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THE IMPACT OF QUALITY TEACHING ROUNDS: REPORT ON THE RESULTS OF A RANDOMISED CONTROLLED TRIAL

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& TEACHING**
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LIST OF ABBREVIATIONS

CONSORT	Consolidated Standards of Reporting Trials
ICSEA	Index of Community Socio-Educational Advantage
LBOTE	Language background other than English
PD	Professional development
PLC	Professional learning community
QT	Quality Teaching
QTR	Quality Teaching Rounds
RCT	Randomised controlled trial
SES	Socioeconomic status

EXECUTIVE SUMMARY

This report provides the findings of a study designed to investigate the efficacy and feasibility of Quality Teaching Rounds (QTR). QTR is a form of teacher professional development designed to bring together the benefits of professional learning communities (PLCs), instructional 'rounds', and the Quality Teaching (QT) pedagogical framework (NSW Department of Education and Training [NSW DET], 2003). QTR involves teachers working in PLCs of three or more teachers to observe and analyse each other's teaching, using the QT framework.

Researchers from the University of Newcastle, led by Professor Jenny Gore, worked with 24 NSW public schools to investigate the impact of participating in QTR on the quality of teaching. Eight teachers at each of the 24 schools were involved in the study, with lesson observations carried out by research assistants, who were blinded to group allocation, at three time points during the period from mid-2014 to mid-2015 – baseline, post-intervention (6-months), and follow up (12-months).

Findings

Participating in QTR was found to significantly impact on the quality of teaching within the relatively short timeframe of this intervention for teachers in a diverse range of schools. Moderators of intervention effects were explored for: type of school, SES, location, teaching experience, and sex of teacher.

The key findings were as follows:

From the observations

- Significant positive effects on the quality of teaching were established for the QTR intervention groups at post-test (6-months) ($d = 0.4$)
- Effects were sustained at the point of delayed follow-up (12-months) for the intervention groups, QTR-Set ($d = 0.2$) and QTR-Choice ($d = 0.5$)
- Improvements for the two intervention groups (QTR-Set and QTR-Choice) were not significantly different from each other
- All PLCs met the pre-specified threshold for implementation fidelity (5 of 8 criteria). Higher fidelity (set at 6 of 8 criteria) produced stronger effects on quality of teaching
- Effects were independent of school type (primary/secondary) and school location (urban/rural)
- Effects were independent of years of teaching experience

From the surveys

- Significant positive effects on teacher morale were observed for the QTR-Set group at 6-months ($d = 0.4$) and for both QTR-Set and QTR-Choice groups at 12-months ($d = 0.6$ and $d = 0.4$ respectively)
- Significant positive effects on sense of appraisal and recognition were observed for the QTR-Set group at 6-months ($d = 0.4$) and for both QTR-Set and QTR-Choice groups at 12-months ($d = 0.4$ and $d = 0.5$ respectively)

From the interviews

- Teachers reported positive impacts on their own and their colleagues' teaching
- Teachers reported positive impacts on collegiality
- Teachers reported positive impacts on school culture
- Teachers reported positive impacts on their identity as teachers
- Teachers reported positive impacts on their students

The findings from this study demonstrate the value of Quality Teaching Rounds in improving teaching quality, teacher morale, and teaching cultures across a range of schools and classroom settings in diverse communities. Quality Teaching Rounds was an effective form of professional development, improving the quality of teaching in primary and secondary

schools across key learning areas and for teachers at different stages of their careers. The positive effects of Quality Teaching Rounds are thus highly generalisable across school contexts.

Other studies of the impact of professional development have not been able to demonstrate such improvements to the quality of teaching. Quality Teaching Rounds is a distinctive form of professional development which is: applicable across stages and subject areas; addresses teaching comprehensively; requires minimal external input; is adaptable to the specific teaching context. This is in contrast to professional development that: is stage or subject-specific; addresses a part of teaching practice only; requires ongoing provision of external expertise; is highly prescriptive of practice.

Additional research

Further research into the wider translation of Quality Teaching Rounds is underway, with 53 schools currently participating in a second phase of this study where the focus is on issues of at-scale implementation. An additional study is underway involving 20 schools in one geographic region, where the focus is on exploring ways in which the conduct of QTR can support small schools. An Australian Research Council application is also under review for a study that focuses on the impact of QTR on student outcomes and aims to further understand how teacher development can impact measurably and sustainably on the quality of teaching for teachers at different career stages.

INTRODUCTION

It is widely recognised that teacher quality is the most important in-school factor affecting student outcomes (Darling-Hammond, 2000; Hattie, 2008; Organisation for Economic Co-operation and Development [OECD], 2005; Rockoff, 2004; Rowe, 2003; Timperley & Alton-Lee, 2008). Finding effective ways to improve the quality of teaching remains a priority for educational systems around the world. To this end, there is substantial investment in teacher professional development, with school systems increasingly mandating ongoing professional learning. However, there are few studies that show evidence of the impact of professional development activities (Cordingley, Bell, Evans, & Firth, 2005; Guskey & Yoon, 2009; Vescio, Ross, & Adams, 2008). This study was designed to rigorously test the effectiveness of one approach to professional development, Quality Teaching Rounds, for its impact on the quality of teaching.

Few studies have directly linked teacher PD activities to improved teaching practice and/or improved student outcomes. Those that have reported such impacts have typically been limited to one aspect of teaching practice (Hill, Beisigel, & Jacob, 2013) or single subject area (Penuel, Fishman, Cheng, & Sabelli, 2007) and often the focus has been on outcomes such as teachers' satisfaction (Ullah & Jundran, 2014), attitude change and commitment to innovation (Desimone, 2009), and self-efficacy (Tzivnikou, 2015).

Nonetheless, some scholars speak of an emerging 'consensus' that effective PD: involves teachers as both learners and teachers (Darling-Hammond & McLaughlin, 1995); is needs-supportive (Aelterman et al., 2013); takes place within the school day (Garet, Porter, Desimone, Birman, & Yoon, 2001); is integrated into practice (Armour & Yelling, 2007); coheres with school and system policies (Desimone, 2009; Ingvarson, Meiers, & Beavis, 2005); and, promotes transformative practice, rather than accountability (Kennedy, 2005).

Most attempts to implement PD that meets these criteria have been expensive and indicate weak return on investment (Harris & Sass, 2011; Hill et al., 2013). Leading researchers conclude that in order to deliver the highest quality PD, investment needs to be limited to fewer teachers or additional resources must be found (Garet et al., 2001).

BACKGROUND TO THE INTERVENTION

Quality Teaching Rounds (QTR) is an approach to PD designed to build on principles of effective PD (as described above), be widely applicable across subject areas and stages of schooling, and be implemented at relatively low cost. In this way, Quality Teaching Rounds is designed to address the major challenges to effective PD.

The approach aims to improve the quality of teaching in ways that teachers experience as supportive and positive, rather than subjecting teachers to intensified levels of accountability and performance review.

Conceptualising Quality Teaching Rounds

Quality Teaching Rounds, designed by Bowe and Gore in 2007, are designed to bring together the benefits of professional learning communities (PLCs) (Lave & Wenger, 1991), instructional 'rounds' (Elmore, 2007), and the Quality Teaching (QT) pedagogical framework (NSW DET, 2003). By adding a pedagogical framework to collaborative forms of PD, QTR provides teachers with a common language and set of conceptual standards with which to engage in rigorous diagnostic professional conversations with colleagues focused on their individual and collective practice (Bowe & Gore, 2016; Gore & Bowe, 2015).

Conducting Quality Teaching Rounds

QTR involve at least three teachers working in a PLC. A “Round” is comprised of three sequential sessions that occur on a single day:

1. *Reading discussion*: Designed to support the group in developing a shared theoretical basis for professional conversations and build a sense of professional community (typically one hour);
2. *Observation*: One PLC member teaches a lesson that is observed by all other members of the PLC (a full lesson length, typically 30–80 minutes); and,
3. *Coding and discussion*: Individual coding of the observed lesson is followed by discussion where all PLC members contribute, including the observed teacher (typically one to two hours). Coding and discussion are centred on constructs of the QT framework.

In QTR, at least one lesson is observed for every member of the PLC, and PLC members stay together for an entire set of Rounds. The intent of QTR is to focus on the relationship between classroom practice and student learning, to show respect for the teacher and the teaching-learning process by watching a whole lesson each time, and for all PLC members to be engaged with all aspects of each QT Round.

Applying the Quality Teaching framework

Fundamental to QTR is the structuring of observations and post-lesson discussions through the research-based constructs of the Quality Teaching framework (NSW DET, 2003). This pedagogical framework has been widely used during the past decade in Australia (particularly in NSW and the ACT). It was derived from work on Authentic Pedagogy (Newmann, 1991; Newmann, Marks, & Gamoran, 1996) and an extensive synthesis of research on aspects of pedagogical practice that make a difference for student outcomes (Ladwig & King, 2003). The framework offers a comprehensive account of teaching, addressing matters of curriculum, student engagement, and social justice, as well as pedagogical practice (Gore, 2007).

The QT framework focuses teachers’ attention on three dimensions of pedagogy: (i) Intellectual Quality, (ii) Quality Learning Environment, and (iii) Significance. These dimensions are comprised of six elements, with each element framed as an inquiry question to focus teachers’ observations and discussions rather than as a rigid directive about what every lesson or every classroom must look like. The concepts, associated language, and fine-grained indicators of quality (using a 1–5 scale) help teachers describe and analyse classroom-based evidence, forming the framework for discussion and analysis within the QTR process.

Table 1. Dimensions and elements of the Quality Teaching framework

Intellectual Quality	Quality Learning Environment	Significance
Deep knowledge	Explicit quality criteria	Background knowledge
Deep understanding	Engagement	Cultural knowledge
Problematic knowledge	High expectations	Knowledge integration
Higher-order thinking	Social support	Inclusivity
Metalanguage	Students’ self-regulation	Connectedness
Substantive communication	Student direction	Narrative

THE STUDY

Building on a series of preliminary studies (Gore, 2014), this study involved a randomised controlled trial (RCT) rigorously designed in accordance with the Consolidated Standards of Reporting Trials (CONSORT) guidelines for group trials (Moher et al., 2010). The three-arm RCT, conducted from mid-2014 to mid-2015, involved two 'intervention' groups (a 'set' intervention and a 'choice' intervention) and a waitlist 'control' group. Two full lessons per teacher for 192 teachers in 24 schools (8 in each school) were observed by the research team before Quality Teaching Rounds commenced (baseline), six months later when the two intervention groups had finished, and again six months after that in order to begin to consider the sustainability of any effects. Surveys and interviews also collected at the three time points provided supplementary data. Further details are provided in the study protocol published in the *International Journal of Educational Research* (Gore et al., 2015).

Participants

Following an invitation to all NSW government schools, 243 schools provided an expression of interest to participate. To be eligible for the study, schools were required to have at least eight teachers who were willing to participate, be prepared to accept any group allocation (including a waitlist control group that would commence the PD activity following a 12-month delay), and be able to commit to the 18-month study period.

Eligible schools were stratified based on school type (i.e., primary or secondary), location (i.e., urban or rural¹), and socioeconomic status (SES) to ensure a diverse and representative sample of schools for testing the efficacy of Quality Teaching Rounds.

Following stratification, 24 schools were then randomly selected for the trial: 12 each from primary and secondary schools (two central schools were included in the secondary sample) and, within each sector, three from each of the SES categories (low, mid, high) for the urban schools and three from a fourth category (all SES) for the rural schools (mostly low SES).

Following baseline assessments of the quality of teaching, the 24 schools, stratified based on SES, geographical location, and school type, were randomly assigned to one of three conditions (by a researcher independent of the project) using a computerised random number generator.

The stratification and associated randomisation processes are illustrated below in Figure 1. The intervention conditions are described in the next section.

¹ Based on school classifications in use at the time of school recruitment.

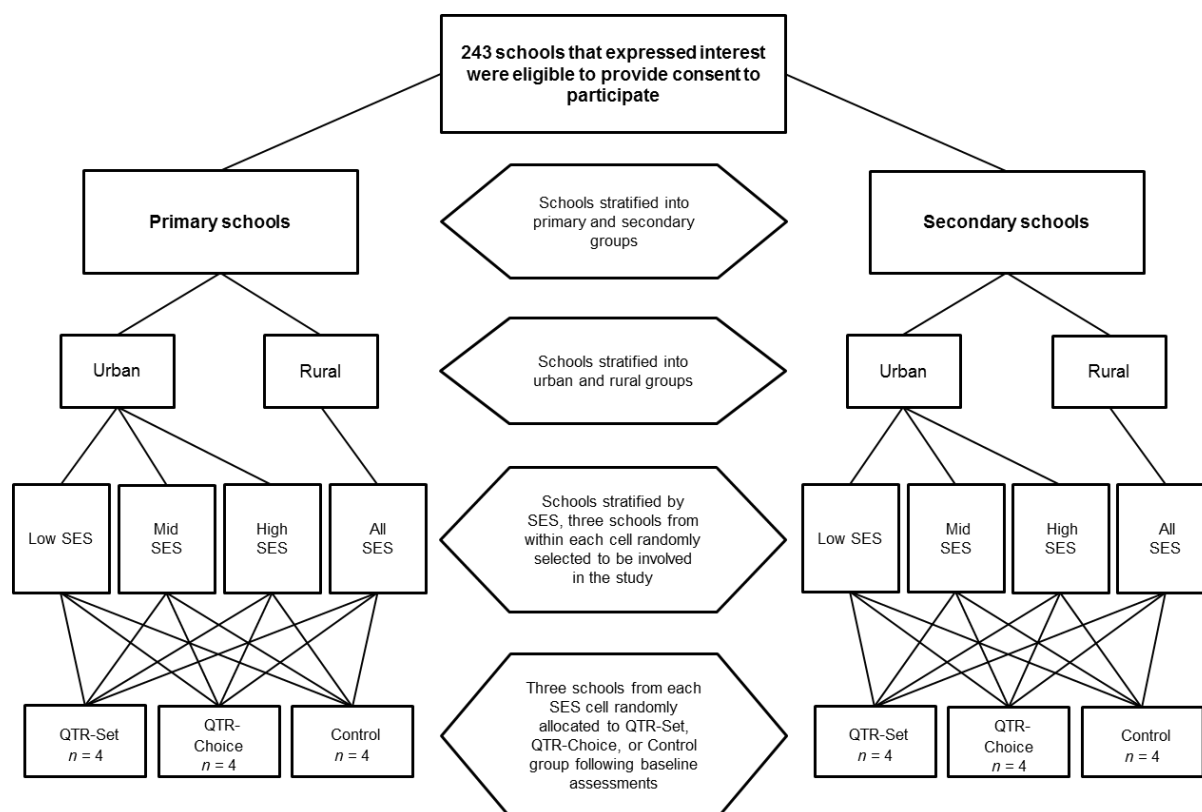


Figure 1. Stratification and randomisation processes

Participating schools

The sample of 24 selected schools was diverse in relation to the following characteristics:

- Enrolment of students with language backgrounds other than English – ranged from 2% to 92%
- Enrolment of Indigenous students – ranged from 0% to 62%
- School index of advantage (ICSEA) – ranged from 766 to 1209

Participating teachers

Eight teachers from each school, a total of 192 teachers, participated in the study. Characteristics of participating teachers, outlined in Table 2, can be summarised as 75% female, 9% from language backgrounds other than English, 54% teaching in the primary years, and an average age of 38 years. The composition of our sample aligns with the composition of the NSW teaching workforce, with around equal numbers of primary and secondary teachers, and around 70% female teaching staff (NSW Department of Education, 2015; Weldon, 2015). Teachers with less than four years of teaching experience accounted for 20% of the total sample, while 25% reported 16 or more years of teaching experience. Nearly 47% of teachers had been teaching at their current school for less than four years, with only 9% at their current school for 16 or more years. Two teachers from each school were interviewed three times during the study.

Table 2. Characteristics of participating teachers

	Group			Total N = 191
	Set n = 64	Choice n = 63	Control n = 64	
Male (%)	20.3	30.2	23.4	24.6
Female (%)	78.1	69.8	76.6	74.9
Average teacher age, years	36.6	39.2	39.0	38.3
Primary school teachers (% of group)	49.2	56.7	55.6	53.8
Secondary school teachers (% of group)	51.8	43.3	44.4	46.2
LBOTE (% of group)	13.6	6.7	6.3	8.8
Total years of teaching (% of group)				
< 4 years	30.5	11.7	17.5	19.8
4 to 15 years	45.8	63.3	57.1	55.5
16 years or more	23.8	25.1	25.4	24.7
Years of teaching at current school (% of group)				
< 4 years	54.2	40.0	46.0	46.7
4 to 15 years	33.9	53.3	46.1	44.4
16 years or more	11.9	6.7	7.9	8.7

The intervention

Eight teachers per school participated in the Quality Teaching Rounds intervention, forming PLCs of between three and eight teachers depending on their intervention group allocation. Prior to commencing Quality Teaching Rounds, at least four of the eight teachers from each of the 16 schools in the intervention groups participated in a two-day workshop to prepare them for conducting this form of PD. The training workshops provided background information on the Quality Teaching framework and Quality Teaching Rounds, highlighting the intention and importance of each component of the approach (i.e., professional learning communities, readings, observations, individual coding, group discussion) and the protocols to be followed. Teachers were given opportunities to practise the QT coding process, to participate in simulated Rounds using sample video-recorded lessons, and to discuss logistics of initiating Quality Teaching Rounds in their own schools.

During Terms 3 and 4 in 2014, the teachers worked in their PLCs and carried out Quality Teaching Rounds in accordance with their school's intervention group:

- QTR-Set schools – two PLCs of four teachers, two full sets of Rounds (each teacher 'hosted' two lesson observations)
- QTR-Choice schools – option to work in PLCs of between three and eight teachers, each PLC with the choice of conducting one or more full sets of Rounds.

Intervention quality was measured through fidelity check observations conducted by members of the research team and self-reported checklists (one per PLC for each Round completed). The fidelity observations aimed to check compliance with at least five of the following eight essential features of QTR:

1. Was a professional reading session conducted?
2. Were PLC members present throughout the lesson?
3. Did PLC members individually code all QT elements prior to the lesson discussion?
4. How long was the post-lesson discussion?
5. Was the host teacher included in the discussion?
6. Were PLC members (including the host teacher) present throughout the discussion?
7. Did PLC members (including the host teacher) provide their codes and justification using evidence from the lesson for each QT element?
8. Was the Quality Teaching Classroom Practice Guide a consistent point of reference throughout the discussion?

The full implementation fidelity checklist used by members of the research team is attached in Appendix A.

Outcome measures

The primary outcome of the study, quality of teaching, was based on two observations of all participating teachers at each time point (i.e., baseline, 6-months, 12-months). The observers were members of the research team, trained in lesson observation protocols and blinded to group allocation. Over the course of the study, 1,073 lessons were coded by the researchers, 122 of which involved two or more raters with an inter-rater reliability score of .76 (ICC = .76, 95% CI [.65, .83], $p < .001$).

The following measures were used:

- Quality Teaching – The Quality Teaching scoring instrument from the Quality Teaching Classroom Practice Guide (NSW DET, 2003) was used. The instrument has 18 elements which form three dimensions: Intellectual Quality, Quality Learning Environment, and Significance. Scores from 1 to 5 are generated in response to a focus question for each of the 18 elements and specific descriptors for each score. The mean of the scores for QT overall is then calculated. Table 3 details the reliability statistics for the Quality Teaching overall scale (18 items).

Table 3. Reliability statistics for Quality Teaching scale (Cronbach's alpha)

	No. of items	Cronbach's alpha		
		Baseline	6-months	12-months
Quality Teaching	18	.82	.83	.82

- Teacher survey – Teachers reported the number of lessons they have observed and had observed during the past year, the time spent during the work day in planning and preparation, and the frequency of collaboration with colleagues to share feedback, suggestions, and strategies. Other survey items form scales that provide estimates of the degree to which teachers: believe there is trust among them (6 items; $\alpha = .82$; Bryk & Schneider, 2002), believe they take collective responsibility for student learning (6 items; $\alpha = .66$; Louis & Marks, 1998; Louis, Marks, & Kruse, 1996), receive appraisal and recognition (6 items; $\alpha = .86$; Hart, Wearing, Conn, Carter, & Dingle, 2000), and have high levels of morale (5 items; $\alpha = .86$; Hart et al., 2000). The baseline teacher questionnaire is attached at Appendix B, however the specific items of the morale and appraisal and recognition scales are protected by copyright and therefore are not reproduced here.²
- The survey also uses scales to gauge the degree to which teachers believe that their teaching aligns with the Quality Teaching framework, by dimension and overall. These scales have the prefix 'Teaching for' to distinguish them from the observation instrument scales. The overall Teaching for Quality Teaching scale has 18 items and a Cronbach's alpha of .87. The subscales are Teaching for Intellectual Quality (6 items; $\alpha = .79$), Quality Learning Environment (6 items; $\alpha = .67$), and Significance (6 scales; $\alpha = .71$).
- Demographic and background information – Details collected by survey included sex, age, identification as Aboriginal or Torres Strait Islander, language background, level of education, years of teaching at current school and overall, subject specialisation (if any), and employment status (i.e., full-time, part-time, casual).

² These 11 items were included at question no.25 in the baseline teacher questionnaire, and were comprised of issues such as: team spirit, level of pride in the school, satisfaction with feedback on work performance, and recognition for good work (Hart et al., 2000).

Data collected

Data collected at the baseline, six-month, and 12-month time points are summarised below in Table 4.

Table 4. Summary of data collected

Data Source	Time point			Total
	Baseline	6-months	12-months	
Lesson observations	381	365	327	1,073
Teacher surveys	182	177	157	516
Teacher interviews	48	46	48	142
Teacher focus groups (case study)		5	6	11
Executive interviews (case study)		5	6	11
Student surveys	3,077	3,237	2,726	9,040
Fidelity checks (research team)		38		38
Fidelity checks (self-reported)		88		88

Data analysis

Statistical analysis of the quantitative data was conducted using linear mixed models with alpha levels set at $p < .05$. The models were used to assess the impact of the two interventions (QTR-Set or QTR-Choice), time (baseline, six-months, and 12-months), and group-by-time interactions, with these three items forming the base model. The models were specified to adjust for the clustered nature of the data (i.e., teachers located within schools) and the multiple observations conducted at each time point using random intercepts.

Moderators of intervention effects were explored for: (i) type of school (primary versus secondary), (ii) SES (based on school Index of Community Socio-Educational Advantage [ICSEA] values), (iii) geographic location of school (urban versus rural), (iv) years of teaching experience, and (v) sex of teacher. Subgroup analyses were conducted if significant interaction effects ($p < .1$) were identified (Assmann, Pocock, Enos & Kasten, 2000).

Analysis was also conducted for PLCs that met at least six of the eight pre-specified standards (based on implementation fidelity checks).

Cohen's d was calculated using the following formula:

$$d = \frac{[(\text{intervention posttest mean} - \text{intervention baseline mean}) - (\text{control posttest mean} - \text{control baseline mean})]}{\text{pooled standard deviation of change}}$$

Qualitative analysis of teacher interviews was conducted, with all interview transcriptions read by at least two members of the research team. Transcripts were coded deductively and inductively to identify themes relating to: the most valued aspects of participating in QTR; the impact of participating in QTR on teachers and students; and, the impact of participating in QTR on teaching culture and identity. (The post-intervention interview schedule is attached at Appendix C.)

Participant flow throughout study

Figure 2 below details the numbers of participating teachers in each intervention group and observed at each of the three time points. Power calculations were previously conducted to determine the number of teachers required (192), allowing for 10% attrition, to detect changes in the primary outcome (i.e., Quality Teaching score). Overall teacher retention during the study was 86%, with various reasons identified for attrition including teachers moving schools ($n = 15$), maternity or long-service leave ($n = 6$), or withdrawal from the study for other reasons ($n = 5$).

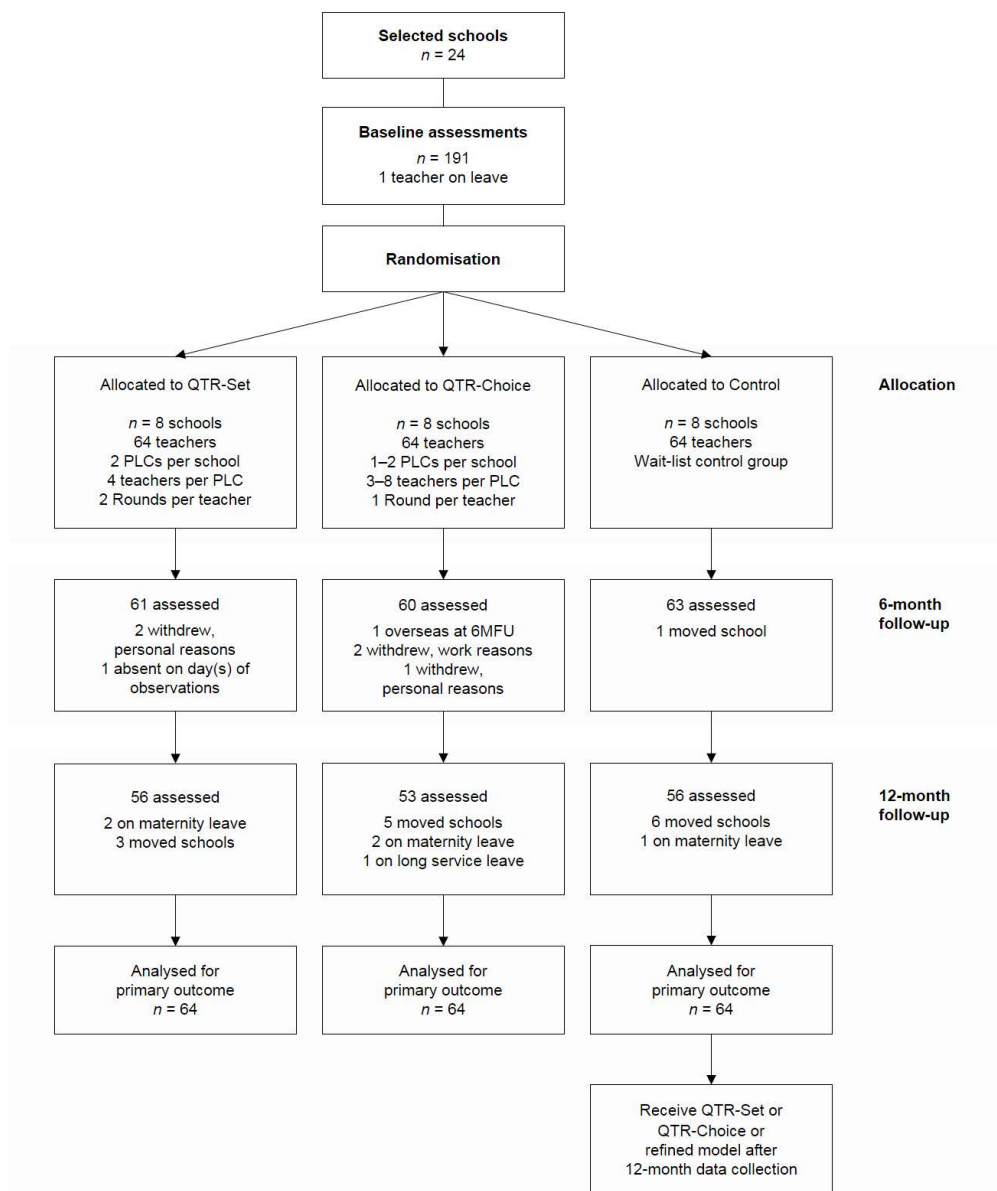


Figure 2. Participant flow through the study and analysed for the primary outcome (Quality Teaching score)

Process evaluation

Of the 192 participating teachers, 141 attended a two-day QTR workshop prior to participating in QT Rounds at their school. All intervention schools sent at least four teachers to the workshop while some schools sent all eight participating teachers. On average, there were six workshop participants per school. 99% of teachers who attended a workshop found it a valuable form of professional development, and 97% stated that they felt prepared for introducing QTR at their school. Figures 3 and 4 below illustrate these findings.

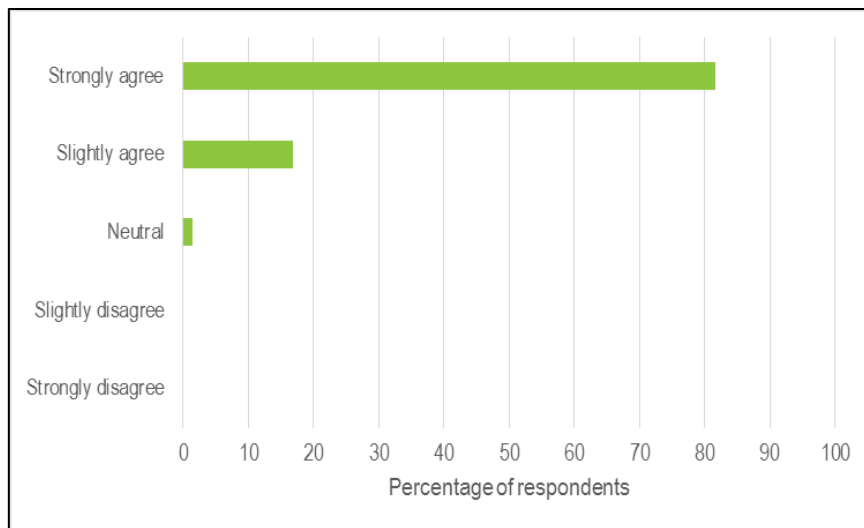


Figure 3. Extent to which teachers agreed that the QTR workshop was a valuable form of professional development

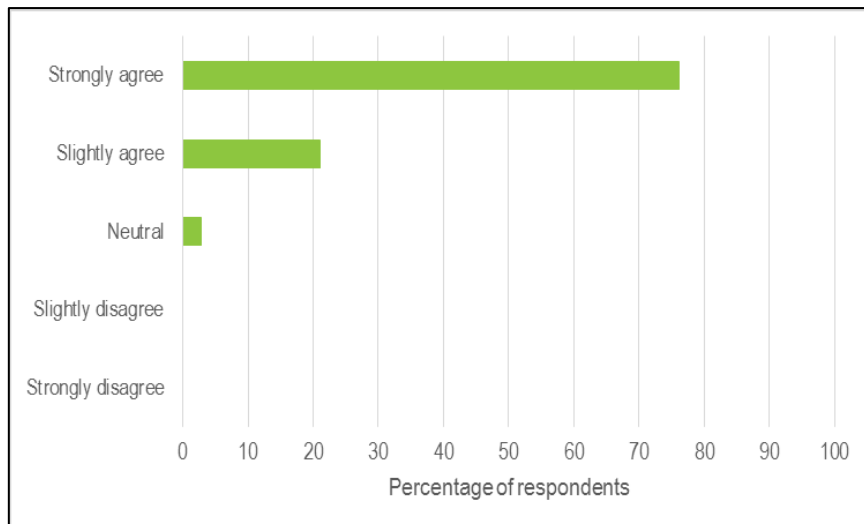


Figure 4. Extent to which teachers agreed that they felt prepared for introducing QT Rounds at their school

Primary outcome: Teaching quality

Impact on teaching quality

The quality of teaching improved significantly from baseline to post-intervention, with medium effects for overall teaching quality for intervention schools (Cohen's $d = 0.4$) (see Figure 5). Effects were sustained at the 12-month follow-up assessment (Cohen's $d = 0.2 - 0.5$). These findings are detailed in Appendix D. Post hoc analyses revealed that improvements in the QTR-Choice group were not significantly different to those observed in the QTR-Set group.

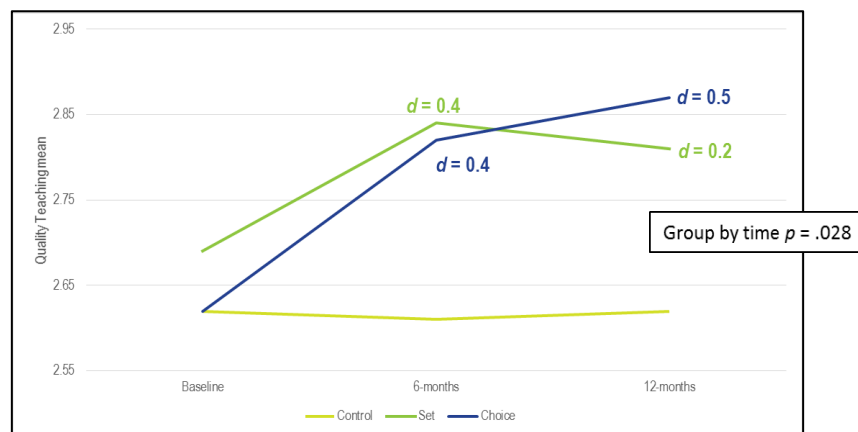


Figure 5. Whole sample teaching quality at baseline, 6-months, and 12-months

Based on fidelity checks conducted by members of the research team (70%) and PLC self-report (30%) all schools met the pre-specified per protocol level of five of eight criteria. However when the level was set to six of eight, three PLCs (two from one school and one from another, all from the QTR-Set group) were excluded. Figure 6 illustrates the results when these data were excluded from the analysis.

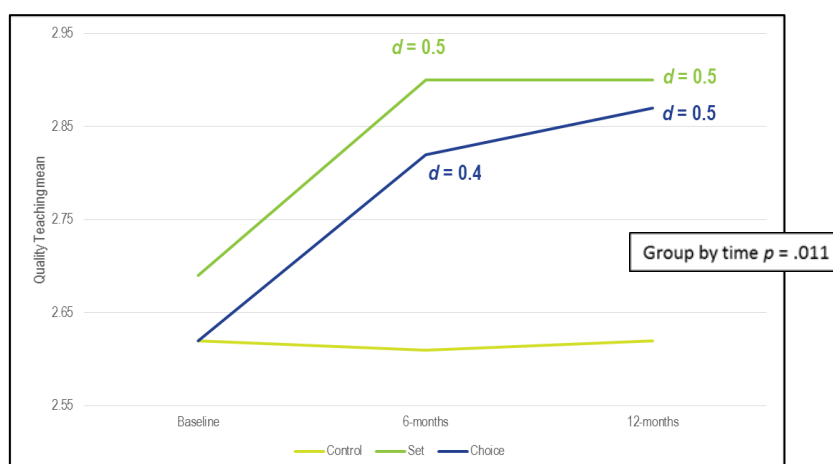


Figure 6. Per protocol analysis, teaching quality at baseline, 6-months, and 12-months

Moderation effects

Moderators of intervention effects were explored for: type of school, SES, location, teaching experience, and sex of teacher. Moderator analysis indicated time by intervention effects that differed for the subgroups explored for the variables SES ($p < 0.001$) and sex of teacher ($p = 0.034$); therefore subgroup analysis was progressed for each of these variables. A greater effect was observed for female teachers in the intervention group(s) compared to the control group, an increase (adjusted difference) in QT score of 0.24 (95% CI [.06, .43], $p = 0.01$) for the QTR-Set group, and 0.34 (95% CI [.15, .53], $p = 0.001$) for the QTR-Choice group. For male teachers no significant differences between intervention groups and control were observed at 12 months follow-up. This suggests the intervention might have been more effective for female teachers. However, given the limited power with fewer male teachers (see Table 2), the subgroup analysis should be viewed as exploratory and findings interpreted with caution.

Exploration of the effects within SES categories identified significant findings for the high and mid SES subgroups. A greater effect was observed for teachers in the high SES category for both the Set and Choice groups compared to the control group on QT score with an adjusted increase of 0.39 (95% CI [.10, .68], $p = 0.009$) and 0.37 (95% CI [.07, .66], $p = 0.016$) respectively. In the mid SES category the Choice group had an increase (adjusted difference) compared to the control group on QT score of 0.78 (95% CI [.44, 1.12], $p < 0.001$). In the low SES category the Choice group had a significant within group effect, however when compared to the control this was not significant. In the rural (all SES) category there were no significant differences between the intervention groups and control. These aspects of QTR will be further explored in the next phase of research which is currently underway.

Secondary outcomes

Data for the secondary outcomes discussed in the following section were derived from the surveys, interviews and focus groups. A substantial number of comments from teachers are included here in order to convey the range of sentiments about the impact of QTR. In looking for disconfirming evidence about the impact of QTR, the only negative comments made by some teachers were about the logistics of scheduling QT Rounds. Overwhelmingly teachers found participating in QTR a valuable experience.

From the teacher survey, the scales of Teaching for Quality Teaching (and sub-scales), as well as Teacher to Teacher Trust and Teacher Responsibility were analysed, and no significant changes were identified. The results for these scales are appended (Appendix E). Significant changes for the intervention groups in relation to the two scales of Morale, and Appraisal and Recognition, were identified, and these are detailed below.

Impact on teaching practice

All participating teachers were asked in the final survey to indicate the degree to which they felt Quality Teaching Rounds had helped to improve their teaching and that of their colleagues. Of the teachers who responded to these survey items, 94% agreed that participating in QTR had helped to improve their teaching and 76% agreed that QTR had helped to improve their colleagues' teaching (see Figures 7 and 8 below).

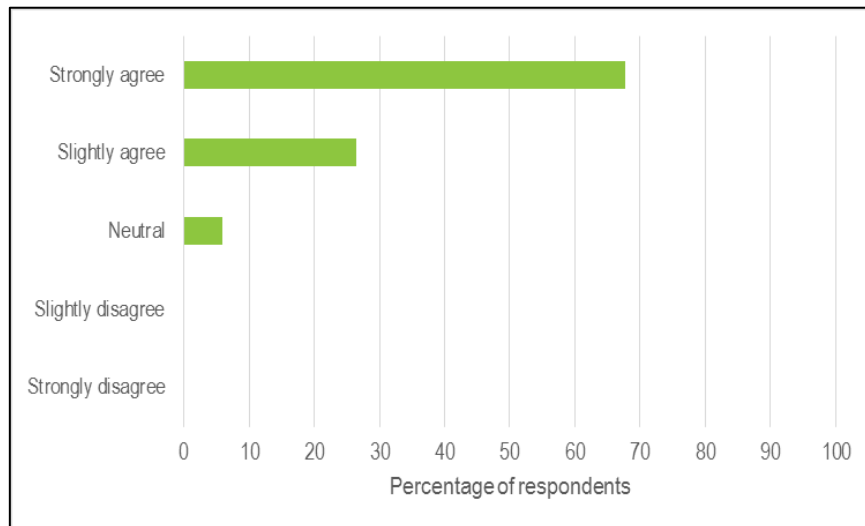


Figure 7. Extent to which teachers agreed that participating in QTR helped improve their teaching

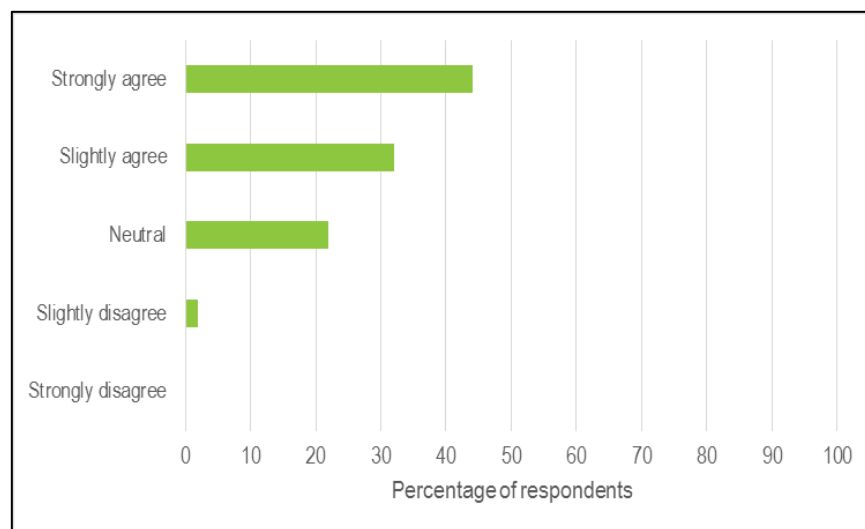


Figure 8. Extent to which teachers agreed that participating in QTR helped improve their colleagues' teaching

Many of the teachers who were interviewed reported that QTR gave them a greater sense of 'awareness' of their teaching and helped them think about their work on a deeper level and in different ways, which in turn brought to light new possibilities for their teaching practice. The use of the QT framework to facilitate more effective analysis, planning, and reflection was also greatly valued.

QTR Rounds makes you question your practice and continually review and refine your pedagogy.

– Kate, secondary teacher of 1 to 3 years

It really made us think about what and how we taught. It also gave us experience of seeing teaching strategies in other areas.

– Ryan, secondary teacher of 16 to 18 years

I think it maybe got me to sort of look back a little bit about how I could re-present certain content, how I could use group work, and as I mentioned with the revision, just sort of learning what could work and what couldn't work, and just being more reflective in general. I think that's probably the thing I've got out of it I suppose, so I'd say it's had a big impact.

– Jack, secondary teacher of 4 to 6 years

Again, I guess it just really confirms that what you're doing is quality work, because sometimes as a teacher you sort of feel a little bit alone. I don't in particular But I know that a lot of other teachers don't have that luxury. So I think, yeah, the Quality Teaching Rounds did help us to understand that our programmes are – they're quality programmes and they do align.

– Molly, primary teacher of 4 to 6 years

Even strategies and organisational things, you walk in a room and go, "I love the way that they've done their readers." Do you know what I mean? Such simple things like that or the way they mark their roll or the way they use the whiteboard for an activity or the way that they call kids up to do an interactive activity, just really little things like that where you probably thought the way you do it was the best way to do it but you're like, "Oh, I hadn't even thought about that way to do it." So yeah, just the exposure I suppose ... you can't read in a book a lot of that stuff especially ... the manner that people have with children. You could think someone is the strictest teacher in the world and then you go and sit in their class and you're like, "You know what? The rapport that you have with your children is beautiful."

– Kristy, primary teacher of 4 to 6 years

I've been able to implement what I've learnt about teaching, and also reassuring myself that I was actually doing the right thing to begin with, but it's far more reflective because, you know, "Okay, I've just taught this lesson, did I really hit these markers, did I really get what I wanted out of it, did the kids really understand where we were going, do they get the sequence?" – that kind of thing. So yeah, it's making a difference in my practice because I'm more focused. Like one of the readings we read was about targets and goals and, you know, it aligns with the Quality Teaching where [you're asking] "do the kids know where we're heading?" And so ... having that makes me far more focused on what is my point of this lesson and getting it out there, so it has been making a huge difference.

– Jodi, primary teacher of 10 to 12 years

Like just making [us] more aware of the framework and that every element is as important as the other, and where you can implement it and do implement it. Like a lot of the time when we're busy we get lazy, you know, you think, "I'm just going to do a really easy lesson with Year 8", but I think since I started the Rounds I've been more aware of that because I've thought, "Oh, if I was being coded on this, this'd be rubbish, I'll fix something here". You know, I think when you're busy, you've got reports to do, you've got things due, you forget, and I think this has definitely made me more aware. ... I've definitely tried harder to – even at the busy times of the year, and even when I'm drained and over it – not to just shove a lesson that's easy in front of them because actually it's more work because they're bored and they don't want to do it. In doing a Quality lesson? In the preparation, a little bit [of extra work] yes, but it's definitely worth the payoff, and I think ... the Rounds have sort of helped me to be a little bit less lazy in terms of – I mean, it's not often, but there are times when you just go, "I'm just going to

photocopy this worksheet that I've got in my file and they're going to do this today", and I think that there's a lot less of that happening in our little PLC and definitely for me because we've seen how much more engaged they are when there's a really quality lesson.

– Peta, secondary teacher of 4 to 6 years

Think of it as a skill set. I think of it as a part of you. ...You're always reflecting, you're always reviewing, you're always thinking of how I could have done something better. It just gives you more areas to think on. ... So I think since doing QTR it's given me a lot more things that I can rely on and all the information that I can kind of process. Also you can read yourself a little bit better. You can read your classroom a little bit better. Yes, you can kind of adapt. ... You become a lot more flexible.

– Latitia, secondary teacher of 1 to 3 years

[QTR] made me think and re-establish and re-connect with ideas that I knew were important but had just sort of either glossed over, forgotten about, or sort of doing but not doing really consciously; so that was important, and that is important to learn in teaching.

– Karen, secondary teacher of 19 to 21 years

Impact on collegiality

Participating teachers were asked in the final survey ($n = 157$) to indicate their familiarity with PLC colleagues prior to participating in the study and whether they intended to continue to collaborate with their PLC colleagues. 17% of respondents indicated that they were unfamiliar with their colleagues before commencing Quality Teaching Rounds, with an additional 14% neutral. 90% of teachers agreed that they intended to continue to collaborate with PLC colleagues following their formal involvement with the study. The results to these two questions are depicted below in Figures 9 and 10.

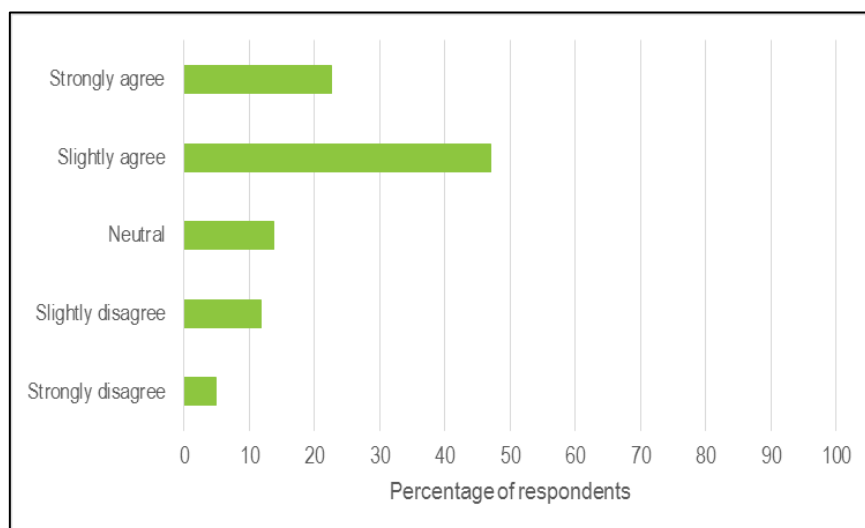


Figure 9. Extent to which teachers were familiar with colleagues in their PLC

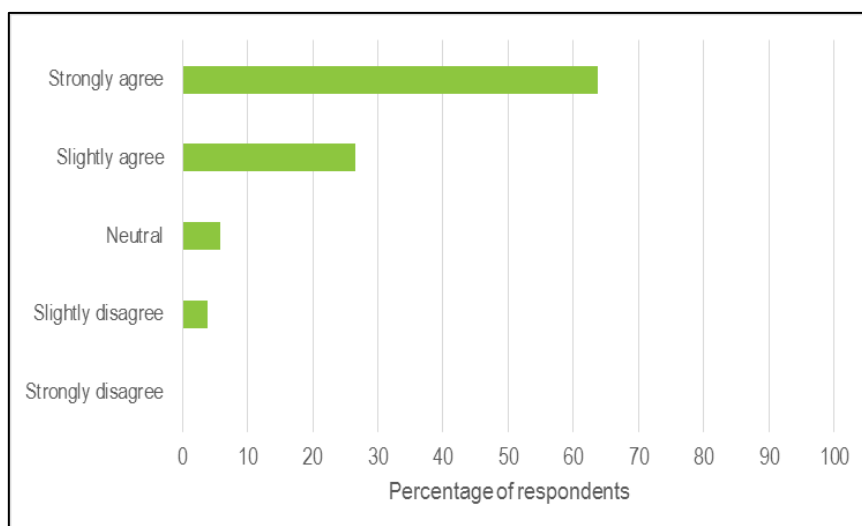


Figure 10. Extent to which teachers intend to continue collaborating with PLC colleagues

Many teachers reported that one of the most significant impacts of participating in this form of professional development was the enhancement of relationships with colleagues. Most participants spoke about how they greatly valued and benefited from the opportunity for professional dialogue with colleagues, and learning from others' experiences and classroom practices.

From those people [in my PLC] in particular because you know, we might have had a friendly lunch conversation before, whereas now we would offer our support to each other because we've developed a relationship that we didn't have before this project. That's on a collegial level but also on a friendship level which is really nice as well.

– Carly, primary teacher of 13 to 15 years

It has been one of the best things I have been involved in for professional learning. Just being able to bounce ideas off – and also being in a group with people that are not in my stage and people I don't usually get to work a lot with. That's been absolutely fantastic and helpful. And just being able to go into a Stage 3 classroom, where I'm not normally, and it made me think maybe I would like to be up there. But just the people in there being so supportive. ... We weren't all very close to begin with but now we are and we feel safe talking about stuff with each other and it's been really – I mean, our group is just so positive.

– Chrissie, primary teacher of 4 to 6 years

Discussions with [my PLC] allowed me to kind of get things off my chest and ... say things that I was frustrated with and it was just nice to have teachers who knew what it was like to have a tough class and knew what I was going through and had valuable things to say back. ... It was nice having that environment where it was safe. I felt like I could say anything about how I was feeling about the class and get a reasonable conversation out of it and then also get to see and compare what troubles other people were having in their classrooms. It kind of puts things in perspective. It's like, "Okay, I'm not the only one struggling" ... it just gives you a good perspective as to what's going on in the school.

– Daniel, primary teacher of 4 to 6 years

The people I worked with were just brilliant, I thought they were fantastic, and I was just amazed by how clever and smart and terrific they were. And we had a beginning teacher and I was just blown away by how smart she was, and how intelligent and her emotional intelligence, and how

she – yeah, dealing with four people who were just really committed to it – yeah, I couldn't have hoped for better people to work with.
– Tony, secondary teacher of more than 24 years

Impact on morale, appraisal and recognition, and school culture

Staff morale

Participating teachers were asked about staff morale in the surveys at the baseline (mid-2014), six-month (end of 2014), and 12-month (mid-2015) time points. Questions related to: team spirit, enthusiasm for work, energy and pride in the school (Hart et al., 2000). The morale scale consisted of five items on a five-point scale from strongly disagree to strongly agree. Figure 11 below illustrates the mean scores over time for these scales (with a minimum of one, and a maximum of five). The QTR-Control group exhibited a significant decline in morale over the three time points ($p = .029$), while significant positive effects on teacher morale were observed for the QTR-Set group at 6-months ($d = 0.4$) and for both QTR-Set and QTR-Choice groups at 12-months ($d = 0.6$ and $d = 0.4$ respectively).

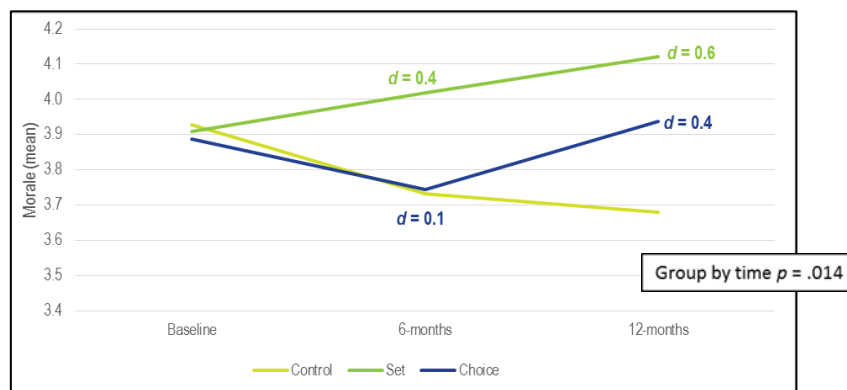


Figure 11. Teachers' perceptions of staff morale (5-item scale)

Appraisal and recognition

Participating teachers were asked about the level of appraisal and recognition experienced in their schools at the three time points. Questions included items such as receiving feedback on performance, opportunities to discuss performance, recognition of good work, and receiving encouragement (Hart et al., 2000). The scale consisted of five items on a five-point scale from 'strongly disagree' to 'strongly agree'. Figure 12 below illustrates the mean score over time for these scales (with a minimum of one, and a maximum of five). As with the morale scale, the control group showed a decline over time in appraisal and recognition mean scores (however not significant). In contrast, the QTR-Set and QTR-Choice intervention groups demonstrated significant gains (difference between control and intervention groups), with significant positive effects on sense of appraisal and recognition observed for the QTR-Set group at 6-months ($d = 0.4$) and for both QTR-Set and QTR-Choice groups at 12-months ($d = 0.4$ and $d = 0.5$ respectively).

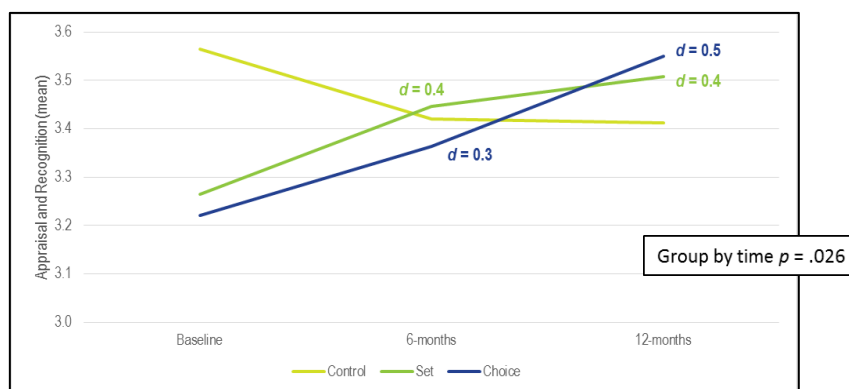


Figure 12. Teachers' perceptions of appraisal and recognition (5-item scale)

Teachers' perceptions of impact on school culture

Many teachers mentioned positive impacts on aspects of school culture as a result of participating in QTR. Overwhelmingly teachers appreciated the opportunity to work across stages or faculties, the 'level playing field' that the QTR process supported, and the opportunity to see inside each other's classrooms (the deprivatisation of practice). Many teachers also discussed how participation in QTR helped to create a more engaged culture in the school.

[QT Rounds] was a catalyst for changing the culture in our school. Staff are happy to embark on new projects and have their peers observe their teaching which was a massive change for our school.

– Jodi, primary teacher of 10 to 12 years

I think the Quality Teaching Rounds have enabled me to have that discussion with people outside my faculty, and I think that's the strength in this... it has the potential to make the school's teaching staff more cohesive, because there is that element of them and us. ... But this Quality Teaching Round has allowed us to actually start dialogue with other people, and we can start saying, "Okay, well this is important and we all do have that common goal, which is to improve the student outcomes". Now, I think that what it does is [it] places that idea of excellence up there for not just the student outcomes but for the teacher outcomes, for what we do as a staff. So for me ... [to] actually start engaging with dialogue with the TAS faculty in terms of LOTE – that's brilliant. That's wonderful.

– Karen, secondary teacher of 19 to 21 years

[QTR] has improved dialogue about teaching. It's giving these young teachers a dialogue to explain their practice and describe their practices. It's given them the skills to observe those practices in other people and so then they can be reflective on themselves but they can also be reflective to other people and give other people feedback. We know that feedback is the number one thing that people want and teachers want it and students want it. If I can give them a dialogue to provide feedback in a constructive, professional, criteria-based way, then it will as a result have positive outcomes. ...It's not going to start fights because it's a criteria-based judgment, it's got a professional language associated with it, it's got the support of research and evidence base so I think that's the benefit to it. ... I think that ultimately will have an impact on teacher performance but I think the dialogue that it's opened up in the staff has been equally as valuable as the performance happening in the [class]room. ... But I think the fact that it makes people mindful, it makes people have discussions about it and then they're able to take that outside of the context of QTR and use that in other professional discussions, that's skill-

building. I can't do that in a one-hour PD session on a Wednesday afternoon. So that to me as, probably for my executive role, has been more impressive. To see that has been a nice change.

– Sarah, primary teacher of 7 to 9 years

In terms of the school, it was a really great way to get people together across stages talking about curriculum. I think often when you do curriculum development or anything like that, it's normally stage-based so that you can converse with your peers. So it was really nice to have those conversations with a Year 6 teacher and stuff that you could use in Kindy. ... you find a lot of common themes [or] issues that they're having or you can sort of give advice.

– Kristy, primary teacher of 4 to 6 years

[T]he culture of the school has altered significantly since we did [QTR] ... and I guess their teaching would have improved immensely because of the Quality Teaching framework, the comprehension and the understanding of the Quality Teaching framework. All of it kind of melded in together to make it that immense professional growth ... it's much more than teachers prepared to open doors. [It's] teachers talking ... those professional conversations and that willingness to take on projects, that willingness to be involved.

– Jodi, primary teacher of 10 to 12 years

Impact on teacher identity

Many teachers reported feeling affirmed through participation in Quality Teaching Rounds. Early career teachers and more experienced teachers alike spoke about how the QTR process increased their confidence and provided them with opportunities to 'speak up' and 'be heard'. Many teachers spoke about QTR helping to reinvigorate their practice, and some discussed how QTR helped to affirm their interest in a leadership or mentoring role, or taking the 'next step' in their careers.

I think I always knew that passion was there; it's just that so many things take us away from what we actually want to be doing. Like, I'd happily make quality resources all day every day and plan quality lessons, but there's so little time to do that and I think this project actually says, "You know what? You're allowed to do it. Here's the time to go and do it and do it the way you want to do it".

– Carly, primary teacher of 13 to 15 years

[T]he rapport that they establish just reminds me how important it is to really get to know the kids, and still take that time to relate to the kids. ... Because when they see you as a person, and you treat them as a person, it certainly makes everything else follow along a lot more smoothly. Not that I didn't do that before, but it was just nice to see it refreshed when I looked at the younger teachers and the way they approached that.

– Michelle, secondary teacher of more than 24 years

I really feel like I've bettered myself by doing this. It's only strengthened, you know, the initiative that I have to be a teacher. It's certainly sort of, like, re-established that thought that, yeah, I've definitely chosen the right career path and this for me. This is for me for the rest of my life. So I think, yeah, in that sense it's definitely helped in that way.

– Samantha, primary teacher of less than one year

Some schools you go into you're very insular. You're in your own classroom. You're in your own world. Nobody comes in. Nobody checks what you're doing. You've got nobody to kind of validate that what you're doing is right, is wrong, could be done better, or that you are doing something fantastic, let's share it with somebody else.

– Jade, primary teacher of 1 to 3 years

I think it reaffirms for me that I see myself as a good practitioner ... a good classroom teacher, and that was really nice ... being reaffirmed from older staff, more experienced staff, and even

staff my own age. ... So yes, it sort of made me realise that I'm ready to start looking at other roles in the school – so starting to look at maybe acting assistant roles and that kind of thing. ... I went, “well maybe I am ready to do my next level of accreditation” because I was like “well have I been teaching long enough...?” But doing [QTR] it stood out to me ... there's no timeframe on this; some people are good teachers and some people are great teachers.

– William, primary teacher of 4 to 6 years

It just validates that you are doing a good job and I think it makes you realise that you've picked the right profession, you know, “I'm obviously good at this and this is something I want to do and keep getting better at.” ... It makes you realise your own strengths and weaknesses and where you do have to pick up your game or where you are doing even better than you thought you were. ... So I think in terms of your own professional development it points you in the right direction, what you're doing [well] and what you need to work on.

– Kristy, primary teacher of 4 to 6 years

So I think I've got a lot more confidence. Even though you're not being judged as a teacher I still think it gives you confidence to get up there and teach in front of people. So I think even though I'm a new teacher and I know I'm still learning I think I can show them what I've got so far, can't hurt, learn and listen to what they've got to say. So yeah, I do now find myself now putting my hand up for a lot more things than probably what I would have prior to the QT Rounds. ... I think I'm again more willing to interact with [my colleagues], I'm not – I don't feel as intimidated. ... I am happy to voice my opinion on what I think about some teaching elements or how things should be taught – yeah, so it's given me confidence.

– Leah, primary teacher of 1 to 3 years

Within me, as a teacher, I think the coding gives you a lot of confidence in your practice ... you're in a job that's so highly criticised every single day, so there's scores and marks and students and that ... they're not like a dish that you just hand out because you're a chef, and they're not just a house that you build because you're a builder. They're so tangible, they just mould and they change every day. So I think being able to put it down on paper that [says], “Yes, you are achieving at a high level”, it's confidence boosting. You know, even if you have a bad day ... you've tried the best you can to present the best lesson that is possible, and it's really good. I guess more of a teacher for other teachers. I think the benefits of being able to work with other teachers and open up your classroom to other teachers, I think maybe my role is to ... prompt that now, how can we – you know, my role as a teacher is not just supporting the kids – can we now just turn to support each other as well, and open up the doors.

– Allana, primary teacher of 4 to 6 years

I think sometimes people get in their little comfort zone and they're like, “well, no, I know how to do this. I've been doing it for so many years”, and vice versa. I'm new and it gets me out of my comfort zone of being protected in my four walls and I don't want to show everyone what I'm doing. So yeah, I think it's definitely – yeah, it's an official – it's got me out of my comfort zone and it's made me more passionate about trying to connect with students, getting the best out of [them] ... for their ability.

– Leah, primary teacher of 1 to 3 years

[Y]ou know, I know I'm a good teacher and I know I'm an effective teacher, so if I can help somebody else then I think that's great, and these rounds have shown me that I can do that, but I can also learn from other people.

– Jo-Anne, primary teacher of 22 to 24 years

I guess probably the biggest thing is I'm a bit more open than I would have been, say, 18 months ago [to] helping other staff. ... That's probably been the biggest benefit. Leading PD

with other staff, I guess, is probably something that really started following my participation in the Rounds. That's probably been the biggest.

– Jack, secondary teacher of 4 to 6 years

It's reinvigorated me, because after all these years you just do what you do, and it was a bit scary to start with because I kind of thought, "Oh, they know everything and they've done it at uni and I've had to learn it". Like Quality Teaching I've had to sort of take it on, I'm not immersed in it. But now I'm on equal footing with them.

– Jo-Anne, primary teacher of 22 to 24 years

I mean look, I've been teaching 27 years, I can go and do an off-the-cuff thing but, you know, it's always good to see what the new technology is, you know, kids that come to my classroom can educate me a hell of a lot more with technology stuff and it's interesting to have that dialogue with them. So I think Quality Teaching at my later stage in my career has sort of switched me back on a little bit, just to give me that – it's not that you lose your passion, but sometimes it gets very hard to maintain it when things are going on in your life and things go on around. I think QTR just came along at the right time, so now I'm sort of mentoring the less experienced teachers which I find very valuable. It helps me as well as helps them.

– Michelle, secondary teacher of more than 24 years

I know me personally ... I could have anyone sit in my classroom now, because ... I'm so used to the fact that there's other people there. ... So the attitude, I think, has changed dramatically because I knew when we were initially doing it, it was a bit like everyone was nervous to be coded and I think they thought the wrong thing of what the coding meant. But myself and the other teachers who have done it, well, we know what the coding means. ... So it's not that you're good or bad or that overall you're a good or bad teacher. It's got nothing to do with that, and I think that's come with the knowledge. The teachers know now that that's not what it is, so they're not so scared and fearful of that judgement. Yeah, so I think it's definitely changed the attitude of a lot of teachers at the school.

– Kate, secondary teacher of 1 to 3 years

Impact on students

Being involved in QTR also benefited the students of many teachers who spoke about their students being more engaged in their learning and producing work of a higher standard. Many teachers also spoke about having higher expectations of their students, and giving their students greater autonomy or choice by experimenting with different approaches to their teaching.

I'm just facilitating more so than standing up and going, "This is what you need to do", so that's been a big change as well. And then you do – like, the kids have been able to produce some amazing stuff when I've let go of the reins and it's just blown us away. So it's been good.

– Paul, secondary teacher of 1 to 3 years

[T]hey said, "oh well, this class just can't do that" ... and I'm going, but I'm giving them the option to achieve, I'm giving them the point. That's what I think is brilliant about this, and that's why the Year 7 group are so happy, because they're achieving, and they're able to show it to an audience now, and sort of say, "we did this!" and "look at this!"

– Karen, secondary teacher of 19 to 21 years

I think it's improved my teaching. It makes me focus more on all of the different elements and making sure that I have a well-rounded lesson. Yeah, I do feel as though my kids are more enthusiastic and more focused and more involved in my lessons.

– Judith, primary teacher of 19 to 21 years

I think sometimes we dumb down ... I've got very high expectations now from doing Quality Teaching ... I think because my teaching's changed. I think in terms of delivery of content – that engagement with the kids, the quality learning environment, that intellectual quality, making learning significant – all of those umbrellas, I guess of the Quality Teaching framework which filter down. ... I think I went into Kindergarten, I guess like a lot of people, thinking it was quite basic but when I got there I realised that there's a lot of potential in these kids. So I sort of made a decision ... that I'm not going to limit myself to what we teach these kids.

– William, primary teacher of 4 to 6 years

I've always had high expectations of my students, but I think they're now even higher and everyone can participate, everyone can be engaged, everyone has the opportunity to know what's being asked of them or participate in what they're needing to do, obviously through differentiation and things like that, we can include all of them.

– Chrissie, primary teacher of 4 to 6 years

Yeah, they've enjoyed it, they're more engaged. ... They're doing better with [Quality Teaching]. Because I'm more aware of the challenge and I'm more aware of making it significant to them, and I'm more aware of all that. It is impacting on their learning. ... Whilst they've enjoyed the learning and they're engaged and they're getting it, they would have gone along with whatever I gave them, they're very compliant. So I don't think *they'll* notice a big difference; I've noticed a big difference, *I've* noticed the difference.

– Jodi, primary teacher of 10 to 12 years

I think they're a lot more confident in themselves whether it's because I'm showing a completely different teaching strategy and tapping into their resources a little bit more and maybe just because I'm confident after all the discussion and all the strategies we've discussed that I'm like, "okay, I can actually do this. I'm not doing such a completely hopeless job". They're a lot more confident. They want to read now. They want to be the teacher. They want to do this which is great. They want to take all these leadership roles, take accountability for their work and responsibility. ... It's been really, really positive.

– Zoe, primary teacher of less than one year

The impact on my students has been phenomenal because the learning – just sort of taking that step back and letting students drive their own learning and allowing for that little bit of narrative to go on in the classroom if it's extending the learning. The other day we were reading a book and we were talking about *Imagine* by Alison Lester which is all about these kids using their imaginations in different parts of the world with these animals and really animal conservation. The kids started talking about the dentist [who] went and killed a lion from America over in South Africa and so we talked about that. We talked about endangered species and extinct, what does extinct mean, and we talked about protected species and we talked about when's it right to kill animals, when's it not right to kill animals. So this reading of the book turned out to be this very deep and meaningful discussion and it was all student-led because they just kept coming up – and I just sort of facilitated the learning. I think that's just a real snapshot of what I don't mind having done now, whereas in the past I would have been like we're getting off task, we need to read the book now. But that conversation was much more meaningful than what was happening in the book, so it was really good.

– William, primary teacher of 4 to 6 years

DISCUSSION

Improving the quality of teaching remains a key policy goal that is widely considered as fundamental to improving student outcomes. The findings reported here demonstrate the capacity of Quality Teaching Rounds to improve the quality of teaching within a relatively short timeframe for teachers in a diverse range of schools and teaching contexts, thus signalling its potential value across school and community settings.

The primary aim of this study was to test the effectiveness of Quality Teaching Rounds as an approach to PD for its capacity to impact on teaching quality as measured by repeated classroom observations conducted by research assistants who were blinded to group allocation.

In a relatively short-term intervention (as few as four half-day QT Rounds for teachers in some PLCs), participating in QTR produced a significant impact (Cohen's $d = 0.4$), on average, for teachers in schools randomly assigned to the intervention conditions, with the effect sustained six months post-intervention (Cohen's $d = 0.2 - 0.5$).

It is worth noting that there was no statistical difference found between the two forms of intervention, QTR-Set and QTR-Choice. This indicates the effectiveness of the QTR intervention on improving teaching quality, even when just the minimum requirement of one set of QT Rounds was met.

In this section we discuss three issues resulting from our enhanced understanding of Quality Teaching Rounds as an effective form of professional development:

1. Quality Teaching Rounds differs substantially from other forms of professional development, highlighting its applicability to a diverse range of contexts and potential for strong return on investment;
2. Statistically significant and practically meaningful results from this study provide strong evidence supporting the efficacy of Quality Teaching Rounds; and
3. Mechanisms of Quality Teaching Rounds which are key to understanding its effectiveness relate to how QTR: (i) structures the knowledge base for teaching, (ii) enhances collaboration by flattening power hierarchies, and (iii) enhances professional relationships to build a culture of learning among teachers.

Distinguishing features

Where specific effects on teaching have been reported, most previous studies have focused on improvements to a particular aspect of teaching, such as teacher-student interactions (De Roos, Van de Heijden, & Gorter, 2010; Domitrovich et al., 2009; Pianta Mashburn, Downer, Hamre, & Justice, 2008), classroom management (Akalın & Sucuoglu, 2015), or formative assessment (Furtak et al., 2016), often focusing on increases in teachers' use of specific practices (Desimone, Porter, Garet, Suk Yoon, & Birman, 2002). In this study, QTR was effective across a **comprehensive range of teaching practices**.

Alternatively, studies have reported impacts on specific subject-based teaching such as science-process skills (Catobish et al., 2011), science pedagogy (Stevenson, Stevenson, & Cooner, 2015), facilitation of mathematical and scientific thinking (Van Whittaker, Kinzie, Williford, & DeCoster, 2016), effective mathematics teaching (Bruce & Ross, 2008), strategies targeting phonological awareness (Cunningham, Etter, Platas, Wheeler, & Campbell, 2015) or language and literacy more broadly (Landry, Swank, Anthony, & Assel, 2011; Neuman & Cunningham, 2009). Our intervention differed in its **applicability across subject and content areas and across grade levels**, with potential transferability of teachers' learning to a broader range of teaching contexts – not just 'this topic', 'this subject', or 'this set of skills', but 'teaching in general'. A specific content focus or specific targeted practice has been considered a core component of effective PD (Desimone, 2009). We suggest that this view may be derived more from what was measured/able than what is possible to measure.

Many prior studies show that training in particular techniques enables teachers to reproduce those techniques, more frequently or more consistently. Few studies address **the quality of practice** but when they do, they either tend to be very specific, such as quality of classroom interactions (Pianta et al., 2008), or quality is implied in the targeted focus. One experimental study reported by Antoniou, Kyriakides, and Creemers (2011) contrasted their 'dynamic integrated approach' to teacher professional development with a more conventional 'holistic/reflective approach'. The dynamic integrated approach addressed eight factors describing instruction – orientation, structuring, questioning, teaching-modelling,

applications, management of time, teacher role in setting the learning environment and classroom assessment – which were measured using the five dimensions of frequency, focus, stage, quality and differentiation. These researchers found that teaching skills improved more over the course of one year for those exposed to the dynamic integrated form of PD than for those encouraged to reflect on their teaching practices and beliefs in a more holistic way, with both groups participating in nine PD sessions. Similarly, Van de Pol, Volman, Oort, and Beishuizen (2014), who defined teaching quality as teachers' capacity to effectively scaffold learning using the four steps of diagnostic strategies, checking diagnoses, giving contingent support, and checking student learning, found that the teachers in the intervention group increased the quality of their teaching as defined in this way.

Many studies of effective PD interventions involve teachers in supported processes over the course of an extended period (typically six to twelve months). In our study, Quality Teaching Rounds was **supported only by teachers themselves, after the initial workshop** which was attended by half of the teachers who then organised the school-based intervention.

It is also noteworthy that a **relatively short intervention** produced sustained effects (six months later), for teaching in general and in a new school year. In studies with a reported effect of PD on student achievement, teachers were engaged, on average, in more than 80 hours of PD (Supovitz & Turner, 2000). In the Set intervention, teachers averaged 42 hours of PD and in the Choice intervention only 24 hours (including the time in the two day workshop for half of the participants).

Meaningful effects

As with all statistical results, the practical significance of our findings is worth further consideration. The effects found in our study ranging from 0.2 to 0.5 are small to moderate. In educational research, effect sizes are often reported in relation to the impact of interventions on aspects of student achievement. In such studies, effect sizes of 0.3 are typically considered meaningful (Coe, 2002; Sanders & Ni Chonaire, 2015).

Fewer studies report effect sizes in relation to changes in teaching practices or teaching quality. We stress the significance of the reported effects with a primary outcome measure of teaching quality that is as multi-faceted and translatable to all teaching contexts as the Quality Teaching measure. Our result is more complex than students mastering new cognitive or linguistic tasks or teachers reproducing a specific set of skills. Rather, our results signal a change in the overall quality of teaching – where the measure of quality includes assessment of the treatment of knowledge, the level of understanding produced, expectations conveyed to students, support for learning in the classroom environment and significance of the learning activities. Such a measure is expected to be less sensitive to change. **To achieve effects of 0.2 to 0.5 with such an instrument** for both intervention groups, with no change in the control group, while adhering to CONSORT protocols including independent randomisation and blinded observers **is a noteworthy outcome**. This is especially so with such a short-term intervention primarily involving teachers themselves rather than external consultants or expertise, after the initial workshop. Hence the main costs in running the intervention related to releasing teachers to participate in Quality Teaching Rounds. Demonstrably, the **return on investment was high**.

Why the approach works

As with other RCTs, this study is useful in providing evidence of an intervention working, in this case an approach to PD making a difference to the quality of teaching practice. Equally important is understanding *how* and *why* the approach works (Connolly, 2009) – questions that are informed by the qualitative evidence gathered. As noted by Lewis, Perry, and Murata (2006), “Innovations often fail when educators focus only on the surface features of the innovation rather than the underlying mechanism[s] that will enable it to work” (p. 5).

We argue that Quality Teaching Rounds works both because of the specific nature of the QT framework and because of the way the framework is used to guide teachers in the observation, analysis, discussion and refinement of each other's teaching. Specifically, we contend that three key mechanisms of Quality Teaching Rounds are likely explanations for the effect on quality of teaching practice for teachers in the intervention groups; namely that Quality Teaching Rounds impact on: (1) the knowledge base for teaching; (2) the power relations among collaborating teachers; and (3) teaching culture in schools through new professional relationships among teachers. Each of these ‘mechanisms’ is addressed briefly, illustrated with excerpts from interviews with participating teachers.

A mechanism for structuring the knowledge base for teaching

The QT framework does particular kinds of work. It provides a structure for thinking about the practice of teaching that organises the many discrete skills and practices into three key ideas – the dimensions of Intellectual Quality, Quality Learning Environment and Significance – and the 18 elements of the model. In so doing, it reduces the multiplicity of teaching's demands without denying its complexity. The dimensions are comprehensive in focus, addressing the intellectual demands of the work, the learning support provided by and expectations of teachers, and ways of connecting school learning to broader issues in students' lives. The QT framework articulates joint concerns for academic excellence, equity (especially for those who have been most disadvantaged by schooling) and curriculum relevance (Gore, 2007), without pitching these goals in opposition to each other as has sometimes been the case historically (Black, 2001).

The QT framework also provides a level of specificity and guidance for teachers that is rare, especially for such a comprehensive framework, while doing so in ways that are adaptable to local contexts (subjects, topics, lessons, classes). While some commentators react negatively to any system involving numbers, it is the way the QT framework resists simplistic adding of numbers and rating of individuals, and insists on using the approach only for PD purposes and focused on teaching rather than teachers, that guards against performativity (Ball, 2003). At the same time, it enables enough calibration/specificity to guide teachers and give them confidence in their own and each other's analyses. High levels of buy-in and commitment to using the framework have been found (Gore & Bowe, 2015), features which are essential for sustaining long-term growth in teaching quality.

The QT framework's structuring of the work of teaching (or instruction) makes 'good teaching' more accessible and in so doing helps teachers feel more confident about their work and helps them make sense of the complex and critical activity of teaching.

It gives you just more a clearer lens to look through or a framework to base your teaching on...it's nice to have a little bit of a framework to ... pin your teaching on, to know that you're doing the right thing really... It's given us greater confidence in what we're doing because we can see that the programs we run ... are addressing the Quality Teaching model and it gives you greater confidence in your teaching and what you're doing.

– Molly, primary teacher of 4 to 6 years

I really like the way that you actually have the [Quality] Teaching framework there as the basis.... It's not just a matter of "that lesson worked well". It's not a free-for-all discussion. It is actually guided by the framework which is really good because you've got that common language and everybody kind of understands where you're coming from and I think I really valued that.

– Jade, primary teacher of 1 to 3 years

Look, I think what makes it safe is having [the Quality Teaching] Classroom Practice Guide because you can really depersonalise it and say, "Well, going on the language here, this is what the coding needs to be, because that is the evidence we have to be able to back it up". So, because you're working in that framework with that language as your guide it does make it really safe

– Tilly, primary teacher of 1 to 3 years

A mechanism for enhancing collaboration by flattening power hierarchies

One of the major barriers to successful collaboration among teachers is the underlying power dynamics that authorise some teachers to dominate in group discussions or produce a level of politeness that gets in the way of critical analysis (Hargreaves, 1994). The organisation of Quality Teaching Rounds whereby all PLC members take their turn to host a round, subjecting their lesson to observation and analysis, acts to 'level the playing field'.

In addition, the process of Quality Teaching Rounds is not about 'giving' a teacher feedback or providing 'coaching' but is about a group of teachers discussing each other's teaching using a lesson taught by each teacher as the basis for their discussions. Everyone in a PLC, whether a beginning teacher, a highly experienced teacher, or a principal, participates at all

stages of the process – being observed, taking turns to speak, everyone coding the lesson including the teacher. As a commitment when doing Quality Teaching Rounds, it is critical that PLC members agree to uphold confidentiality and use lesson evidence for the purposes of the PLC discussions and not for evaluative or rating purposes. As a result of feeling safe to do this critical analytical work, Quality Teaching Rounds build professional relationships among teachers:

I think I'm ... more willing to interact with the [other teachers] – I don't feel as intimidated. As a new teacher you sort of sit back and go, "I don't really know what they're talking about" but QT has given me a lot more confidence so I know I can speak a bit more because I'm more confident as a teacher. I'm not afraid to speak in front of people, even if I'm wrong.

– Kate, secondary teacher of 1 to 3 years

One thing that I've really liked about this is that there's just been the four of us, so you're almost – not forced, but you have to speak up. You do get the opportunity to share your thoughts and to speak. I know when we were coding, you know, we'd have to justify why we gave ... that particular code. ... That's been the best thing about this is that it's been in a small [group]. I've gotten to really know three other teachers and their practices throughout this time. I feel like I've been heard.

– Victoria, primary teacher of 1 to 3 years

Even the more experienced teachers who have been doing QT [Rounds] are really taking it on board as well and they're asking a lot of questions which shows ... that you could be teaching for 20 plus years and still have a lot of questions.

– Derek, primary teacher of 1 to 3 years

A mechanism for enhancing professional relationships to build a culture of learning among teachers

Quality Teaching Rounds typically involve teachers in PLCs from different subject areas and/or different grade levels working together. This is quite different from professional development that emphasises subject-specific knowledge. The Quality Teaching Rounds approach treats teaching holistically, recognising that what teachers know will always be mediated by what they do in the classroom. In addition to addressing the knowledge to be taught and how to engage students in powerful learning experiences, we suggest that at least equal attention must be given to teachers' knowledge of teaching (that is, teachers' broad pedagogical knowledge) in the quest for improving teaching quality. As a comprehensive pedagogical framework to guide reflection, analysis and improvement, QT offers an approach that enables teachers to work across subject and grade level divides to learn from each other, thus providing a broad conceptualisation of what teachers need to know if they are to succeed in the classroom.

Working across the typical divides of disciplines and grade levels (common staff-room divides) fosters new relationships and new respect within schools that help build a culture of support and collaboration.

Doing the Rounds was the best thing that I've been able to do. Building that relationship with the other teachers like within different faculties that I didn't really have a relationship with before and being able to go into that faculty and get assistance for certain things especially across-KLA ideas. It strengthened my relationship so that this year I organised a medieval day and I could get the food tech teachers – they catered. Then the drama teachers helped and it was really good across KLAs. Yes, it strengthened relationships in terms of going to get assistance from other faculties and other areas and didn't make it so segregated.

– Christina, secondary teacher of 1 to 3 years

They did not like me, and I did not like them, and it was only on hearsay and reputation alone, and they did not know me from a bar of soap, I did not know them from a bar of soap. But when I was in the room with them and working with them, I respected them and I learned to trust them and I learned who they really were.

– Karen, secondary teacher of 19 to 21 years

And it's good to work with people that I don't normally work with. ...And the fact that we aren't all on the same stage just brings us that little bit more – like, I've got to know one lady – closer, and I'm able to talk to her. ... I didn't even realise she was a teacher here before, particularly in the middle of last year, I thought she was just a parent that didn't leave. I didn't even realise! It's pretty sad ... the school is so big I didn't realise. ... I've actually been involved in her lessons and got to know her through this, and her passion – yeah, it's been good.

– Tessa, primary teacher of 10 to 12 years

I think in terms of impact on myself and my colleagues and the kids, I think really [QTR] has been the biggest winner to be honest [because] ... breaking down the barriers going into other peoples' classrooms to share, that collegiate feeling. The kids, probably giving them a more engaging set of activities and the way that I present the work in the classroom – just more thought goes into that, and I think as a whole-school initiative, you know, everyone's involved so everyone seems to be on board and we have that common goal to work towards.

– Michelle, secondary teacher of more than 24 years

CONCLUSION

We argue that the improvement in the quality of teaching and teacher morale and recognition for our intervention groups was not simply the result of teachers working collaboratively with a pedagogical framework to guide their practice and analysis. The particular qualities of the QT framework and ways of using it in the context of Quality Teaching Rounds, as outlined in the three 'mechanisms' addressed above, are critical to the effects produced.

The findings from this study have implications for the use of other frameworks in guiding the substance of (preservice and/or inservice) teacher development and for the use of collaborative processes of professional development. Moreover, our results broaden the international evidence base for improving teaching. Although our approach can be considered part of the most recent practice-based turn in teacher education (Zeichner, 2012), the QT framework and its use in Quality Teaching Rounds does different kinds of work. QT is not just about practices of and for teaching but includes concerns for social justice, connecting school learning to broader social issues, and the treatment of knowledge. It thus brings together key commitments of different traditions within teacher education (as argued by Gore, 2001), going beyond the social efficiency and competency-based traditions that characterise much of the earlier work in this field. Moreover, the Quality Teaching framework is not simply 'practice-based' in the sense of practising discrete teaching skills but, instead, is utilised in the context of full lessons. It develops inquiry habits and productive ways of collaborating with colleagues in the assessment and refinement of teaching. In this way, the approach strengthens rather than diminishes the intellectual and professional aspects of teaching (Evans, 2014).

With demonstrated effects of our intervention on the quality of teaching and teacher morale, this study makes a significant contribution to the field of teacher professional development and provides an exciting foundation for further studies into such matters as the longer term sustainability of impact, impact on teachers at different career stages, the impact of ongoing or longer term participation in Quality Teaching Rounds, and the impact on student outcomes (of various kinds).

Granted limitations posed by complex and intransigent social, political, and economic conditions, improving teaching remains a key policy goal that is widely considered as fundamental to improving student outcomes. This study's demonstration of improvement in the quality of teaching for a representative group of teachers in a diverse range of schools and teaching contexts signals its potential value across school and community settings.

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APPENDICES

Appendix A: Implementation fidelity checklist

Appendix B: QTR baseline teacher survey

Appendix C: Post-intervention interview schedule for Set and Choice groups

Appendix D: Impact on QT whole sample and per protocol

Appendix E: Impact on secondary outcomes

Appendix A: Implementation fidelity checklist

QTR Implementation Fidelity check - general information



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Communities

***1. Your name:**

***2. School:**

***3. Host Teacher:**

***4. PLC Members:**

***5. Date: (DD/MM/YYYY)**

***6. Were all PLC members in attendance?**

☐ Yes

☐ No

If "No", please specify

***7. Was there a designated individual facilitator for this Round? If yes, who?**

☐ No

☐ Yes

Name

***8. Was a professional reading session conducted?**

☐ Yes

☐ No

If "No", please comment

QTR professional reading session



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***9. What was the reading? (Please email a copy to QTR@newcastle.edu.au)**

***10. Who provided/recommended the reading?**

***11. Did PLC members complete the reading prior to the Round?**

- ☐ No
- ☐ Some
- ☐ All

***12. Did PLC members find the reading useful?**

- ☐ No
- ☐ Some
- ☐ All

***13. How long was the reading session? (minutes)**

14. Comment:

QTR lesson observation



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***15. How long was the lesson observation? (minutes)**

***16. Were PLC members present throughout the lesson?**

- ☐ No
- ☐ Some
- ☐ All

17. Comment:



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***18. How long was allocated for individual coding? (minutes)**

***19. Did PLC members individually code all QT elements prior to the lesson discussion?**

- ☐ No
- ☐ Some
- ☐ All

20. Comment:

QTR post lesson discussion



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***21. How long was the post lesson discussion? (minutes)**

***22. Was the host teacher included in the discussion?**

- ☐ No
- ☐ To some extent
- ☐ Yes

***23. Were PLC members present throughout the discussion?**

- ☐ No
- ☐ Some
- ☐ All

***24. Did PLC members provide their codes and justification using evidence from the lesson for each QT element?**

- ☐ No
- ☐ Some
- ☐ All

***25. Did PLC members contribute to the coding discussion for each QT element?**

- ☐ No
- ☐ Some
- ☐ All

***26. Did PLC members take turns in facilitating the discussion of this Round?**

- ☐ No
- ☐ Some
- ☐ All

***27. Was the Quality Teaching Classroom Practice Guide a consistent point of reference throughout the discussion?**

- ☐ No
- ☐ To some extent
- ☐ Yes

***28. Who collected the PLC members' evidence sheets and the group's coding sheet?**

29. Please comment on the substance of the discussion (in terms of discussion about the lesson, the teacher, and/or teaching practices in general):

30. Please comment on the tone of the discussion:

31. Any additional comments:

Appendix B: QTR baseline teacher survey

QTR RCT - Teacher Survey

1. Introduction

Dear Teacher,

This survey is part of the Quality Teaching Rounds research project that your school is involved in. All of the teachers participating in this study are being asked to complete this survey. Completing this survey is your indication to us that you allow us to use your answers in our data. Your answers will contribute towards our findings for this study but you will not be identified in any way in any documents or reports produced from our findings.

For each item, either mark the response that best suits, or answer in your own words where necessary.

The personal demographic information that we are collecting (such as language background) allows us to make valuable comparisons with teachers and other schools involved in this and other related studies.

Please review the information in the email which directed you to this survey. Your teacher code, which is provided in that email, needs to be entered into Question 1. Please contact QTR@newcastle.edu.au if you have not received a teacher code.

It is anticipated that it will take you approximately 30 minutes to complete this questionnaire.

Thank you in advance for your time.

QTR RCT - Teacher Survey

2. Teacher Background

1. Please enter your teacher code (from the email describing this survey):

Your teacher code:

2. Your sex:

☐ Male

☐ Female

3. Your age:

4. Are you of Aboriginal or Torres Strait Islander descent? (mark all that apply)

☐ No

☐ Yes, Aboriginal

☐ Yes, Torres Strait Islander

3. Teacher Background

5. Do you have a language background other than English?

- ☐ No
- ☐ Yes (please specify)

6. Which of the following qualifications do you have? (mark all that apply):

- ☐ Accelerated teacher training qualification
- ☐ 2 or 3 year teaching qualification
- ☐ 4 year education/teaching qualification (e.g., B.Ed.)
- ☐ Bachelor degree other than education
- ☐ Diploma in Education
- ☐ Postgraduate certificate or Postgraduate diploma
- ☐ Masters in Education
- ☐ Masters in another academic subject
- ☐ Doctorate in Education
- ☐ Doctorate in another academic subject
- ☐ Other degree (please specify)

4. Teacher Background

7. Prior to this year, how many years of experience have you had as a teacher IN THIS SCHOOL?

- ☐ Less than one year
- ☐ 1 year
- ☐ 2 years
- ☐ 3 years
- ☐ 4-6 years
- ☐ 7-9 years
- ☐ 10-12 years
- ☐ 13-15 years
- ☐ 16-18 years
- ☐ More than 18 years

8. Prior to this year, how many years of experience have you had as a teacher?

- ☐ Less than one year
- ☐ 1-3 years
- ☐ 4-6 years
- ☐ 7-9 years
- ☐ 10-12 years
- ☐ 13-15 years
- ☐ 16-18 years
- ☐ 19-21 years
- ☐ 22-24 years
- ☐ More than 24 years

5. Structure of Teachers' Work

9. Are you a member of your school's teaching staff on a: (mark only one)

- ☐ Permanent full-time basis
- ☐ Permanent part-time basis
- ☐ Casual basis

10. Do you have a particular KLA affiliation or specialisation?

- ☐ Yes
- ☐ No

6. Structure of Teachers' Work

11. Please indicate your major affiliation or specialisation. If your major affiliation or specialisation is not listed, please include it in the section provided (Other). Should you have more than one affiliation/specialisation, please choose the one you teach the most on a weekly basis (mark only one):

- ☐ Careers
- ☐ Creative and Performing Arts (CAPA) includes music, visual arts, drama among others
- ☐ English
- ☐ English as a Second Language (ESL) includes Intensive English Centres
- ☐ Human Society and Its Environment (HSIE) includes History, Geography, Economics, Civics among others
- ☐ Languages Other than English (LOTE)
- ☐ Library
- ☐ Mathematics
- ☐ Personal Development, Health and Physical Education (PDHPE)
- ☐ Primary generalist
- ☐ Science includes Agricultural Sciences
- ☐ Special Education
- ☐ Technology and Applied Sciences (TAS) includes Design and Technology and Computing Sciences among others
- ☐ Other

7. Teachers' Work

12. Since the beginning of this year, how often have you visited another teacher's classroom to observe and discuss his or her teaching?

- ☐ Never
- ☐ 1 time
- ☐ 2 times
- ☐ 3 times
- ☐ 4 times
- ☐ 5 times
- ☐ 6 times
- ☐ 7 times
- ☐ 8 times
- ☐ More than 8 times

13. Since the beginning of this year, how often has a colleague come to your classroom to observe your lesson?

- ☐ Never
- ☐ 1 time
- ☐ 2 times
- ☐ 3 times
- ☐ 4 times
- ☐ 5 times
- ☐ 6 times
- ☐ 7 times
- ☐ 8 times
- ☐ More than 8 times

QTR RCT - Teacher Survey

8. Teachers' Work

14. Since the beginning of this year, how often have you (mark only one in each row):

	Never	Once	Twice	3-4 times	5-9 times	10 or more times	Not applicable to me
Received useful feedback on your performance from your supervisors, executive or peers?	☐	☐	☐	☐	☐	☐	☐
Received useful suggestions for curriculum materials from your immediate colleagues?	☐	☐	☐	☐	☐	☐	☐
Received useful suggestions for teaching practice or learning activities from your colleagues?	☐	☐	☐	☐	☐	☐	☐
Met with colleagues to discuss specific teaching strategies?	☐	☐	☐	☐	☐	☐	☐
Received useful suggestions for assessment materials from your colleagues?	☐	☐	☐	☐	☐	☐	☐

15. Do you participate in a regularly scheduled planning period with other teachers?

- ☐ Yes
- ☐ No

9. Teachers' Work

16. How long is the typical planning period WITH OTHER TEACHERS?

- ☐ 0-10 minutes
- ☐ 11-20 minutes
- ☐ 21-30 minutes
- ☐ 31-40 minutes
- ☐ 41-50 minutes
- ☐ 51-60 minutes
- ☐ 61-70 minutes
- ☐ Over 70 minutes

17. On average, how often do you meet WITH OTHER TEACHERS for a planning period?:

- ☐ Less than once per week
- ☐ Once per week
- ☐ Twice per week
- ☐ 3-4 times per week
- ☐ 5 or more times per week

18. On average, how much regularly scheduled time per week DURING WORK TIME do you have for planning and preparation?

- ☐ No scheduled time
- ☐ 1-29 minutes of scheduled time per week
- ☐ 30 -59 minutes of scheduled time per week
- ☐ 60 -89 minutes of scheduled time per week
- ☐ 90 -119 minutes of scheduled time per week
- ☐ 2-3 scheduled hours per week
- ☐ 3-4 scheduled hours per week
- ☐ 4-5 scheduled hours per week
- ☐ 5-6 scheduled hours per week
- ☐ more than 6 scheduled hours per week

QTR RCT - Teacher Survey

10. Teachers' Work

19. Since the beginning of this year, about how much time PER MONTH (on average) have you spent on the following? (mark only one in each row)

[illegible]

QTR RCT - Teacher Survey

11. Teachers and Teaching

20. How often does each of the following apply to your lessons or teaching? (mark only one in each row)

[illegible]

QTR RCT - Teacher Survey

12. Teachers and Teaching

21. How often does each of the following apply to your lessons or teaching? (mark only one in each row)

[illegible]

QTR RCT - Teacher Survey

13. Teachers and Teaching

22. Please mark the extent to which you disagree or agree with each of the following (mark only one in each row)

[illegible]

QTR RCT - Teacher Survey

14. Teachers and Teaching

23. Please mark the extent to which you disagree or agree with each of the following (mark only one in each row)

[illegible]

QTR RCT - Teacher Survey

15. Teachers and Teaching

24. Please mark the appropriate response for each of the following (mark only one in each row)

[illegible]

QTR RCT - Teacher Survey

16. Teachers and Teaching

25. Please mark the extent to which you agree to the following statements (mark only one in each row)

The 11 items that were included here in the original version of this survey are protected by copyright and therefore are not reproduced here.

QTR RCT - Teacher Survey

17. Any comments

26. Are there any additional comments you would like to make which have not already been covered by the questions in this survey? (your response to this question is optional)

QTR RCT - Teacher Survey

18. Thank you for completing this survey.

We are very grateful for your time spent in completing these surveys.

Appendix C: Post-intervention interview schedule for Set and Choice groups

Improving teaching quality through peer observation & feedback: An investigation of the impact of Quality Teaching Rounds

TEACHER INTERVIEW SCHEDULE: INTERVIEW 2 (SET AND CHOICE GROUPS ONLY)

Prior to beginning the interview

- 1. Remind teachers of who you are, your University, and the purpose of your meeting to conduct an interview.*
- 2. Confirm with the participant their receipt of a copy of the interview questions.*
- 3. Confirm with the participant that they understand the voluntary nature of their participation in the interview and research project.*
- 4. Confirm with the participant that they may terminate the interview and / or their participation in the research now, or at any time during or after the interview, and need not give a reason for their decision.*
- 5. Confirm with the participant that they understand the measures taken to ensure their confidentiality and procedures for the storage of data and return of interview transcripts and audio files (refer to information statement if necessary).*
- 6. Explain to the participant that the interview will take approximately 40 minutes.*
- 7. If the participant agrees, commence the interview.*

Interview details

Record your name, the name of the school and the interviewee, the date and the time, as follows:

This is (your name) **at** (name of school) **on** (date) **at** (time) **interviewing** (interviewee's name) **who is** a (role, e.g., English teacher, Teacher Librarian).

1. Focusing on background and orientations to teaching:
 - 1.1. What have been the highlights of your teaching since we last met?
 - 1.2. What have you learned, and what has supported that learning?
2. Focusing on Quality Teaching Rounds:
 - 2.1. Please describe how QT Rounds have been implemented in your school.
 - 2.2. How would you describe the general level of commitment to the initiative within the School (can you quantify it)?
 - 2.3. How would you describe the support for teachers attempting to use QT Rounds?
 - 2.4. How would you describe the impact of QT Rounds on the school, your teaching and your students? What evidence can you point to that illustrates the impact? (Can you talk through an example or two of things you do differently or aspect of your teaching about which you are now more mindful?)
 - 2.5. Based on your experience with the readings, and with QT Rounds, what, if anything, would you change about the way QT Rounds were implemented in your school?
3. Focusing on Professional Learning Communities:
 - 3.1. How effective has the PLC been for you as a form of professional learning?
 - 3.2. How well do you think your QT Rounds PLC has worked this year?
 - 3.3. Can you talk about your experience as part of a Professional Learning Community:
 - The sense of community within your PLC
 - What has helped build that sense of community
 - What gets in the way of building/strengthening the community
 - Your own experience in being part of the PLC community
 - 3.4. To what degree has your PLC become skilled at evaluating and refining practice?
 - 3.5. If you were to rate your professional learning as a result of your participation in QT Rounds on a scale of 1 to 10 (10 being best), what would your rating be? Why?
 - 3.6. We could say that the QT Rounds approach to professional learning is characterised by:

- De-privatised practice (opening classroom teaching to other colleagues),
- Sustained and detailed communication about teaching practice, and
- A safe environment for doing hard analytical work.

Could you say a little about each of these and how QT Rounds has worked in your School context?

3.7. Do you think QT Rounds have changed you as individuals and as a group? If so, how?

3.8. To what extent do you think this implementation model of professional learning (QT Rounds) is making a difference in your practice and why? What is it about QT Rounds that is most powerful?

3.9. What has been the most beneficial thing about being in QT Rounds? What has been the most challenging thing about it?

4. Since your participation in QTR has anything changed with regards to... (With each of these to be elaborated, prompting to follow up points made)

- What you think about...
- What you talk about...
- What you do as a teacher?
- How you feel about teaching as a profession... (Prompt – e.g. including the positive and negative)
- How you view and interact with your colleagues... (Prompt – e.g. including the support you get from them, your position among the staff)
- How you view and interact with your students... (Prompt – e.g. including your expectations of them, the way you work with them, what they are achieving)
- How you see yourself as a teacher... (Prompt – e.g. including confidence, orientation to ongoing learning, primary responsibilities and goals)
- Your plans for your career... (Do you intend to continue with teaching or do you see yourself on a different career path in the future?)

5. Is there anything you would like to add at this point?

Appendix D: Impact on QT whole sample and per protocol

Table D1. Changes in outcome variable (using observation data) for teacher by treatment group from baseline to 6 months and 12 months – whole sample

Outcome	Group	Baseline		6-months			12-months			Within group ^a <i>p</i>	Group-by-time <i>p</i>	Post hoc analyses ^b
		Mean	(95% CI)	Mean	(95% CI)	Cohen's <i>d</i>	Mean	(95% CI)	Cohen's <i>d</i>			
Quality Teaching	Control	2.62	(2.45, 2.79)	2.61	(2.44, 2.78)	–	2.62	(2.45, 2.79)	–	0.987	0.028	
	QTR-Set	2.69	(2.52, 2.86)	2.84	(2.67, 3.01)	0.4	2.81	(2.64, 2.98)	0.2	0.017		Set > Control (6M-B), <i>p</i> = 0.046
	QTR-Choice	2.62	(2.46, 2.79)	2.82	(2.65, 2.99)	0.4	2.87	(2.70, 3.04)	0.5	< 0.001		Choice > Control (6M-B), <i>p</i> = 0.012 Choice > Control (12M-B), <i>p</i> = 0.004

Notes. QTR-Set = Quality Teaching Rounds set intervention; QTR-Choice = Quality Teaching Rounds choice intervention; CI = confidence intervals; 6M = 6-months; 12M = 12-months; B = baseline. Significant *p*-values < 0.05 highlighted in bold.

^a Within group change from baseline to 12-months. ^b Post hoc analysis results for adjusted difference between groups over time (non-significant findings not reported). Cohen's *d* was calculated using the following formula:

$$d = \frac{[(intervention\ posttest\ mean - intervention\ baseline\ mean) - (control\ posttest\ mean - control\ baseline\ mean)]}{pooled\ standard\ deviation\ of\ change}$$

Table D2. Changes in outcome variable (using observation data) for teacher by treatment group from baseline to 6 months and 12 months – implementation fidelity less than 6

Outcome	Group	Baseline		6-months			12-months			Within group ^a <i>p</i>	Group-by-time <i>p</i>	Post hoc analyses ^b
		Mean	(95% CI)	Mean	(95% CI)	Cohen's <i>d</i>	Mean	(95% CI)	Cohen's <i>d</i>			
Quality Teaching	Control	2.62	(2.44, 2.79)	2.61	(2.43, 2.79)	–	2.62	(2.44, 2.80)	–	0.986	0.011	
	QTR-Set	2.69	(2.51, 2.86)	2.90	(2.72, 3.09)	0.5	2.90	(2.71, 3.09)	0.5	< 0.001		Set > Control (6M-B), <i>p</i> = 0.008 Set > Control (12M-B), <i>p</i> = 0.015
	QTR-Choice	2.62	(2.45, 2.80)	2.82	(2.64, 3.00)	0.4	2.87	(2.69, 3.05)	0.5	< 0.001		Choice > Control (6M-B), <i>p</i> = 0.011 Choice > Control (12M-B), <i>p</i> = 0.004

Notes. QTR-Set = Quality Teaching Rounds set intervention; QTR-Choice = Quality Teaching Rounds choice intervention; CI = confidence intervals; 6M = 6-months; 12M = 12-months; B = baseline. Significant *p*-values < 0.05 highlighted in bold.

^a Within group change from baseline to 12-months. ^b Post hoc analysis results for adjusted difference between groups over time (non-significant findings not reported). Cohen's *d* was calculated using the following formula:

$$d = \frac{[(intervention\ posttest\ mean - intervention\ baseline\ mean) - (control\ posttest\ mean - control\ baseline\ mean)]}{pooled\ standard\ deviation\ of\ change}$$

Appendix E: Impact on secondary outcomes

Table E1. Changes in secondary outcome variables (using survey data) for teacher by treatment group from baseline to 6 months and 12 months – whole sample

Outcomes	Group	Baseline		6-months			12-months			Within group ^a <i>p</i>	Group-by-time <i>p</i>	Post hoc analyses ^b
		Mean	95% CI	Mean	95% CI	Cohen's <i>d</i>	Mean	95% CI	Cohen's <i>d</i>			
Quality Teaching	Control	3.82	(3.69, 3.96)	3.90	(3.77, 4.04)	–	3.84	(3.70, 3.98)	–	0.207	0.157	
	QTR-Set	3.91	(3.78, 4.05)	3.95	(3.81, 4.08)	–	4.01	(3.87, 4.15)	–	0.159		
	QTR-Choice	3.83	(3.69, 3.96)	3.95	(3.81, 4.08)	–	3.82	(3.69, 3.96)	–	0.025		
Intellectual Quality	Control	3.89	(3.72, 4.05)	3.97	(3.80, 4.13)	–	3.94	(3.77, 4.11)	–	0.387	0.439	
	QTR-Set	4.03	(3.87, 4.20)	4.07	(3.90, 4.23)	–	4.15	(3.98, 4.32)	–	0.193		
	QTR-Choice	3.92	(3.76, 4.08)	4.09	(3.92, 4.26)	–	4.03	(3.86, 4.20)	–	0.025		
Quality Learning Environment	Control	3.67	(3.53, 3.80)	3.72	(3.59, 3.86)	–	3.82	(3.68, 3.96)	–	0.010	0.190	
	QTR-Set	3.84	(3.70, 3.98)	3.93	(3.79, 4.07)	–	4.03	(3.89, 4.17)	–	0.001		
	QTR-Choice	3.78	(3.64, 3.92)	3.89	(3.75, 4.03)	–	3.84	(3.69, 3.98)	–	0.114		
Significance	Control	3.79	(3.66, 3.93)	3.90	(3.76, 4.04)	–	3.77	(3.63, 3.91)	–	0.032	0.153	
	QTR-Set	3.78	(3.64, 3.92)	3.79	(3.65, 3.93)	–	3.84	(3.70, 3.98)	–	0.560		
	QTR-Choice	3.68	(3.54, 3.81)	3.77	(3.63, 3.91)	–	3.77	(3.63, 3.92)	–	0.147		
Teacher to Teacher Trust	Control	5.40	(4.94, 5.86)	4.31	(3.85, 4.77)	–	4.38	(3.92, 4.85)	–	0.000	0.302	
	QTR-Set	5.43	(4.97, 5.89)	4.58	(4.12, 5.05)	–	4.73	(4.26, 5.20)	–	0.000		
	QTR-Choice	5.45	(4.99, 5.91)	4.35	(3.88, 4.81)	–	4.43	(3.96, 4.89)	–	0.000		
Teacher Responsibility	Control	4.28	(3.99, 4.58)	4.61	(4.31, 4.91)	–	4.03	(3.72, 4.33)	–	0.000	0.664	
	QTR-Set	4.42	(4.12, 4.72)	4.82	(4.52, 5.12)	–	4.15	(3.85, 4.46)	–	0.000		
	QTR-Choice	4.42	(4.12, 4.72)	4.82	(4.52, 5.12)	–	4.06	(3.75, 4.36)	–	0.000		
Morale	Control	3.93	(3.43, 4.43)	3.73	(3.23, 4.24)	–	3.68	(3.17, 4.19)	–	0.029	0.014	Set > Control (B-6M), <i>p</i> = 0.027 Set > Control (B-12M), <i>p</i> = 0.002 Choice > Control (B-12M), <i>p</i> = 0.041
	QTR-Set	3.91	(3.40, 4.41)	4.02	(3.51, 4.53)	0.4	4.12	(3.61, 4.63)	0.6	0.122		
	QTR-Choice	3.89	(3.38, 4.39)	3.74	(3.24, 4.25)	0.1	3.94	(3.43, 4.45)	0.4	0.152		
Appraisal and Recognition	Control	3.56	(3.13, 4.00)	3.42	(2.98, 3.86)	–	3.41	(2.97, 3.86)	–	0.293	0.026	Set > Control (B-6M), <i>p</i> = 0.037 Set > Control (B-12M), <i>p</i> = 0.016 Choice > Control (B-12M), <i>p</i> = 0.004
	QTR-Set	3.26	(2.82, 3.71)	3.45	(3.00, 3.89)	0.4	3.51	(3.06, 3.96)	0.4	0.092		
	QTR-Choice	3.22	(2.78, 3.66)	3.36	(2.92, 3.81)	0.3	3.55	(3.10, 4.00)	0.5	0.022		

Notes. QTR-Set = Quality Teaching Rounds set intervention; QTR-Choice = Quality Teaching Rounds choice intervention; CI = confidence intervals; 6M = 6-months; 12M = 12-months; B = baseline. Significant *p*-values < 0.05 highlighted in bold.

^a Within group change from baseline to 12-months. ^b Post hoc analysis results for adjusted difference between groups over time (non-significant findings not reported). Cohen's *d* was calculated using the following formula:

$$d = \frac{[(intervention\ posttest\ mean - intervention\ baseline\ mean) - (control\ posttest\ mean - control\ baseline\ mean)]}{pooled\ standard\ deviation\ of\ change}$$