THE UNIVERSITY OF NEWCASTLE AUSTRALIA

BUILDING CAPACITY FOR QUALITY TEACHING IN AUSTRALIAN SCHOOLS

SCALING QUALITY TEACHING ROUNDS: A CROSS-SECTIONAL EXAMINATION

TEACHERS & TEACHING RESEARCH CENTRE

Executive Summary

Replicating the results of controlled research trials in education is difficult at scale, given variation between schools in vastly different contexts.

Difficulties in taking interventions to scale are not unique to the field of education. Implementation Science was specifically developed to assist in the implementation of interventions across a wide range of settings. This field of science has produced a wide range of theoretical and practical frameworks to assist in understanding facilitators and barriers to implementation as interventions are taken to scale.

The goal of this study was to use frameworks from Implementation Science to better understand factors associated with the successful implementation of Quality Teaching Rounds (QTR) during scaling in 119 NSW government schools between 2019 and 2021.

Using an annual survey of teachers, this research explored if determinant factors (such as the inner setting of the school and cost per teacher) were associated with scaling outcomes (such as penetration, adaptation, and fidelity) and perceived intervention outcomes (teaching practice, student motivation and student achievement). Additionally, the influence of context on determinants and outcomes was investigated by evaluating differences among these schools across the spectrum of socio-educational advantage. Of the participating schools, 68 (57%) were engaged in QTR in the year they completed the survey.

Key findings from this cross-sectional evaluation were:

1. **The inner setting is a key determinant of outcomes**

   Schools reporting higher levels of internal support, including dedicated resources and staff buy-in, were more likely to have a larger proportion of their staff engaged in QTR and display more positive perceptions of the impact of QTR in their school.

2. **Money matters in implementation**

   Schools spending the lowest amounts of funding per staff member to engage in QTR (<$500 per teacher) made more adaptations to QTR during implementation, with associated reduction in fidelity. These schools also displayed significantly lower perceptions of the impact of QTR.

3. **Access to casuals and time were the greatest constraints**

   The most common reasons reported for adapting QTR were to limit school disruption and a lack of casual teacher availability. A significant proportion of schools conducted a time-reduced version of QTR (multiple rounds in one day or half-day rounds) to minimise disruption and work within casual relief constraints.

4. **Lower ICSEA schools should be a focus for implementation supports**

   Schools in the lowest ICSEA group (ICSEA <950) displayed the lowest levels of environmental support and organisational capability, highest proportion of implementation adaptation when engaging in QTR, and lowest perceptions of the impact of QTR. These findings suggest that lower ICSEA schools are encountering more difficulty in implementing QTR than higher ICSEA schools and additional implementation supports are likely to be required to enhance outcomes in these contexts.

Table of Contents

List of Tables

List of Figures

Introduction

Evidence-based practices have risen in prominence in the field of education over the past two decades (Farley-Ripple et al., 2018; Horner et al., 2017). To some extent this has occurred due to the need to provide justifiable evidence of the benefits that could occur if a practice is adopted and to assist in deciding between alternative courses of action (Cooper et al., 2009). The typical path for developing and implementing evidence-based practices involves the initial development and testing of an intervention in tightly controlled research trials with a specified sample of participants. If those trials are successful, the next stage involves taking the intervention to scale in more schools across a wider range of contexts. This translation of research is generally difficult to achieve in practice due to the logistical issues associated with increasing the number of schools involved combined with the complexity within each school and the variation that occurs between schools (Horner et al., 2017). Because of the difficulties in scaling across vastly different contexts, generating impact at scale is seldom achieved with education interventions.

The difficulties experienced in taking interventions to scale are not unique to the field of education. Outside of education, Implementation Science was developed specifically to assist in the implementation of interventions across a wide range of settings (Damschroder, 2020). Implementation Science has been built upon a rigorous and systematic approach to optimising the implementation process and contains a wide range of theoretical and practical frameworks to assist in that endeavour. While many of the constructs within the frameworks have their origins outside of the field of education, their comprehensive approaches make them promising for describing and assisting implementation in the field of education.

Quality Teaching Rounds (QTR) is an evidence-based program that is attempting to scale. QTR was developed as a professional development program for in-depth engagement with the Quality Teaching model. It is a safe and supportive way for teachers to be critically reflective of practice in a collaborative and collegial way (Gore & Bowe, 2017). The Quality Teaching model is a model of pedagogy developed by James Ladwig and Jenny Gore in conjunction with the NSW Department of Education. At the time of its inception, it was the basis of one of the largest systematic reforms in Australian schools (SIPA, 2006). QTR has demonstrated success in improving the quality of teaching (Gore et al., 2017) and student outcomes (Gore et al., 2021) in a series of randomised controlled trials (RCTs) and is now attempting to expand its adoption through scaling across more schools in a wide range of contexts.

The goal of this study was to use Implementation Science to better understand the factors associated with successful implementation during the scaling of an evidence-based program in schools. The frameworks, models and theories developed in Implementation Science were used to study the implementation of QTR professional development in 119 New South Wales government schools. This research explored if determinant factors identified through Implementation Science were associated with the scaling outcomes and perceived intervention outcomes of QTR PD in school settings. Additionally, the influence of context on determinants and outcomes was investigated using the level of socio-educational advantage (or disadvantage) experienced among a school community as a proxy for school context.

Research Design

This research examined the scaling of QTR in 119 NSW public schools. A key member of the QTR implementation team in each participating school was surveyed on behalf of the school about the implementation and perceived outcomes of QTR at their school. Cross-sectional analysis was performed on the questionnaire and socio-demographic data collected between 2019 and 2021.

The original research design included longitudinal data collection (including school level student achievement data) and analysis to identify the factors associated with successful implementation of QTR in New South Wales public schools over an extended period of time. This was to be achieved by examining a range of contextual and determinant factors over time and evaluating if variance in those factors was associated with changes in a range of implementation and intervention outcomes.

Unfortunately, this research design was severely impacted by the outbreak of Covid 19 which disrupted the final two years of data collection (2019 to 2022). The first outbreak of the global pandemic Covid 19 was recorded in Australia in early 2020 with significant outbreaks also occurring in 2020 and 2021 (Fray et al., 2022). Teaching in many public schools in New South Wales was significantly disrupted for both 2020 and 2021 (Fray et al., 2022). There were substantial periods of school closures and a move to on-line teaching with the impact varying at the individual school level (Gore et al., 2021a).

The data collected in 2020 and 2021 were very likely impacted by the changes in schooling brought about by the responses to the Covid 19 pandemic. The high dropout rate of schools between 2019 and 2021 (34.5% in 2020 and 68% in 2021) prevented longitudinal analysis being conducted with any certainty. These factors led to the decision to conduct cross-sectional analysis of the data collected.

Ethical approval of research

The University of Newcastle Human Research Ethics Committee (HREC) approved the conduct of this research. Approval to conduct research in NSW schools was granted through the NSW State Education Research Applications Process (SERAP).

Data

This study is part of the evaluation of QTR implementation within the Building Capacity for Quality Teaching in Australian Schools project. Factors affecting longitudinal implementation were studied using three components to provide a comprehensive picture of the implementation process:

1. School level implementation questionnaire
2. Linkage data – DoE data linked to questionnaire responses for participating schools
3. Case studies – providing more in-depth investigation into implementation

This examination concentrates on the school level implementation questionnaire.

Recruitment

Schools that sent staff to a QTR 2-day foundation workshop were invited to participate in this study. A QTR Liaison Officer (QTRLO) was nominated from each participating school as the primary implementation and administrative contact. The QTRLOs were in a position within their school to gather administrative data (e.g., number of QTR participants for the year) and to provide details of QTR implementation at the school. The QTRLO was asked to complete an implementation questionnaire each year between 2019 and 2021. If a QTRLO moved away from a school several attempts were made to recruit a new QTRLO for that school. Due to ongoing recruitment of participants, training and changes in individual circumstances, participants could begin or cease participation in the questionnaire in any of the three years.

Questionnaire

The questionnaire was administered in the weeks 6 and 7 of Term 4 each year. An initiation email was sent to the QTRLO two weeks prior to the survey to inform them of the information that would be required to efficiently complete the upcoming survey (e.g., amount the school spent implementing QTR in the current year and how many staff engaged in QTR). Over the three-year data collection period up to three questionnaires could be completed by the QTRLOs from participating schools. To ensure independence of observations among our sample this analysis was restricted to the responses provided in the first year that a questionnaire was completed. The first year of responses (2019) was selected to minimise the impact of Covid 19 on the results.

Due to the exploratory nature of the research a wide range of factors that could be associated with successful implementation and perceived outcomes were collected. Whilst it is acknowledged that individual factors can occupy several different roles in the implementation process, for the purposes of this examination the factors were categorised under the following Implementation Science domains as shown in Table 1.

Table 1. Allocation of Factors to Implementation Science Domains

Factor	Context	Determinants	Implementation Outcomes	Intervention Outcomes
School type	X			
School size	X			
School level	X			
Level of advantage	X			
Indigenous background	X			
Language background	X			
Organisational capacity		X		
Financial stability		X		
Environmental support		X		
Cost		X		
Penetration			X	
Adoption			X	
Adaptation			X	
Fidelity			X	
Teaching practice				X
Academic achievement				X
Student engagement				X
Participation				X
Drop-out				X

Note. Fixed contextual elements: Jurisdiction - NSW Department of Education and School Sector – public schools.

Participants were asked different questions using skip logic depending on whether their school had implemented QTR or not in the current year. Figure 1 provides an overview of participant movement through the questionnaire. A copy of the survey instrument can be provided upon request. It should be noted that there is considerable overlap between the four Implementation Science implementation domains, particularly between context and determinants, but as was noted by Nilsen (2015) the divisions provide a useful framework to consider the implementation process.

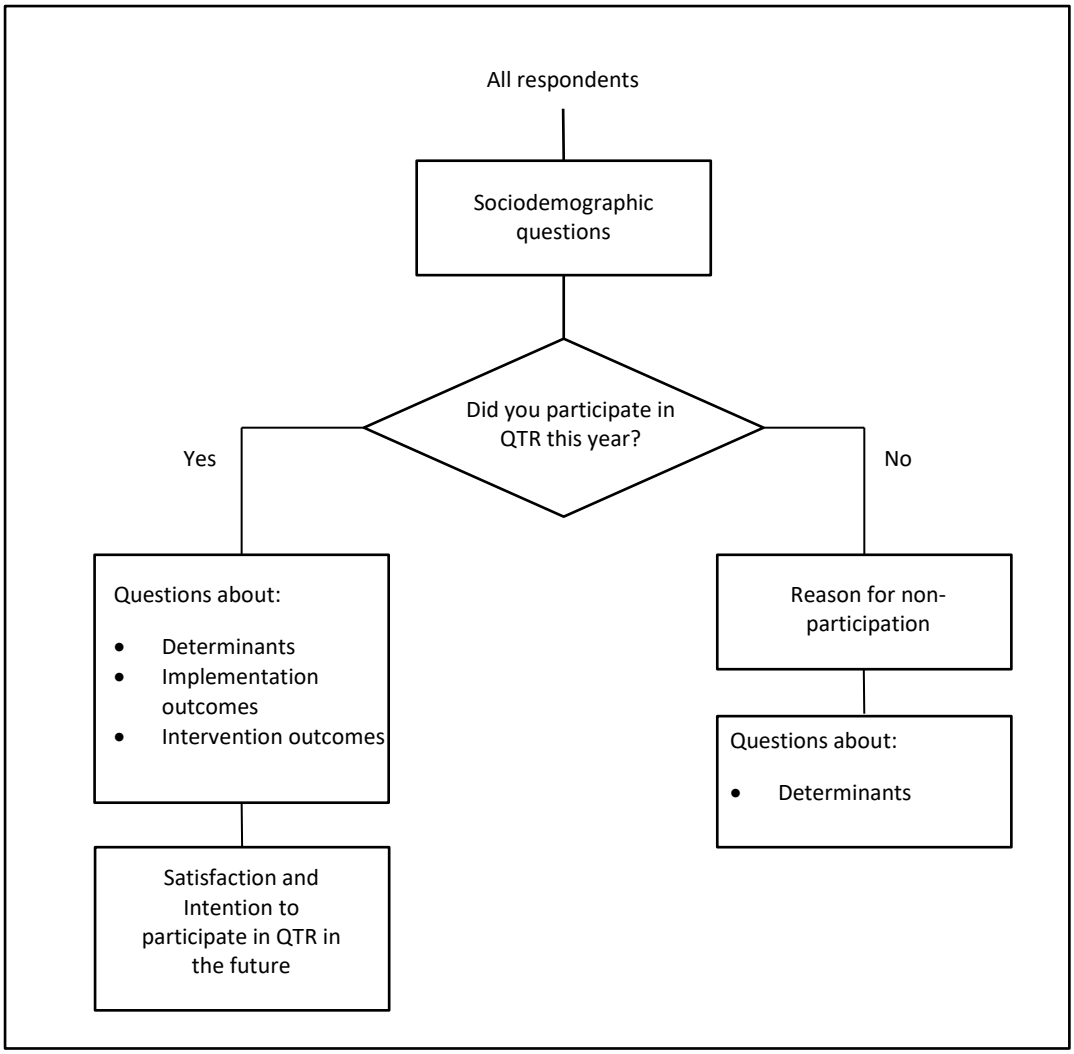

Figure 1. QTR Longitudinal Implementation Questionnaire Flowchart

Determinants

Determinant frameworks "specify types (also known as classes or domains) of determinants and individual determinants, which act as barriers and enablers (independent variables) that influence implementation outcomes (dependent variables)" (Nilsen, 2020, p. 12). The Consolidated Framework for Implementation Research (CFIR) determinant framework was selected to examine the determinant factors in this study (Damschroder, 2008). Of the five domains that make up the CFIR (inner setting, outer setting, the intervention, the implementers, and the process of implementation) those domains that were based on the contextual setting inside the school (inner setting and process domains) were the main focus of the investigation in the questionnaire. These domains were chosen because all schools differ internally even though they have common structures.

Program Sustainability Assessment Tool

A modified version of the Program Sustainability Assessment Tool (PSAT) was used to assess a school's inner setting in relation to the implementation of QTR. The PSAT was developed to provide a reliable and valid measure of eight domains considered important for the long-term sustainability of public health (Luke et al., 2014). There has been limited application of this tool in school settings to date, however the measure has previously been adapted to take into account possible contextual effects in school settings (Hall et al., 2021).

For this investigation, three out of the eight domains were considered to be potentially relevant determinants for the implementation of QTR in school settings:

1. Organisational capacity – “having the internal support and resources needed to effectively manage your program” (Luke et al., 2014, p.9).

2. Funding stability – “establishing a consistent financial base for your program” (Luke et al., 2013, p.9).

3. Environmental support – “internal and external political environments that support your program” (Luke et al., 2014, p.9).

The excluded domains were partnerships, program evaluation, program adaptation, communications and strategic planning. Whilst those five domains contained some individual questions which may have been useful it was decided to use other questions to cover those domains without having to include an additional five questions for each domain.

Each domain in the PSAT was originally comprised of five questions relating to the respective aspect of program sustainability (Table 2). Respondents are asked to indicate the level of the presence of sub-scales ranging from 1 (little or no extent) to 7 (a great extent). Domain scores are calculated by averaging the scores for each of the questions in the domain with a potential range of 1 to 7. For the environmental support domain, based on the CFIR classification structure, four of the questions related to the inner setting whilst the fifth related to the outer setting and was therefore excluded (Table 2). For each of the other two domains, one question was excluded from each domain as it did not translate to a school setting (Table 2).

The environmental support and funding stability scales displayed lower Cronbach’s alphas than the original PSAT tool (Table 2) (Luke et al., 2014). For the sub-scale of organisational capacity, the QTR implementation figure matched that of the PSAT tool (Table 2). Considering each of these sub-scales used only four of the five items from the original PSAT tool it appears that these sub-scales have an acceptable level of internal validity and warrant further investigation for inclusion in the study of implementation in school-settings.

Table 2. PSAT Domains and Corresponding Questions

PSAT Domain	Internal Validity (Cronbach's Alpha)		Individual Question*	Included/ Excluded
	PSAT Tool	QTR Modified Tool		
Environmental support	0.88	0.67	QTR has the support of the executive	Included
			QTR has strong support from teachers at my school	Included
			There are identifiable champion/s who strongly support QTR	Included
			QTR has strong champions with the ability to garner resources	Included
			QTR has support from the education department of my state/territory	Excluded
Funding Stability	0.79	0.63	QTR is financially supported by my school as part of normal funding cycles	Included
			The cost of QTR is sustainable	Included
			QTR is funded through a variety of sources	Included
			We have sustained funding to continue QTR	Included
			The program exists in a supportive economic climate	Excluded
Organisational Capacity	0.88	0.88	QTR is well integrated into school operations	Included
			Organisational systems are in place to support QTR	Included
			The executive effectively articulates the vision of QTR to the wider school community	Included
			The executive efficiently manages staff and other resources for QTR	Included
			The program has adequate staff to complete the program's goals	Excluded

Note. * the letters "QTR" have been substituted for the words "the program" in the included questions.

Cost per teacher

Cost was anticipated be an important determinant in the long-term adoption and implementation of QTR in schools. Cost was calculated by dividing the total yearly cost by the number of participants. Three cost groupings were considered useful for this analysis. Less than $500 per participating teacher represented a lower cost level for teacher participation in professional development, middle cost being between $500 and $1500 and higher cost group representing $1500 or more per teacher. The corresponding CFIR domain and construct associated with cost are shown below in Table 3.

Table 3. CFIR Domain Construct and Corresponding Question – Intervention characteristics

CFIR Domain	CFIR Construct	Individual Element
Intervention Characteristics	Cost	How much did your school spend on QTR last year in dollars? (e.g., travel, teacher release, workshops)

Process

The final group of determinant questions came from the reflecting and evaluating construct of the CFIR which includes measures focused on the process of implementation, reflection on implementation process and the evaluation of the implementation. Table 4 displays the questions in relation to the CFIR construct. Questions were measured on a scale from 1 (Strongly disagree) to 5 (Strongly agree), with 3 labelled as “Unsure”.

Table 4. CFIR Domain and Construct with Corresponding Questions – Process

CFIR Domain	CFIR Construct	Individual Element
Process	Reflecting and evaluating	My school has a strategy in place for monitoring the effects of participation in QTR on teacher outcomes
		My school has a strategy in place for monitoring the effect of participation in QTR on student outcomes (e.g., achievement, efficacy, engagement)

Implementation outcomes

Implementation outcomes are those focused on the implementation process. These were sourced from the evaluation frameworks developed by Proctor et al. (2011) and Durlak and Dupre (2008). Of the more than ten implementation outcomes identified by Proctor and Durlak and Dupre, five implementation outcomes were examined (Table 5). Categorical variables were created to group penetration and fidelity variables into groupings of clinical relevance for analysis. Penetration was grouped to examine the differences between less than one third of teachers participating (Low <30%), more than a third but less than two thirds of teachers (30% and <70%) and a high proportion of teachers participating (>=70%). Fidelity was grouped to examine the impact of making varying levels of adaptation to the intervention; low (3 or more adaptations), mid (2 adaptations) and high (0 or 1 adaptation).

Table 5. Implementation Outcomes with Corresponding Questions and Taxonomy

Implementation Outcome	Individual Questions	Implementation Taxonomy
Adoption	Did anyone in your school participate in QTR last year? (This refers to a PLC completing Rounds, not a workshop)	Proctor
Adaptation	Did you adapt QTR?	Durlak & Dupre
	How did you adapt? (11 option to select)	Durlak & Dupre
Fidelity	Calculated as the number of possible adaptations less the actual number of adaptations / number of possible adaptations e.g., 0 adaptations = (11-0)/11 = 100% fidelity)	Proctor
Penetration	How many teachers at your school have participated in QTR? (Total across all years of involvement in your school, including participation last year) - Measured as a percentage of school full time equivalent teaching staff. May be greater than 100%.	Proctor

Non-adoption

If schools indicated they had not implemented QTR in the current year, they were asked to illuminate the reasons why this occurred. Table 6 displays the questions in relation to the adoption implementation outcome (Proctor et al., 2011). Questions were measured on a scale from 1 (Strongly disagree) to 5 (Strongly agree).

Table 6. Implementation Outcome with Corresponding Questions – Adoption

Implementation outcome	Individual Element
Non-adoption	It was difficult to arrange the time to implement QTR
	The school executive was not supportive of QTR
	Teachers were not supportive of QTR
	We were unable to access casual teachers
	QTR did not align with our school plan
	We did not see the value of participating in QTR

Intervention outcomes

Intervention outcomes were perception-based measures ranging from a proximal measure of change in teaching practice moving to more distal measures of improved student engagement and increased academic achievement (Table 7). The response scale for these questions was 1 (Strongly disagree) to 5 (Strongly agree).

Table 7. Perceived Intervention Outcomes with Corresponding Questions

Intervention Outcomes	Individual Questions
Teaching Practice	Teaching practice has changed for those who have participated in QTR
Academic achievement	Academic achievement has increased (e.g., NAPLAN, in-class assessment, other in-school measures) as a result of teachers participating in QTR
Student engagement	Student motivation and/or engagement have increased as a result of teachers participating in QTR
Participation	Please indicate the number of consecutive years your school has undertaken QTR

Context

Demographic variables were collected to investigate the influence of context on implementation determinants, and implementation and intervention outcomes (Table 8).

Table 8. Contextual Elements of Participating Schools

Contextual Element	Measure	Fixed or Variable
Level of advantage	Index of Community Socio-Economic Advantage	Variable
School type	Primary, secondary, combined and special schools	Variable
School size	Total student full-time equivalent (FTE) enrolments	Variable
School level	Kindergarten to year 12	Variable
Indigenous background	Proportion of Indigenous enrolments	Variable
Language background	Proportion of Language Background Other Than English (LBOTE) enrolments	Variable

A key consideration in this research is the role of socio-educational advantage on the implementation of QTR. In Australia, ACARA (2013) developed the Index of Community Socio-educational Advantage (ICSEA) to qualify the level of advantage (or disadvantage) among the community attached to a school. The index is made up of the following four elements: the occupation and education of the parents/guardians of the students, the proportion of Indigenous students and the remoteness of the school (ACARA, 2013). The mean ICSEA for all Australian schools is standardised at 1000 with a standard deviation of 100.

For this research the level of advantage was based on the ICSEA level of the school. ICSEA was chosen because it is the dominant measure of advantage in Australian schooling, and it captures a mix of demographic outcomes as evidenced by the Table 9 below. The level of advantage was broken down into three levels. The mid ICSEA level included those schools with an ICSEA half a standard deviation either side of the mean of 1000 (950 to <1050). The other two groups included schools above or below the mid-level (low <950 and high >=1050). This delineation method, forming a group of the average of schools and splitting the distinction into half or quarter standard deviation groups, has previously been used to examine the impact of ICSEA on school level variables (Gore et al., 2021b; Goss & Emslie, 2018).

School demographic characteristics included in Table 9 were all significantly correlated to each other ($p < 0.01$). There was a range of positive and negative linear correlations with ICSEA, this indicates

that an increase in one of the school characteristics was associated with either an increase or decrease in ICSEA.

Table 9. Correlation Matrix for Individual School Characteristics

	1	2	3	4	5
1. ICSEA	--				
2. Indigenous Enrolments (%)	-.817**	--			
3. LBOTE Enrolments (%)	.489**	-.516**	--		
4. School size (FTE Enrolments)	.402**	-.307**	.430**	--	
5. ABS Remoteness Area	-.435**	.490**	-.499**	-.453**	--

Note. **Correlation is significant at the 0.01 (2-tailed); *n* = 118.

Due to the calculation of the ICSEA index (ICSEA = Socio-Educational Advantage + Remoteness + Percent Indigenous student enrolment), it was expected that for the schools included in this questionnaire that the proportion of Indigenous enrolments and remoteness would be correlated to ICSEA. However, school size and percentage of Language Background Other Than English (LBOTE) students are not included in the calculation of the index but they were also found to be correlated to ICSEA.

It would be possible to examine the impact of each of the individual contextual factors against the determinants and implementation/intervention outcomes but as they are correlated with each other this increases the potential for collinearity in models and could result in multiple instances of the same underlying factor being reported.

ICSEA was used as the primary factor to highlight the association between context and other factors within the implementation process. Further supporting the use of ICSEA, one recent study conducted in Australia found a positive correlation between ICSEA and school readiness for improvement plus a positive correlation between NAPLAN results and ICSEA (Lynch, 2018).

Analysis

The data was analysed using IBM statistical software package SPSS (version 28) to determine the factors associated with successful implementation of QTR in New South Wales public schools and to provide correlates of implementation success. Statistical significance was set at $p = 0.05$.

Correlation analysis was performed to examine the relationship between variables providing important information of relationships that can be further investigated using causal methods. A range of techniques were used to analyse the data depending on the data type and the number of variables to be included.

The association between two continuous variables was determined by performing linear regression with Pearson's correlation coefficient R values used to determine the strength of the association (Pearson, 1900). Cohen (1988) produced a table of Pearson's correlation coefficient *r* values:

- $r = 0.10$ small effect, explains 1% of the variance
- $r = 0.30$ medium effect, explains 9% of the variance
- $r = 0.50$ large effect, explains 25% of the variance

Where analysing differences in the mean response amongst categories was of interest (e.g., ICSEA categories for differences among socio-education context) one-way ANOVA was used. If the F statistic indicated that the difference between all means was statistically significant, a post hoc Tukey Honestly Statistically Difference test was conducted to determine the difference between any of the pairs of means after ensuring that the assumption on homogeneity of variance was met. Eta-squared was used to represent the differences as an effect size with groupings shown below (Cohen, 1988):

- $\eta 2 = 0.01$ indicates a small effect
- $\eta 2 = 0.06$ indicates a medium effect
- $\eta 2 = 0.14$ indicates a large effect

A Pearson's Chi Squared test was performed to determine if the difference between proportions of categorical values was statistically significant using the standard statistical significance (Pearson, 1900).

Unit of analysis

The unit of analysis was set at the school level. The school level was selected as individual schools are the smallest operational unit which contain a unique complete set of contextual elements and factors that impact on the implementation process. The aim of QTR is to have a positive impact on the quality of teaching in schools and it is envisioned that when QTR is successfully implemented it has the potential to generate changes at the whole school level (Gore et al., 2017). Whilst the intervention is implemented by teachers within a school, they work within a school setting which has a unique set of physical characteristics, leadership team and culture.

Sample

A total of 119 schools were represented in the questionnaire with 68 (57%) participating in QTR in the first year that they completed the survey (Table 10). Approximately two out of five of the school responses (*n* = 51; 43%) came prior to the two Covid 19 impacted years of 2020 and 2021.

Table 10. Participation of Schools for First Year of Questionnaire Completion

Type of Participation	2019, *n*	2020, *n*	2021, *n*	Total, *N*
Completed questionnaire	51	38	30	119
Participated in QTR in same year	29	25	14	68

Approximately one third of schools (37%) had gone beyond trialling QTR (more than one year) and one in eight schools were longer term implementers (12% implementing for >=3years) (Table 11).

Table 11. Consecutive Years Implementing QTR in School

Years	Frequency	Percent
0	25	21.0
1	50	42.0
2	30	25.2
3	7	5.9
4	3	2.5
5	2	1.7
8	1	0.8
9	1	0.8
Total	119	100.0

All represented schools were NSW government schools with the key sociodemographic characteristics displayed in Table 12. The sample of schools included substantial differences in ICSEA, proportions of Indigenous and LBOTE enrolments and schools or varying sizes and locations. The group of schools is reasonably representative of NSW government schools. The mean ICSEA of the participating schools was 983 and the standard deviation was 83 which is similar to the mean (981) and standard deviation (92) of New South Wales schools. There was an over representation of secondary schools (sample 41.2%, population 18.1%) and under representation of primary schools (sample 51.3%, population 72.5%) in the sample. For all other measures there is good alignment between the sample and all NSW public schools.

Table 12. Sociodemographic Characteristics of Represented Schools and All NSW Public Schools

	Sample Schools		NSW Government Schools[1]	
Characteristic	**n**	**%**	***n***	**%**
ICSEA				
Low ICSEA (<950)	42	35.9	775	36.2
Mid ICSEA (950 to <1050)	53	45.3	887	41.5
High ICSEA (>=1050)	22	18.8	477	22.3
Percent Indigenous Enrolments				
Low (<5%)	42	35.6	825	38.1
Mid (5 to 25%)	67	56.8	1078	49.8
High (>25%)	9	7.6	262	12.1
Percent LBOTE Enrolments[2]				
Low (<5%)	28	23.7	518	24.0
Mid (5 to 25%)	55	46.6	892	41.3
High (>25%)	35	29.7	749	34.7
School Size (FTE Enrolments)				
Small (<100)	19	16.1	552	25.5
Mid (100 to 500)	40	33.9	956	44.2
Large (>500)	59	50.0	657	30.3
Geographic Location[3]				
Very Remote	0	0	13	0.6
Remote	2	1.7	39	1.8
Outer regional	11	9.2	345	15.7
Inner regional	38	31.9	584	26.5
Major cities	68	57.1	1222	55.5
School Type				
Primary	61	51.3	1598	72.5
Secondary	49	41.2	399	18.1
Combined	5	4.2	68	3.1
Special Schools	4	3.4	138	6.3

Notes. [1] 2019 school data sourced from ACARA, 2021, [2] Language Background Other Than English and [3]Location is based on ABS Remoteness Classification

Approximately half of the QTRLOs (50.4%) were assistant principals or head teachers (Table 13). Due to their roles as a key interface between the school executive and classroom teachers this sees them ideally positioned to view the potential impact and interaction of both the school executive and the school teachers that are involved in the implementation of QTR.

Table 13. Position of QTRLO within Represented School

Position	Frequency	Percent
School Principal	16	13.4
Deputy Principal	23	19.3
Assistant Principal / Head Teacher	60	50.4
Classroom Teacher	20	16.8
Total	119	100.0

Schools implementing QTR

The following analysis is undertaken for schools indicating they had engaged in QTR in the current year (*n* = 68). Determinants are summarised for this group, followed by analysis of the associations of determinants with implementation and intervention outcomes. School context is examined in detail in the final section with the association between context, determinants and implementation outcomes examined in relation to the ICSEA levels of the participating schools.

Determinants

This section provides a descriptive analysis of the determinants included in this investigation.

Inner setting

The distribution of responses for the three sub scales from the Program Sustainability Assessment Tool was skewed towards the higher end of the scale with the average response for environmental support having a mean of 6.07 on a seven-point scale (Figure 2 and Table 14). The other two sub-scales, funding stability and organisational capacity appear closer to a normal distribution of values.

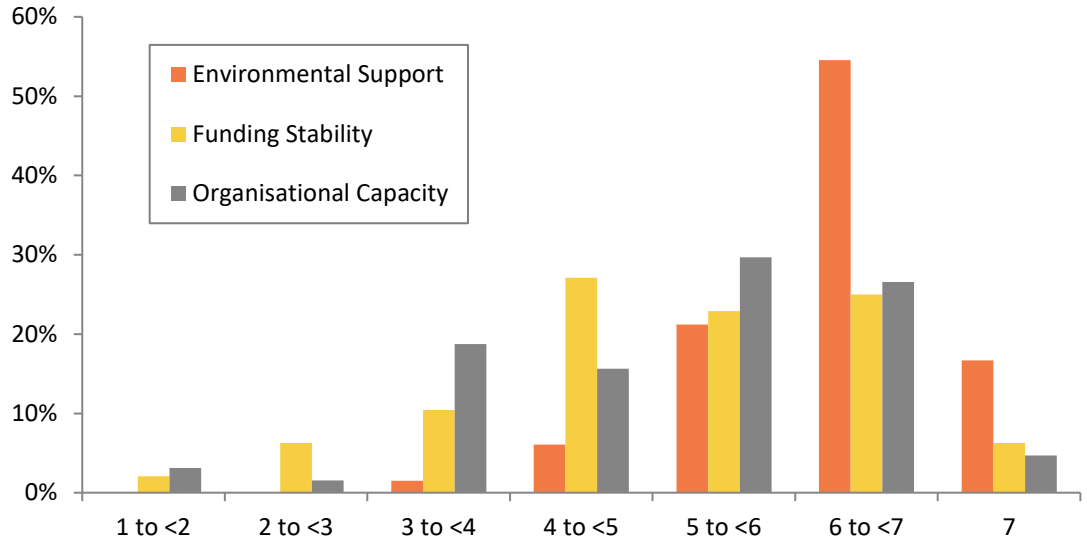

Figure 2. Distribution of Inner Setting Determinant Scales Responses

Note. *n* = 68, scale: average of 4 items for each scale, individual items response range is from 1 = to some extent up to 7 = to a great extent, Scale source: Program Sustainability Assessment Tool (Luke et al., 2014)

Table 14. Means of Inner Setting Determinant Scales

Determinant Scale	Mean	SE	95% CI LL	95% CI UL
Environmental Support	6.07	0.10	5.87	6.28
Funding Stability	4.98	0.19	4.60	5.37
Organisational Capacity	5.00	0.17	4.66	5.34

Cost per teacher

There was a wide distribution of reported costs per teacher ranging from under $500 to greater the $2500 per teacher (Figure 3). The wide difference in cost per participating teacher could lead to significantly different impacts on school budgets with higher costs creating a significant barrier to implementation. The differences in cost reported may relate to the way that schools replace staff who participate. The proportion of schools within cost groupings was broadly spread with nearly equal mid (37.3%; *n* = 19) and high (39.2%; *n* = 20) cost groups and a lower proportion in the lower cost group (23.5%; 12) (Figure 3).

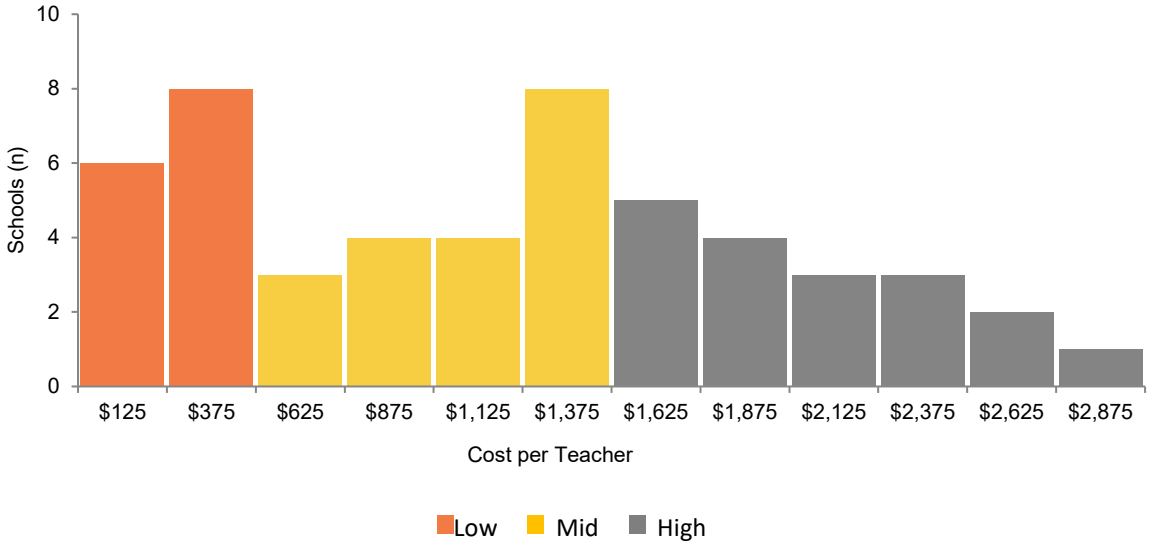

Figure 3. Distribution of Cost per Teacher Participating in QTR within a School

Notes: Mid-point of column shown. Cost measured as cost per participating teacher in QTR for the reporting year; Low <$500, Middle $500 to <$1500 and High >=$1500

Implementation outcomes

This section presents the results for the QTR implementation outcomes in relation to the determinants. Implementation outcomes are defined as “the effects of deliberate and purposive actions to implement new treatments, practices, and services” (Proctor et al., 2009, p.65). Implementation outcomes can be viewed as output measures of the implementation processes and they have been shown to be associated with implementation outcomes (Proctor et al., 2011; Durlak & Dupre, 2008). This analysis focused on penetration of QTR within schools and adaptations to QTR implementation. Fidelity is analysed below as a product of adaptation (i.e., that that did not adapt were considered to display high fidelity to program design structures).

Penetration

High levels of penetration have demonstrated an association with improved intervention outcomes (Proctor et al., 2011). The distribution of responses for the implementation outcomes measure of penetration is shown in Figure 4. Penetration within many schools was relatively low, with (*n* = 37; 54.4%) of respondents indicating less than 30% of teachers had participated in QTR in their school. This means that measures of whole school change in the questionnaire will be based on relatively low levels of penetration for a significant number of larger schools.

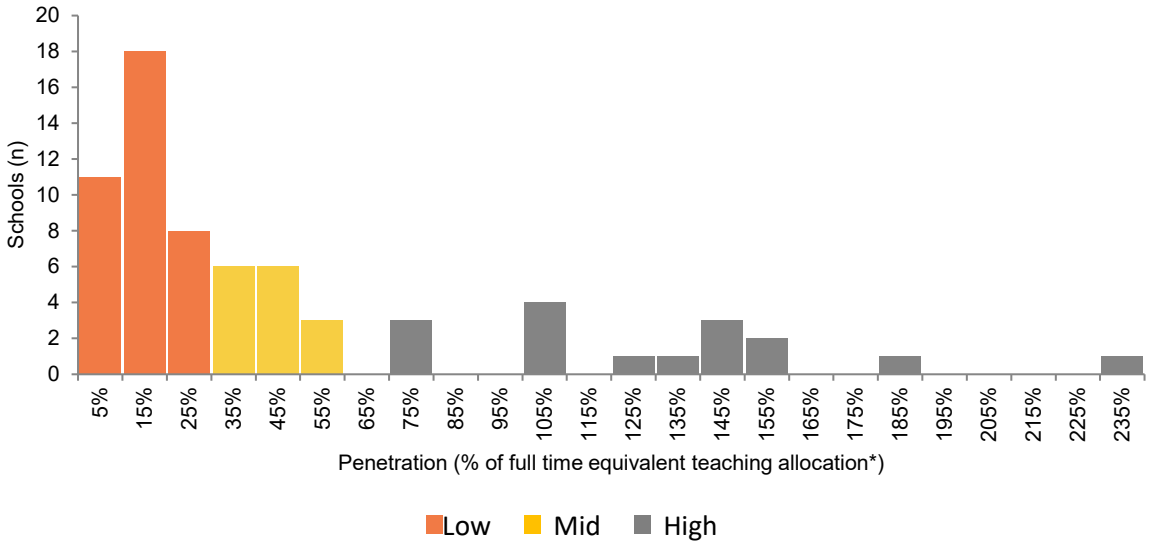

Figure 4. Distribution of Penetration of QTR within Schools

Notes: Mid-point of column shown. School penetration measured as the number of teachers who have participated in rounds in that year divided by the number of full time equivalent teachers within a school: Low <30%, Mid 30 to <70% and High ≥70%; *n* = 68; * result can be greater than 100%.

The relationship between the number of consecutive years conducting QTR and penetration was examined for all schools (see Figure 5) and then schools with enrolments of 500 FTE or more (see Figure 6) to give an indication of the time required to achieve full penetration. Due to staff turnover and the potential for the same teacher to participate in multiple rounds the total penetration can exceed 100% for an individual school. The examination of larger schools was performed to give a more sensitive measure by removing the effect of small schools.

As expected, there is a direct linear relationship between the number of consecutive years QTR has been undertaken and the penetration within a school (see Figure 6). With four teachers typically participating in each round and an option to conduct single or multiple rounds in a year, the total number of teachers in a school would normally determine the time taken for all teachers being trained in QTR. Looking at schools with 500 or more FTE enrolments (*n* = 37), it could take approximately 7 years on average to achieve 100% penetration based on the fitted regression line.

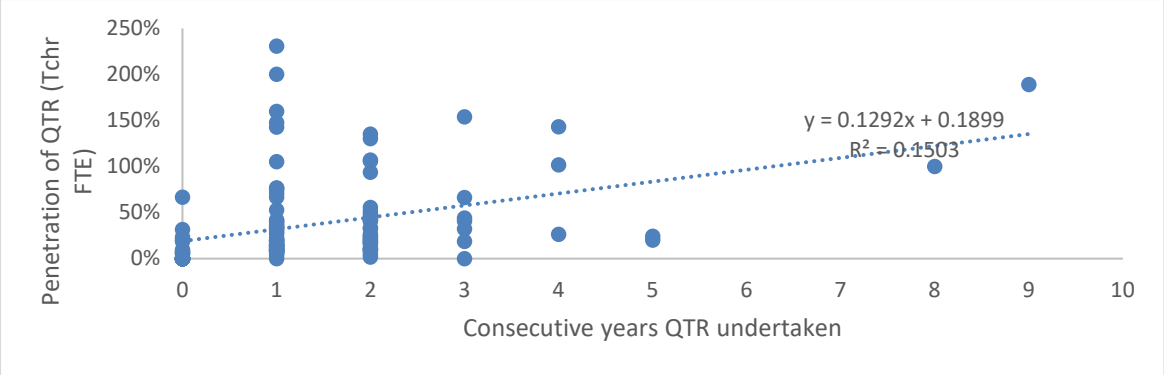

Figure 5. Correlation between Years Conducting QTR and Penetration: All Schools (*n* = 68)

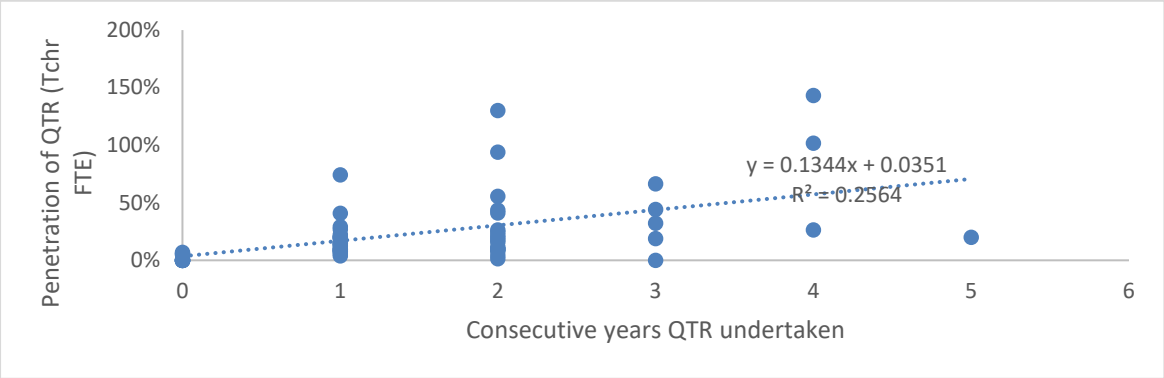

Figure 6. Correlation between Years Conducting QTR and Penetration: Schools with enrolments of 500 or more students (*n* = 37)

Adaptation of QTR

Just over half of schools (*n* = 37; 54.4%) adapted QTR during implementation (Table 15). The main forms of adaption involved multiple rounds in one day (39.4%) and not doing the professional reading (30.3%) as shown in Table 16. Conducting multiple rounds in one day and half day rounds represents a significant departure from the implementation process outlined by the developers. A reduction of time allocated to the implementation of QTR has great potential to reduce the depth of reflection on teaching. Additionally, it could be perceived as signal of the level of commitment from the school executive about the importance that they place on the intervention.

Table 15. Participation of Schools for First Year of Questionnaire Completion

Type of Participation	2019, *n*	2020, *n*	2021, *n*	Total All Years, *N*
Participated in QTR in that year	29	25	14	68
Participated in QTR in that year and made adaptations	17	14	6	37
Proportion adapting QTR	58.6%	56.0%	42.9%	54.4%

Table 16. Forms of QTR adaptation (*n* = 33)

Reason	n	%
We did half-day Rounds	13	39.4%
We did not do the reading	10	30.3%
We did multiple Rounds in one day	8	24.2%
We had short post-lesson discussions (under 60 minutes)	5	15.2%
We established a PLC leader rather than sharing responsibility	4	12.1%
We used video-recorded lessons	3	9.1%
We averaged codes instead of reaching consensus	1	3.0%
We did not establish any norms for PLCs	0	0.0%
We shared QT codes outside the PLC	0	0.0%
We did not view whole lessons	0	0.0%
Other reason	16	48.5%

Reasons for Adapting QTR

The reasons for adapting QTR varied (Table 17). Most respondents agreed that they adapted QTR to limit disruption to the school (54.1% either agreeing or strongly agreeing). Most respondents disagreed with the statement that they adapted QTR for financial reasons (62.2%) and that QTR did not suit their needs (67.6%). A more detailed examination of adaptation is shown in the context section which examines the association between reasons for adaptation and ICSEA level.

Table 17. Reasons to adapt QTR (*n* = 37)

Reason for Adaptation	Disagree	Unsure	Agree	Total
To limit school disruption	37.8%	8.1%	54.1%	100.0%
Due to teacher availability	43.2%	5.4%	51.4%	100.0%
For financial reasons	62.2%	5.4%	32.4%	100.0%
QTR didn't suit needs	67.6%	5.4%	27.0%	100.0%

Determinants and implementation outcomes

Associations between determinants and implementation outcomes are presented in Table 18. Environmental support and organisational capacity were both positively associated with the outcome of penetration, displaying a significant relationship of a moderate magnitude (*r* = ~0.30). Neither cost per teacher nor funding stability demonstrated a significant relationship with penetration. There were no significant associations displayed between any of the determinants and the fidelity outcome.

Table 18. Correlation between Inner Setting Determinants and Implementation Outcomes

		Standardised Coefficient		
	Overall Model	Dependent Variable	Significance	
Inner Setting Factor	R^2	Beta	t	sig
Penetration				
Environmental Support	0.103	0.322	2.717	0.008**
Funding Stability	0.016	0.125	0.855	0.397
Organisational Capacity	0.097	0.311	2.577	0.012*
Cost	0.009	-0.096	-0.677	0.501
Fidelity				
Environmental Support	0.011	-0.106	-0.85	0.399
Funding Stability	0.001	-0.023	-0.156	0.876
Organisational Capacity	0.002	0.047	0.372	0.711
Cost	0.026	0.160	1.137	0.261

Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Cost grouping and penetration of QTR

While the high-cost group displayed slightly lower rates of penetration (Figure 7), there was no significant difference displayed between the groups (Table 19). This may indicate that there are no economies of scale within a school, which is a logical outcome given the main cost of conducting QTR is the cost of casual replacement which is typically a fixed cost per participating teacher.

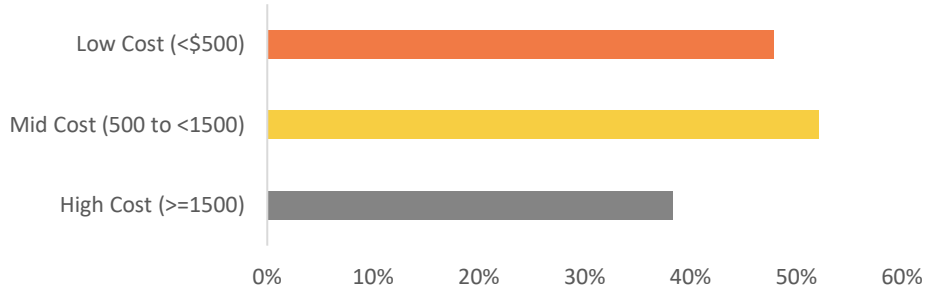

Figure 7. Average Penetration by Cost Grouping

Note. Penetration – number of teachers/total teaching FTE; Cost – cost per participating teacher

Table 19. Mean difference in Penetration by Cost Groupings

	Mean			ANOVA between groups		Measure of Association
Attribute	Low Cost (<$500)	Mid Cost ($500 to <$1500)	High Cost (≥$1500)	F	Sig.	Eta Squared
Penetration (%)	47.9%	52.1%	38.3%	0.36	0.70	0.01

Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Cost grouping and QTR fidelity

Schools in the low-cost group displayed the lowest average fidelity score (Figure 8), with significant differences ($p < 0.05$) in the average fidelity when compared to mid-coast and high-cost groups (Table 20). This pattern is consistent with schools making adaptations to reduce the cost of implementation.

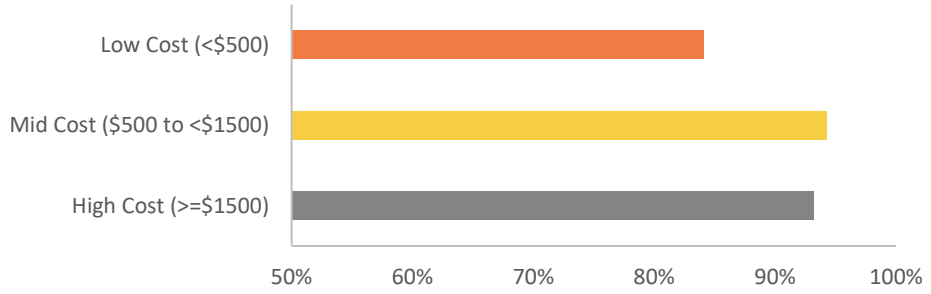

Figure 8. Average Fidelity by Cost Grouping

Note. Fidelity % - (number of possible adaptations - number of adaptations) / number of possible adaptations

Table 20. Mean difference in Fidelity by Cost Groupings

	Mean			ANOVA between groups		Measure of Association
Attribute	Low Cost (<$500)	Mid Cost ($500 to <$1500)	High Cost (≥$1500)	F	Sig.	Eta Squared
Fidelity	84.09%	94.26%	93.18%	5.62	0.01*	0.19

Note. * $p < 0.05$.

Key learnings - Implementation outcomes

– The inner setting determinants of environmental support and organisational capacity were found to be positively associated with penetration of QTR within schools. This highlights the importance of inner setting during implementation, with schools reporting higher levels of internal support through dedicated capacity (Organisational capacity) and political backing (Environmental support) demonstrating larger proportions of their staff engaged in QTR.

– Schools spending the lowest amounts per staff member to engage in QTR (<$500 per teacher) displayed more adaptations to QTR implementation and thus lower fidelity outcomes.

– Adaptation of QTR during implementation was reported by just over half of schools engaging in QTR. The most common reasons reported for adapting QTR were to limit school disruption and casual teacher availability. A significant proportion of schools conducted a time reduced version of QTR (multiple rounds in one day or half-day rounds) in an effort to minimise disruption and work within casual relief constraints.

Intervention Outcomes

This section reports on the interventions outcomes that have resulted from the implementation of QTR. Perceived changes in teaching practice, student engagement and academic achievement were the outcome measures. These measures move from being proximal to QTR (change in teacher practice due to focus on pedagogy through QTR) to more distal (student engagement and academic achievement). As shown in Figure 9 there was a distinct pattern for the perceptions of QTR impact with strong agreement for changes in teaching practice and declining perception of improvement as outcomes move distal to academic achievement. The decrease in agreement for both academic achievement and student engagement/motivation saw a corresponding increase in the proportion of respondents that were unsure (39.7% and 67.6%) rather than a strong level of disagreement. This may indicate that there may be a lack of measurement strategies relating to changes in students' attitudes and behaviours at many schools.

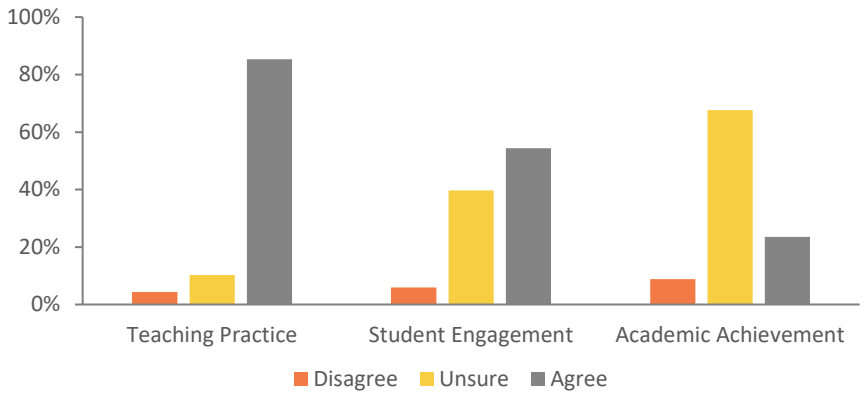

Figure 9. Distribution of Intervention Outcomes Responses

Determinants and Intervention Outcomes

When examining the relationships between the three inner setting sub scales and perceived intervention outcomes (Table 21), environmental support and organisational capacity displayed significant positive associations with all three intervention outcomes (changed teaching practice, academic achievement and student motivation or engagement), with strength of these associations was moderate (ranging from 0.373 to 0.498). Cost also displayed a moderate significant association with academic achievement (r = 0.447).

Table 21. Correlation between Inner Setting Determinants and Perceived Outcomes

		Standardised Coefficient		
	Overall Model	Dependent Variable	Significance	
Inner Setting Factor	R^2	Beta	t	sig
Teaching Practice				
Environmental Support	0.248	0.498	4.625	<0.001***
Funding Stability	0.043	0.207	1.447	0.154
Organisational Capacity	0.171	0.414	3.609	0.001**
Cost	0.032	0.178	1.267	0.211
Student Engagement				
Environmental Support	0.139	0.373	3.238	0.002**
Funding Stability	0.010	0.102	0.705	0.484
Organisational Capacity	0.215	0.463	4.148	<0.001***
Cost	0.040	0.201	1.436	0.157
Academic Achievement				
Environmental Support	0.111	0.333	2.848	0.006**
Funding Stability	0.003	-0.055	-0.376	0.709
Organisational Capacity	0.164	0.404	3.510	<0.001***
Cost	0.200	0.447	3.496	0.001**

Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Cost Grouping and Intervention Outcomes

When cost is broken down into groups there is evidence that it is significantly associated with the perceived intervention outcomes of academic achievement and teaching practice (Figure 10 and Table 22). Increasing academic achievement was significantly related to cost level ($p < 0.01$) whilst teaching practice was not significantly related but showed the same stepped pattern with increasing cost being associated with improved intervention outcomes. In post hoc testing a statistically significance difference was found between the average increase in academic achievement between the lowest and highest cost groups ($p = 0.010$). This could be the result of some schools making adaptations to QTR to lower costs, but these changes being associated with lower perceptions of impact on student achievement.

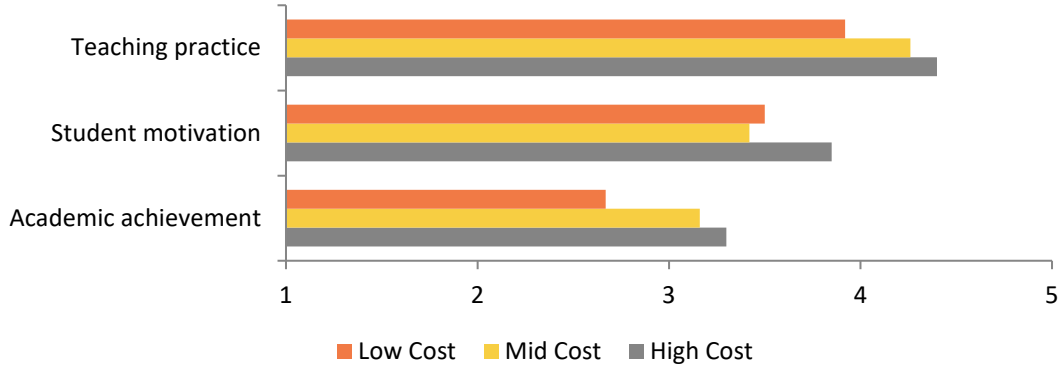

Figure 10. Association between Cost Group and Mean Intervention Outcome Scores

Table 22. Association between Cost Groups and Mean Intervention Outcome Scores

	Mean			ANOVA between groups		Measure of Association
Attribute	Low Cost (<$500)	Mid Cost ($500 to <$1500)	High Cost (≥$1500)	F	Sig.	Eta Squared
Teaching practice	3.92	4.26	4.40	1.03	0.37	0.04
Student engagement	3.50	3.42	3.85	1.31	0.28	0.05
Academic achievement	2.67	3.16	3.30	4.86	0.01*	0.17

Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Key learnings - Intervention outcomes

– As for implementation outcomes, the inner setting of a school appears important in creating perceptions of impact through engagement in QTR. Determinants of environmental support and organisational capacity displayed significant associations with perceived QTR outcomes that were of moderate magnitude.

– Cost per teacher to engage in QTR displayed positive impact on the perceptions of student achievement. Those schools spending the least per teacher, which led to higher levels of adaptation, displayed significantly lower perceptions of QTR having a positive impact on student achievement.

It should be noted that the intervention outcomes are measured by the changes perceived by the QTRLO. Ideally these findings would be triangulated with measured linkage data (e.g., NAPLAN).

Context and QTR implementation

The role of context in the implementation of interventions was a key focus of my research and is presented as a separate group of interactions and analysis. The context for the implementation of an intervention is the setting in which the intervention will occur. This includes both the static and dynamic elements of the setting (Pfadenhauer et al., 2017). It has been suggested that changes in context from initial experimental trials are a significant contributing factor in the failure of scaling interventions (Horner et al., 2017).

To study the impact of context in detail, this section examines the possible association between context (presented here as socio-educational status), implementation determinants, implementation outcomes and intervention outcomes. For clarity in presentation, the results that follow are based primarily on a measure of school advantage represented by school ICSEA (grouping described in the data context section). The number of schools from each ICSEA group were: *n* = 27 low (ICSEA <950), *n* = 25 mid (ICSEA 950 to <1050) and *n* = 16 high (ICSEA ≥1050) (Figure 11).

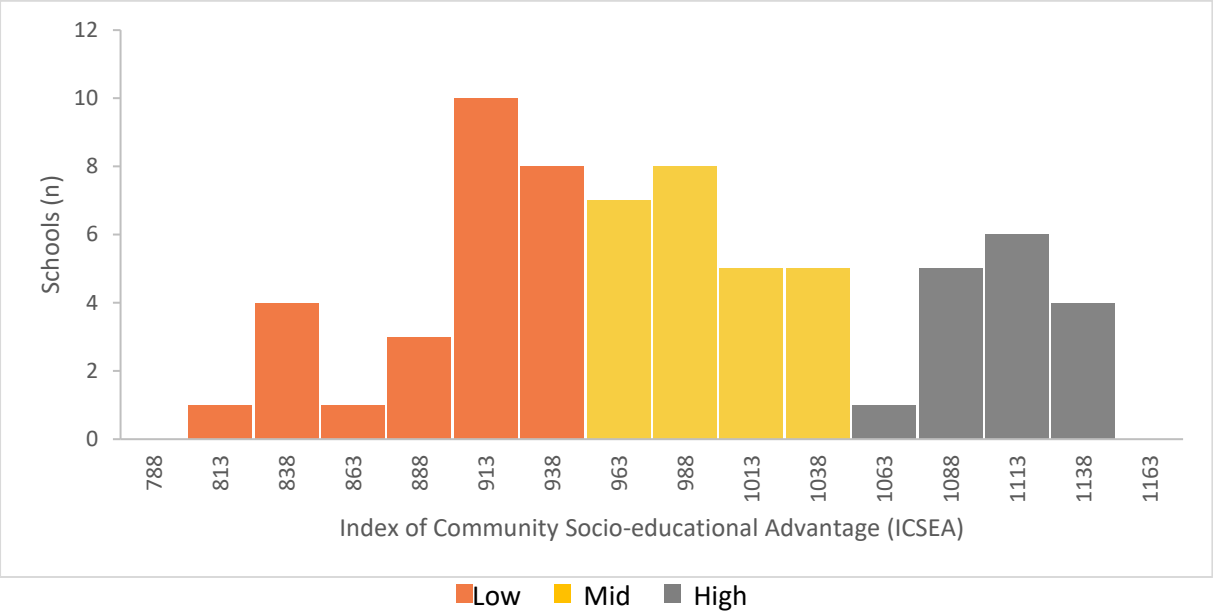

Figure 11. Distribution of Schools Participating in QTR by ICSEA Group

Note. Mid-point of column shown, ICSEA level grouping; low <950, mid 950 to <1050 and high ≥1050.

Context and Determinants

The difference between context and determinants is not well defined in Implementation Science. Contextual elements are included among the determinants in some determinant frameworks (Nilsen & Bernhardsson, 2019); however, those frameworks imply that context or setting can be either a barrier or facilitator to the implementation of an intervention. Nilsen (2015) noted there can be significant overlap between the models and frameworks within Implementation Science, going on to stress the importance of context in scaling interventions (Nilsen & Pfadenhauer, 2019). Based on recent literature regarding the importance of context in relation to scaling (Horner et al., 2017; Nilsen & Bernhardsson, 2019; Pfadenhauer, 2017), I feel that examination of context as a separate construct in education settings is warranted due to the potential influence of socio-educational context on determinants in schools.

Inner setting by ICSEA groups

Inner setting determinants of support and organisational capacity, whilst not statistically significant, display a linear pattern with ICSEA grouping (increasing with each ICSEA group). Organisational capacity and environment support have both been identified as key factors for successful implementation (Damschroder et al., 2008; Durlak & Dupre, 2008; Flottorp et al., 2013). Lower levels of organisational capacity and environment support among disadvantaged schools highlights that schools in these settings may have a less refined focus on teaching and learning due to additional layer of student welfare that is part of the context that disadvantaged schools operate in (Harris & Jones, 2017). Funding stability did not differ between ICSEA groups indicating that the funding of QTR is not a necessarily a barrier to the implementation of QTR.

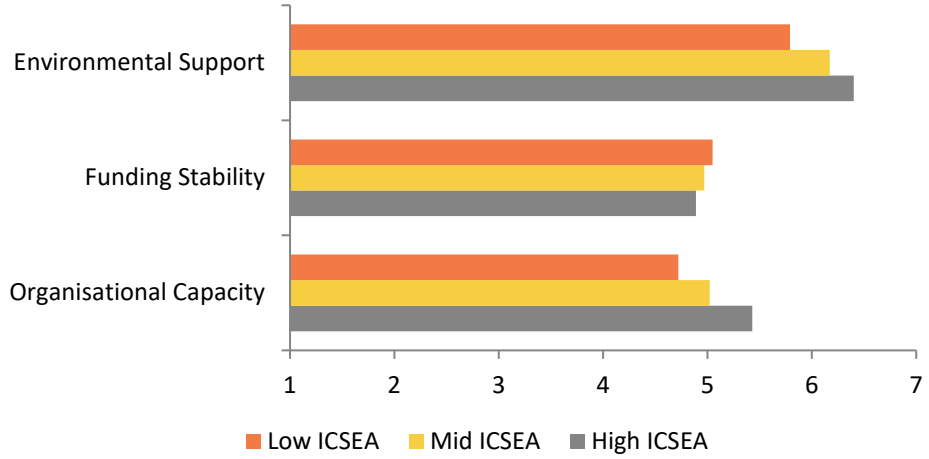

Figure 12. Inner Setting Determinant Scales by ICSEA Group

Table 23. Inner Setting Determinant Scales by ICSEA group

	Mean			ANOVA between groups		Measure of Association
Scale	Low ICSEA	Mid ICSEA	High ICSEA	F	Sig.	Eta Squared
Environmental Support	5.79	6.17	6.40	3.07	0.05	0.09
Funding Stability	5.05	4.97	4.89	0.05	0.95	0.00
Organisational Capacity	4.72	5.02	5.43	1.29	0.28	0.04

Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Cost per Teacher by ICSEA groups

There were no statistically significant differences for the average cost per teacher between ICSEA groups. The high ICSEA group of schools recorded the highest average cost for implementing QTR, which may also be related to high ICSEA groups indicating the lowest level of agreement with the statement that QTR is financially sustainable. Average cost per teacher engaging in QTR ranged from $1048 to $1553, demonstrating that QTR is relatively low-cost professional development.

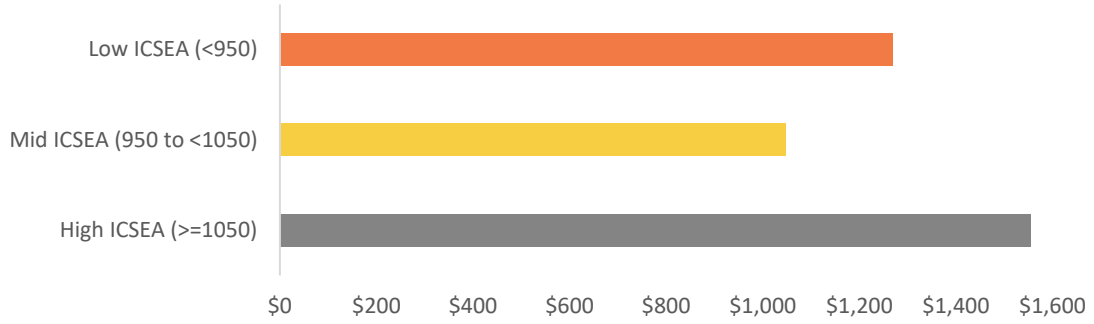

Figure 13. Average cost per Participating Teacher by ICSEA Group

Table 24. Average cost per participating teacher by ICSEA Group

	Mean			ANOVA between groups		Measure of Association
Attribute	Low ICSEA	Mid ICSEA	High ICSEA	F	Sig.	Eta Squared
Average cost per participating teacher	$1267	$1048	$1553	1.45	0.24	0.06

Context and Implementation Outcomes

The association between context and implementation outcomes was examined to determine if differences existed between ICSEA groupings for adaptation and penetration implementation outcomes.

Adaptation by ICSEA groups

The proportion of schools that adapted QTR by ICSEA group was examined to determine if lower ICSEA schools were more likely to adapt QTR. Of those schools that participated in rounds a higher proportion of low ICSEA schools adapted QTR. This decreased as the ICSEA level increased. The difference in the proportions was not statistically significant (Table 25).

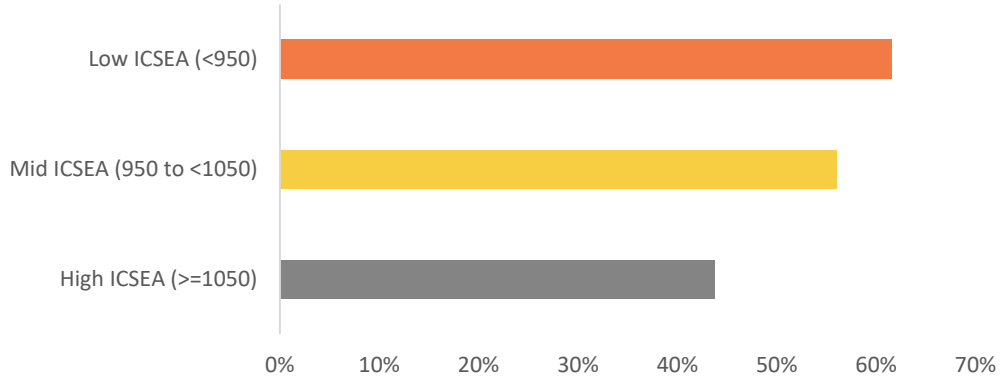

Figure 14. Proportion of Schools Adapting QTR by ICSEA Group

Table 25. Proportion of Schools Adapting QTR by ICSEA Group

Attribute	Proportion			Pearson Chi-Square Test	
	Low ICSEA	Mid ICSEA	High ICSEA	Value	Asymptotic Significance (2-sided)
Adapted QTR	61.5%	56.0%	43.8%	1.28	0.53

Penetration by ICSEA groups

The average level of penetration was higher for schools in the low (48.5%) and mid ICSEA (59.9%) groups compared to the high ICSEA (30.0%) group (Figure 15). The differences between the mean rates of penetration were not significantly different (Table 26). The lower average penetration value among High ICSEA schools may reflect the higher costs reported among this group.

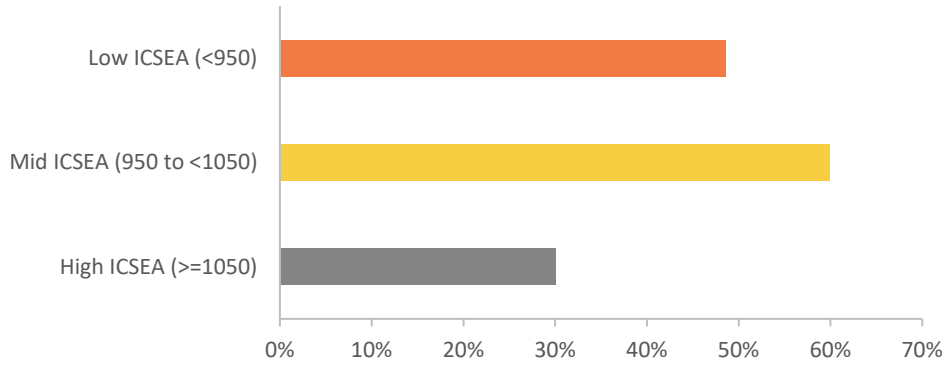

Figure 15. Average Penetration Level by ICSEA Group

Table 26. Average Penetration Level by ICSEA Group

Attribute	Mean			ANOVA between groups		Measure of Association
	Low ICSEA	Mid ICSEA	High ICSEA	F	Sig.	Eta Squared
Mean Penetration Level	48.5%	59.9%	30.0%	1.69	0.19	0.05

Context and Intervention Outcomes

The association between context and intervention outcomes was examined to determine if differences in ICSEA groups were related to changes in perceived intervention outcomes. It should again be noted that these are the perceived outcomes reported by the QTRLO on behalf of the school.

Of the three perceived outcomes the most proximal outcome to the QTR intervention, changes to teaching practice, displayed the highest average response (Figure 16). Post hoc testing displayed a statistically significant difference between the low and high ICSEA groups for perceptions of change in teaching practice (p = 0.035).

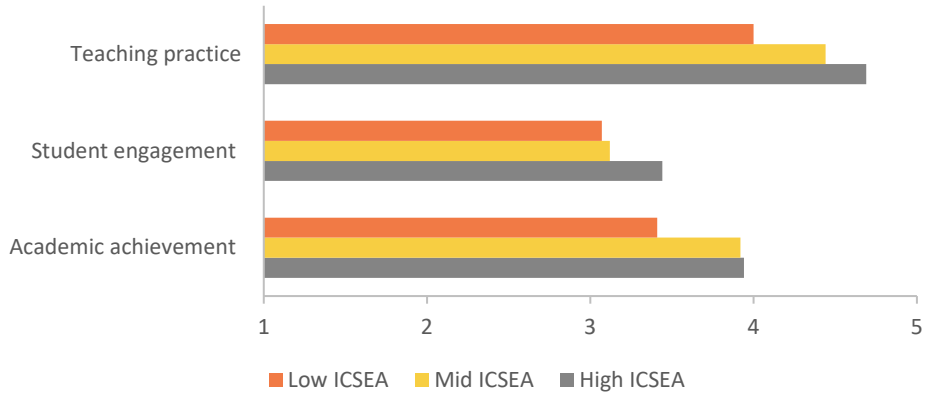

Figure 16. Association between Intervention Outcomes Mean Score by ICSEA Group

Table 27. Association between Intervention Outcomes Mean Score by ICSEA Group

Attribute	Mean			ANOVA between groups		Measure of Association
	Low ICSEA	Mid ICSEA	High ICSEA	F	Sig.	Eta Squared
Teaching practice	4.00	4.44	4.69	3.61	0.03*	0.10
Student engagement	3.07	3.12	3.44	1.55	0.22	0.05
Academic achievement	3.41	3.92	3.94	2.90	0.06	0.08

Note. * p < 0.05, ** p < 0.01, *** p < 0.001.

Key learnings – context and QTR implementation

– Schools in the lowest ICSEA group (ICSEA <950) displayed the lowest levels of environmental support and organisation capability, with the highest proportion of implementation adaptation when engaging in QTR. These findings along with the lowest average perceptions of the impacts of QTR suggest that lower ICSEA schools are encountering more difficulty in implementing QTR compared to higher ICSEA schools and additional implementation supports may be required to enhance outcomes in lower ICSEA schools.

Non-Adoption of QTR

To provide a comprehensive picture of the implementation process the reasons schools did not implement QTR were examined to identify potential barriers to implementation and the association with context. Of the 119 schools providing data, 51 (43%) were not engaged in QTR during the year they responded to the survey. Difficulty in arranging time displayed the highest average for not being able to implement QTR, followed by inability to access casuals (Figure 17). These were the only factors to display values with positive agreement (greater than 3).

There were no significant differences between ICSEA groups for any of the non-implementation factors (Table 28), however the was a distinct trend for being unable to source casuals and support amongst staff, with the highest means reported among the Low ICSEA group of schools.

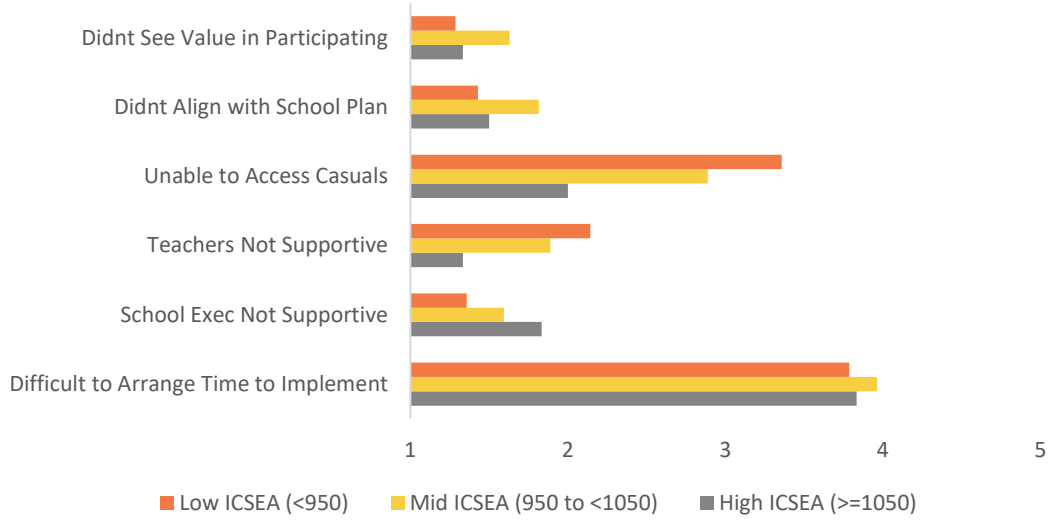

Figure 17. Reasons for not Implementing QTR by ICSEA Group

Table 28. Reasons for not implementing QTR by ICSEA Group

Reasons for Adapting QTR	Low ICSEA	Mid ICSEA	High ICSEA	F	Sig.	Eta Squared
Didn't see value in participating	1.29	1.63	1.33	1.04	0.36	0.05
Didn't align with school plan	1.43	1.81	1.50	1.36	0.27	0.06
Unable to access casuals	3.36	2.89	2.00	3.06	0.06	0.12
Teachers not supportive	2.14	1.89	1.33	2.04	0.14	0.08
School executive not supportive	1.36	1.59	1.83	0.87	0.43	0.04
Difficult to arrange time	3.79	3.96	3.83	0.16	0.86	0.01

Key learnings – Non-adoption of QTR

– Time to implement and access to casual relief teachers were the main barriers reported in schools that did not undertake QTR in the year of the survey. The inability to access casuals appeared greater in Low ICSEA schools. This factor alone may account for the higher level of adaptation seen among Low ICSEA schools when implementing QTR.

Limitations

The research design contained several limitations which impact on the generalisability of the results. As schools agreed to participate in the study this introduces potential self-selection bias in the results. Schools that had a more positive experience with QTR may be more likely to participate in the study and report more positive results. This is also a concern because the intervention outcomes measured were based on the perceived outcomes of the QTRLOs. Ideally the perceived outcomes would be triangulated against other less potentially biased measures. This triangulation of results was included in the original longitudinal research design but could not be enacted when a change to cross-sectional analysis was made due to the impact of COVID-19 on the data from schools. The absence of a control group, random allocation of schools to the intervention and a lack of longitudinal data analysis prevent causal relationships being established.