

Articulating teacher thinking to build collectively efficacious practice: a longitudinal study

Carmel Patterson 

National School of Education, Faculty of Education and Arts, Australian Catholic University, Strathfield, Australia

ABSTRACT

Individual pedagogical knowledge is tacitly understood by teachers with minimal opportunities to discuss, demonstrate and expand upon teaching and learning practices together. Articulating implicit understanding requires an approach that enables teachers to continually dissect, develop and redesign their pedagogy schoolwide. Developing this collectively efficacious culture is the nub of creating and sharing practice together in context. The longitudinal study of one Australian secondary school questioned: How does articulating teacher thinking build collectively efficacious practice across one school context over time? The study explored how to continually develop the confidence and capability of teachers to adopt and adapt practices to enhance student learning. The teacher professional learning captured data from analysis on observations of learning and two online surveys. The data showed increased adoption over time in the shared use of the pedagogical language, thinking routines and resources. A notable outcome was harnessing individual thinking on learning to improve teacher collective efficacious practice across the school. This paper supports the ongoing articulation of teacher thinking – individually and collectively – in changing practice and offers a pedagogical approach that could be utilised across similar schoolwide contexts.

ARTICLE HISTORY

Received 18 December 2023
Accepted 9 May 2024

KEYWORDS

Teacher pedagogical thinking; collective efficacy; teacher professional learning; schoolwide pedagogy; teacher-led inquiry; longitudinal study

Introduction

Opportunities for teachers to discuss, demonstrate and expand upon teaching and learning practices across a school are not the norm. Intentional strategies are needed to draw out teacher's tacit understanding by articulating and sharing their thinking on practice. A collective efficacy school culture allows teachers to continually dissect, develop and redesign their practice together in context. This ethos can address the disparate tension between individual and collective learning in building a schoolwide pedagogy. Teacher professional learning (TPL) within the complex context of secondary schools requires development of individual teacher confidence and capability through a collective practice (Wallace 2021, Lowell and McNeill 2023). This paper explores how teachers can articulate and share their thinking to collectively, over time, adopt and adapt practices schoolwide.

The longitudinal study presented here advocates an enduring and interwoven perspective. TPL should more credibly frame the articulation of teacher thinking to build collectively efficacious practice across a school. Teacher collective efficacy comprises interrelated experiences. These develop capabilities through mastery, learning vicariously, and sharing purpose in persuasive

CONTACT Carmel Patterson  carmel.patterson@acu.edu.au  National School of Education, Faculty of Education and Arts, Australian Catholic University, 25a Barker Road, Strathfield, NSW 2135, Australia

© 2024 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent.

collaborative efforts (Loughland and Ryan 2022). The required effective social–emotional relationships are thus dependent on individual thinking being heard and understood to contribute to the development of collective practice. This approach for inquiry-based TPL is influential in providing pedagogical connections between reflexive conversations on selected strategies and student progress (Donohoo 2017). It requires building positive interrelationship between teacher efficacy and self-evaluation, whilst integrating theory and practice. Teacher collective efficacy that forefronts the collective predictions and expectations of teachers is identified as having one of the highest positive influences on student learning (Hattie 2017). Furthermore, teacher collective efficacy is fostered when leaders model the developing practice throughout TPL experiences (Friesen and Brown 2020).

TPL is open to variations in the education systems across the state and territory authorities of Australia. TPL as a ‘continuous learning cycle’ (Australian Institute for Teaching and School Leadership 2017) includes a range of job-embedded workplace learning opportunities as well as specifically organised professional development (PD) activities (Hallinger and Kulophas 2020). Nationally, schools may offer opportunities through external professional development (PD) providers or tailor a TPL programme for their context. The Australian Professional Standards for Teachers (Australian Institute for Teaching and School Leadership 2012) provides a framework to customise continuing PD and TPL initiatives for prompting self-reflection and self-assessment. However, as legislated by the state employing the largest number of teachers (NSW Education Standards Authority 2019), professional accountability is often managed through mandatory PD hours and priority areas. Discrete PD activities or individual point-in-time assessment need to convincingly foreground the interrelationship between individual and collective learning. Importantly, individual and collective development are viewed as paired influences in building a culture of professional development (Fullan and Hargreaves 2016). This highlights the need to understand the extent to which a sustained TPL programme supports the development of teaching thinking in changing practice for all teachers collectively across a school.

The study reported in this paper explores an approach to develop and support teacher collective efficacy that can result in schoolwide changes in practice. The Learning Thinking Scope (LTS)© as a pedagogy of learning is focused on thinking (Furney and English 2016) with a methodology of inquiry-based practice for TPL. The LTS aims to improve learning outcomes by making visible the thinking on four pedagogical elements over a sustained timeframe. Elements were identified as: clarity of learning intentions and explicit success criteria, questions, talk or discourse, and feedback. Importantly, thinking time is provided throughout the TPL programme to embed understanding and use of the meta-language and pedagogical model within the learning context (Patterson and O’Brien 2021). The study sought to investigate six years of the LTS as the core TPL programme conducted in one Australian secondary school. The research questioned: How does articulating teacher thinking build collectively efficacious practice across one school context over time?

Review of the literature

Teacher collective efficacy and pedagogical thinking

Articulation of teacher thinking on practice resonates across the research literatures. Various terms are used to denote beliefs, ideas, perspectives, perceptions, reflections, and thoughts. Understanding has expanded from self-reflective practice (Elbaz 1983) to communication of expertise in practice (Lampert and Clark 1990). Articulating teacher thinking and reflection has focused on identifying individual strengths (Korthagen and Vasalos 2005, Kelchtermans 2009) as well as the challenges for individual decision making (Lloyd 2019). Pedagogical thinking is continually reframed throughout the development of professional expertise (Patterson 2019), with links highlighted between individual efficacy and pedagogical analysis (Lee *et al.* 2020). Social and emotional caring within the interpersonal nature of learning can intensify the effort of teachers to think critically about and test

ideas on new strategies for their practice (Agne 1999). Teachers can become overwhelmed when integrating new learning without the necessary trust in collegial and leadership support (Lee *et al.* 2011). Therefore, coping with professional change requires adaptative thinking relevant to the context rather than a procedural uptake of instructional techniques (Dobbs *et al.* 2016).

Research on collective efficacy has provided insights on its use as a measurement construct and in understanding the alignment in teacher thinking throughout their learning. Surveying teacher beliefs provides a valid and reliable measure of collective efficacy by analysing the group competence of teacher capability and the external factors affecting tasks (Goddard 2002). This measure was used to understand changes in teacher collective efficacy for nine schools participating in a sustained TPL programme (Patterson and O'Brien 2023), identifying the alignment as well as disparity in teacher thinking. Another 16-month PD initiative studied teacher thinking as 'sense-making' across two schools (Allen and Penuel 2015). They found that ambiguity and uncertainty was expressed by teachers with differences in the perceived value of the professional development activities that focused on external standards. These longitudinal studies highlighted that coherence across contexts could be undermined due to inadequate time to implement and the degree to which teachers could collectively develop practice.

As a conceptual frame, teacher collective efficacy provides precursive, collaborative aspects for improving teacher professional learning experiences (Loughland and Nguyen 2020). Teachers are able to articulate and develop their thinking in collectively selected strategies based on research and practice (Hattie and Zierer 2018). Meta-analysis across a variety of studies demonstrated the influential effect that teacher collective efficacy has on student achievement (Hattie 2009, Hattie and Anderman 2013). Furthermore, teacher collective efficacy is changed to the extent in which the structures are created for teacher collaboration to improve pedagogical practice and so affect learner outcomes (Goddard *et al.* 2015).

Sustained schoolwide teacher-led inquiry

Schoolwide teacher professional learning requires programmes of sustained TPL and continuing professional development (PD). Longevity enables a focus on the complex dynamics of recognising individual thinking on learning and coherently addressing the practice challenges across collective efforts. Sustained professional learning is needed 'to reach for deeper analytical frames and offer differing methodologies' (Moss 2008). Models of professional growth are characterised as non-linear and multi-dimensional (Clarke and Hollingsworth 2002), requiring time for change through stops and starts and regressions in developing expertise (Patterson 2019). Evaluation of longitudinal TPL should be based on common aspects of conceptual frameworks used to change practice and beliefs (Desimone 2009). Appeals continue for the design of TPL to be based on understanding how beliefs change over time and how individual characteristics influence the rate of change (Lowell and McNeill 2023).

Building collective efficacy in collaborative cycles of inquiry over time is defined in the literature using various terms – inquiry-based, collective professional inquiry, teacher-led inquiry, instructional rounds, and active learning. Crucially, teachers engaged in ongoing cycles of inquiry builds capacity to address the contextual problems of practice for improving learner outcomes (Fink *et al.* 2011, Timperley 2011). Instructional rounds develop shared practice by identifying a problem of practice to enact a theory of action for collective observations and analysis (City *et al.* 2009). The importance of positioning strategies within teachers' own schemata that address their practice was identified within 28 studies where teachers formulated a collective theory of action (Kennedy 2016). Teacher self-efficacy is influenced through lesson study where sharing perceptions of the school culture and conditions promotes collaborative learning (Schipper *et al.* 2020) and where critical self-assessment is integral to their learning (Baricaua Gutierrez 2016). In developing TPL for coaches, Gibbons and Cobb (2017) synthesised several requirements. High-quality professional learning required sustaining intensity through an ongoing approach, situating the learning within the problems of practice, orienting teacher learning to student thinking, and developing a community of learners supported in taking risks in inquiry-based learning.

The critical role of leadership for sustained schoolwide TPL is to advance a clear articulation of the status and unique needs of everyone. Borko (2004, p. 13) advocates balancing the ‘fidelity and adaptation’ of an individual programme at one site, across sites, or multiple programmes across multiple sites. Therefore, the decision to embark on a selected schoolwide TPL programme should enable structures that are not seen as a burden but as an integral part of developing teacher pedagogy and investing in their professional growth (Cameron *et al.* 2013). A flexible approach must be prioritised within an agreed period, allowing for contextual changes in culture and resourcing across classrooms and the school (Kemmis *et al.* 2014). The involvement of teacher leaders as colleagues throughout the TPL was found to be crucial for teachers to alter their practices and so strengthen the adoption and adaptation of practices schoolwide that harness the individual into the collective focus of improving student learning (Power and Goodnough 2019). Leader participation is essential in the TPL plans and practices to engage with the associated observations of learning and feedback for teachers (Hallinger 2011, Timperley 2015).

The literature explored on teacher collective efficacy supports contextually collaborative professional learning that allows teachers to share their thinking on setting, communicating, and monitoring learning goals. Teacher-led inquiry within a sustained TPL approach positions a shared development of practice for aligning strategies schoolwide. The study presented here builds on the literature to detail how one collective approach for teacher-led inquiry develops thinking and shares practice through a pedagogical model and language of learning. Understanding the confidence and capability required of teachers to collectively adopt and adapt practices informed the study described below.

Longitudinal study

Research design

The study was conducted under an approved research project through the University of Technology Sydney (UTS), Australia. The research tracked teacher perceptions on the impact of the LTS on their thinking and their inquiry into practice in analysing evidence for improvements. Teachers focused on what their learners could do, say, and produce, where thinking as tacit understanding could become explicit (Wallace 2021). The design supported teachers to track their collective understanding, articulated through changes in their beliefs over time as the underpinning motivator for modifying practice.

The research design applied a mixed methods approach to compare perspectives using different lenses (Greene 2005). Qualitative and quantitative data was intuitively used to better understand the phenomenon under investigation (Creswell and Poth 2018). The next section explains how data was collected via teacher-led observations on learning and individual responses to two online surveys. This design was selected to collect rich data on teacher thinking and considered transferable to comparable contexts (Merriam and Tisdell 2016). Both qualitative and quantitative analysis was conducted by a research assistant external to the school context, along with external administration of the online surveys. Trustworthiness of the data is acknowledged by the credibility of sustained engagement with the school and the dependability provided by overlapping, or triangulating, sources of data collection (Edmondson and Choudhry 2018, Lee and Tan 2020). The methods resonate with the complexity of thinking in which ‘the individual and social influences of motivation, emotion and volition on enacted and lived learning were to some extent revealed’ (Taylor 2015, p. 16).

Secondary school context

Mambaral is a non-government years 7 to 12 girls’ secondary school located in a metropolitan suburb of Sydney, Australia. Based on the data from the My School website (Australian Curriculum Assessment and Reporting Authority 2010b) between 2017 and 2022, an average of 14.5% of students identified with English as an Additional Language or Dialect (EAL/D) (Australian

Curriculum Assessment and Reporting Authority 2019). The Index of Socio-Educational Advantage (ICSEA) for the student population was an average of 1125 at slightly above the national average of 1000 that has a high-end range that reaches above 1180 (Australian Curriculum Assessment and Reporting Authority 2010a).

Research participants

The number of teaching staff steadily increased throughout the LTS initiative from 2017 to 2022. The number of teaching staff was 79 in 2017, 88 in 2018, 85 in 2019, 90 in 2020, 91 in 2021, and 94 in 2022. The steady rise in staff was due to increased school enrolments and adjustments to teacher loads to include a fortnightly scheduled TPL session. As teachers commenced the LTS they completed an individual consent form to voluntarily provide data throughout their involvement. Almost full participation in the LTS was maintained throughout the TPL programme, excepting when teachers were on leave. Teacher involvement in the generation of each data set and the response rate to surveys are reported in the data sections of this paper.

Instruments for data collection

The study captured teacher thinking through their observations on learning interventions and survey responses as described below.

Teacher-led inquiry

Throughout the TPL programme, teaching teams completed investigations across classroom practice for secondary school years 7–12 learners (aged 12–18).

Coaching of teachers to investigate problems of practice and theories of action through the instructional core (City *et al.* 2009) commenced in July 2017. Between 2017 and 2019, teachers worked in department teams from the curriculum key learning areas (NSW Education Standards Authority 2018). Teaching teams targeted a specific problem of practice and identified a theory of action to investigate in their subject specific classrooms. For their targeted learners, teachers identified strategies, and resource organisers and thinking constructs to use. The coaching of teachers in small group TPL sessions was initially conducted during lunch or after school in staff meetings.

From 2019, teachers worked in cross-curricular teams for collection of observation data and collated analysis during TPL sessions. Of consequence for teachers was scheduling a lesson per fortnight in all teaching loads from 2019 to participate in a dedicated small group session. This allowed teachers to plan for and reflect with colleagues in the inquiry-based approach. This change was part of ongoing strategic planning between the school's board and the leadership team that relied on the teacher-generated data from the study. Due to the pandemic, this work was suspended within the four-term academic year in terms 2 and 3 of 2020, and temporarily for term 3 and the first half of term 4 in 2021.

The teacher-led inquiry required recording qualitative data to evidence the connection between the learner, content and teacher (City *et al.* 2009). Cross-curriculum observations of learning were based on the instructional core to focus on pedagogical practice (Loughland and Nguyen 2016). For each observed lesson, teachers noted the learning intention(s) and made written observation notes, keeping a record of any resources that were used in the lesson. Teachers were coached on how to make non-judgemental and specific observations of the learner. Teachers used a template to categorise sample observations statements into one of the quadrants shown in Figure 1.

Targeted observations statements were recorded in relation to the learning intention(s) and evidence of what identified learners had done, said, or produced. The observation statements

| | | |
|-----------------|--|--------------------------------|
| Judgemental | Judgemental & Specific ✘ | Judgemental & General ✘ |
| Non-Judgemental | Non-Judgemental & Specific ✓ | Non-Judgemental & General ✘ |
| | Specific | General |

Figure 1. Non-judgemental and specific observations of learning reproduced from (Furney and English 2016).

included identifying descriptors of the learner and exact quotes or diagrams in gathering evidence of what their learners could do, say, and produce across different classrooms.

Teachers were guided to address their own learning needs in selecting subject and year levels for their lesson observations. Their choice varied based on similar alignment either practically and/or theoretically to their own teaching area, or similar stage or year levels aligned to their current teaching subjects, or stage levels in their own subject area they had not recently taught or were planning to teach in the future. Lessons were spread across years 7–12 in stages 4–6 of the curriculum (NSW Education Standards Authority 2018). In the final two years of the study, observations of learning were completed on 81 lessons in Term 2 of 2021 and 88 lessons in Term 1 of 2022. One example of the number and variety of lessons observed is shown in Table 1.

Table 1. 2022 Term 1 Number of lessons observed across years 7 to 12 for NSW Curriculum stages 4 to 6.

| NSW Curriculum Stage | 4 | | 5 | | 6 | | Total |
|------------------------------------|-----------|-----------|-----------|----------|-----------|-----------|-----------|
| | 7 | 8 | 9 | 10 | 11 | 12 | |
| Art | 1 | | | | | | 1 |
| Biology | | | | | | 1 | 1 |
| Business Studies | | | | | 2 | 2 | 4 |
| Chemistry | | | | | | 2 | 2 |
| Design & Technology | 1 | 2 | | | | | 3 |
| Digital Technologies | | 1 | 1 | | | | 2 |
| English | 2 | | 2 | | 1 | | 5 |
| Geography | | 2 | 1 | | | | 3 |
| History | 2 | | | 1 | | | 3 |
| Hospitality | | | | | 1 | | 1 |
| Information Process Technology | | | | | | 1 | 1 |
| iSTEM | | | | 1 | | | 1 |
| Italian | | 1 | | | | | 1 |
| Mathematics | 2 | | 4 | 2 | 1 | | 9 |
| Modern History | | | | | 5 | | 5 |
| Multimedia | | | | 1 | 1 | | 2 |
| Music | 3 | | | | 1 | | 4 |
| Personal Development, Health & PE | | | | | 3 | | 3 |
| Physical Activity & Sports Studies | | | 1 | | | | 1 |
| Religious Education | 2 | 2 | | | | | 4 |
| Science | 3 | 3 | 2 | 2 | | | 10 |
| Society & Culture | | | | | 2 | 2 | 4 |
| Spanish | | | | | | 1 | 1 |
| Studies of Religion | | | | | 4 | 2 | 6 |
| Technology | 1 | | | | | | 1 |
| Textiles & Design | | | | | 1 | 1 | 2 |
| Visual Arts | | | 1 | | | | 1 |
| Total | 17 | 11 | 12 | 7 | 22 | 12 | 81 |

Collective efficacy survey

A collective efficacy survey drawn from Goddard (2002) provided data on teacher judgement of the school group's capability to impact student learning outcomes. The survey was externally administered and completed at the start of the 2019 and the 2021 school years. Teachers responded to statements with their beliefs on the interactions within their school community. Appendix A lists the 12-item survey and the scoring key for the six option Likert Scale of Strongly Disagree, Disagree, Somewhat Disagree, Somewhat Agree, Agree, Strongly Agree. The results were analysed for the degree of alignment in responses to statements on learning that relate to students, teachers, and the school community. The findings from the collective efficacy survey were then discussed during the subsequent two-week cycle of TPL sessions.

Teacher professional learning survey

The LTS model is based on continual feedback so that changes to instruction are regularly trialled, adapted, and adopted. The TPL reflection survey was used to substantiate specific strategies as demonstrated or observed by teachers. The survey was completed at the end of 2019 and the start of 2021. Appendix B lists the three questions used in the TPL reflection survey. The validation for the survey lies in the observed change in practice that is quoted in teacher responses (Camburn *et al.* 2017).

Results

Thematic coding of observation statements

From 2019, teachers acknowledged the support provided by the change from siloed departmental pedagogical practices to cross-curricular strategies that are collectively developed through teacher-led inquiry. In their fortnightly cross-curricular groups of six to eight teachers, a protocol was used for sharing statements taken from lesson observations. Teachers selected three to six pieces of evidence from their observations on the learning. The observation statements were written on sticky notes. Teachers took turns to share pieces of data until all sticky notes had been read out. Similar pieces of data were grouped together on a flip chart.

From the collation of data, teachers identified patterns in the observation statements. The patterns that teachers identified from their observation statements were thematically coded to the elements of the LTS. Table 2 shows one example of a summary of coded observation statements.

From this 2022 Term 1 data, teachers collectively agreed that learning intentions and success criteria were the aspects of practice that had become most successfully embedded schoolwide. They found that the lower levels of questioning and talk or dialogue were substantive. However, the higher levels needed further strategies to be trialled schoolwide, specifically on discourse, self-assessment or reflection, and metacognition. The inconsistent findings on the element of feedback then became their central focus for ongoing development of routines and the pedagogical language for both teachers and students. An agreed next step was to continue the administration of surveys to capture student understanding and use of the targeted pedagogical practice and language to compare against the findings from the teacher analysis of observations.

The observations from the teacher-led inquiry and coding of the data in coaching sessions evidenced the shared use of the pedagogical language, routines, and resources. This teacher-led inquiry boosted teacher confidence in the validity of this contextually relevant data and in their own capabilities in collating and analysing the data. Furthermore, it developed the motivation for formulating their next steps in the TPL.

Table 2. 2022 Term 1 Summary of the teacher observation statements coded to the LTS elements and sub-set descriptors per year group.

| LTS Elements/Year group | 7 | 8 | 9 | 10 | 11 | 12 | Total |
|---|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| Learning Intentions (LI) | 13 | 9 | 8 | 3 | 9 | 8 | 50 |
| a) Syllabus/Curriculum/Programme Outcomes | | 1 | | 1 | 2 | 3 | 7 |
| b) Big Questions and connections: real-life or cross-curricular | 7 | 2 | 7 | 1 | 4 | 2 | 23 |
| c) Lesson Learning Intentions | 5 | 3 | | 1 | 3 | 2 | 14 |
| d) Incomplete or Off task | 1 | 3 | 1 | | | 1 | 6 |
| Success Criteria (SC) | 13 | 14 | 8 | 7 | 14 | 11 | 67 |
| a) Modelling what good looks like – student or teacher samples | 3 | 7 | 6 | | 7 | 7 | 30 |
| b) Avoiding or Correcting misconceptions/common errors | 5 | 4 | | 2 | 1 | 2 | 14 |
| c) Demonstrated knowledge, skills and/or attitudes | 5 | 3 | 2 | 5 | 6 | 2 | 23 |
| Questions | 5 | 6 | 2 | 4 | 8 | 10 | 35 |
| a) Clarifying thinking – factual, compare and expand ideas | 3 | 6 | 2 | 3 | 6 | 7 | 27 |
| b) Probing student critical and/or creative thinking | 2 | | | 1 | 2 | 2 | 7 |
| c) Building student questioning – complex and/or abstract ideas | | | | | | 1 | 1 |
| Talk | 11 | 2 | 8 | 3 | 28 | 5 | 57 |
| a) Monologue Teacher: Initiate- respond-evaluate | 3 | | | | 7 | 1 | 11 |
| b) Dialogue exchanging ideas | 8 | 1 | 7 | 3 | 19 | 2 | 40 |
| c) Discourse on metalanguage and high order thinking | | 1 | 1 | | 2 | 2 | 6 |
| Feedback | 2 | 3 | 5 | 5 | 3 | 8 | 26 |
| a) Teacher task descriptive feedback connects LI to SC | 1 | | 3 | | | 3 | 7 |
| b) Teacher on success criteria to improve, correct or extend | | 1 | 1 | 1 | 1 | | 4 |
| c) Peers feedback on work or LI and SC or teach others | 1 | 2 | 1 | 4 | 2 | 4 | 14 |
| d) Self-assessment or reflection or metacognition | | | | | | 1 | 1 |
| Grand Total | 44 | 34 | 31 | 22 | 62 | 42 | 235 |

Responses from two collective efficacy surveys

At the start of 2019, 75% of teachers voluntarily responded to an externally administered and analysed online survey to capture perceptions of their collective efficacy. Overall, the collective efficacy survey results showed a positive alignment in the teacher's collective beliefs. The responses for impacts on student learning that indicated a greater disparity were in two aspects – the teacher perceptions related to student home life and the learning opportunities within the community. Subsequently, data relevant to the school's context on the two areas of disparity was sourced and reviewed with teachers along with the survey results in the coaching sessions. Teachers were advised that the initial collective efficacy survey results represented baseline data for comparison with any subsequent collective efficacy survey data.

Two years later in February 2021, the collective efficacy survey was completed by all teachers. All responses were the same or more positive on measures of collective efficacy showing that the teachers continue to develop a collective mindset with shared collaborative values. An important change in teacher views was the increase in a positive perception of the local community in assisting learning for students. While there was a small disparity in responses on the students themselves and their home life influences, there was still an increased positive correlation on these factors. There was a high positive alignment in teacher responses on students feeling comfortable and safe, as well as their judgement about the ability of teachers to improve student learning outcomes. Overall, the survey results showed an increase in collective efficacy.

Reflections from two teacher professional learning surveys

At the end of 2019, 82% of teachers voluntarily completed an externally administered and analysed online survey reflecting on their professional learning from the LTS. Teachers had taken part in at least two rounds of teacher-led inquiry, firstly in key learning area teams and then in cross-curricular teams. The survey resulted in many positive and specific examples for teachers and students in their learning. 83% of teachers had implemented at least one change to their teaching

practice. Strategies routinely used were cited as: Think Pair Share, Know Wonder Learn (KWL), Name, Explain, Example and Demonstrate (NEED), Pounce and Bounce, Expert Jigsaw, Gallery walks, Sentence stretching, Entry and Exit tickets. One teacher reflected on several changes in their practice:

Plan my questions. Allow for more student discourse without my input. Encourage peer teaching. Make lesson goals clear and provide better exemplars.

Teachers cited specific observable changes in student learning behaviours. One response highlighted:

I have changed the way I teach. I have lifted the expectations of my classes. This has been within lessons, assessment tasks and examinations. I have challenged my students to think and take control of their learning.

Cross-curricular development and trialling of teaching strategies was a dominant theme in responses on teacher collaboration. The importance of collective work across the school was evident in the response below.

Working across KLA and having the opportunity to hear and witness strategies in other classes was beneficial. It provided a broader learning perspective and shared skills.

The indications of improved teacher collaboration were encouraging to further develop the teacher collective efficacy that is necessary for inquiry-based TPL. The overwhelming positive changes were not indicative of three negative comments, which indicated the TPL was a 'waste of time' in that it 'affirmed practices that staff already do'. A report from this survey, including teacher comments, was shared with teachers and school leaders.

In February 2021, the professional learning reflection survey was completed by 99% of teachers. 90% of teachers identified a range of positive examples of changed practice. The comment below draws on some of the pedagogical elements of learning intentions, explicit success criteria, questioning, classroom talk, and feedback.

Making clear learning intentions, room/desk formation, group tasks using different approaches such as jigsaw, pair & share etc. Further thought about the kind of questions I am posing to generate quality discourse.

Collaboration was important for developing practices schoolwide, as evidenced in the comment below.

I have used ideas/strategies suggested by people in other subject areas and have adapted them to suit my subject area. They have also adopted successful strategies used within my department.

Two-thirds of the teachers cited many positive effects on student outcomes. Examples included:

There has been an improvement in that quality of work from students especially in year 7 and 8 non elective classes. Compositions are more complex and successful. Group performances are also at a higher level and more successful.

A focus on students taking ownership of their learning strengths and weaknesses and thinking about strategies for improvement.

The need to continue collaborative work with colleagues on their practice to impact student learning was indicative of the comments below.

Being able to identify which students learn most effectively from what teaching strategies and sharing this across curricula.

Gave us the opportunity to work in groups with other faculties which allowed for better sharing of ideas. Would like to see this happen more in a planning stage of activities and topics to allow content to be shared and not doubled up on across subjects.

Importantly, ongoing collective agreement was perceived as needed to effectively harness teacher-led inquiry to continually build a shared language and practice focussed on thinking about learning. A report on the survey, including an appendix containing all comments from teachers, was shared with teachers and school leaders.

Limitations

Standardised data on student performance was not collected in relation to the LTS. However, 2022 data from internal student surveys on their understanding of feedback was shared with teachers. Feedback was the final element addressed by the TPL programme. The student data was compared to the analysis on teacher observations that were conducted at that time. This data is not reported here as consent was not obtained from students as part of the original research ethics. Future studies that include feedback from students in data collection would address the limitation of the self-reported data in being transferrable rather than generalisable across contexts (Mansfield and Thompson 2017).

Discussion

The teacher thinking articulated across the findings emphasise the need for ongoing development to bring together teachers to work towards the common vision and approach that underpin a schoolwide pedagogy. The imperatives are the necessary time needed to share and develop thinking, the timeframe required to embed changed practice, and the structural and mentoring support required by all levels of learners.

An 'ecological approach' (Priestley *et al.* 2015) of creating school structures supported the collective work required by the TPL. Ongoing reflection by the learning and teaching leadership team allowed an adaptive approach (Stevenson *et al.* 2016) that included creating cross-curricular teams for coaching, providing release time for TPL and bearing this cost in teaching loads. This 'giving back' of time added to teacher efficacy when working in new cross-curricular teams as they were re-configured each semester. Not all contexts have the freedom to reduce teaching loads that incorporate time for TPL. This study provides powerful evidence for policy makers to implement initiatives like the 'Workload Reduction Fund' for prioritising the retention of teachers (Australian Government Department of Education 2022).

Individuals were able to create a 'diversity of voices' (Philpott and Oates 2017) within a valued TPL community. Mutual generation of learning practices developed over the longer period enabled teachers to adapt and adopt the LTS strategies and language across the co-curricular teams. Moving the theoretical into the practical allowed teachers to be actively involved in research on their practice (White *et al.* 2021). The momentum of teacher-led inquiry cycles motivated and sustained teacher learning focused on assessing learner needs (Timperley *et al.* 2009). The longitudinal study supports the need to develop and maintain teacher collegiality and collaboration in a collectively efficacious approach that is 'frequent, formal, and focused on instructional improvement' (Goddard *et al.* 2015, p. 526). The development of a communicative, collaborative pedagogy incorporating reflexive practice with colleagues (Patterson 2019) boosted collective reflexivity on practice.

Additionally, teachers used their own unstructured time to organise classroom observations as well as to autonomously meet 'personalised professional learning goals' (Stevenson *et al.* 2016, p. 833). A significant challenge for building collective efficacy in a new schoolwide approach are the stages of learning for teachers. Consolidating learning and thinking to differentiate the new approach from existing practice (Labone and Long 2016) required developing teacher confidence in their competence for inquiry-based TPL. This required critical thinking about the strengths and areas of improvement for their practice and how to best utilise the strategies developed throughout the TPL programme. The study elucidates how teacher thinking was explicated and evolved to clarify collective understanding of pedagogical strategies and a shared language of learning.

A fraught area for most of the heads of department was the expanded teaching and learning responsibility for the coaching of teachers. Involvement ranged from active leading of the TPL to a lack of confidence in the use of the meta-language or to difficulties in motivating and modelling changes to practice with teachers. As leaders of key curriculum learning areas, they had to move away from traditional role responsibilities of curriculum compliance and administration. Therefore, productive coaching activities included analysing audio-visual examples of practice strategies and examining work samples (Gibbons and Cobb 2017). Consideration is needed on the contextual support for heads of departments in their learning area as recognised TPL coaches on research-based ideas and strategies. Mentoring of identified coaches requires recognition of the humility often demonstrated through the experimentation and risk-taking of their learning (Collinson 2012). Modelling new and often challenging strategies to change enculturated practice required the building of collective efficacy through practical, critical, and professionally constructive feedback (Mansfield and Thompson 2017).

Sustaining collective efficacy through collaborative inquiry also requires data literacy to formulate inquiry questions for the teaching context (DeLuca *et al.* 2015). Teachers were supported in developing skills for data analysis of student results from year level standardised ability tests and the matriculation results that impact tertiary education options. Teaching teams used their lesson observation data to identify what their students could do, say, and produce because of specific strategies. However, teachers identified that further practice was needed to effectively measure and collectively evaluate evidence of learning and the impact of their changed practice on collectively thinking about learning.

Of note was the impact of the COVID-19 pandemic in 2020 when TPL became focussed on learning new technology and wellbeing concerns for all. After the ad-hoc hiatus, teachers resumed their analyses on observations of learning to share their thinking on schoolwide teaching practice. The school continued to implement face-to-face TPL blended with online affordances for building teacher collective efficacy based on the necessary collaborative conversations (Lefstein *et al.* 2020).

Conclusion

As an exemplar, this longitudinal study within one school demonstrates how to bolster individual teacher efficacy within the complex, collective work of TPL. It advocates for the time and resources to be made systemically available to develop the collective efficacy that affects pedagogical change across larger contexts. The findings support the recommendations of Darling-Hammond *et al.* (2017) in redesigning the use of time and schedules for TPL based on ongoing evaluations, using data from teachers to assess needs, and mentoring teacher leaders as coaches.

The study presented here illuminated the development of teacher collective efficacy as a necessary condition for building and sustaining a schoolwide pedagogy. Exploring one school context implementing a TPL programme focussed on teacher thinking demonstrated how developing teacher collective efficacy could change practice schoolwide. Sharing individual teacher thinking to collectively adopt and adapt practices was evident in the listening, modelling, and analysing of practice. Crucial for the approach was ensuring that all learners were heard and understood, and their ideas valued. The study responds to the call for professional learning that develops collective efficacy for teachers and the need for sustained study into its effectiveness (de Carvalho *et al.* 2023).

Acknowledgments

I am extremely grateful for the frankness and generosity of the teachers and teacher leaders in sharing their thinking on their professional learning throughout their participation in the study. Thanks to my mentors for their ongoing support – Adjunct Professor Sandy Schuck, Professor Tracey Muir and Associate Professor Dr Jane Hunter.

Disclosure statement

No potential conflict of interest was reported by the author(s).

ORCID

Carmel Patterson  <http://orcid.org/0000-0002-3383-9764>

References

- Agne, K.J., 1999. Caring: the way of the master teacher. In: R.P. Lipka and T.M. Brinthaupt, eds. *The role of self in teacher development (Vol. SUNY series, studying the self)*. Albany, NY: State University of New York Press, 165–188.
- Allen, C.D. and Penuel, W.R., 2015. Studying teachers' sensemaking to investigate teachers' responses to professional development focused on new standards. *Journal of teacher education*, 66 (2), 136–149. doi:10.1177/0022487114560646
- Australian Curriculum Assessment and Reporting Authority, 2010a. *Index of community socio-educational advantage (ICSEA)*. Australian Curriculum, Assessment and Reporting Authority (ACARA). Available from: <https://www.myschool.edu.au/glossary/#i> [Accessed 21 Feb].
- Australian Curriculum Assessment and Reporting Authority, 2010b. *My School website*. Australian Curriculum Assessment and Reporting Authority (ACARA). Available from: <http://www.myschool.edu.au/> [Accessed 21 Feb].
- Australian Curriculum Assessment and Reporting Authority, 2019. *Meeting the needs of students for whom English is an additional language or dialect (EAL/D)*. Australian Curriculum, Assessment and Reporting Authority. Available from: <https://www.australiancurriculum.edu.au/resources/student-diversity/meeting-the-needs-of-students-for-whom-english-is-an-additional-language-or-dialect/> [Accessed 25 Jan].
- Australian Government Department of Education, 2022. *National teacher workforce action plan*. <https://www.education.gov.au/national-teacher-workforce-action-plan>
- Australian Institute for Teaching and School Leadership, 2012. *Australian professional standards for Teachers*. Australian Institute for Teaching and School Leadership (AITSL) Ltd. Available from: <https://www.aitsl.edu.au/standards> [Accessed 13 Apr].
- Australian Institute for Teaching and School Leadership, 2017. *Improving teacher professional learning*. Australian Institute for Teaching and School Leadership. <https://www.aitsl.edu.au/teach/improve-practice/improving-teacher-professional-learning>
- Baricua Gutierrez, S., 2016. Building a classroom-based professional learning community through lesson study: insights from elementary school science teachers. *Professional development in education*, 42 (5), 1–17. doi:10.1080/19415257.2015.1119709
- Borko, H., 2004. Professional development and teacher learning: mapping the terrain. *Educational researcher*, 33 (8), 3–15. doi:10.3102/0013189X033008003
- Camburn, E.M., Han, S.W., and Sebastian, J., 2017. Assessing the validity of an annual survey for measuring the enacted literacy curriculum. *Educational policy*, 31 (1), 73–107. doi:10.1177/0895904815586848
- Cameron, S., Mulholland, J., and Branson, C., 2013. Professional learning in the lives of teachers: towards a new framework for conceptualising teacher learning [Article]. *Asia-pacific journal of teacher education*, 41 (4), 377–397. doi:10.1080/1359866X.2013.838620
- City, E.A., et al. 2009. *Instructional rounds in education: a network approach to improving teaching and learning*. Cambridge, MA: Harvard Education Press.
- Clarke, D. and Hollingsworth, H., 2002. Elaborating a model of teacher professional growth. *Teaching and teacher education*, 18 (8), 947–967. doi:10.1016/S0742-051X(02)00053-7
- Collinson, V., 2012. Leading by learning, learning by leading. *Professional development in education*, 38 (2), 247–266. doi:10.1080/19415257.2012.657866
- Creswell, J.W. and Poth, C.N., 2018. *Qualitative inquiry & research design: choosing among five approaches*. 4th ed. Los Angeles: SAGE.
- Darling-Hammond, L., Hyler, M.E., and Gardner, M., 2017. *Effective teacher professional development*. Palo Alto, CA: Learning Policy Institute. <https://learningpolicyinstitute.org/product/teacher-prof-dev>
- de Carvalho, A.L., Durksen, T.L., and Beswick, K., 2023. Developing collective teacher efficacy in mathematics through professional learning. *Theory into practice*, 62 (3), 279–292. doi:10.1080/00405841.2023.2226553
- DeLuca, C., et al. 2015. Collaborative inquiry as a professional learning structure for educators: a scoping review. *Professional development in education*, 41 (4), 640–670. doi:10.1080/19415257.2014.933120
- Desimone, L.M., 2009. Improving impact studies of teachers' professional development: toward better conceptualizations and measures. *Educational researcher*, 38 (3), 181–199. doi:10.3102/0013189x08331140

- Dobbs, C.L., Ippolito, J., and Charner-Laird, M., 2016. Scaling up professional learning: technical expectations and adaptive challenges. *Professional development in education*, 43 (5), 1–20. doi:10.1080/19415257.2016.1238834
- Donohoo, J., 2017. Collective teacher efficacy research: implications for professional learning. *Journal of professional capital & community*, 2 (2), 101–116. doi:10.1108/JPC-10-2016-0027
- Edmondson, E. and Choudhry, F., 2018. Talking the talk: Exploring teacher learning and their use of discourse strategies. *School science and mathematics*, 1–17. doi:10.1111/ssm.12297
- Elbaz, F., 1983. *Teacher thinking: a study of practical knowledge*. London: Croom Helm.
- Fink, S., Markholt, A., and Bransford, J., 2011. *Leading for instructional improvement: how successful leaders develop teaching and learning expertise*. San Francisco, CA: Jossey-Bass.
- Friesen, S. and Brown, B., 2020. Teacher leaders: developing collective responsibility through design-based professional learning. *Teaching education*, 33 (3), 1–18. doi:10.1080/10476210.2020.1856805
- Fullan, M. and Hargreaves, A., 2016. *Bringing the profession back in: call to action*. Oxford, OH: Learning Forward. <https://learningforward.org/report/professional-learning-canada/bringing-profession-back/>
- Furney, A.-M. and English, K. (2016). *The learning thinking scope*©. SCHMIC Consulting (school, mentoring, improvement & coaching). Available from: <http://www.schmicconsulting.com.au/learning-thinking-scope> [Accessed 8 Jan].
- Gibbons, L.K. and Cobb, P., 2017. Focusing on teacher learning opportunities to identify potentially productive coaching activities. *Journal of teacher education*, 68 (4), 411–425. doi:10.1177/0022487117702579
- Goddard, R.D., 2002. A theoretical and empirical analysis of the measurement of collective efficacy: the development of a short form. *Educational and psychological measurement*, 62 (1), 97–110. doi:10.1177/0013164402062001007
- Goddard, R.D., et al. 2015. A theoretical and empirical analysis of the roles of instructional leadership, teacher collaboration, and collective efficacy beliefs in support of student learning [Article]. *American journal of education*, 121 (4), 501–530. doi:10.1086/681925
- Greene, J.C., 2005. The generative potential of mixed methods inquiry. *International journal of research & method in education*, 28 (2), 207–211. doi:10.1080/01406720500256293
- Hallinger, P., 2011. Leadership for learning: lessons from 40 years of empirical research. *Journal of educational administration*, 49 (2), 125–142. doi:10.1108/09578231111116699
- Hallinger, P. and Kulophas, D., 2020. The evolving knowledge base on leadership and teacher professional learning: a bibliometric analysis of the literature, 1960–2018. *Professional development in education*, 46 (4), 521–540. doi:10.1080/19415257.2019.1623287
- Hattie, J., 2009. *Visible learning: a synthesis of over 800 meta-analyses relating to achievement*. London, New York: Routledge.
- Hattie, J., 2017. *The research of John Hattie: visible Learning^{Plus} 250+ influences on student achievement*. Melbourne, VIC: Corwin. <https://visible-learning.org/wp-content/uploads/2018/03/VLPLUS-252-Influences-Hattie-ranking-DEC-2017.pdf>
- Hattie, J. and Anderman, E.M., Eds. 2013. *International guide to student achievement*. New York, NY: Routledge.
- Hattie, J. and Zierer, K., 2018. *10 mindframes for visible learning: teaching for success*. Abingdon, London: Routledge.
- Kelchtermans, G., 2009. Who I am in how I teach is the message: self-understanding, vulnerability and reflection. *Teachers & Teaching Theory & Practice*, 15 (2), 257–272. doi:10.1080/13540600902875332
- Kemmis, S., et al. 2014. Professional learning as practice development. In: S. Kemmis, J. Wilkinson, C. Edwards-Groves, I. Hardy, P. Grootenboer, and L. Bristol, eds. *Changing practices, changing education*. Singapore: Springer, 127–155.
- Kennedy, M.M., 2016. How does professional development improve teaching? *Review of educational research*, 86 (4), 945–980. doi:10.3102/0034654315626800
- Korthagen, F. and Vasalos, A., 2005. Levels in reflection: core reflection as a means to enhance professional growth. *Teachers & teaching*, 11 (1), 47–71. doi:10.1080/1354060042000337093
- Labone, E. and Long, J., 2016. Features of effective professional learning: a case study of the implementation of a system-based professional learning model. *Professional development in education*, 42 (1), 54–77. doi:10.1080/19415257.2014.948689
- Lampert, M. and Clark, C.M., 1990. Expert knowledge and expert thinking in teaching: a response to floden and klinzing. *Educational researcher*, 19 (5), 21–23. doi:10.3102/0013189X019005021
- Lee, L.H.J. and Tan, S.C., 2020. Teacher learning in lesson study: Affordances, disturbances, contradictions, and implications. *Teaching and teacher education*, 89, 102986. doi:10.1016/j.tate.2019.102986
- Lee, W.C., Wang, L.-Y., and Chen, D.-T., 2020. A qualitative inquiry into the relationships between teacher efficacy beliefs and teaching task analysis in the context of learner-centred pedagogy. *The Australian educational researcher*, 47 (4), 611–628. doi:10.1007/s13384-019-00346-y
- Lee, J.C.-K., Zhang, Z., and Yin, H., 2011. A multilevel analysis of the impact of a professional learning community, faculty trust in colleagues and collective efficacy on teacher commitment to students. *Teaching and teacher education*, 27 (5), 820–830. doi:10.1016/j.tate.2011.01.006
- Lefstein, A., et al. 2020. Taking stock of research on teacher collaborative discourse: theory and method in a nascent field. *Teaching and teacher education*, 88, 102954. doi:10.1016/j.tate.2019.102954

- Lloyd, C.A., 2019. Exploring the real-world decision-making of novice and experienced teachers. *Journal of further and higher education*, 43 (2), 166–182. doi:10.1080/0309877X.2017.1357070
- Loughland, T. and Nguyen, H.T., 2020. Using teacher collective efficacy as a conceptual framework for teacher professional learning – a case study. *Australian journal of education*, 1–14. doi:10.1177/0004944120908968
- Loughland, T. and Nguyen, H.T.M., 2016. Using the instructional core to implement a professional learning programme for primary science teachers in Australia: teacher learning and student skill outcomes. *Teacher development*, 20 (4), 498–520. doi:10.1080/13664530.2016.1164748
- Loughland, T. and Ryan, M., 2022. Beyond the measures: the antecedents of teacher collective efficacy in professional learning. *Professional development in education*, 48 (2), 343–352. doi:10.1080/19415257.2020.1711801
- Lowell, B.R. and McNeill, K.L., 2023. Changes in teachers' beliefs: A longitudinal study of science teachers engaging in storyline curriculum-based professional development. *Journal of research in science teaching*, 60 (7), 1457–1487. doi:10.1002/tea.21839
- Mansfield, C. and Thompson, G., 2017. The value of collaborative rounds for teacher professional learning in Australia. *Professional development in education*, 43 (4), 666–684. doi:10.1080/19415257.2016.1216883
- Merriam, S.B. and Tisdell, E.J., 2016. *Qualitative research: a guide to design and implementation*. 4th ed. San Francisco, CA: Jossey-Bass, a Wiley Brand.
- Moss, J., 2008. Leading professional learning in an Australian secondary school through school-university partnerships. *Asia-pacific journal of teacher education*, 36 (4), 345–357. doi:10.1080/13598660802375941
- NSW Education Standards Authority, 2018. NSW curriculum and Syllabuses. NSW Education Standards Authority (NESA) for and on behalf of the crown in right of the State of New South Wales. Available from: <https://educationstandards.nsw.edu.au/wps/portal/nesa/11-12/Understanding-the-curriculum/nsw-curriculum-syllabuses> [Accessed 25 Jan].
- NSW Education Standards Authority, 2019. *Maintaining your accreditation: professional Development*. NSW Education Standards Authority (NESA) for and on behalf of the crown in right of the State of New South Wales. <https://educationstandards.nsw.edu.au/wps/portal/nesa/teacher-accreditation/maintaining-accreditation/professional-development>
- Patterson, C., 2019. *Enacted personal professional learning: Re-thinking Teacher expertise with story-telling and problematics*. Singapore: Springer. doi:10.1007/978-981-13-6007-7
- Patterson, C., and O'Brien, G., 2021. Cultivating a schoolwide pedagogy: achievements and challenges of shifting teaching thinking on learning. *Professional development in education*. doi:10.1080/19415257.2021.1879221
- Patterson, C., and O'Brien, G., 2023. *Cultivating a schoolwide pedagogy: achievements and challenges of shifting teacher learning on thinking*. In: S. Swaffield & P. E. Poekert, Eds. *Cultivating a schoolwide pedagogy: achievements and challenges of shifting teacher learning on thinking*. Routledge. <https://www.routledge.com/Leadership-for-Professional-Learning-Perspectives-Constructs-and-Connections/Swaffield-Poekert/p/book/9781032412979>
- Philpott, C. and Oates, C., 2017. Teacher agency and professional learning communities; what can learning rounds in Scotland teach us? *Professional development in education*, 43 (3), 318–333. doi:10.1080/19415257.2016.1180316
- Power, K. and Goodnough, K., 2019. Fostering teachers' autonomous motivation during professional learning: a self-determination theory perspective. *Teaching Education*, 30 (3), 278–298. doi:10.1080/10476210.2018.1465035
- Priestley, M., Biesta, G., and Robinson, S., 2015. *Teacher agency: an ecological approach*. London, England: Bloomsbury Academic.
- Schipper, T.M., et al. 2020. Promoting a professional school culture through lesson study? An examination of school culture, school conditions, and teacher self-efficacy. *Professional development in education*, 46 (1), 112–129. doi:10.1080/19415257.2019.1634627
- Stevenson, M., et al. 2016. Leading learning: the role of school leaders in supporting continuous professional development. *Professional development in education*, 42 (5), 818–835. doi:10.1080/19415257.2015.1114507
- Taylor, P., 2015. Learning about professional growth through listening to teachers. *Professional development in education*, 43 (1), 1–19. doi:10.1080/19415257.2015.1030035
- Timperley, H., 2011. *Realizing the power of professional learning*. Maidenhead: McGraw-Hill Open University Press.
- Timperley, H., 2015. *Professional conversations and improvement-focused feedback*. Melbourne, VIC: Australian Institute for Teaching and School Leadership (AITSL). <https://www.aitsl.edu.au/tools-resources/resource/literature-review-professional-conversations-and-improvement-focused-feedback>
- Timperley, H., Parr, J.M., and Bertanees, C., 2009. Promoting professional inquiry for improved outcomes for students in New Zealand. *Professional development in education*, 35 (2), 227–245. doi:10.1080/13674580802550094
- Wallace, H., 2021. Planning in professional learning teams: building trust, common language and deeper understanding of pedagogy. *The Australian educational researcher*, 48 (2), 377–395. doi:10.1007/s13384-020-00394-9
- White, S., et al. 2021. Strengthening a research-rich teaching profession: an Australian study. *Teaching education*, 32 (3), 338–352. doi:10.1080/10476210.2020.1737666

Appendices

Appendix A: Collective efficacy survey and scoring key

The wording for six statements (items 1, 2, 5, 6, 7, and 10) indicates a higher efficacy for the Strongly Agree option. These statements were scored with a value of “1” for Strongly Disagree up to a value of “6” for Strongly Agree. The wording for six statements (items 3, 4, 8, 9, 11 and 12) indicates a higher efficacy for the Strongly Disagree option. These statements were reverse scored with a value of “1” for Strongly Agree and “6” for Strongly Disagree.

- (1) Teachers in the school are able to get through to the most difficult students.
- (2) Teachers here are confident they will be able to motivate their students
- (3) If a child doesn't want to learn, teachers here give up.
- (4) Teachers here don't have the skills needed to produce meaningful student learning.
- (5) Teachers in this school believe that every child can learn.
- (6) These students come to school ready to learn.
- (7) Home life provides so many advantages that students here are bound to learn.
- (8) Students here just aren't motivated to learn.
- (9) Teachers in this school do not have the skills to deal with student disciplinary problems.
- (10) The opportunities in this community help ensure that these students will learn.
- (11) Learning is more difficult at this school because students are worried about their safety.
- (12) Drug and alcohol abuse in the community make learning difficult for students here.

Appendix B: Teacher professional learning survey

- (1) Have you changed any aspect of your teaching practice or introduced any new practices based on your learning in this course? If yes, can you elaborate? – What are you doing differently? What new practices have you adopted?
- (2) As a result of this programme, do you think your work with others on the staff is now more collaborative? If Yes, can you give at least one example?
- (3) If you have changed your teaching practice, do you think it has had a positive effect on student outcomes? Can you provide any evidence or examples or comments to clarify?