has worked both as a teacher and educational psychologist in the primary and secondary settings.

Additional Training Required: N/A

Ethics Training already undertaken: Assoc Professor Care has participated in several NHMRC workshops over the past five years on ethics compliance, and has served at Faculty, HESC and HREC levels on the review of ethics applications.

Student Supervisor (if applicable):

Co researcher: Robertson, Ms Pamela
Person Type: Staff
Department Name: 450 - Melbourne Graduate School Of Education

Centre Name: Assessment Research Centre
Phone Number: 83445537
Email Address: p.robertson@unimelb.edu.au

Qualifications: Bachelors Degree, University of Melbourne
Post Graduate Diploma, University of Melbourne

Experience and Skills Relevant to Project: Ms Robertson has been a teacher in Victorian schools for 17 years. She has been involved in the delivery of professional development for teachers involved in the broader program of research.

Additional Training Required: N/A

Ethics Training already undertaken: As part of her role in this program of research, Ms Robertson has read the National Statement on Ethical Conduct in Research involving Humans.

Student Supervisor (if applicable):

E. ADDITIONAL QUESTIONS

a) Sponsored Projects
   Source of Funding
   External Sponsors Identified
   Sponsors
   Participant to be informed

b) Clinical Trials
   Registered in public trials registry?
   Registry Name
   Registry Number
   Date of Registration
   Project name recorded in registry
   Name of researcher in whose name the project is registered

c) Drug Trials
1. PROJECT DETAILS

1.1 EXECUTIVE SUMMARY IN PLAIN ENGLISH: Provide a brief outline of the project in everyday language. Include a description of how the Project relates to the approved Program, along with a summary of the proposed methodology, an explanation of what participants will be required to do specifically in this project and a description of any procedure which is beyond already established and accepted techniques. Please provide a description of the participant population, including anticipated number and age-range, along with information as to how participants are to be recruited. If the Project does not require use of a plain language statement or consent form, please provide additional details about how the informed consent of participants will be obtained and documented. [No more than 500 words]

This project is designed to identify how teachers' knowledge of how to use student data can improve student outcomes. Participants are teachers from 200 Department of Education and Early Childhood Development (DEECD) schools involved in the overarching program of research (Ethics ID 0830929). The project will systematically examine teachers' collaborative use of assessment data to inform teaching in reading comprehension, numeracy and problem solving over the next three years.

Teachers will be recruited for inclusion in this research from those schools that have participated in, are currently participating in, or have requested future participation in the project. Principals will be emailed regarding the purpose of the research and procedures. Following consent for the school to participate, teachers will be invited to take part in the research. The teachers will have roles within the school as Professional Learning Team (PLT) Leaders or as Professional Learning Team Members.

Permission is sought from principals to involve the school in the research in the following ways:

- To collect data about the school's leadership, resourcing and support of professional learning teams.
- To access DEECD data regarding school demographics
- To use de-identified student background data routinely collected by schools and student assessment data collected by teachers as part of their participation in this project
- To approach teachers from the school who are members of professional learning teams seeking their participation in the collection of data relating to teacher beliefs and attitudes, knowledge and practice as well as data relating to professional learning team meetings and leadership
- To link student, teacher, professional learning team and school data via de-identified codes to examine the influence of evidence-based decisions by collaborative teacher teams on student outcomes in reading comprehension, numeracy and problem solving

In this phase of the research, permission is sought from teachers to complete online questionnaires relating to teacher beliefs and attitudes, knowledge and practice as well as PLT meetings at intervals throughout 2012 to 2014.

Results will be reported at an aggregate level, and no student, teacher or school will be identified.
2. **PLAIN LANGUAGE STATEMENT (IF APPLICABLE)**

CONFIRM THAT THE PLAIN LANGUAGE STATEMENT WILL:

1. be printed on University of Melbourne letterhead  
2. include clear identification of the University, the Department(s) involved, the project title, the Principal and Other Researchers (including contact details), and the study level if it is a student research project.
3. provide details of the purpose of the research project
4. provide details of what involvement in the project will require (e.g., involvement in interviews, completion of questionnaire, audio/video-taping of events), and estimated time commitment
5. provide details of any risks involved and the procedures in place to minimise these.
6. advise that the project has received clearance by the HREC
7. (if the sample size is small), confirm that this may have implications for protecting the identity of the participants
8. include a clear statement that if participants are in a dependent relationship with any of the researchers that involvement in the project will not affect ongoing assessment/grades/management or treatment of health (if relevant)
9. state that involvement in the project is voluntary and that participants are free to withdraw consent at any time, and to withdraw any unprocessed data previously supplied
10. provide advice as to arrangements to be made to protect confidentiality of data, including that confidentiality of information provided is subject to legal limitations (see ** below)
11. provide advice as to whether or not data is to be destroyed after a minimum period (if relevant)
12. provide in the footer, the project HREC number, date and version of the PLS
13. provide advice that if participants have any concerns about the conduct of this research project that they can contact the Executive Officer, Human Research Ethics, The University of Melbourne, ph: 8344 2073; fax 9347 6739

[**Re 10 – it is possible for data to be subject to subpoena, freedom of information request or mandated reporting by some professions. Depending on the research proposal you may need to specifically state these limitations]**

PLEASE ATTACH A COPY OF THE PLAIN LANGUAGE STATEMENT TO YOUR APPLICATION

3. **CONSENT FORM (IF APPLICABLE)**

CONFIRM THAT THE CONSENT FORM WILL:

1. be printed on University of Melbourne letterhead
2. include the title of the project and names of researchers
3. state that the project is for research purposes
4. state that involvement in the project is voluntary and that participants are free to withdraw at any time, and to withdraw any unprocessed identifiable data previously supplied
5. outline particular requirements of participants including, for example, whether interviews are to be audio and/or video-taped
6. include arrangements to protect the confidentiality of data
7. include advice that there are legal limitations to data confidentiality (see below)**
8. (if the sample size is small) confirm that this may have implications for protecting the identity of the participants
9. (once signed and returned) be retained by the researcher

[**Re 7 – it is possible for data to be subject to subpoena, freedom of information request or mandated reporting by some professions. Depending on the research proposal you may need to specifically state and explain these limitations]**

PLEASE ATTACH A COPY OF THE CONSENT FORM TO YOUR APPLICATION
5. DECLARATION BY DEPARTMENTAL HUMAN ETHICS ADVISORY GROUP (HEAG)

DATE APPLICATION RECEIVED: 19-JAN-12

☑ TECHNICAL REVIEW COMPLETED
☑ ETHICAL REVIEW COMPLETED

CHECKLIST

Has the HEAG reviewed the related Program Application? ☐ YES ☐ NO

Is the HEAG satisfied that this project fits within the approved program? (If not, please ensure that either an amendment to the Program is submitted to the HESC or the researchers submit a separate Form 1 Project application) ☐ YES ☐ NO

Are there any minor differences between the Project and Program applications? ☐ YES ☐ NO

If yes:
- have these been addressed in the Project application? ☐ YES ☐ NO
- do any of these differences need HESC approval? ☐ YES ☐ NO

Have the following documents been attachments if applicable:

- evidence of external approvals ☐ YES ☐ NO ☐ N/A
- recruitment advertisement ☐ YES ☐ NO ☐ N/A
- questionnaire ☐ YES ☐ NO ☐ N/A
- list of interview questions ☐ YES ☐ NO ☐ N/A
- debriefing statement ☐ YES ☐ NO ☐ N/A
- plain language statement ☐ YES ☐ NO ☐ N/A
- consent form ☐ YES ☐ NO ☐ N/A

COMMENTS FOR INFORMATION/ACTION OF HESC:

The HEAG has reviewed this project and considers the methodological/technical and ethical aspects of the proposal to be appropriate to the tasks proposed and recommends approval of the project. The HEAG considers that the researcher(s) has/have the necessary qualifications, experience and facilities to conduct the research set out in the attached application, and to deal with any emergencies and contingencies that may arise. [Note: If the HEAG Chair is also a principal researcher for this project, the declaration should be signed by another authorised member of the HEAG]

Comments/Provisos:

Name of HEAG Chair (in BLOCK LETTERS) \( \text{LEO} \) 
Signature \( \text{[signature]} \)
Date 7/2/12

6. DECLARATION BY HEAD OF DEPARTMENT

DATE APPLICATION RECEIVED: 19-JAN-12

☑ TECHNICAL REVIEW COMPLETED
☑ ETHICAL REVIEW COMPLETED

I have reviewed this project and consider the methodological, technical and ethical aspects of the proposal to be appropriate to the tasks proposed and recommend approval of the project. I consider that the researcher(s) has/have the necessary qualifications, experience and facilities to conduct the research set out in the attached application, and to deal with any emergencies and contingencies that may arise. [If the Head of Department is also a principal researcher for this project, the declaration should be signed by another authorised member of the Department]

This project has the approval and support of this Department/School/Centre.

Name of Head (in BLOCK LETTERS) \( \text{JULIE MCLAREN} \)
Signature \( \text{[signature]} \)
Date 9-2-2012

11. WHEN COMPLETE

When this form has been completed and finalised it should be attached to the coversheet section of the application completed in Themis Research and then submitted to the nominated Human Ethics Advisory Group for review.

Project:within-Program application form (9/08)
It is not expected that any one teacher would be invited to participate in all of the above.

Your decision regarding your school’s participation in the research will not in any way affect your employment opportunities or those of teachers at your school, or the educational experiences of your students. Your participation and the participation of your teachers will only be used to help improve teachers’ ability to use student assessment data and to work collaboratively in teams to improve learning outcomes for all students.

**How will confidentiality be protected?**

Participation in this study is completely voluntary, and anonymity and confidentiality of student assessment data, team logs of teaching decisions, observations, interviews, focus groups and questionnaire responses will be ensured to the fullest possible extent. Confidentiality of all data will be preserved through a protocol in which names are replaced by codes. Those subsequently handling the data will do so using only codes. Schools and participants will not be named in any report arising from this research. The information we obtain will be included in reports of the study at a summary level only. Should you wish to withdraw yourself or your school from the study at any time, or to withdraw unprocessed information that has been collected, you are free to do so. All information will be treated in the strictest confidence subject to any legal limitations. It will be stored in secure files at the University of Melbourne under the University’s guidelines for the management of research data and records, and destroyed five years after publication of findings.

**How will you receive feedback?**

On completion of the research, a summary of findings will be made available to you. It is expected that the results will be presented at workshops for teachers and academic conferences.

This project has the clearance of The University of Melbourne’s Human Research Ethics Committee (HREC project number: 1136675.1). Should you have any concerns about the conduct of the research, contact the Executive Officer, Human Research Ethics, the University of Melbourne, on 8344 2073 (phone) or 9347 6739 (fax).

If you have any further questions about the project, please do not hesitate to contact the chief investigators of the study.

Yours sincerely,

---

Professor Patrick Griffin  
Director  
Assessment Research Centre  
Melbourne Graduate School of Education  
The University of Melbourne  
p.griffin@unimelb.edu.au  
Ph: 8344 2898

Associate Professor Esther Care  
Deputy Director  
Assessment Research Centre  
Melbourne Graduate School of Education  
The University of Melbourne  
e.care@unimelb.edu.au  
Ph: 8344 0975

---

HREC: Project No 1136675.1; Date: 6/02/12; Version: CEOM Teacher
The Influence of Evidence-Based Decisions by Collaborative Teacher Teams on Student Reading Comprehension, Numeracy and Problem Solving Achievement in Department of Education and Early Childhood Development Schools, Victoria

We invite you to participate in a research project, which is being conducted under the leadership of Professor Patrick Griffin and Associate Professor Esther Care of the Melbourne Graduate School of Education at the University of Melbourne. The research is a joint project of the University of Melbourne and the Department of Education and Early Childhood Development, Victoria.

What are the aims of the study?

This study investigates how teachers’ collaborative use of data to plan teaching interventions within a developmental framework affects student achievement in reading comprehension, numeracy and problem solving. Relationships between a range of teacher, professional learning team (PLT), school and student variables on student achievement in the area of reading comprehension, numeracy and problem solving are addressed in this research.

What will you be asked to do?

In this phase of the project, you will be asked to complete online questionnaires relating to teacher beliefs and attitudes, knowledge and practice as well as PLT meetings at intervals throughout 2012 -2014. No student, teacher, PLT or school will be identified as part of this research. No questionnaire will take more than 15 minutes to complete and in total, no more than 2 hours will be required staggered across a year. These data will be linked to school data and student assessment data across the duration of the research.

Your decision regarding your participation in the research will not in any way affect your employment opportunities, or the educational experiences of your students. Your participation will only be used to help improve teachers’ ability to use student assessment data and to work collaboratively in teams to improve learning outcomes for all students.

How will confidentiality be protected?

Participation in this study is completely voluntary, and anonymity and confidentiality of student assessment data, team logs of teaching decisions, observations, interviews, focus groups and questionnaire responses will be ensured to the fullest possible extent. Confidentiality of all data will be preserved through a protocol in which names are replaced by codes. Those subsequently handling the data will do so using only codes. Schools and participants will not be named in any report arising from this research. The information we obtain will be included in reports of the study at a summary level only. Should you wish to withdraw from the study at any time, or to withdraw unprocessed information that has been collected, you are free to do so. All information will be treated in the strictest confidence subject to any legal limitations. It will be stored in secure files at the University of Melbourne under the University’s guidelines for the management of research data and records, and destroyed five years after publication of findings.

HREC: Project No: I130702.1; Date: 6/02/12; Version: CEOM Teacher

Melbourne Graduate School of Education
The University of Melbourne Victoria 3010 Australia
T: +61 3 8344 8285  F: +61 3 8344 8529  W: www.edfac.unimelb.edu.au
The Influence of Evidence-Based Decisions by Collaborative Teacher Teams on Student Reading Comprehension, Numeracy and Problem Solving Achievement in Department of Education and Early Childhood Development Schools, Victoria

Name of School Teacher: .................................................................

School name: .............................................................................

School number: .................................................................

Name of Investigators: Professor Patrick Griffin and Associate Professor Esther Care

1. I consent to my participation in the above research study, the particulars of which – including details of procedures – have been explained to me in the Plain Language Statement and I have been given a copy of that explanation to keep.

2. I authorize the investigators in the above study to implement the procedures referred to under (1) above.

3. I acknowledge that:
   (a) the possible uses of the information arising from the study have been explained to me to my satisfaction;
   (b) I have been informed that my participation in this research is voluntary, and that I am free to withdraw from the study at any time and to withdraw any unprocessed information that has been supplied;
   (c) the study is for the purpose of research and development only;
   (d) once signed and returned, a copy of this consent form will be retained by the principal researcher; and
   (e) I have been informed that the confidentiality of the information provided by myself will be safeguarded, subject to any legal requirements (subpoena, freedom of information, mandated reporting), and in the following ways:

   • no names or personal details of individual participants or schools will be revealed in any report of the study, and any contextual details that might reveal their identity will be removed;

   • data will be stored in secure files at the University of Melbourne under the University’s guidelines for the management of research data and records, and destroyed five years after publication of findings.

Principal’s Signature: .............................................................................

Date: .............................................................................

HREC: Project No 1136675.1; Date: 6/02/12; Version: DEECDTeacher

Melbourne Graduate School of Education
The University of Melbourne Victoria 3010 Australia
T: +61 3 8344 8285  F: +61 3 8344 8529  W: www.edfac.unimelb.edu.au
My PLT interprets inconsistencies in student assessment data. *
- My PLT does not interpret student assessment data.
- My PLT tries to understand why there are inconsistencies in student assessment data.
- My PLT interprets inconsistencies in student assessment data.
- My PLT uses our interpretation of inconsistencies in student assessment data to make adjustments in assessment and/or teaching practices.

My PLT summarises evidence of student learning. *
- My PLT does not summarise evidence of student learning.
- My PLT summarises evidence of student learning against curriculum expectations.
- My PLT summarises evidence of student learning by identifying what the students are ready to learn.

My PLT sets learning goals for students. *
- Learning goals are based on the student’s year level curriculum.
- Learning goals are related to the curriculum and classroom behaviour of the student.
- Learning goals build on areas where students have shown they are proficient.
- Evidence of the zone of proximal development is used to identify readiness to learn.

My PLT determines the effectiveness of teaching strategies and resources. *
- My PLT assumes the effectiveness of teaching strategies and resources.
- My PLT uses teacher opinion to justify the effectiveness of teaching strategies and resources.
- My PLT reviews PLT records and progress data from students to determine the effectiveness of teaching strategies and resources.
- My PLT conducts action research to determine the effectiveness of teaching strategies and resources.

My PLT selects teaching strategies and resources to meet learning goals. *
- My PLT selects teaching strategies and resources based on our familiarity with them.
- My PLT selects teaching strategies and resources based on our perceptions of their ability to help students meet learning goals.
- My PLT selects teaching strategies and resources based on evidence of their ability to help students to meet learning goals.
- My PLT selects teaching strategies and resources based on evidence of their ability to meet learning goals for students with similar characteristics.

My PLT determines the effectiveness of assessment practices. *
- My PLT assumes the effectiveness of assessment practices.
- My PLT uses past and current practices of the PLT to determine the effectiveness of assessment practices.
- My PLT incorporates information about best practice from external sources to determine the effectiveness of assessment practices.

My PLT determines professional development priorities for members in the area of teaching practice. *
- My PLT uses available PD to help develop members’ teaching practices.
- My PLT determines teaching practices for development based on perceptions of need.
- My PLT determines teaching practices for development based on evidence of student learning needs.
Tension in the PLT is managed by remaining focused on the team’s goals.
Tension in the PLT is managed by focusing on the team’s goals while maintaining positive relationships.

My PLT resolves disagreements.
- When there is a disagreement, we do not reach a consensus view.
- When there is a disagreement, one or two members’ views usually prevail.
- Disagreement is tolerated and evidence sought to support each view.

My PLT monitors whether team members carry out the agreed tasks.
- My PLT assumes team members are carrying out the agreed tasks.
- My PLT checks with members whether they are carrying out their tasks.

My PLT leader’s tasks are known to members.
- I don’t know what the PLT leader’s tasks are.
- I know what the PLT leader’s tasks are.
- I know if the PLT leader’s tasks have been carried out.

My PLT leader keeps the PLT focused on the tasks necessary to achieve our goals.
- My PLT leader’s role is no different to that of any other team member.
- My PLT leader facilitates the team’s tasks.
- My PLT leader keeps the PLT focused on tasks.

My PLT leader supports team members to achieve the team goals.
- My PLT leader does not support other team members to achieve team goals.
- My PLT leader supports members to achieve team goals when asked.
- My PLT leader is proactive in supporting team members to achieve goals.

My PLT uses links with people or organisations outside the PLT.
- My PLT does not use links with people or organisations outside the PLT.
- My PLT shares information with people or organisations outside the PLT.
- My PLT uses people or organisations outside the PLT to build its resources.

My PLT actively promotes itself to others.
- My PLT does not have the opportunity to showcase the work we do.
- My PLT takes opportunities to showcase our work when they arise.
- My PLT shares aspects of our work with stakeholders.
- My PLT promotes evidence of student learning to stakeholders.

My PLT works to ensure it is sustainable in the long term.
- My PLT does not have any long term plans.
- My PLT makes plans to ensure the team is successful.
- My PLT works with school leadership to ensure succession and longevity.

If you would like to provide any comments regarding the questions in this section or include any additional information, please enter them in the text box below:

Your experience in the PLT
This section contains questions about your experience being part of the PLT.
I offer to help other team members. *
  - I do not offer to help other team members.
  - I offer to help other team members.
  - It is my responsibility to help any team member to ensure team tasks are carried out well.

I receive help from other team members. *
  - Team members do not offer to help me.
  - In some circumstances I reject offers of help from team members, even though I need it.
  - I accept help from other team members when needed.
  - I seek and accept help from other team members when needed.

I contribute to team goals. *
  - I carry out actions which contribute to my PLT’s goals when I can.
  - I prioritise actions that contribute to my PLT’s goals.

I can rely on other members of my PLT to accomplish the team’s goals. *
  - I cannot rely on everyone in the team to accomplish team goals.
  - I can rely on other members of my PLT to accomplish the team’s goals.

My work in the PLT affects the outcomes of my students. *
  - My work in the PLT does not help improve outcomes for my students.
  - My work in the PLT improves the outcomes for my students.
  - My work in the PLT improves outcomes for the students of all PLT members.

If you would like to provide any comments regarding the questions in this section or include any additional information, please enter them in the text box below:

Display text only

This is the end of the questionnaire. Click Finished to submit your responses and exit the questionnaire.
As Regional Director of the Northern Metropolitan region in the Victorian Department of Education and Early Childhood Development (DEECD) I have read and understood the requirements in the Conditions of Grant with regard to industry partners.

Yours sincerely

Wayne Craig  
Regional Director  
Northern Metropolitan Region  
7/11/2008
I certify that no part of the cash contribution is drawn from funds previously appropriated from government sources for the purposes of research, evaluation and/or consultancy activity.

I have read and understood the requirements in the standard Linkage Projects Funding Agreement about Partner Organisation written agreements, including the requirement to enter into arrangements regarding intellectual property. We look forward to this exiting opportunity.

Yours sincerely

BOB STEPHENS
Assistant Regional Director
Southern Metropolitan Region

PETER GREENWELL
Regional Director
Southern Metropolitan Region
I certify that no part of the cash contribution is drawn from funds previously appropriated from government sources for the purposes of research, evaluation and/or consultancy activity.

I have read and understood the requirements in the standard Linkage Projects Funding Agreement about Partner Organisation written agreements, including the requirement to enter into arrangements regarding intellectual property. We look forward to this exiting opportunity.

Yours sincerely

[Signature]

KAREN CAIN
Assistant Regional Director
School Improvement
11 February 2012

Prof. Patrick Griffin
Assessment Research Centre
Melbourne Graduate School of Education
The University of Melbourne

Dear Prof. Griffin

I am pleased to advise that the Melbourne Graduate School of Education Human Ethics Advisory Group (MGSE HEAG) has approved the following Project-within-Program application:

**Project-within-Program**

**Project title:** The influence on student achievement in reading comprehension, numeracy and problem solving of evidence-based decisions by collaborative teacher teams in Victorian independent schools.

**Researchers:** Patrick Griffin, Alejandra Arratia-Martinez, Masa Pavlovic, Zuraimi Zakaria, Judith Crigan, Esther Care and Pamela Robertson.

**Ethics ID:** 1137200

**MGSE HEAG ID:** 17/12

**Related Program**

**Project title:** The influence on student achievement of evidence-based decisions by collaborative teacher teams.

**Ethics ID:** 0830929

The project has been approved for the period: 11 February 2012 to 31 December 2012.

It is your responsibility to ensure that all people associated with the Project-within-Program are made aware of what has actually been approved.

A Project-within-Program is normally approved to 31 December of the year of approval and may be renewed yearly for up to a total of three years upon receipt of a satisfactory annual report. If a Project-within-Program is to continue beyond three years a new application will normally need to be submitted.

Please note that the following conditions apply to your approval. Failure to abide by these conditions may result in suspension or discontinuation of approval and/or disciplinary action.

(a) **Limit of Approval:** Approval is limited strictly to the research as submitted in your Project application.

(b) **Amendments to Project:** Any subsequent variations or modifications you might wish to make to the Project must be notified formally to the Human Ethics Advisory Group for further consideration and approval before the revised Project can commence. If the Human Ethics Advisory Group considers that the proposed amendments are significant, you may be required to submit a new application for approval of the revised Project.

(c) **Incidents or adverse affects:** Researchers must report immediately to the Advisory Group and the relevant Sub-Committee anything which might affect the ethical acceptance of the protocol including adverse effects on participants or unforeseen events that might affect continued ethical acceptability of the Project. Failure to do so may result in suspension or cancellation of approval.

(d) **Monitoring:** All projects are subject to monitoring at any time by the Human Research Ethics Committee.

(e) **Annual Report:** Please be aware that the Human Research Ethics Committee requires that researchers submit an annual report on each of their projects at the end of the year, or at the conclusion of a project if it continues for less than this time. Failure to submit an annual report will mean that ethics approval will lapse.

(f) **Auditing:** All projects may be subject to audit by members of the Sub-Committee.

Please quote the ethics registration number and the name of the Project in any future correspondence.

On behalf of the Ethics Committee I wish you well in your research.

Yours sincerely,

Associate Professor Leo Goethebuere
Chairperson, Melbourne Graduate School of Education Human Ethics Advisory Group
Phone: 83440619, Email: leo.g@unimelb.edu.au

cc: Alejandra Arratia-Martinez, Masa Pavlovic, Zuraimi Zakaria, Judith Crigan, Esther Care, Pamela Robertson and Human Research Ethics Committee, Melbourne Research Office.

Melbourne Education Research Institute (MERI)
Melbourne Graduate School of Education | The University of Melbourne
Level 9 | 100 Leicester Street | Carlton Victoria 3053 | Australia
THE UNIVERSITY OF MELBOURNE
HUMAN RESEARCH ETHICS COMMITTEE

APPLICATION FOR APPROVAL OF RESEARCH INVOLVING HUMAN PARTICIPANTS

A. ADMINISTRATION DETAILS

APPLICATION TYPE: Project within Program
ETHICS ID: 1137200
PROGRAM ID: 0830929
RESPONSIBLE HEAG: Melbourne Graduate School of Education
HESC: Humanities and Applied Sciences
ADMINISTERING DEPARTMENT: 460 - Melbourne Graduate School Of Education
ADMINISTERING CENTRE: Assessment Research Centre

B. DETAILS OF RELATED PROGRAM

Title: The influence on student achievement of evidence-based decisions by collaborative teacher teams
Program Category:
Degrees for which research may be undertaken:
Program Involves: Locations other than in addition to Uni of Melbourne Approvals (non-ethics) needed from external orgs Funded Research (internal or external funding) Likely participants of social group with special needs
Description: This study will examine teachers' collaborative use of assessment data to inform teaching of foundational learning domains, encompassing literacy, numeracy, communication, social processes, emotional self-management, and interpersonal skills such as attention, memory and task organization. It will investigate the implications of shifting from a deficit or remedial model of teaching to a developmental approach to improving student outcomes. Based on the seminal work of Lev Vygotsky (1974), a developmental approach focuses on students' readiness to learn and individual differences in their capacity to respond to scaffolding of their learning. The study will work with teams of teachers in special education and mainstream schools to link targeted and differentiated instruction to evidence of student readiness to learn.
Overview of anticipated staff/student involvement: Projects within this Program of research will involve contributions from senior researchers from the Graduate School of Education who will supervise the work of staff members and graduate students.
Proposed Duration of Program: From: APR-2009 To: DEC-2012

C. PROJECT DETAILS

Title: The influence on student achievement in reading comprehension, numeracy and problem solving of evidence-based decisions by collaborative teacher teams in Victorian independent schools.
Project Type: Supervised Student Research Project - PhD Staff Research Project Supervised Student Research Project - Doctorate
Research Involves: Approvals (non-ethics) needed from external orgs Locations other than in addition to Uni of Melbourne
Description: The project examines the influence of teachers' collaborative, evidence-based decision making on student achievement in reading comprehension, numeracy and problem solving. Measures of school, team and teacher factors will be administered as online questionnaires and linked to student achievement data collected in schools. Data will be collected biannually over a period of three years. All data will be managed with codes and no individual or school will be identified through the research.
Proposed Duration of whole Research Project: From: FEB-2012 To: DEC-2014
### D. PERSON DETAILS

<table>
<thead>
<tr>
<th>Role</th>
<th>Full Name</th>
<th>Person Type</th>
<th>Department Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsible</td>
<td>Griffin, Prof Patrick</td>
<td>Staff</td>
<td>460 - Melbourne Graduate School Of Education</td>
</tr>
<tr>
<td>Researcher</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Centre Name:** Assessment Research Centre  
**Phone Number:** 8344 2895  
**Email Address:** p.griffin@unimelb.edu.au  
**Qualifications:**  
- Bachelors Degree, University of Melbourne  
- Masters (Coursework), University of Melbourne  
- Other (Qualification), University of Melbourne  
- PhD, Florida State University  
**Experience and Skills Relevant to Project:**  
From the mid 1980s, Professor Griffin has been developing criterion referenced frameworks for assessment. His work led to the development of the national profiles and curriculum frameworks and a new direction for Australian school education. These profiles were modeled on his work in developing the Victorian Literacy and Numeracy Profiles for which he was awarded the John Smyth medal for education research. Professor Griffin’s recent work has included developing techniques for teachers to adopt the logic of item response modelling. This process has been adopted by Professor Griffin internationally, in Hong Kong in basic competency assessment and evaluation of students' second language acquisition, in Vietnam in the assessment of primary teachers' competencies, and locally in the development of learning pathways for students with additional needs. He has established procedures for teams of teachers in special education and mainstream schools to collaborate in the use of developmental frameworks to inform their teaching of foundational learning domains.  
**Additional Training Required:** N/A  
**Ethics Training already undertaken:** Professor Griffin has participated at Graduate School level in the review of ethics applications.  
**Student Supervisor (if applicable):**

<table>
<thead>
<tr>
<th>Student Researcher</th>
<th>Arratia Martinez, Alejandra</th>
<th>Student</th>
<th>460 - Melbourne Graduate School Of Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centre Name:</td>
<td>Assessment Research Centre</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phone Number:</td>
<td>03 98417927</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Email Address:</td>
<td><a href="mailto:a.arratiamartinez@student.unimelb.edu.au">a.arratiamartinez@student.unimelb.edu.au</a></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Qualifications:**  
**Experience and Skills Relevant to Project:** Ms Arratia Martinez is an educational psychologist and has worked with teachers for 16 years in the areas of curriculum development and teacher training.  
**Additional Training Required:** N/A  
**Ethics Training already undertaken:** Ms Arratia Martinez has read the National Statement on Ethical Conduct in Research Involving Humans.  
**Student Supervisor (if applicable):** Prof Patrick Griffin, Assoc Prof Esther Care  

<table>
<thead>
<tr>
<th>Student Researcher</th>
<th>Pavlovic, Masa</th>
<th>Student</th>
<th>460 - Melbourne Graduate School Of Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centre Name:</td>
<td>Assessment Research Centre</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phone Number:</td>
<td>93292210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Email Address:</td>
<td><a href="mailto:m.pavlovic@student.unimelb.edu.au">m.pavlovic@student.unimelb.edu.au</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Role</td>
<td>Full Name</td>
<td>Person Type</td>
<td>Department Name</td>
</tr>
<tr>
<td>---------------------</td>
<td>------------------</td>
<td>-------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>460 - Melbourne Graduate School Of Education</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Role</th>
<th>Full Name</th>
<th>Person Type</th>
<th>Department Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Researcher</td>
<td>Zakaria, Zuraimi</td>
<td>Student</td>
<td>Assessments Research Centre</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>93637689</td>
</tr>
<tr>
<td>Centre Name:</td>
<td></td>
<td></td>
<td><a href="mailto:z.zakaria@student.unimelb.edu.au">z.zakaria@student.unimelb.edu.au</a></td>
</tr>
<tr>
<td>Phone Number:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Email Address:</td>
<td></td>
<td></td>
<td>460 - Melbourne Graduate School Of Education</td>
</tr>
<tr>
<td>Qualifications:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience and Skills Relevant to Project:</td>
<td>Ms Zakaria has four years of teaching experience in teacher education, has conducted several courses on classroom assessments for school teachers, and has experience in item writing and instrument development.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional Training Required:</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethics Training already undertaken:</td>
<td>Ms Zakaria has read the National Statement on Ethical Conduct in Research involving Humans.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Supervisor (if applicable):</td>
<td>Prof Patrick Griffin, Assoc Prof Esther Care</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Role</th>
<th>Full Name</th>
<th>Person Type</th>
<th>Department Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Researcher</td>
<td>Crigan, Judith</td>
<td>Student</td>
<td>Assessments Research Centre</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>03 9886 0770</td>
</tr>
<tr>
<td>Centre Name:</td>
<td></td>
<td></td>
<td><a href="mailto:j.cigan@student.unimelb.edu.au">j.cigan@student.unimelb.edu.au</a></td>
</tr>
<tr>
<td>Phone Number:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Email Address:</td>
<td></td>
<td></td>
<td>460 - Melbourne Graduate School Of Education</td>
</tr>
<tr>
<td>Qualifications:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience and Skills Relevant to Project:</td>
<td>Ms Crigan has an honours degree in psychology and has experience in project management.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional Training Required:</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethics Training already undertaken:</td>
<td>Ms Crigan has read the National Statement on Ethical Conduct in Research involving Humans.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Supervisor (if applicable):</td>
<td>Assoc Prof Esther Care, Prof Patrick Griffin</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Role</th>
<th>Full Name</th>
<th>Person Type</th>
<th>Department Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co researcher</td>
<td>Care, AProf Esther</td>
<td>Staff</td>
<td>Assessments Research Centre</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>03 9344 0975</td>
</tr>
<tr>
<td>Centre Name:</td>
<td></td>
<td></td>
<td><a href="mailto:e.care@unimelb.edu.au">e.care@unimelb.edu.au</a></td>
</tr>
<tr>
<td>Phone Number:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Email Address:</td>
<td></td>
<td></td>
<td>460 - Melbourne Graduate School Of Education</td>
</tr>
<tr>
<td>Qualifications:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience and Skills Relevant to Project:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional Training Required:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethics Training already undertaken:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Supervisor (if applicable):</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Role | Full Name | Person Type | Department Name
--- | --- | --- | ---
Qualifications: | Bachelor's Degree, University of Melbourne  Graduate Certificate, University of Melbourne  Graduate Diploma, Caulfield Institute of Technology  Graduate Diploma, University of Melbourne  PhD, University of Melbourne | | |
Experience and Skills Relevant to Project: | Assoc Professor Care has extensive experience in liaising with schools for the purpose of assessment and intervention projects, and supervision of staff and students researching in schools. Assoc Professor Care has worked both as a teacher and educational psychologist in primary and secondary school settings. | | |
Additional Training Required: | N/A | | |
Ethics Training already undertaken: | Assoc Professor Care has participated in several NHMRC workshops over the past five years on ethics compliance, and has served on Faculty, HESC and HREC levels on the review of ethics applications. She is currently a member of the HREC. | | |
Student Supervisor (if applicable): | | | |

#### Co-researcher: Robertson, Ms Pamela

| Centre Name: | Assessment Research Centre |
| Phone Number: | 93449537 |
| Email Address: | p.robertson@unimelb.edu.au |
| Qualifications: | Bachelor's Degree, University of Melbourne  Post Graduate Diploma, University of Melbourne |
| Experience and Skills Relevant to Project: | Ms Robertson has been a teacher in Victorian schools for 17 years. She has been involved in the delivery of professional development for teachers involved in the broader program of research. |
| Additional Training Required: | N/A |
| Ethics Training already undertaken: | As part of her role in this program of research, Ms Robertson has read the National Statement on Ethical Conduct in Research Involving Humans. |
| Student Supervisor (if applicable): | | |

### ADDITIONAL QUESTIONS

a) Sponsored Projects
   - Source of Funding
   - External Sponsors Identified
   - Sponsors
   - Participant to be Informed

b) Clinical Trials
   - Registered in public trials registry?
   - Registry Name
   - Registry Number
   - Date of Registration
   - Project name recorded in registry
   - Name of researcher in whose name the project is registered

c) Drug Trials
Type of trial
Phase (if applicable)

d) Research Involving Aboriginal and Torres Strait Islanders
   Reference group appointed?
   Details/Explanation
   Type of approval

  e) Location of Research

   Where research to be carried out
   Category of external location
   External sites within Australia
   University of Melbourne
   Schools

  f) Other Approvals Required (other than ethics clearances)

   Approvals required?
   Yet to be determined

   Approvals required from:

<table>
<thead>
<tr>
<th>Approval Required From</th>
<th>Approval Status</th>
<th>Date approval granted</th>
<th>Special Conditions</th>
<th>Comments</th>
</tr>
</thead>
</table>

Comments

  g) Other Ethics Clearances/Details of Multicentre Research

   Other clearances required?
   Not required

   Clearances required from:

<table>
<thead>
<tr>
<th>HREC</th>
<th>Sites covered</th>
<th>Clearance Status</th>
<th>Date clearance granted</th>
<th>Period of approval from</th>
<th>Period of approval to</th>
<th>Special Conditions</th>
<th>Comments</th>
</tr>
</thead>
</table>

Responsible HREC

Comments

F. ATTACHMENTS

PLEASE ENSURE YOU ATTACH A PAPER COPY OF EACH OF THE FOLLOWING ATTACHMENTS:

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Attached Via Themis</th>
<th>Hard Copy Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>Project within Program Application - MGSE HEAG No.: 17/12</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Consent Form</td>
<td>Updated principal PLS and consent</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Plain Language Statement</td>
<td>Updated teacher PLS and consent</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Questionnaire/Survey</td>
<td>Draft sample of online questionnaire - MGSE HEAG No.: 17/12</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>
PROJECT WITHIN PROGRAM APPLICATION

PROGRAM REFERENCE DETAILS

Enter the Ethics ID number assigned by Themis Research to this ethics application.

1137200.1

Enter the title of the Program as recorded in Themis Research

The influence on student achievement in reading comprehension, numeracy and problem solving of evidence-based decisions by collaborative teacher teams in Victorian independent schools.

Enter the name of the Responsible Researcher as recorded in Themis Research

Prof. Patrick Griffin

1. PROJECT DETAILS

1.1 EXECUTIVE SUMMARY IN PLAIN ENGLISH: Provide a brief outline of the project in everyday language. Include a description of how the Project relates to the approved Program, along with a summary of the proposed methodology, an explanation of what participants will be required to do specifically in this project and a description of any procedure which is beyond already established and accepted techniques. Please provide a description of the participant population, including anticipated number and age-range, along with information as to how participants are to be recruited. If the Project does not require use of a plain language statement or consent form, please provide additional details about how the informed consent of participants will be obtained and documented. [No more than 500 words]

This project is designed to identify how teachers’ knowledge of how to use student data can improve student outcomes. Participants are teachers from 3 independent schools involved in the overarching program of research (Ethics ID 0830929). The project will systematically examine teachers’ collaborative use of assessment data to inform teaching in reading comprehension, numeracy and problem solving over the next three years.

Teachers will be recruited for inclusion in this research from those schools that have participated in, are currently participating in, or have requested future participation in the project. Principals will be emailed regarding the purpose of the research and procedures. Following consent for the school to participate, teachers will be invited to take part in the research. The teachers will have roles within the school as Professional Learning Team (PLT) Leaders or as Professional Learning Team Members.

Permission is sought from principals to involve the school in the research in the following ways:
- To collect data about the school’s leadership, resourcing and support of professional learning teams.
- To collect data regarding the school demographics
- To use de-identified student background data routinely collected by schools and student assessment data collected by teachers as part of their participation in this project
- To approach teachers from the school who are members of professional learning teams seeking their participation in the collection of data relating to teacher beliefs and attitudes, knowledge and practice as well as data relating to professional learning team meetings and leadership
- To link student, teacher, professional learning team and school data via de-identified codes to examine the influence of evidence-based decisions by collaborative teacher teams on student outcomes in reading comprehension, numeracy and problem solving

In this phase of the research, permission is sought from teachers to complete online questionnaires relating to teacher beliefs and attitudes, knowledge and practice as well as PLT meetings at intervals throughout 2012 to 2014.

Results will be reported at an aggregate level, and no student, teacher or school will be identified.
The following table outlines the approximate number of teachers involved in each part of the project and the maximum time commitment required annually.

<table>
<thead>
<tr>
<th></th>
<th>Online questionnaires</th>
<th>Classroom observations</th>
<th>Interviews</th>
<th>PLT observations</th>
<th>Online submission of PLT logs</th>
<th>Focus group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approximate Number of teachers</td>
<td>10</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Time commitment</td>
<td>Up to 2 hours</td>
<td>0 hours (being observed for Up to 6 hours)</td>
<td>Approx. 1 hour</td>
<td>0 hours (being observed for Up to 3 hours)</td>
<td>Up to 1 hour</td>
<td>Approx. 2 hours</td>
</tr>
</tbody>
</table>

1.2 **ALIGNMENT WITH APPROVED PROGRAM OF RESEARCH:** Please confirm that the Project shares the following elements in common with the approved Program:

- a) theoretical structure
- b) as per the identified category indicated on the Approved Program
  - EITHER an integrated research question
  - OR cohesive methodological approach
- c) researchers (at least one of the principal researchers nominated in the Program must be associated with the Project-within-Program application)
- d) participant population
- e) methodology
- f) risk/inconvenience to participants
- g) risks to researchers
- h) arrangements to document informed consent
- i) arrangements to preserve confidentiality

[If you have responded “no” to any of the above elements please discuss this issue with the HEAG. If a Project-within-Program Application differs substantively from the approved Program in any of the above areas it will be necessary to either submit an application for an amendment to the Program or treat the application as an individual Project (unrelated to the Program) and, instead, complete a Standard Project application for consideration by the relevant HESC]
2. PLAIN LANGUAGE STATEMENT (IF APPLICABLE)

CONFIRM THAT THE PLAIN LANGUAGE STATEMENT WILL:

1. be printed on University of Melbourne letterhead
2. include clear identification of the University, the Department(s) involved, the project title, the Principal and Other Researchers (including contact details), and the study level if it is a student research project.
3. provide details of the purpose of the research project
4. provide details of what involvement in the project will require (e.g., involvement in interviews, completion of questionnaire, audio/video-taping of events), and estimated time commitment
5. provide details of any risks involved and the procedures in place to minimise these.
6. advise that the project has received clearance by the HREC
7. (if the sample size is small), confirm that this may have implications for protecting the identity of the participants
8. include a clear statement that if participants are in a dependent relationship with any of the researchers that involvement in the project will not affect ongoing assessment/grades/management or treatment of health (if relevant)
9. state that involvement in the project is voluntary and that participants are free to withdraw consent at any time, and to withdraw any unprocessed data previously supplied
10. provide advice as to arrangements to be made to protect confidentiality of data, including that confidentiality of information provided is subject to legal limitations (see ** below)
11. provide advice as to whether or not data is to be destroyed after a minimum period (if relevant)
12. provide in the footer, the project HREC number, date and version of the PLS
13. provide advice that if participants have any concerns about the conduct of this research project that they can contact the Executive Officer, Human Research Ethics, The University of Melbourne, ph: 8344 2073; fax 9347 6739

[**Re 10 – it is possible for data to be subject to subpoena, freedom of information request or mandated reporting by some professions. Depending on the research proposal you may need to specifically state these limitations]

PLEASE ATTACH A COPY OF THE PLAIN LANGUAGE STATEMENT TO YOUR APPLICATION

3. CONSENT FORM (IF APPLICABLE)

CONFIRM THAT THE CONSENT FORM WILL:

1. be printed on University of Melbourne letterhead
2. include the title of the project and names of researchers
3. state that the project is for research purposes
4. state that involvement in the project is voluntary and that participants are free to withdraw at any time, and free to withdraw any unprocessed identifiable data previously supplied
5. outline particular requirements of participants including, for example, whether interviews are to be audio and/or video-taped
6. include arrangements to protect the confidentiality of data
7. include advice that there are legal limitations to data confidentiality (see below)**
8. (if the sample size is small) confirm that this may have implications for protecting the identity of the participants
9. (once signed and returned) be retained by the researcher

[**Re 7 – it is possible for data to be subject to subpoena, freedom of information request or mandated reporting by some professions. Depending on the research proposal you may need to specifically state and explain these limitations]

PLEASE ATTACH A COPY OF THE CONSENT FORM TO YOUR APPLICATION
The information contained herein is, to the best of our knowledge and belief, accurate.

We have obtained and read a copy of the approved Program on which this project is based and agree to carry out the project in strict accordance with the protocol outlined in that Program. We have the appropriate qualifications, experience and facilities to conduct the research and to deal with any emergencies and contingencies related to the research that may arise.

We, the researcher(s) agree:
- To only start this research project after obtaining final approval from the departmental Human Ethics Advisory Group (HEAG);
- To only carry out this research project where adequate funding is available to enable the project to be carried out according to good research practice and in an ethical manner;
- To provide additional information as requested by the HEAG or HREC;
- To provide progress reports to the HREC as requested, including annual and final reports;
- To maintain the confidentiality of all data collected from or about project participants, and maintain security procedures for the protection of privacy;
- To notify the HEAG in writing immediately if any change to the project is proposed and await approval before proceeding with the proposed change;
- To notify the HREC in writing immediately if any adverse event occurs after approval has been obtained;
- To agree to an audit if requested by the HREC;
- To only use data and any tissue samples collected for the study for which approval has been given;

We have read the National Statement on Ethical Conduct in Human Research and agree to comply with its provisions.

All researchers listed in the application must sign

<table>
<thead>
<tr>
<th>Researchers’ Name (please PRINT)</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof. Patrick Griffin</td>
<td></td>
<td>24/11/11</td>
</tr>
<tr>
<td>A. Prof. Esther Care</td>
<td></td>
<td>24/11/11</td>
</tr>
<tr>
<td>Masa Pavlovic</td>
<td></td>
<td>24/11/11</td>
</tr>
<tr>
<td>Pam Robertson</td>
<td></td>
<td>24/11/11</td>
</tr>
<tr>
<td>Judy Crigan</td>
<td></td>
<td>24/11/11</td>
</tr>
<tr>
<td>Alejandro Arratia Martinez</td>
<td></td>
<td>24/11/11</td>
</tr>
<tr>
<td>Zuraimi Zakaria</td>
<td></td>
<td>24/11/11</td>
</tr>
</tbody>
</table>
5. DECLARATION BY DEPARTMENTAL HUMAN ETHICS ADVISORY GROUP (HEAG)

DATE APPLICATION RECEIVED: 19-JAN-12
HEAG NO: 17/12

☒ TECHNICAL REVIEW COMPLETED
☒ ETHICAL REVIEW COMPLETED

CHECKLIST

Has the HEAG reviewed the related Program Application? ☐ YES ☐ NO
Is the HEAG satisfied that this project fits within the approved program? (If not, please ensure that either an amendment to the Program is submitted to the HESC or the researchers submit a separate Form 1 Project application) ☐ YES ☐ NO
Are there any minor differences between the Project and Program applications? ☐ YES ☐ NO
If yes:
- have these been addressed in the Project application? ☐ YES ☐ NO
- do any of these differences need HESC approval? ☐ YES ☐ NO

Have the following documents been attachments if applicable:

- evidence of external approvals ☐ YES ☐ NO ☐ N/A
- recruitment advertisement ☐ YES ☐ NO ☐ N/A
- questionnaire ☐ YES ☐ NO ☐ N/A
- list of interview questions ☐ YES ☐ NO ☐ N/A
- debriefing statement ☐ YES ☐ NO ☐ N/A
- plain language statement ☐ YES ☐ NO ☐ N/A
- consent form ☐ YES ☐ NO ☐ N/A

COMMENTS FOR INFORMATION/ACTION OF HESC:

The HEAG has reviewed this project and considers the methodological/technical and ethical aspects of the proposal to be appropriate to the tasks proposed and recommends approval of the project. The HEAG considers that the researcher(s) has/have the necessary qualifications, experience and facilities to conduct the research set out in the attached application, and to deal with any emergencies and contingencies that may arise. [Note: If the HEAG Chair is also a principal researcher for this project, the declaration should be signed by another authorised member of the HEAG]

Comments/Provisos:

Name of HEAG Chair (in BLOCK LETTERS)

Signature

Date 7/12/12

6. DECLARATION BY HEAD OF DEPARTMENT

DATE APPLICATION RECEIVED: 19-JAN-12
HEAG NO: 17/12

☒ TECHNICAL REVIEW COMPLETED
☒ ETHICAL REVIEW COMPLETED

I have reviewed this project and consider the methodological, technical and ethical aspects of the proposal to be appropriate to the tasks proposed and recommend approval of the project. I consider that the researcher(s) has/have the necessary qualifications, experience and facilities to conduct the research set out in the attached application, and to deal with any emergencies and contingencies that may arise. [If the Head of Department is also a principal researcher for this project, the declaration should be signed by another authorised member of the Department]

This project has the approval and support of this Department/School/Centre.

Name of Head (In BLOCK LETTERS)

Signature

Date 9.2.2012

11. WHEN COMPLETE

When this form has been completed and finalised it should be attached to the coversheet section of the application completed in Themis Research and then submitted to the nominated Human Ethics Advisory Group for review.

Project-within-Program application form (9/08)
The Influence of Evidence-Based Decisions by Collaborative Teacher Teams on Student Reading Comprehension, Numeracy and Problem Solving Achievement in Independent Schools, Victoria

We invite your school to participate in a research project, which is being conducted under the leadership of Professor Patrick Griffin and Associate Professor Esther Care of the Melbourne Graduate School of Education at the University of Melbourne.

What are the aims of the study?

This study investigates how teachers’ collaborative use of data to plan teaching interventions within a developmental framework affects student achievement in reading comprehension, numeracy and problem solving. Relationships between a range of teacher, professional learning team (PLT), school and student variables on student achievement in the areas of reading comprehension, numeracy and problem solving are addressed in this research.

What will your school be asked to do?

Your permission is sought to allow the researchers to:

- Collect data about your school's leadership, resourcing and support of professional learning teams (PLTs) from you or another member of your school’s leadership team
- Collect data regarding the demographics of your school and its students
- Use de-identified student achievement and background data (e.g. class, year level) routinely collected by the school
- Approach teachers from your school who are members of PLTs inviting them to participate in phases of the research as outlined below
- Link student, teacher, PLT and school data from your school via de-identified codes to examine the influence of evidence-based decisions by collaborative teacher teams on student outcomes in reading comprehension, numeracy and problem solving.

Data will be collected between February 2012 and December 2014. No student, teacher, PLT or school will be identified as part of this research.

All teachers who are part of PLTs within your school will be invited to complete online questionnaires relevant to their role within the PLT at intervals across the research project. No questionnaire will take more than 15 minutes to complete and in total, no more than 2 hours will be required staggered across a year. These data will be linked to school data and student assessment data across the duration of the research.

Selected teachers or PLTs may be invited to take part in additional aspects of the research. This involvement may include:

- Online submission of PLT logs to the research team (up to 1 hour per year)
- Interviews conducted at your school (approximately 1 hour)
- Observations of PLT meetings (up to 3 hours)
- Observations of classroom teaching (up to 6 hours)
- Participation in a focus group held at a central location (approximately 2 hours)
- Completion of additional online questionnaires (up to 1 hour)

HREC: Project No 1137200.1; Date: 6/02/12; Version: CEOM Teacher

Melbourne Graduate School of Education
The University of Melbourne Victoria 3010 Australia
T: +61 3 8344 8285  F: +61 3 8344 8529  W: www.edfac.unimelb.edu.au
It is not expected that any one teacher would be invited to participate in all of the above.

Your decision regarding your school’s participation in the research will not in any way affect your employment opportunities or those of teachers at your school, or the educational experiences of your students. Your participation and the participation of your teachers will only be used to help improve teachers’ ability to use student assessment data and to work collaboratively in teams to improve learning outcomes for all students.

How will confidentiality be protected?

Participation in this study is completely voluntary, and anonymity and confidentiality of student assessment data, team logs of teaching decisions, observations, interviews, focus groups and questionnaire responses will be ensured to the fullest possible extent. Confidentiality of all data will be preserved through a protocol in which names are replaced by codes. Those subsequently handling the data will do so using only codes. Schools and participants will not be named in any report arising from this research. The information we obtain will be included in reports of the study at a summary level only. Should you wish to withdraw yourself or your school from the study at any time, or to withdraw unprocessed information that has been collected, you are free to do so. All information will be treated in the strictest confidence subject to any legal limitations. It will be stored in secure files at the University of Melbourne under the University’s guidelines for the management of research data and records, and destroyed five years after publication of findings.

How will you receive feedback?

On completion of the research, a summary of findings will be made available to you. It is expected that the results will be presented at workshops for teachers and academic conferences.

This project has the clearance of The University of Melbourne’s Human Research Ethics Committee (HREC project number: 1136675.1). Should you have any concerns about the conduct of the research, contact the Executive Officer, Human Research Ethics, the University of Melbourne, on 8344 2073 (phone) or 9347 6739 (fax).

If you have any further questions about the project, please do not hesitate to contact the chief investigators of the study.

Yours sincerely,

[Signature]

Professor Patrick Griffin
Director
Assessment Research Centre
Melbourne Graduate School of Education
The University of Melbourne
p.griffin@unimelb.edu.au
Ph: 8344 2898

[Signature]

Associate Professor Esther Care
Deputy Director
Assessment Research Centre
Melbourne Graduate School of Education
The University of Melbourne
e.care@unimelb.edu.au
Ph: 8344 0975

Melbourne Graduate School of Education
The University of Melbourne Victoria 3010 Australia
T: +61 3 8344 8285  F: +61 3 8344 8529  W: www.edfac.unimelb.edu.au
The Influence of Evidence-Based Decisions by Collaborative Teacher Teams on Student Reading Comprehension, Numeracy and Problem Solving Achievement in Independent Schools, Victoria

Name of School Principal: ............................................................................................................................................

School name: ..............................................................................................................................................................

School number: ........................................

Name of Investigators: Professor Patrick Griffin and Associate Professor Esther Care

1. I consent to the participation of my school in the above research study, the particulars of which – including details of procedures – have been explained to me in the Plain Language Statement and I have been given a copy of that explanation to keep.

2. I authorize the investigators in the above study to implement the procedures referred to under (1) above.

3. I acknowledge that:

(a) the possible uses of the information arising from the study have been explained to me to my satisfaction;

(b) I have been informed that my school’s participation and the participation of my teachers in this research is voluntary, and that I am free to withdraw my school from the study at any time and to withdraw any unprocessed information that has been supplied;

(c) the study is for the purpose of research and development only;

(d) once signed and returned, a copy of this consent form will be retained by the principal researcher; and

(e) I have been informed that the confidentiality of the information provided by myself and teachers at my school will be safeguarded, subject to any legal requirements (subpoena, freedom of information, mandated reporting), and in the following ways:

- no names or personal details of individual participants or schools will be revealed in any report of the study, and any contextual details that might reveal their identity will be removed;

- data will be stored in secure files at the University of Melbourne under the University’s guidelines for the management of research data and records, and destroyed five years after publication of findings.

Principal’s Signature: .......................................................................................................................................................

Date: ..................................................................................................................

HREC: Project No 1136675.1; Date: 6/02/12; Version: INDPT Principal
The Influence of Evidence-Based Decisions by Collaborative Teacher Teams on Student Reading Comprehension, Numeracy and Problem Solving Achievement in Independent Schools, Victoria

We invite you to participate in a research project, which is being conducted under the leadership of Professor Patrick Griffin and Associate Professor Esther Care of the Melbourne Graduate School of Education at the University of Melbourne.

What are the aims of the study?

This study investigates how teachers’ collaborative use of data to plan teaching interventions within a developmental framework affects student achievement in reading comprehension, numeracy and problem solving. Relationships between a range of teacher, professional learning team (PLT), school and student variables on student achievement in the area of reading comprehension, numeracy and problem solving are addressed in this research.

What will you be asked to do?

In this phase of the project, you will be asked to complete online questionnaires relating to teacher beliefs and attitudes, knowledge and practice as well as PLT meetings at intervals throughout 2012 -2014. No student, teacher, PLT or school will be identified as part of this research. No questionnaire will take more than 15 minutes to complete and in total, no more than 2 hours will be required staggered across a year. These data will be linked to school data and student assessment data across the duration of the research.

Your decision regarding your participation in the research will not in any way affect your employment opportunities, or the educational experiences of your students. Your participation will only be used to help improve teachers’ ability to use student assessment data and to work collaboratively in teams to improve learning outcomes for all students.

How will confidentiality be protected?

Participation in this study is completely voluntary, and anonymity and confidentiality of student assessment data, team logs of teaching decisions, observations, interviews, focus groups and questionnaire responses will be ensured to the fullest possible extent. Confidentiality of all data will be preserved through a protocol in which names are replaced by codes. Those subsequently handling the data will do so using only codes. Schools and participants will not be named in any report arising from this research. The information we obtain will be included in reports of the study at a summary level only. Should you wish to withdraw from the study at any time, or to withdraw unprocessed information that has been collected, you are free to do so. All information will be treated in the strictest confidence subject to any legal limitations. It will be stored in secure files at the University of Melbourne under the University’s guidelines for the management of research data and records, and destroyed five years after publication of findings.

HREC: Project No: 1137200.1; Date: 6/02/12; Version: INDPT Teacher

Melbourne Graduate School of Education
The University of Melbourne Victoria 3010 Australia
T: +61 3 8344 8285  F: +61 3 8344 8529  W: www.edfac.unimelb.edu.au
How will you receive feedback?

On completion of the research, a summary of findings will be made available to you. It is expected that the results will be presented at workshops for teachers and academic conferences.

This project has the clearance of The University of Melbourne’s Human Research Ethics Committee (HREC project number: 1136675.1). Should you have any concerns about the conduct of the research, contact the Executive Officer, Human Research Ethics, the University of Melbourne, on 8344 2073 (phone) or 9347 6739 (fax).

If you have any further questions about the project, please do not hesitate to contact the chief investigators of the study:

Yours sincerely

[Signatures]

Professor Patrick Griffin
Director
Assessment Research Centre
Melbourne Graduate School of Education
The University of Melbourne
p.griffin@unimelb.edu.au
Ph: 8344 2898

Associate Professor Esther Care
Deputy Director
Assessment Research Centre
Melbourne Graduate School of Education
The University of Melbourne
e.care@unimelb.edu.au
Ph: 8344 0975
The Influence of Evidence-Based Decisions by Collaborative Teacher Teams on Student Reading Comprehension, Numeracy and Problem Solving Achievement in Independent Schools, Victoria

Name of School Teacher: ......................................................................................................................................................

School name: ..........................................................................................................................................................................

School number: ........................................

Name of Investigators: Professor Patrick Griffin and Associate Professor Esther Care

1. I consent to my participation in the above research study, the particulars of which – including details of procedures – have been explained to me in the Plain Language Statement and I have been given a copy of that explanation to keep.

2. I authorize the investigators in the above study to implement the procedures referred to under (1) above.

3. I acknowledge that:
   (a) the possible uses of the information arising from the study have been explained to me to my satisfaction;
   (b) I have been informed that my participation in this research is voluntary, and that I am free to withdraw from the study at any time and to withdraw any unprocessed information that has been supplied;
   (c) the study is for the purpose of research and development only;
   (d) once signed and returned, a copy of this consent form will be retained by the principal researcher; and
   (e) I have been informed that the confidentiality of the information provided by myself will be safeguarded, subject to any legal requirements (subpoena, freedom of information, mandated reporting), and in the following ways:
      • no names or personal details of individual participants or schools will be revealed in any report of the study, and any contextual details that might reveal their identity will be removed;
      • data will be stored in secure files at the University of Melbourne under the University's guidelines for the management of research data and records, and destroyed five years after publication of findings.

Principal's Signature: ......................................................................................................................................................

Date: ..........................................................
PLT FUNCTIONING QUESTIONNAIRE

Display text only
Dear Participant,

As this questionnaire asks about PLT functioning, you should only complete it if you are currently part of a PLT. If you are part of more than one PLT, please select one of your PLTs to use as the base for your responses. For each statement, please select the one that most accurately describes your PLT.

Your responses are saved as you go so if you're interrupted part-way through the questionnaire, you can simply return to the questionnaire and complete it another time.

If you are part of more than one PLT and would like to complete the questionnaire again using information about another of your PLTs, you may do so once you have finished the previous questionnaire.

Thank you for giving your time to complete this questionnaire.

Yours sincerely,
ALP Research Team

[No Question Text Set]
Melbourne Graduate School of Education
The University of Melbourne Victoria 3010 Australia
T:+61 3 8344 9335 P:+61 3 9340 2753 W: www.pdhr.unimelb.edu.au

PLT Tasks
This section contains questions about the tasks carried out by your PLT.

My PLT uses evidence of student learning. *
○ My PLT does not use evidence of student learning.
○ My PLT uses evidence which is collected for other purposes.
○ My PLT uses evidence which allows student learning needs to be determined.

My PLT identifies skills demonstrated by students. *
○ My PLT does not interpret evidence of student learning.
○ My PLT focuses on student test scores.
○ My PLT identifies student skills from a single source of evidence.
○ My PLT synthesises multiple sources of evidence to identify student skills.

My PLT considers the suitability of the evidence of student learning. *
○ My PLT uses whatever evidence of student learning is available.
○ My PLT considers the suitability of evidence.
○ My PLT justifies the suitability of evidence and identifies additional evidence if required to resolve interpretation difficulties.
My PLT interprets inconsistencies in student assessment data. *
- My PLT does not interpret student assessment data.
- My PLT tries to understand why there are inconsistencies in student assessment data.
- My PLT interprets inconsistencies in student assessment data.
- My PLT uses our interpretation of inconsistencies in student assessment data to make adjustments in assessment and/or teaching practices.

My PLT summarises evidence of student learning. *
- My PLT does not summarise evidence of student learning.
- My PLT summarises evidence of student learning against curriculum expectations.
- My PLT summarises evidence of student learning by identifying what the students are ready to learn.

My PLT sets learning goals for students. *
- Learning goals are based on the student’s year level curriculum.
- Learning goals are related to the curriculum and classroom behaviour of the student.
- Learning goals build on areas where students have shown they are proficient.
- Evidence of the zone of proximal development is used to identify readiness to learn.

My PLT determines the effectiveness of teaching strategies and resources. *
- My PLT assumes the effectiveness of teaching strategies and resources.
- My PLT uses teacher opinion to justify the effectiveness of teaching strategies and resources.
- My PLT reviews PLT records and progress data from students to determine the effectiveness of teaching strategies and resources.
- My PLT conducts action research to determine the effectiveness of teaching strategies and resources.

My PLT selects teaching strategies and resources to meet learning goals. *
- My PLT selects teaching strategies and resources based on our familiarity with them.
- My PLT selects teaching strategies and resources based on our perceptions of their ability to help students meet learning goals.
- My PLT selects teaching strategies and resources based on evidence of their ability to help students to meet learning goals.
- My PLT selects teaching strategies and resources based on evidence of their ability to meet learning goals for students with similar characteristics.

My PLT determines the effectiveness of assessment practices. *
- My PLT assumes the effectiveness of assessment practices.
- My PLT uses past and current practices of the PLT to determine the effectiveness of assessment practices.
- My PLT incorporates information about best practice from external sources to determine the effectiveness of assessment practices.

My PLT determines professional development priorities for members in the area of teaching practice. *
- My PLT uses available PD to help develop members’ teaching practices.
- My PLT determines teaching practices for development based on perceptions of need.
- My PLT determines teaching practices for development based on evidence of student learning needs.
My PLT determines teaching practices for development based on evidence of student learning needs and current teaching practices.

**My PLT determines professional development priorities for members in the area of assessment practice.**
- My PLT assumes assessment practices are adequate and appropriate for teacher needs.
- My PLT determines assessment practices for development based on opinions of types of assessment procedures.
- My PLT determines assessment practices for development based on data needed to inform teaching decisions and current teacher assessment practices.

**My PLT develops the teaching practices of its members.**
- My PLT does not develop the teaching practices of its members.
- My PLT exposes members to relevant and varied teaching practices.
- My PLT assists members to implement relevant teaching practices.
- My PLT facilitates members to develop the skills necessary to implement teaching practices.

**My PLT develops the assessment practices of its members.**
- My PLT does not develop the assessment practices of its members.
- My PLT exposes members to new and relevant assessment practices.
- My PLT assists members to implement new and relevant assessment practices.
- My PLT facilitates members to develop the skills necessary to implement new and relevant assessment practices.

If you would like to provide any comments regarding the questions in this section or include any additional information, please enter them in the text box below:

**PLT Processes**
This section contains questions about the way your PLT works together.

**My PLT values contributions to meetings.**
- The value of contributions to meetings is judged based on who makes the contribution.
- The value of contributions to meetings is judged on the way in which they are delivered.
- The value of contributions to meetings is judged based on supporting evidence of the information.

**My PLT takes the perspectives of others into account in discussions.**
- My PLT does not take all members' perspective into account.
- My PLT considers the perspectives offered at meetings.
- My PLT seeks the perspectives of all members and considers them.

**My PLT discusses difficult issues.**
- We avoid discussing difficult issues in case we give offence.
- We endeavour to ensure our discussions of difficult issues do not cause offence.
- Discussions of difficult issues in our team do not cause offence.

**Tension is managed in the PLT.**
- Tension between members is allowed to develop in the PLT.
- Tension is managed in the PLT by focusing on maintaining interpersonal relationships.
Tension in the PLT is managed by remaining focused on the team’s goals.

My PLT resolves disagreements.
- When there is a disagreement, we do not reach a consensus view.
- When there is a disagreement, one or two members’ views usually prevail.
  Disagreement is tolerated and evidence sought to support each view.

My PLT monitors whether team members carry out the agreed tasks.
- My PLT assumes team members are carrying out the agreed tasks.
- My PLT checks with members whether they are carrying out their tasks.

My PLT leader’s tasks are known to members.
- I don’t know what the PLT leader’s tasks are.
- I know what the PLT leader’s tasks are.
- I know if the PLT leader’s tasks have been carried out.

My PLT leader keeps the PLT focused on the tasks necessary to achieve our goals.
- My PLT leader’s role is no different to that of any other team member.
- My PLT leader facilitates the team’s tasks.
- My PLT leader keeps the PLT focused on tasks.

My PLT leader supports team members to achieve the team goals.
- My PLT leader does not support other team members to achieve team goals.
- My PLT leader supports members to achieve team goals when asked.
- My PLT leader is proactive in supporting team members to achieve goals.

My PLT uses links with people or organisations outside the PLT.
- My PLT does not use links with people or organisations outside the PLT.
- My PLT shares information with people or organisations outside the PLT.
- My PLT uses people or organisations outside the PLT to build its resources.

My PLT actively promotes itself to others.
- My PLT does not have the opportunity to showcase the work we do.
- My PLT takes opportunities to showcase our work when they arise.
- My PLT shares aspects of our work with stakeholders.
- My PLT promotes evidence of student learning to stakeholders.

My PLT works to ensure it is sustainable in the long term.
- My PLT does not have any long term plans.
- My PLT makes plans to ensure the team is successful.
- My PLT works with school leadership to ensure succession and longevity.

If you would like to provide any comments regarding the questions in this section or include any additional information, please enter them in the text box below:

Your experience in the PLT
This section contains questions about your experience being part of the PLT.
I contribute to the work in the PLT meetings to the best of my ability. *
- I do not contribute to PLT meetings.
- I contribute to PLT meetings when asked.
- I contribute to PLT meetings as much as possible.
- I contribute to PLT meetings and encourage others to do so.

I complete team tasks to the best of my ability. *
- I do not complete team tasks.
- I complete the team tasks depending on my priorities.
- I complete all the team tasks to the best of my ability.

I report to the PLT on my implementation of teaching plans. *
- I don't provide information about my implementation of teaching plans.
- I tell the PLT about implementation of the teaching plans.
- I report to the PLT on the effects on student learning of the teaching plans.

I respond to comments from other team members. *
- I respond defensively to feedback from PLT members.
- I accept feedback from PLT members.
- I respond to feedback from PLT members in terms of its usefulness in helping us achieve team goals.

I query the accuracy of statements made by team members. *
- I accept statements made by other team members at face value.
- I ask other PLT members to provide further information to support their statement if it is needed.
- I analyse statements from PLT members considering the supporting information they provide.

I challenge PLT members' views on student learning. *
- I accept views on student learning made by other team members at face value.
- I challenge the views on student learning of some team members.
- I challenge when a team member's judgment of student learning needs further supporting evidence.

I give feedback about PLT tasks to other team members when warranted. *
- I do not give feedback about PLT tasks to other team members even when warranted.
- I give feedback about PLT tasks to team members with whom I feel comfortable when warranted.
- I give feedback about PLT tasks to all PLT members when warranted.

I value feedback from PLT members. *
- The feedback I get from team members is not generally helpful.
- I adjust my teaching and organisation based on feedback from team members.
- Feedback from team members has helped my students get better results.

I ask for feedback from team members. *
- I do not ask for feedback on PLT tasks.
- I only ask for feedback on PLT tasks from members of my team with whom I feel comfortable.
- I ask for feedback on PLT tasks from members whose perspective or expertise would contribute to my understanding.
I offer to help other team members. *
  - I do not offer to help other team members.
  - I offer to help other team members.
  - It is my responsibility to help any team member to ensure team tasks are carried out well.

I receive help from other team members. *
  - Team members do not offer to help me.
  - In some circumstances I reject offers of help from team members, even though I need it.
  - I accept help from other team members when needed.
  - I seek and accept help from other team members when needed.

I contribute to team goals. *
  - I carry out actions which contribute to my PLT's goals when I can.
  - I prioritise actions that contribute to my PLT's goals.

I can rely on other members of my PLT to accomplish the team's goals. *
  - I cannot rely on everyone in the team to accomplish team goals.
  - I can rely on other members of my PLT to accomplish the team's goals.

My work in the PLT affects the outcomes of my students. *
  - My work in the PLT does not help improve outcomes for my students.
  - My work in the PLT improves the outcomes for my students.
  - My work in the PLT improves outcomes for the students of all PLT members.

If you would like to provide any comments regarding the questions in this section or include any additional information, please enter them in the text box below:

Display text only

This is the end of the questionnaire. Click Finished to submit your responses and exit the questionnaire.
Author/s: 
Crigan, Judith Ann

Title: 
A framework for the study of collaborative teams in education

Date: 
2019

Persistent Link: 
http://hdl.handle.net/11343/226881

File Description: 
complete thesis

Terms and Conditions: 
Copyright in works deposited in Minerva Access is retained by the copyright owner. The work may not be altered without permission from the copyright owner. Readers may only download, print and save electronic copies of whole works for their own personal non-commercial use. Any use that exceeds these limits requires permission from the copyright owner. Attribution is essential when quoting or paraphrasing from these works.