No hands up: An investigation into the impact of cold-calling on primary school teacher expectations

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A Research & Development Project

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Abstract

Teacher expectations have a significant impact on pupil outcomes. Expectations are the beliefs teachers hold about pupils' potential academic achievements. Previous studies have investigated the impact of incorporating the strategies of high-expectation teacher on pupils' attainment. Teacher expectations appear to be related to teachers' self-efficacy beliefs and beliefs about intelligence. This study aimed to investigate the impact of cold-calling on teachers' expectations. Cold-calling is a questioning strategy where teachers choose children from the whole class to answer their questions rather than rely on volunteers raising their hands. It is referred to frequently in professional documentation relating to high expectations. There is a lack of existing research into the decision-making process of teachers when choosing children to answer questions. The intervention was to incorporate cold-calling into the classroom practice of four participants in an English primary school setting. The Coronavirus school closures meant that the study had to be adapted due to no data being able to be collected. Had data collection been possible, a mixed-methods approach would have been used. Quantitative data including potential changes to predictions of attainment and teacher self-efficacy using the established Teacher Self Efficacy Scale would have been collected. Focus groups would have provided qualitative data which would have been analysed using grounded theory. The potential findings have been considered based on existing findings in the literature and a critical analysis of the proposed research methods. Including cold-calling in a teacher's practice may increase their expectations but there are additional factors which might affect this; however, it may also communicate increased expectations to pupils, which is strongly proven to raise outcomes due to initiating or encouraging a change to their behaviour to meet increased expectations.

1. Introduction

Having high expectations of pupils is a requirement of the Teachers Standards (Department for Education, 2014), a characteristic of successful educational systems (Johnston et al., 2019), and has a grounding in research spanning over fifty years. One of the ways that expectations are conveyed to pupils is through teacher-pupil interactions (Rubie-Davies, 2007). During whole-class teaching, the typical means of interaction follows the pattern of a teacher posing a question followed by children raising their hands to answer (Black and Wiliam, 2009). Cold-calling requires teachers to select a particular student to respond to their question, from the entire class, rather than rely on voluntary hand-raising. Sherrington and Stafford (2018) argue that this creates an expectation that all children should be ready to answer a teacher's question. The relationship between cold-calling and high expectations is one which has received little academic attention.

In my Part 2 assignment, investigating the impact of teacher expectations on disadvantaged children inspired a further study into how teacher expectations can be raised to improve attainment for all pupils. This assignment was conducted at a school that was in an area of significant socio-economic deprivation, and where national outcomes were consistently below the expected floor standard. Part of the school improvement plan, which was devised in conjunction with the school improvement advisor who was a successful ex-Headteacher, had a focus on having higher expectations for pupils. This caused me to question what is meant by 'high expectations' beyond a semantic level, and how my practice, and the practice of others, might be adapted to include high expectation strategies. Initial readings for this assignment were completed before the Autumn Term 2017 when a significant disruption in my original school contributed to the suspension of my studies for two years at the end of Michaelmas Term 2017. I was able to resume this project in January 2020 after changing

schools. With a change in school came a change in practices markedly different to those I had experienced before. Comparatively higher standards were evident in many aspects of school life such as in attainment and progress, and particularly in the content and presentation of pupils' work. The structure of lessons was also suggestive of higher expectations in that all children are taught at age-related expectations in each year group (except for those whose cognitive needs would have meant this to have been inappropriate), with same-day interventions enacted daily to ensure no children fall behind.

The outcomes of my current school, where I am an Assistant Headteacher, were significantly higher than the Part 2 school, although there were still hints of differing expectations for some groups of pupils, such as the language used by some teachers about 'ability' and 'some pupils not being able to achieve a particular standard'. After speaking about resuming this project with my Headteacher, we discussed how a 'no hands up' approach to classroom questioning was one of the key strategies we wanted to develop across the school. Following this initial collaboration, I chose to explore the impact of introducing cold-calling as a means of affecting teachers' expectations of pupils in a school where high expectations underpin the culture of daily life.

The Headteacher wants cold-calling to be the default questioning strategy that teachers use. His justification for the use of this strategy is that all children should participate all of the time: there should not be moments in the classroom where children can opt-in and out of their learning, and assessment for learning should not be limited to a handful of responses from, usually, the same children.

My role as a senior leader, classroom teacher, and practitioner-researcher means that I could understand the potential impact of the strategy in terms of increasing expectations for all pupils to participate in their learning and subsequently achieve at a comparatively higher standard. The literature review supported a more precise understanding of the impact of high expectations than the anecdotal guidance around high expectations that I had discussed with colleagues previously. However, I could also understand the hesitation, revealed by sharing my ideas with other teachers across the school, that they might face in adapting their classroom practice to adopt the strategy. For example, the impact of an incorrect answer can often affect the pace of the lesson or might be a cause of embarrassment to a child. Some teachers shared they would be worried it would make their teaching less effective.

The focus of this research and development project was to ascertain the impact of cold-calling on teachers' expectations: to find out how whether the data gained about students' current understanding through classroom questioning affects a teacher's inference about their potential achievement. This would develop my practice by informing my understanding of how my expectations are informed and demonstrated in the classroom. I think that I have high expectations for all, but I am not confident that my practice, particularly in classroom questioning, always reflects this. Beyond my immediate context, this intervention is relevant more widely to contribute to participants' awareness of the impact of their expectations of their pupils. From a national perspective, under-achievement of specific groups of pupils is an ethical and equitable issue. This study will be able to contribute to a growing awareness of interventions which aim to increase achievement for all, and to a gap in the research literature regarding the use of cold-calling as a high-expectation strategy.

Differing expectations for groups of pupils have long been studied with conclusions being replicated consistently that higher expectations result in higher achievement for all. Rubie-Davies, who has made substantial contributions to the expectancy literature, has categorised high expectation practices as representing teachers' beliefs. Recent studies have investigated the impact of instructing teachers in New Zealand with high-expectation strategies to employ in their classroom, and have measured the impact on pupils' achievement. Few studies have so far investigated the impact such strategies have on teachers' beliefs. This project offers an opportunity to investigate the impact of the cold-calling questioning strategy on teachers' beliefs. It also aims to establish whether the information received by the teacher affects such expectation beliefs or merely confirms pre-formed expectations. Personally, exploring the impact of an intervention on teacher change will be useful from my professional development viewpoint, as I one day wish to become a Headteacher, and this process will reveal some of the challenges that I may face with changing any practice across a school. In a wider context, investigating a change to teacher beliefs is a useful opportunity to explore the impact of introducing high-expectation strategies and will contribute to an understanding of the relationship between teachers' practices and beliefs, and their pupils' outcomes.

The intervention is the systematic implementation of cold-calling into the participants' classrooms and the tracking of a change to the participants' beliefs about pupils in their class and their practice. Unfortunately, due to the school closures mandated by HM Government in late-March 2020, it was not possible to conduct the intervention and so this assignment details and evaluates the planned methodology, and potential findings and implications for practice.

The following questions guided the literature review:

1. What are high teacher expectations and why do they matter?

2.Why is there variation among teachers in their expectations?

3.How are teachers' expectations demonstrated in the classroom?

4.How do teachers' questioning strategies demonstrate expectations, and to what extent can cold-calling be defined as a high-expectation strategy?

2. Literature Review

2.1.1 What are high teacher expectations?

The seminal study by Rosenthal and Jacobson (1968), commonly referred to as the 'Pygmalion in the Classroom', established the finding that the pupils' academic achievement is affected by their teachers' expectations of their achievement. Although this study has been criticised in its methodology and its ethical considerations, its finding has been confirmed in many subsequent studies over the last fifty-two years: the higher that teachers expect pupils to achieve, the higher pupils are likely to achieve in relation to their current level of achievement (Hinnant et al., 2009; Li & Rubie-Davies, 2017). Good and Brophy (1997) define teacher expectations as the inferences which teachers make about the future behaviour and achievement of the pupils in their class based on their current knowledge about them. This definition is often cited in recent studies although not every study in the teacher expectation field adopts it, and the lack of a single definition has been offered as a criticism by Johnston et al. (2019). Teacher expectations represent a belief about the pupils in a class and their potential achievement and it is argued that this belief has a significant impact on children's academic achievement (Timmermans and Rubie-Davies, 2018).

Teacher expectations are conceptualised as a belief about pupils (Timmermans & Rubie-Davies, 2018). Expectations of potential achievement can be either high, average, or low depending on the child's prior attainment (De Boer et al., 2010). Timmermans et al. (2016) argue that teacher expectations can vary in their accuracy, and inaccurate expectations can have a negative, limiting effect on pupils when they expect too little in terms of progress and achievement. Importantly, the beliefs teachers have about pupils' potential academic achievement become the goals by which they make decisions and take actions

(Woodcock et al, 2019), which demonstrates the potential impact teachers can have on pupils based on the assumptions they make. The assumptions which inform these beliefs can be used to overestimate or underestimate pupils' potential: Alviderez and Weinstein (1999) found that teachers overestimated the potential of pupils from higher socio-economic backgrounds, and underestimated that of their less affluent peers. Ascertaining exact levels of achievement and proficiency in any subject or skill is always vulnerable to inconsistencies and potential errors with assessment and this can affect the analysis of teacher expectation effects on pupils (De Boer et al., 2010). However, the importance and impact that teacher beliefs have is an important factor to consider for educational effectiveness for all pupils.

Until recently, there was a greater research focus on how different groups of pupils were affected by differences in teacher expectations which were based on individual pupil characteristics. A range of characteristics can affect the formation of teachers' expectations. Prior attainment is a significant factor for teachers when forming their expectations of children (Rist, 1970). The seminal Rosenthal and Jacobson (1968) study showed that pupils achieved higher than those with similar starting points when teachers were misled into believing that these pupils had higher prior attainment. Other pupil characteristics include ethnicity (Tenenbaum & Ruck (2007), socio-economic status (McKeown & Weinstein, 2008), and gender (Van Duzer, 2006). There are also pupil traits that can affect teachers' expectations, such as participation and perceived confidence (Kelly & Carbonaro, 2012). Proctor (1984) also found that the school climate can affect the expectations individual teachers held about students, doing so in the context of how high school expectations raised the teachers' individual ones. It can be concluded that a range of factors might contribute to teacher expectations, although there is little guidance on

the magnitude that each characteristic has in proportion to each other. Prior achievement, however, does feature as a common influence (Rubie-Davies & Peterson, 2016).

More recent studies have moved the focus away from specific groups of pupils within a cohort to teachers' beliefs about children generally, with Rubie-Davies (2014) arguing that expectations are a class-level phenomenon. This means that the differences between what teachers believe about pupils and learning affects the outcomes of all children in the class, rather than just some with certain characteristics. This might explain the inconsistencies between the effect sizes of teacher expectation effects across a range of studies (Johnston et al., 2019). Furthermore, Rubie-Davies and Peterson (2016) also argue, using evidence from a three-year study, that teachers hold similar beliefs for specific groups of pupils across different cohorts. The study explored the stability of expectations of ninety-four teachers in New Zealand across a three-year period, although the authors warn against the generalisability of their findings, and they only explored expectations based on prior attainment. This overall shift in focus is significant as it implies that it is what teachers believe about pupils and their learning that makes a difference to outcomes (Timmermans & Rubie-Davies, 2018). In the context of professional development, it demonstrates the importance of raising teachers' expectations of what all children can achieve rather than of specific children in any given cohort.

There is also variation between how individual teachers are affected by factors that influence their expectations. Most of the research in this field has been conducted by Babad who explored the concept of bias in a range of studies. She conceptualised the concept of a high- and low-bias teacher and was able to deduce some characteristics. Biased teachers tend to evaluate students based on stereotypical information and are

also more likely to hold more dogmatic views about their students and be more authoritarian in their interactions (Babad, 2009). These conclusions were formed from reviewing a large amount of research regarding teacher expectations, from over several decades.

Once teachers' expectations are formed, they affect the nature of interactions between the teachers and their pupils (Brophy and Good, 1970). Teachers communicate their expectations to pupils both verbally and non-verbally (Babad et al., 1989) which can include the quality and quantity of support given (Babad, 1998); the amount of attention given to pupils (Bloom, 1984); and the amount of praise or criticism, wait-time, and interaction given to children of different abilities (Brophy, 1985). Brophy and Good (1970) found a pattern of more negative interactions with lower-expectancy groups, and although this peer-reviewed study was relatively small-scale with only 48 participants, the finding has been replicated in subsequent studies. Rubie-Davies et al. (2015) discuss how it was previously considered that teachers held different expectations for different groups of children in their class, and in earlier studies, it was found that children, in addition to teachers of varying levels of experience, can successfully identify the expectations that teachers hold for different children within the classroom (Brophy, 1983; Weinstein, 2002). Now, it is also considered that teachers can have high or low expectations for all pupils in their classrooms (Rubie-Davies et al., 2015), although the earlier studies' findings suggest that despite having higher or lower overall expectations, there still may be some variation in classrooms in the range of potential achievement and progress, and this can be inferred by pupils (Weinstein et al., 1987).

Children can perceive teachers' expectations and their behaviour responds to them accordingly (Johnston et al., 2019). There appear to be several causes behind this effect.

Rubie-Davies (2006) states that pupils' self-perceptions are affected by teachers' interactions. She found that pupils' self-belief increased slightly over the course of a year when in the classes of high-expectation teachers; for pupils with low-expectation teachers, however, their self-belief decreased substantially and quickly. Weinstein (2002), based on data from decades of research, found that pupils interpret the expectations the teachers have of them through: how the curriculum is differentiated; the feedback provided by teachers; public acknowledgement of achievement; the ways they are grouped; and verbal and non-verbal behaviours. The combination of factors is interpreted by pupils with increasing sophistication and impacts on their academic achievement (Timmermans & Rubie-Davies, 2018; Johnston et al., 2019).

Teacher expectations are often conceptualised as being self-fulfilling (Li & Rubie-Davies, 2017): children will meet the expectations teachers have for them, whether they are high or low (Weinstein, 2002). De Boer et al. (2018) suggest that this is, however, not always true in that several pupil characteristics can mitigate the teacher expectation effect, although they concede that there is a lack of evidence to substantiate this argument. They do, however, argue that for some groups of children the self-fulfilling effect can be particularly strong where teacher expectations are inaccurate and are biased by student characteristics, such as ethnicity and gender, which have no causal link to achievement.

There are also instructional differences which might cause a difference in achievement. Timmermans and Rubie-Davies (2018) suggest that teachers with high-expectations use more effective pedagogy and provide a higher overall level of challenge and a warmer classroom climate. De Muijs et al. (2014) argue that the expectations demonstrated within the context of the classroom climate need to be high for teaching to be effective. In Rubie-Davies' (2006) study, she categorised teachers into three discrete groups: those

who had high expectations and whose pupils achieved highly, those with high expectations but whose pupils made only average progress, and those with low expectations whose pupils made respectively lower progress. The difference between the first two groups was attributable to the differences in pedagogy that were identified, particularly the use of questioning (Rubie-Davies, 2006). Furthermore, a key finding in Rubie-Davies' (2007) explorative study, and confirmed by De Boer et al. (2018) is that teacher expectations can affect children's opportunity to learn, due to the level of cognitive demand of the tasks they set and their level of questioning, and that low expectations limit the progress that children can make. This demonstrates the importance of intervening with teachers' beliefs as a means to improve outcomes for pupils, particularly those who are at risk of lower expectations, such as those from disadvantaged groups (Strand, 2016).

2.1.2 Why do teacher expectations matter?

The impact of teacher expectations on pupils' outcomes has been clearly demonstrated in a range of studies spanning the past several decades. Hinnant et al. (2009) found that the overestimation of pupils' potential positively impacted children's achievement not only a year later but also four years later. Although their study focused on children under five, its large sample size gives its finding statistical significance. In a tertiary education setting, Li and Rubie-Davies (2017) made a similar finding, concluding that students whose teachers had high expectations made much larger academic gains than those whose teachers held lower expectations. Raising expectations of pupils' potential achievement accelerates progress for all pupils (Timperley & Philips, 2003), as lower expectations are likely to constrain overall student progress (Timmermans & Rubie-Davies, 2018). The findings from these studies demonstrate the impact and importance of teacher expectations on academic achievement and the importance of professional

development to raise the expectations of teachers' expectations as an issue of educational equity.

2.2 Why is there variation among teachers in their expectations?

There is evidence from a wide range of education systems of variance in teachers' expectations of pupil achievement. Most of the studies in the expectancy field originate from the English-speaking world and a significant amount of the most recent research has been conducted in New Zealand. However, studies from the United Kingdom, United States of America, China (Li & Rubie-Davies, 2018), Australia, The Netherlands (De Boer et al., 2010) and New Zealand all show that there is variance among teachers between their expectations of pupils' potential achievements.

When considering how to categorise a teacher according to their expectations, it appears that a best-fit model should be used to categorise into discrete groups. Rubie-Davies (2007) adopted this approach by basing her categorisation on the frequency of teacher behaviours. It was found that 1/4 of all teachers appear to hold high expectations for all pupils, and between 1/6 and 1/8 of teachers hold low expectations for all pupils (Rubie-Davies, 2007). Between these categories exists a range of teacher beliefs and practices which vary in their alignment and consistency with the two extremes of the scale. Importantly, having high expectations and believing one has high expectations are different things (Rubie-Davies et al., 2006) and there are differences between the practices of those who claim they have high expectations and those whose practice reflects these expectations. There are also significant differences between the extremes of high- and low-expectation teachers. High-expectation teachers are those who believe children can make accelerated progress within the academic year and whose practice reflects the necessary instructional strategies to achieve this progress (Rubie-Davies,

2007). McDonald et al. (2014) analysed the practices of high- and low-expectation teachers and found clear differences between their respective attitudes, behaviours and use of strategies. This study was one of a small number to have investigated high-expectation teachers empirically and the findings agree with Rubie-Davies (2007) which also found that children in classes where teachers displayed these behaviours made greater overall learning gains (d=1.03). Although Rubie-Davies (2007) lists the observed characteristics of these teachers as teacher beliefs, the substantive differences appear to relate more to pedagogical and instructional practices. Moreover, Rubie-Davies et al. (2015) show that interventions to make teachers' practice reflect that of high-expectation teachers have been successful with statistically significant differences in outcomes. The study used random assignment with a sample of 90 teachers who taught children in classes from Year 3 to Year 8; all of these teachers were, however, from Auckland, New Zealand, and pupils involved were mainly limited to Years 5 and 6.

An additional level of complexity is the extent to which teachers differentiate according to their expectations. Weinstein (2002) analysed the findings of a large volume of empirical research and was able to deduce the differences in how high-differentiating and low-differentiating teachers practise. According to Weinstein (2002), high-differentiating teachers typically use ability grouping, view intelligence as fixed, use extrinsic sources of motivation, limit student agency, have a climate of favouritism, have different relationships with parents depending on pupils' achievement, and limit opportunities for recognition to only a few pupils. Conversely, low-differentiating teachers arrange pupils in mixed-ability groups, consider that all students can learn, foster intrinsic motivation, provide all students with choices, promote a classroom community, develop relationships with all parents and offer opportunities for all students to be involved. High-differentiating teachers tend to have different expectations for different groups of children within their

class, meaning that they only hold high expectations for some of those children. Low-differentiating teachers, however, can have high or low expectations all of their pupils, or for groups, which tend to be lower-achieving pupils (Weinstein, 2002). Pertinently, high-differentiating teachers exacerbate differences in achievement between high- and low-achieving pupils, whereas low-differentiating teachers reduce the achievement gap, even when they hold lower expectations for pupils overall (Weinstein, 2002). Although Weinstein (2002) claims that all pupils benefit from low-differentiating teachers, Timmermans and Rubie-Davies (2018) found that such teachers have relatively lower expectations for high-achievers. The reasons for this were not stated and have not been investigated, and contradict De Boer et al.'s (2010) argument that where high-achieving pupils interpret lower expectations on them, they adapt their behaviour to increase the teacher's expectations of them. This hypothesis has not been tested, however.

It is important to note that differentiation as an instructional practice is something which is required by the Teachers' Standards (DfE, 2014) and is still widely prevalent in practice in the United Kingdom, although it can take many forms. Whilst the nature of the differentiation strategies listed by Weinstein (2002) has an overall negative effect on pupil outcomes, there are other strategies, such as differentiation by support, which is aimed at providing support to pupils to achieve a higher standard than they might be able to achieve alone. Differentiation appears to have a negative effect when it limits pupils' learning (Timmermans et al., 2016). However, although there have been recent developments where schools have moved towards mixed-ability teaching as standard practice, the processes of streaming and setting can still be mandated by schools and are not always within the agency of individual teachers. The connection between differentiation and expectations should therefore be interpreted with this in consideration.

Models of the teacher expectation effect demonstrate that a teacher believes something about a pupil's potential academic achievement and then behaves in a way which is likely to bring effect to this potential (Rubie-Davies, 2007; Johnston et al., 2019). These beliefs, which relate to both teaching and learning, result in differences in instructional and pedagogical practices (Rubie-Davies et al., 2012; Timmermans & Rubie-Davies, 2018). It is therefore important to examine the differences in teachers' beliefs about pupils, which Timmermans and Rubie-Davies (2018) state are one of the most significant factors in teacher expectations.

The concept of ability is underlying in many of the aforementioned studies with classifications of pupils being high-, average-, or low-ability pupils (Weinstein, 2002; Timmermans & Rubie-Davies, 2018). Teachers' beliefs about ability can affect how classrooms are organised and the nature of the learning activities given to different groups of children (Weinstein, 2002). Ladwig and McPherson (2017) claim that teachers' concepts of ability are largely unstudied and the definition of ability is relatively obscure. Gilbert and Youdell (2001), however, argue that the word 'ability' is often used as a substitute for 'intelligence'. Patterson et al. (2016), who explored the views of both undergraduate and postgraduate student teachers, found that teachers' views on intelligence affect their practice. This was also found by Heyder et al. (2020) who concluded that instructional practices are linked to teachers' beliefs about low-ability, although the authors caution against generalising from the peer-reviewed study's findings, due to the sole use of teacher self-reports as the research instrument and their potential inaccuracy.

Teachers are considered to hold either an 'entity' theory of intelligence (TOI) or an 'incremental' TOI (Dweck, 2016). This means that teachers broadly believe that

intelligence is either fixed or something that can be developed (Patterson et al., 2016). There are patterns of behaviour associated with both theories of learning, which draw similarities to patterns of behaviour between high- and low-expectation teachers' practice. Those teachers who hold an entity TOI tend to place a greater emphasis on performance than mastery of goals and are less likely to provide support for student autonomy (Stipek et al., 2001), which is a similar practice to that described for high-differentiating (Weinstein, 2002) and low-expectation teachers (Timmermans & Rubie-Davies, 2018). Additionally, it is contended that such teachers are also more likely to classify or stereotype pupils than those who have an incremental TOI, drawing links with Babad's (2009) definition of high-bias teachers. Wieman and Welsh (2015) argue that those who hold an entity TOI use less effective teaching strategies and attribute student failure to internal student factors which are alarming due to the finding by Brophy and Good (1974) that such teachers are less likely to vary or adapt their instructional practices to improve pupil performance.

A teacher's TOI also has implications for how they interpret information gained from and about pupils. Rattan et al. (2012) claim that in the context of maths learning, teachers with an entity TOI were more readily prepared to judge pupils as having a low ability than those with an incremental TOI. This was illustrated in Jackson et al. (2017) where it was found that most of the 122 American middle-grade teacher teachers did not view all students as capable of rigorous mathematical activity, and they attributed this to inherent traits in students or deficits in their families or communities. Rattan et al. (2012) also suggest that pupils interpret teachers' theories of intelligence, and this consequently lowers pupils' motivation which in turn limits their potential achievement. Rissanen et al. (2017) agree and add that teachers' underlying beliefs about specific pupil attributes can be communicated to pupils in ways that teachers are unaware of, although these findings are

not generalisable due to the study only involving two Finnish teachers. They do, however, suggest that even when teachers have an incremental TOI, their pedagogical practices might cause pupils to experience similar beliefs because some practices do not necessarily reflect teachers' TOI (Rissanen et al., 2017).

Molden et al. (2006) also suggest specifically that a teacher's TOI affects their assessment of information, which includes all aspects of data that teachers might use to form their expectations, including responses to teacher questioning. Rubie-Davies (2007) found that some teachers respond differently to incorrect answers depending on their expectation of a child: their responses were often more negative for children for whom they had lower expectations. Importantly, it was found that teachers responded to lower-achieving children in a manner which suggested that they should have known the answer, whereas incorrect responses from higher-achieving children were met with responses which suggested teachers showed concern about their own effectiveness and treated the incorrect answer in a more restorative way. Krkovic et al. (2014), although focusing on gender in a small-scale Finnish study rather than on ability, argue that teachers' evaluations have a significant influence on pupils' development. This demonstrates the importance of teachers' beliefs about ability and how this can impact on their expectations and pupils' achievement. As Gilborn and Youdell (2001) warn, the use of the term 'ability' can offer a means to condemn children to a second-class education. It would appear that when some teachers evaluate children as being low in ability, the instructional and pedagogical practices that they adopt act to enforce this judgement (Wieman & Welsh, 2015), rather than act to effect change and accelerated progress in achievement. This would appear to confirm Boer et al.'s (2010) argument that the self-fulling prophecy effect has a more pejorative impact on lower-achieving children.

Weiner (2001) explains that teachers differ in the locus of causality for pupil achievement; this affects the level of responsibility they take for student learning, with teachers being more likely to take responsibility for positive outcomes than negative ones (Frumos, 2015). A key relationship established by Patterson et al. (2016) is how teachers with an entity TOI are less likely to take responsibility for pupils' academic performance; instead, they blame any underperformance on pupils' internal factors. Ladwig and McPherson (2017) add that teachers with an entity TOI tend to view ability as being static, meaning that they do not imagine a pupil changing in their ability level. This creates a significant issue for disadvantaged children as they are a group for whom teachers hold the most static views (Ladwig & McPherson, 2017) and are also the group for whom there is more likely to be lower expectations of achievement (Strand, 2016). Guskey (1981) found that the responsibility teachers take for outcomes indeed affects those outcomes, meaning that those who take less responsibility are more likely to limit the achievement of the children in their class, which appears likely to be attributable to a combination of weaker instructional practices (Wieman & Welsh, 2015) and lower expectations (Timmermans & Rubie-Davies, 2018). In contrast, teachers with an incremental TOI are more likely to take responsibility for pupils' achievement (Matteucci et al., 2017), and will take action to ensure all pupils make expected or accelerated progress during their time with them.

Teacher expectations can also be related to their self-efficacy: their confidence that they can achieve a particular task (Hattie & Yates, 2014). Johnston et al. (2019) claim that there is a statistical link between self-efficacy and high expectations, although this study only explored the relationship in one school. Guskey (1981) argues that high-efficacy teachers use more effective instructional practices, however, and this is similar to the findings regarding high-expectation teachers and their instructional practices (Rubie-Davies et al., 2015). High teacher self-efficacy is also related to an incremental theory of learning

(Matteucci et al., 2017). Together, these studies suggest that there are correlations between levels of self-efficacy, expectations, theories of intelligence, and instructional practices, which have thus far not been studied together. Their trends do, however, suggest a relationship which is important and which might explain variation between teachers in why their expectations of children's potential achievement vary: teachers are more likely to have high expectations of children when they believe they can help children reach a higher level of achievement. Barone (2012) concluded in her peer-reviewed doctoral thesis that pedagogical content knowledge, the knowledge relating to how people learn a particular concept or skill in a domain, is an important factor which influences teachers' expectations; when this is lacking, teachers are more likely to infer that pupils are incapable of higher levels of achievement.

One other important potential cause of variance in teachers' expectations is the length of service. There is contradicting evidence the expectancy field that teachers with a greater number of years of experience generally have lower expectations of pupils (Wang et al., 2018). Patterson et al. (2016) suggest that some teachers become disillusioned based on their experiences from the point they enter the profession, which may account for decreases in self-efficacy and expectations of pupils. There is, however, contradictory evidence which shows no such phenomenon occurs, although the variance in findings suggests that it may still need to be considered.

Findings from Timmermans and Rubie-Davies (2018) suggest that teachers view children from different cohorts in a similar way. This implies that teachers begin to view students collectively as they develop their teaching expertise, in contrast to novice teachers who tend to view students more individually (Black and Wiliam, 2009). The construct of the 'collective student', conceptualised by Bromme and Steinbring (1994), is used by

teachers to monitor understanding at a class level: after building experience in the classroom, teachers more readily use their knowledge of how students generally learn and the possible misconceptions they may hold. This may explain why more experienced teachers appear to have more rigid expectations of pupils (Wang et al., 2018), but this hypothesis is so far untested in the expectancy field.

2.3 How are teachers' expectations demonstrated in the classroom?

Expectations are mainly transmitted to pupils by teachers' behaviours (Johnston et al., 2019). Comparing behaviours between high- and low-expectation teachers enabled Rubie-Davies et al. (2007) to identify those which are common to the two categories. However, Brophy (1985) warns that teacher expectations are a complex entity and cannot be just reduced to a list of behaviours. Within the context of behaviours, studies refer to the actions and strategies employed by teachers which reflect their instructional and pedagogical choices, such as feedback and classroom interactions (McDonald et al., 2014). Teachers' behaviours also contribute to overall classroom climate, which in itself communicates expectations to pupils, with Harris and Rosenthal (1985) claiming its impact is greater than individual pupil treatment. The fundamental difference between behaviours is attributed by the majority of studies as the causal factors to explain the difference in pupils' achievement. Behaviours, therefore, are an important area of practice for teachers to be aware of when considering the impact of their expectations. Teachers are not, however, always aware of how their expectations are communicated to pupils (Rissanen et al., 2017), and Rubie-Davies and Peterson (2016) argue that teachers are unlikely to question their current practice if they are unaware of the effect of teacher expectations. It is therefore argued that teachers would benefit from being made aware of the teacher expectation effect and consider the impact of their beliefs and actions on their pupils.

Professional development can improve teacher expectations (Timperley and Phillips, 2003). Teacher beliefs, however, are very difficult to change, and changes to practice are a more useful vehicle for belief change than interventions directly addressing beliefs (Timperley and Phillips, 2003). Rubie-Davies et al.'s (2015) intervention sought to model and teach three key areas of high-expectation teachers' behaviours to a group of 84 teachers in New Zealand. This involved the 43 teachers in the intervention group adapting the classroom climate to make it more positive, introducing flexible grouping, and developing goal setting. The adoption of these behaviours led to significant improvements in pupil outcomes in maths and reading for all pupils, with differences between the experimental and control groups growing from 0% to 28% in average attainment across the year. The findings from the study also indicate that the more the strategies were employed, the greater the academic gains that were made by the pupils (Rubie-Davies et al., 2015). Timperley et al. (2009) argue that it is necessary for teachers to interpret an improvement in outcomes as a result of changes in practice if the new practices are to be maintained post-intervention. Importantly, Rubie-Davies et al. (2015) also found that gains in pupil achievement were not maintained once pupils moved on to different teachers who had not been part of the original intervention; this shows the significance in the impact that a change in teacher behaviour can have on pupils' academic achievement within a current year, but also how these behaviours need to be consistent across a school to prevent any educational inequality arising from differences in teachers' expectations and related practice.

Teachers with high expectations are often considered to use more effective instructional strategies than those with low expectations (McDonald et al., 2016). Rubie-Davies (2007) found several effective teaching strategies employed by high-expectation teachers when

exploring differences in interactions relating to feedback, nature of questioning, teacher talk, and behaviour management. Interventions involving these practices as pedagogical constructs have widely been studied, although not within the context of increasing expectations from the perspective of either the teacher or pupil. This leaves a gap in the expectancy research for studies to investigate the impact of increasing expectations through professional development focusing on subject-specific pedagogical strategies. It is suggested that such development may also raise teachers' sense of self-efficacy (Guskey, 1981) and as such raise expectations both directly and indirectly (Johnston et al., 2019).

2.4 How do teachers' questioning strategies demonstrate expectations, and to what extent can cold-calling be defined as a high-expectation strategy?

2.4.1 Questioning and Expectations

Classroom questioning has been extensively researched (Albergaria-Almedia, 2010) and classroom teachers use questioning for a variety of reasons including to verify if pupils understand the content they are teaching (Rangel et al., 2016). In the context of teacher expectations, Rubie-Davies (2007) found statistically significant differences between how high- and low-expectation teachers ask and respond to questions. High-expectation teachers tend to ask more open questions and ask a higher volume of questions than low-expectation teachers (Rubie-Davies, 2007). This study also examined teachers who had high expectations of pupils but whose pupils made average progress. These 'average progress' teachers also asked fewer questions overall and fewer open questions as a proportion of the total questions asked. Although statistically significant differences were found, the study investigated only 12 teachers in total across 8 schools in New Zealand, limiting its generalisability; however, another finding with statistical significance was that high-expectation teachers are more likely to rephrase or offer explanations to students

who provide wrong answers. Although limited in number, the studies which investigate questioning in the context of teacher expectations not only show that there are differences in how high- and low-expectation teachers use questioning in the classroom, but they also demonstrate the need for further research to add to this field, particularly with a focus on how pupils' responses might affect teachers' expectations. Kang and Anderson (2015) argue that the interpretation of pupil responses much depends on the individual teacher's ability to notice and the focus of what they notice. This suggests that if teachers give attention to whether a child's response might indicate they are capable of achieving higher, there may be a chance of expectations being adapted.

Teachers use questioning as a form of formative assessment to constantly assess pupil understanding (Black and Wiliam, 2009; DfE, 2014). Effective questioning is vitally important to formative assessment (Duckor, 2014); however, Ateh (2015) argues it is beset with difficulties. For example, Wylie and Lyon (2015) argue that teachers find it difficult to use evidence about student understanding to inform their instruction, although Lineback (2015) disagrees, arguing that teachers' use of questioning can allow them to redirect the lesson in light of pupil responses. This is, however, dependent on teachers' pedagogical content knowledge (Haug & Ødegaard, 2015) which also affects teachers' expectations and self-efficacy (Barone, 2012). Zhai et al. (2018) also claim that teachers are more able to teach adaptively when they understand the learning progressions of the lesson, which is an aspect of pedagogical content knowledge. However, it appears that teachers more frequently monitor class understanding than that of individuals and teachers seemingly rarely act as diagnosticians or remediators of individual children's difficulties (Calderhead, 1996). Prawat (1992) suggests that this might be due to how teachers view their pupils and the curriculum: if they see them as stable, as the study argues, they focus more on delivery than on appropriate content or meaning-making. This implies that when

questioning, teachers ask questions to assess the rate of understanding in response to their intended outcome of the lesson, rather than assessing individual understanding. This is, however, somewhat necessary during whole-class teaching, due to the mental overload that would occur in trying to obtain every pupil's level of understanding (Bromme, 2005) and the time this would take from instruction.

Black and Wiliam (2009) argue that teachers use questioning differently depending on their experience. They found that novice teachers are more likely to consider the needs of individual students and expert teachers are more likely to draw out implications for the whole class (Black & Wiliam, 2008). Bromme and Steinberg (1994) label this as the construct of the 'collective student'. They claim this is beneficial because teachers can build their knowledge of how students learn over time which in turn can support individual understanding when individual errors or issues appear. Interestingly, Bromme (2005) found that in post-lesson discussions, teachers were able to refer to issues encountered by the collective student, but they were less able to refer precisely to individual issues. Bromme (2005) argues the construct of the collective student is required for teachers to avoid the mental overload which would ensue if they were to give their attention to the large number of individual students in their classrooms. Missing from the discussion on how teachers interpret pupil responses - about which Bromme (2005) states there have been few investigations - is the consideration of how responses affect teachers' expectations of individual students. Rubie-Davies et al. (2018) suggest that once formed, teacher expectations are stable, implying that individual responses do not affect teachers' perceptions of individual pupils' potential achievement if individual responses are attributed to the collective student rather than individuals (Bromme, 2005; Black & Wiliam, 2008). This has so far not been investigated.

Although Bromme (2005) has warned against the mental overload which would ensue from attending to each individual response given by students during classroom interactions, teachers' use of the 'collective student' construct can cause several issues. Teachers' beliefs about individual children affect their interpretation of their responses (Bromme, 2005). For example, children can be grouped into types which more reflect data analysis procedures (Bromme, 2005). Rubie-Davies (2007) found that teachers are also more likely to respond negatively to a 'low-ability' pupil giving an incorrect response, interpreting the error as an indication of poor attention, whereas a 'high-ability' pupil giving the same incorrect response would be interpreted as an error the teacher would need to consider or adapt their teaching towards. The variation in the attribution of causality to these errors causes issues for classroom climate, pedagogical content knowledge, and teacher-pupil relationships. Moreover, Lundgren (1972) found that teachers appear to use a steering group of pupils which they use to monitor the pace of instruction. This group appears to be formed from students who lay between the 10th and 25th percentile in the ability distribution (Lundgren, 1972) meaning that the understanding of many pupils in the class is not obtained and therefore not interpreted. Unless attention is given to some of the difficulties encountered by all pupils, Bromme's (2005) assertion that individual responses contribute to the responses of the 'collective' student seems to be limited.

2.4.2 Pupil Participation

One of the main ways in which pupils indicate they want to respond to teachers' questions is through raising their hand. Despite it being a very common practice, there is little research into hand-raising (Böheim et al., 2020). There are, however, some important findings which relate to hand raising and teacher expectations. Firstly, Brophy and Good (1970) found that pupils for whom teachers had higher expectations raised their hands

more frequently than others. Fiedler et al. (2002) suggest that teachers tend to judge their students' abilities on the frequency of their hand-raising, with those who raise their hands more being interpreted as more able. Kelly and Carbonaro (2012) show that teachers' expectations are positively affected by their perceptions of engagement, for which hand-raising can be considered a heuristic. Hand-raising, therefore, might indeed induce teachers to interpret the potential academic achievement of two identical pupils differently if the only difference was the frequency of their hand-raising. It appears that this interpretation may be based on the act of hand-raising, rather than the actual response given: pupils who raise their hand and give an incorrect response might still be viewed as having more potential than an otherwise identical pupil who remains silent. The findings from these studies suggest that a virtuous cycle is created for pupils who participate often in a classroom, and possibly a less-virtuous cycle is created for others. Boheim et al. (2020) argue that pupils' security in their self-concept, or their self-belief, predicts hand-raising. This study was conducted in the context of maths and needs further investigation to identify if it is more generalisable to wider contexts. Hand raising might also disproportionally skew teachers' judgements of pupils' potential as Fiedler et al. (2002) argue the practice is a heuristic cue used by teachers to evaluate ability; it is not clear, however, if this would apply to both an entity and incremental TOI. This raises an important issue for how teachers understand the needs and potential of pupils who do not participate voluntarily (Bromme, 2015).

There is significant inequality in classrooms in the participation of pupils during whole-class interactions (Fiedler et al., 2002). This can be attributable to a range of reasons ranging from behaviour management strategies to pedagogical and instructional choices. Pupils 'calling out' is often met by warnings or consequences and is present in many behaviour policies across the educational landscape. Traditionally, hand-raising is the

preferred route by which pupils can signify their voluntariness to contribute (Boheim et al., 2020). There is a distinct lack of studies which have directly investigated the reasons why teachers choose particular children to answer questions, with their hands up or otherwise. Three studies do, however, provide some trends in how teachers select pupils. Lundgren (1972) found that teachers choose pupils whose ability lays between the 10th and 25th percentile as a steering group for instruction, which suggests a greater amount of teacher-pupil interaction exists between the teacher and these children. This is supported by Bloom (1984) who found that teachers typically give children in the top third of the class (ability range) the most attention and give the least attention to the lowest tercile of ability, although this study did not isolate choosing children to answer questions as part of the total attention measured. Stringfield et al. (1985) found that there are more frequent interactions between teachers and those pupils for whom they have higher expectations, though this study does not illustrate differences between high- and low-expectation teachers, rather it concentrated on the high- and low-expectation pupils. If teacher-pupil interaction is considered as a method by which pupils are permitted to participate in whole-class interactions, and the subsequent assessment opportunities these interactions bring, it appears that higher-achieving pupils, for whom teachers generally have higher expectations, participate more often than lower-achieving pupils.

Internal pupil factors do, however, also need consideration. Fiedler et al. (2002) argue that the significant inequality in pupils' participation is unrelated to teachers' attitudes. Developing this argument, Kelly (2007) states that participation is a pupil-level phenomenon and argues that teacher behaviours do not explain students' unequal verbal participation which is unrelated to the classroom climate. There is evidence which opposes this argument, however. Ingram et al (2015) claim that pupils' affective reactions are indeed linked to the classroom climate, which directs how a pupil will respond if they

make an error, and Rubie-Davies (2007) found that there was variation between how high- and low-expectation teachers responded publicly to errors in the classroom. It is suggested that pupils would be therefore less likely to participate if the classroom climate was one in which mistakes were not received positively. The findings from Lundgren (1972), Bloom (1984), and Stringfield et al. (1985) also all demonstrate that teacher choices and subsequent behaviours do affect which children are chosen to participate. Additionally, Boheim et al. (2020) argue that it is a pupil's self-concept which directs whether a child will choose to volunteer an answer through raising their hand. The lack of clarity and agreement in the literature suggests a need to investigate this area further; however, it can be concluded that pupil participation is a complex area and there may be a range of reasons for why pupils will or will not participate that may or may not be within a teacher's sphere of influence.

2.4.3 Cold-calling

Cold-calling is the process where teachers select pupils to respond without using hand-raising. It has been popularised through its promotion in the UK by Dylan Wiliam, and in the USA and UK by Doug Lemov, who includes it as a strategy to support all pupils to reach their potential (Lemov et al., 2016). There have been few studies which have investigated its practice, meaning that academic discussion and criticism mainly originates from non-empirical articles such as blog posts, and teacher training manuals based on observations of classroom practice that correlates with high rates of achievement. The main argument behind using cold-calling is that it signals to the pupil that they need to participate in the learning situation and that the teacher expects such participation (Black et al., 2011). Lemov et al. (2016) do not include cold-calling as a 'high expectation strategy' but rather as a participation strategy. Becker et al. (2017) claim that cold-calling in itself does not increase pupil outcomes; however, Dallimore et al (2012)

argue that cold-calling does increase the likelihood of pupils' voluntary participation, which therefore increases the frequency of teacher-pupil interactions which Stringfield et al. (1985) argue can have an impact on achievement. Dallimore et al. (2012) empirically studied the impact of introducing cold-calling into a graduate classroom and found that the practice can be used extensively without negatively affecting the classroom climate. Although this study was conducted in the context of adult students and its findings might therefore not be generalisable to primary and secondary settings, it does provide some counter-argument to the non-empirical claim that cold-calling can be a punitive practice (Dabell, 2018).

2.5 Conclusion

Teacher expectations matter because they can affect the academic achievement and development of pupils. Expectations are informed by a range of pupil characteristics which may or may not affect how teachers interpret the potential of pupils. Once formed, expectations are usually stable. Some teachers vary in their expectations of particular groups, whereas others have high or low expectations for all pupils. High expectations can accelerate learning for all pupils across an academic year. It has been demonstrated that high-expectation strategies can be explicitly modelled to teachers with the result of a positive impact on pupil achievement over the course of an academic year. How teachers use questioning and respond to answers can reflect and inform their expectations: those pupils who raise their hand more are often considered higher-achieving. Whether teachers can adapt their expectations of pupils throughout the year has not yet been studied, and there is evidence to suggest that teachers do not interpret pupil responses as sources of information which may affect their expectations. Expectations appear to be linked to teachers' TOI. Practices of those with an entity TOI use similar practices to low expectation teachers, and those with an incremental TOI use similar practices to high

expectation teachers. Another important connection is the similarities between high- and low-expectation teachers and high and low levels of teacher self-efficacy. This potential relationship might reflect underlying reasons for differing expectations for different pupil groups, particularly those with special educational needs or considered to be at an educational disadvantage.

In terms of demonstrating expectations, cold-calling shows pupils that they need to be prepared to participate (Black et al., 2011; Dallimore et al., 2012). It is suggested that the teacher behaviour of choosing a greater range of pupils would also demonstrate an increased expectation and belief in children to be able to answer a question. It would also provide additional opportunities for teachers to develop their understanding of their class' understanding by incorporating a greater range of pupils' responses to their construction of the 'collective student'. This would provide more accurate information of what pupils require to succeed, in addition to providing opportunities for teachers to grow their pedagogical content knowledge of issues children might have, although perhaps only if teachers interpreted this as a personal need. Alternatively, responses to questions from pupils which teachers might not ordinarily have asked might affect teachers' inferences about pupils' potential achievement.

Considering the theory and findings in the existing literature, this project aims to investigate the effect of introducing cold-calling into the primary classroom. To explore its effect, the following research questions have been devised to guide this study:

Research Question 1: To what extent does introducing cold-calling affect teacher expectations of children **A)** individually and **B**) collectively?

Research Question 2: To what extent does introducing cold-calling affect teachers' self-efficacy?

Research Question 3: To what extent does cold-calling affect teachers' approach to asking questions?

3. Methodology

This project aimed to investigate the impact of cold-calling on teachers' expectations of pupils' potential academic achievement. This investigative practitioner research would be used to provide an insight into teacher change as a result of the intervention of cold-calling, specifically with regard to how it affects their inferences about pupils' potential, so that it can inform future school policy and personal and professional practice.

3.1 Participants and Context

The study was planned to have been undertaken within the primary campus of a large through-school, where I am currently an Assistant Headteacher teaching in Year 6. The school lies geographically on the border of the most affluent and most deprived areas of a large city in the north of England, meaning the school population is significantly varied. Children from disadvantaged homes represent around 10% of the total pupil population, and there are a significant number of children with recognised additional needs relating to social and emotional disorders. The school has a culture of high expectations and outcomes, which has been demonstrated through high levels of attainment and progress and recognised by external audits from school improvement services. Proctor (1984) explains that a school's culture can moderate individual teachers' overall expectations. Individual expectations of pupils are routinely recorded by teachers as part of their predictions of end of year outcomes in line with age-related expectations. These expectations are logged using the following school codes which relate to end of year achievement:

A1 - expected to be working confidently at greater depth

A2 - expected to be working at greater depth

E1 - expected to be working confidently at age-related expectations

E2 - expected to be working at age-related expectations

B1 - expected to be working below age-related expectations and needs additional support

B2 - expected to be working significantly below age-related expectations

Participation in the study was voluntary and was advertised through an email sent to all teaching staff in January 2020. Four teachers volunteered to participate meaning that the sample comprised of teachers from different year groups (Year 1, Year 4 and Year 6), levels of experience (second, fifth, and sixth year of teaching) and responsibility (middle and senior leaders), although all volunteers were female. All teachers are considered to have good or outstanding practice as evaluated by the school's internal monitoring systems.

3.2 Intervention

The intervention was intended to have introduced the practice of cold-calling with examples given of how it could be done in the classroom. This information would be important due to the differences in ages of the participants' classes where too rigid an approach might not be appropriate. How participants would have implemented the practice into their respective year group would have been an important finding. Participants were asked to inform children that they would not be chosen to answer if they raised their hand, and that the teachers would instead choose a pupil. A checklist for each class would be provided as a guide for participants to use to keep track of which children they had asked a question, and participants were asked to try to ask at least one question to each child per day so that the impact of the intervention on the whole class could be interpreted. Whilst the total number of questions posed to the class would not necessarily be different, the range of children answering them would therefore be greater.

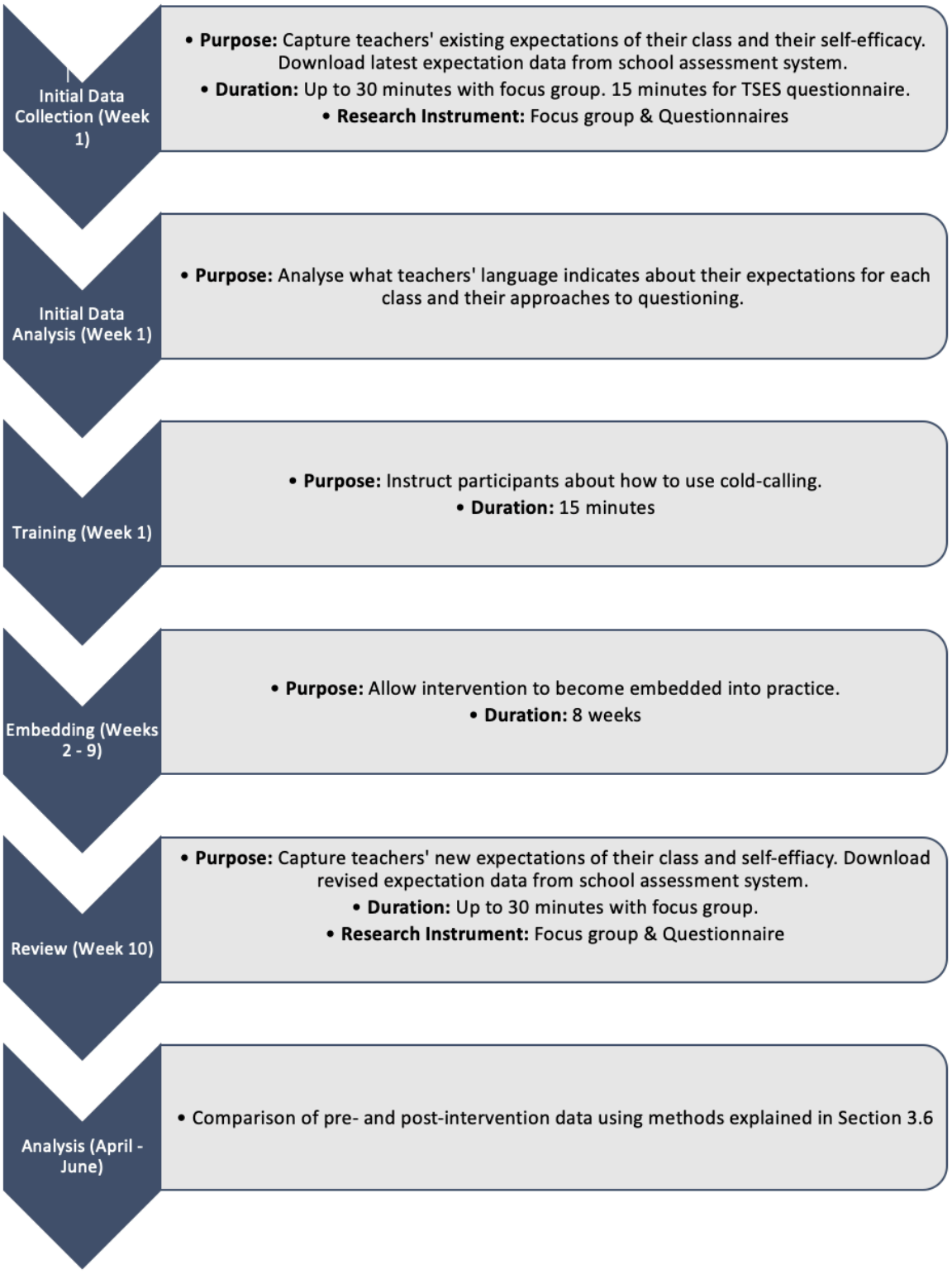


Figure 1: Summary of Intervention

3.3 Impact of Co-vid 19 on the Study

This study was adapted following the closure of the school in response to the Coronavirus crisis in March 2020. No data was collected due to the following reasons. Firstly, I resumed my study from suspension in January 2020 but this was not confirmed until January 21st 2020. Then, through consultation with my supervisor and a discussion of the change of context since before suspension, the intervention was adapted and then the necessary ethics approval was sought. This occurred in February 2020. I did not receive the approval until after the school had been closed. As it was not possible to obtain any data before confirmation of CUREC approval, and following advice from the university's Department of Education, the study was adapted to meet the criteria for no data being collected.

3.4 Collaboration

Collaboration is an important part of this practitioner research project as it has enabled: the study to be aligned with the values of the school leadership team; knowledge to be gained and tested from discussion around the theories and concepts contained in the study; and the sharing of the learning from the project to inform future practice. In the initial planning stages of the project, I discussed my readings from the expectancy field with my headteacher who was interested in the implications for practice. It was apparent from reflecting on the implications from existing research that the study school's practices demonstrated higher expectations of pupils than the school where I had first begun to consider the project; therefore, it was necessary to consider alternative ways of investigating how teacher expectations might be affected by an intervention, so this collaborative discussion was crucial to the design of the project. The headteacher had been encouraging teachers to adopt a 'no hands up' approach to classroom

management, but recent observations and learning walks had shown that this practice was emergent rather than embedded.

This discussion led to the consideration of the impact of cold-calling as a school approach for classroom questioning but also as an opportunity to understand its impact on teachers' expectations. Discussing the ideas from the literature review with the participants, and other students on the MLT course during the poster conference, allowed me to understand the practical implications and aspects of the different theories. These discussions gave more tangible meaning to the strategies and approaches contained in the literature. Had the study been conducted, the findings regarding the impact of the intervention would have been shared with the wider teaching team to share the learning about how cold-calling might impact teachers' expectations and why this is important. The implications from the literature review and evaluation of this study's potential findings will be shared with teachers in the Autumn term of 2020/21 and will be used to inform school policy around classroom practice, in addition to developing my personal practice.

3.5 Ethics

This study meets the ethical requirements of Oxford University and no data was planned to be collected and the intervention not started until approval from CUREC was given. This occurred after the school closure. The study is ethical as all participants provided their consent willingly (BERA, 2018) and would not be subjected to any risk or have to discuss confidential or sensitive information (Buckler & Wallman, 2016). Moreover, as the intervention related to an encouraged school practice, there was minimal risk to participants or children. As the research was to be conducted in a school setting, consent was also sought from the headteacher to conduct the research and use data which is collected as part of normal school procedures to measure potential change in

expectations. Before participating in the research, the stakeholders (head teacher and participants) were informed of the study's purpose and exploratory nature before their consent was sought (Cohen et al., 2018). It was important to share with the participants that there was no hypothesis to prove, as the potential power imbalance due to the seniority of my role might have caused the participants to have inferred that a particular outcome was desired. The timings of each stage of the intervention were considered and designed to minimise the impact of the study on participants' workload (BERA, 2018).

The rights of the participants have been respected and their contributions to focus groups or interviews were to be anonymised during the data collection and transcription process to maintain their privacy (BERA, 2018). Participants agreed to their responses being used for the study and gave permission for me to use data from initial discussions about the research for as long as they were useful to the study. The recordings and transcriptions of the formal data collection were to be uploaded and stored on OneDrive. After the study, the participants would have been informed of the findings in an optional short meeting where further discussion would have been possible. Otherwise, the findings would be shared with the participants during the staff meeting which I will conduct in Autumn 2020/21 regarding teacher expectations and the potential impact of cold-calling.

3.6 Research Questions

RQ1:To what extent does introducing cold-calling affect teacher expectations of children a) individually and b) collectively?

This question aims to investigate the impact of the intervention on teachers' expectations of individual pupils and of the class collectively. It is suggested that teachers struggle to interpret and attribute data from class questioning to individual pupils and so this question aims to address this potential limitation.

In analysing the impact of the intervention on individual expectations, existing data for individual children in each class would be collected before and after the intervention. Inferential analysis of these data would provide an opportunity to see if there is any quantitative change in expectations individually. The school uses a 'point in time assessment' approach which means that teachers record their expectations based on what children have achieved in class so far throughout the year: any positive change to these would reflect an increase in expectations rather than coverage of material. These increases might not be attributable to the intervention as some 'B1' children receive additional inputs to close gaps. Any changes for these children would need to be triangulated with conversations with individual teachers about why the expectation has changed in order to attribute any impact to the project.

The number of children for each expectation category (A1-B2) would be compared from pre- and post-intervention in the usual eight-week period of teacher tracking. Bromme (2005) argues that teachers develop the construct of the 'collective' student rather than consider individual students in their classroom interactions, and so this research instrument would allow analysis of any trends in differences which might show how this applies in the context of teacher expectations.

The use of this data is potentially limited, however, as the categories are informed by teacher judgement and are not aligned to any national standard (except for children in Year 2 and Year 6) which affects the reliability of the data. This would cause issues for generalisability, although for the purposes of this study, the familiarity with the system will support more robust comparison for pre- and post-intervention expectations, and as the

same teachers will be logging the expectations, it is suggested that intra-teacher variability will be reduced, although is still something which may need to be considered.

In terms of tracking differences to the 'collective student', focus groups would also be used where participants would discuss their current expectations for their class overall (pre-intervention) and then the impact of the intervention on their expectations of their class (post-intervention). Transcripts would be made and then the data would be coded according to emerging themes from the data. This data would then be analysed using content analysis and grounded theory, which Cohen et al. (2018) argue is appropriate for interpreting data for which there is a lack of existing theory. Focus groups are more appropriate than interviews for this research question as they would involve group discussion where contributions are more equal than in a 1:1 situation where an imbalance of power exists between me as the researcher and Assistant Headteacher, and the participants (Cohen et al., 2018). Cohen et al. (2018) also suggest that focus groups are time effective and useful for gathering large amounts of data at once, and for generating hypotheses that derive from the data provided from the group. This is particularly important given the lack of existing research into the impact of practice on teachers' expectations. As the focus group includes four participants, Morgan (1988) suggests that this is an appropriate size for the group, although certainly towards the lower limit of his 4-12 person recommended size. Cohen et al. (2018) advise that despite their advantages, focus groups work less efficiently for participants who are unknown to each other, and they often provide data which is not generalisable. As the participants already know each other, having worked as part of the same team for at least one year, and this study does not intend to be generalisable, this possible flaw can be discounted. A drawback might exist, though, in how the dynamics of the group affects each person's

participation, particularly in a situation where social relationships and potential imbalances of power unknown to the researcher might exist.

RQ2: To what extent does introducing cold-calling affect teachers' self-efficacy?

The relationship between expectations and teacher self-efficacy is claimed by Johnston et al. (2019) although has not been extensively investigated. This project is an opportunity to investigate whether changes to expectations might affect teachers' self-efficacy, and also whether patterns between self-efficacy and changes to expectations across the participants might provide an insight into how these factors relate. This question would be answered by conducting the Teacher Self-Efficacy Scale developed by Tschannen-Moran and Woolfolk Hoy (2001) both before and after the intervention. This is an established scale which has been used in a range of studies, and can be adapted by removing items which have less relevance to the variables within a study. Participants would rate themselves on a Likert scale for demonstrating the extent to which they agree with statements about their teaching. A benefit of using such an established scale is that its reliability and validity as a research instrument has been proven, which means that methodological issues in creating a new questionnaire can be avoided (Cohen et al., 2018). The Tschannen-Moran and Woolfolk Hoy (2001) scale was rigorously developed through empirical research and its reliability is held in high regard by researchers in the self-efficacy field. Although the scale is intended to be used numerically and thus changes to self-efficacy might be captured arithmetically, it is suggested that differences to individual strands could be positive or negative and as such, comparisons from pre- and post-intervention should be made on the item level so that a more nuanced understanding can be gained on the impact of the intervention. This will be important to identify if the intervention might increase particular feelings of efficacy and reduce others. As with all self-reported data, a potential weakness in this instrument could be differences

in the participants' understanding of the statements and what quantifies each position on the Likert scale; however, as the instrument is being used to analyse changes to the individual participant, it is suggested that this will not affect the reliability of the findings. Using this instrument as the single measure of self-efficacy, without triangulation through other methods, means that there is also no way of verifying the accuracy of the data. As there is no hypothesis to prove, grounded theory will be applied to analyse the data, and any inferences made could form avenues of future research.

RQ3: To what extent does cold-calling affect teachers' approach to asking questions?

The literature review identified that there was a distinct lack of studies into how teachers choose pupils to answer questions. It is hypothesised that the intervention would affect a teacher's approach to asking questions as it would increase the range of pupils being asked. Although there is no hypothesis on the nature of this change on how teachers choose children, it is suggested that it might affect both the types of questions that teachers ask, and their reasons for choosing specific children when posing particular questions. A focus group on approaches to questioning would be conducted before and after the intervention, a transcript made, and then responses would be codified after initial analysis to obtain a description of the reasons behind asking questions and choosing children, and a comparison could be made between the two. This data would provide an insight into relationships which might exist between teacher questioning and teacher expectations that have so far been unstudied. Again, the effectiveness of this research instrument would be limited by the types of responses that the participants provide and might not provide sufficient data to gain a sufficient insight or make any conclusions about the impact of the intervention. There would also need to be some structuring by myself to enable the research instrument to provide appropriate data for analysis. The

following three questions would be posed if discussion leading from the focus group did not address them:

1. How and why do you choose children to answer questions in your class?
2. Is your approach to asking questions the same for each pupil in your class?
3. What do you consider when posing questions to your class?

The literature review has revealed that teachers' inferences about individual pupils' potential academic achievement can be affected by a range of variables such as the school in which they teach (Proctor, 1984), the amount to which they are biased by stereotypical information (Babad, 1999), their own self-efficacy (Johnston et al., 2019), and their pedagogical content knowledge (Barone, 2012). In addition, it is argued that children who raise their hand can cause their teacher to have distortedly higher expectations (Fiedler et al, 2012). The research questions have been generated to investigate the impact of removing the hand-raising heuristic from practice on teachers' expectations but to also develop an understanding of the nature of this impact on teachers' beliefs and practice. In isolation, the research questions will reveal the potential impact of the intervention on the participants; in exploring the findings across the research questions, it might be possible to gain a deeper insight into how changing approaches to questioning might be able to signify not only a higher expectation to pupils, but become a route through which teachers might be able to become more attuned to what pupils can actually do, rather than what it is assumed they are able to do.

4. Potential Findings and Discussion

4.1 Research Question 1A

The potential findings would have demonstrated whether the introduction of cold-calling might contribute to or cause teacher expectations of individuals to decrease, stay the same, or increase. This would have been established through comparing pre- and post-intervention ratings of teachers' expectations of pupils' potential achievement, and tracking changes between the two points in time. The potential findings would allow a theory to be generated relating to how cold-calling might affect teacher expectations, although this would be limited to the occurrence of change, rather than any explanation of such an occurrence or not.

The potential findings would illustrate whether increasing the range of pupils who respond to teacher questions can change teachers' expectations of potential achievement, or whether pupils' responses might be used to confirm pre-existing expectations. Prawat (1992) suggests teachers tend to see pupils as fixed or stable, and Calderhead (1996) argues that teachers are more likely to use questioning to assess understanding and use this information to adjust delivery of the lesson. This suggests teachers are more likely to interpret responses with relation to pre-existing expectations rather than illustrations of changes to pupils' achievement or potential to achieve more. Bromme's (2005) argument relating to mental overload might imply that teachers are less likely to use the assessment information to adjust their expectations of pupils unless this is a directed activity to which teachers attend directly. Importantly, teachers in the context school regularly and routinely assess children's performance with a learning task on a lesson-by-lesson basis. The participants' revelations about pupils' understanding gained through cold-calling would not necessarily yield new information, rather it would enable teachers to find this

information earlier than usual. Whether finding this information out earlier affects teachers' expectations is something which might have emerged from the data analysis.

The measurement of ratings from before and after an intervention are a common method of data collection, and as the participants were familiar with the ratings system that was intended to be used, it is considered that this data would be an appropriate research instrument. Even if participants had individual differences in understanding the ratings used in the data collection system, it was differences between before and after the intervention that was being sought, and so any variance in understanding of the ratings between the participants is unlikely to have affected the accuracy and validity of the data.

As changes to individual expectations would represent the data sought to answer the question, the accuracy of the data, in terms of eradicating any errors which may have occurred through data entry, would need to be verified to validate the data. This verification would have required each participant to approve both the pre- and post-intervention data rather than just entering the data without suitable checking. This should have avoided any input errors being made. However, it would have been important to have supported teachers in making accurate judgements before and after the intervention, as the study was using established school systems which were used for reporting to parents and for making summative assessments (although not during the timeframe of the study). As the data collected is part of usual school practice, participants may have been hesitant to have recorded any changes to their expectations that might have caused conflict with performance management targets to ensure that all children make expected progress from the previous year. If fewer children were recorded as 'E1' than at a previous tracking point, this could potentially raise concerns from key stage leaders. The potential dilemma that any changes to expectations might incur could

place the participants into a situation of potential distress, which is beyond the ethical parameters of the study. It is suggested that guidance would have therefore needed to have been given to participants that in this eventuality, the accurate judgement should be the one given, and my role as researcher but also as Assistant Headteacher would be to explain these variances to important stakeholders such as line managers and parents, if any issues arose from a change in expectations. It is important that the accurate judgement be recorded rather than inaccurate data as any inaccurate data would affect both the validity of the study, and the reputation of the profession more generally, in contradiction of the requirements of BERA (2018).

The system used to capture teacher expectations in the study school uses an ordinal categoric method. It would therefore be inappropriate to convert these categories to numerical formats as the intervals between them are not regularly spaced meaning that any numerical substitutions would be false or contrived. Instead, frequency data for each category would be initially compiled to investigate any patterns of change within the data. Further analysis could then have tracked frequencies in positive, null, or negative change overall and from prior expectation groups, which would have illustrated potential patterns that represented change in expectations. The descriptive analysis would be appropriate because the study's aim is not to generalise from the potential findings to a larger population.

The potential findings might demonstrate that expectations change for lower- and average-ability children as these groups of children are typically less called upon according to the limited research into this area (Bloom, 1984; Lundgren, 1972). Ding and Rubie-Davies' (2019) also found that low and medium attainers benefited more than higher attainers when teachers adopted high expectation strategies. If higher

expectations are communicated to a greater range of students through cold-calling (Sherrington & Stafford, 2018), children might then adapt their behaviour due to increased motivation (Johnston et al, 2019) which in turn might then affect teachers' expectations of their potential achievement due to increases in actual achievement over the eight-week period. The various potential findings would illustrate that the intervention might affect teacher expectations directly, indirectly, or by both means, if teacher expectations changed at all. The research instrument itself would not present the nature of this relationship, although establishing any relationship would be an important first step.

Another possibility, linked to the indirect impact of not choosing children who raise their hand, could be that children who are used to being selected to answer questions might be less motivated if they receive less attention during whole-class interaction. Thus, decreases to their motivation might mean they commit less effort with their learning and subsequently perform at a lower standard. De Boer et al. (2018) do suggest that in this situation, the opposite is more likely in that typically higher-attaining children will behave in a way which seeks to improve their teachers' expectations of them, Consequently, this was not foreseen as a possible consequence as part of the implementation of the intervention and so ethically this is something that participants should have been made aware of so that they could pay close attention to children who may have been at risk of this happening. Additionally, any negative changes to expectations would also be discussed in usual school pupil progress meetings which represent a safeguard against any negative impact on the children. This would mean that if any negative impact did happen to a child's motivation, it could be identified and rectified quickly.

It would be useful to analyse patterns within participants' data and across their data. This would allow an insight into similarities and differences into how the intervention might

affect teachers' expectations. Patterns within participants' data could illustrate groups of students for whom the intervention has improved expectations, and if these patterns were similar across participants' data, a stronger argument about the impact of the intervention might be able to be developed.

It would also be important to verify if any changes to expectations were attributable to the intervention. Due to the number of factors which might affect children's achievement, and teachers' expectation of children's potential academic achievement, it might not be able to distil the intervention as a cause for any changes, or to attribute any significance to potential changes to the intervention. For example, during the timeframe of the study's intervention, day-to-day teaching and routine interventions relating to gaps in children's understanding teaching groups would have been delivered which might also have affected the teacher's interpretation of an individual child's potential. A method of respondent validation, such as an interview or focus group, might have been necessary to triangulate the data to ensure the validity of the data in answering the research question. Teachers could be asked to attribute causes to any changes, although this self-reporting would still only give an indication of the intervention's impact rather than demonstrate the level of significance of cold-calling. However, as usual school practice in the study's context ordinarily contains these practices, it would still be worthwhile to assess if the intervention itself does inform teachers' expectations, as that was the question the study aimed to investigate.

The sample was formed by recruiting volunteers which means that the participants were keen to participate in the research as something which should ethically be beneficial to them. Due to the voluntariness of adopting the practice, the sample therefore became less representative of investigating teacher change at the school level, as some teachers

might not have interpreted the intervention as being beneficial. This means that whilst the sample was sufficient to investigate the impact of the intervention on teachers, it would be less appropriate for the investigation of the impact of introducing the study across the entire teaching team. The sample would, however, be appropriate for intimating the potential changes to teacher expectations which aligns with the scope and limitations of this research and development project. Additionally, the nature of the participants being involved because they saw the intervention as a means of improving their practice, makes the potential findings potentially less indicative of the effectiveness of the intervention process on teacher change for all teachers.

4.2 Research Question 1B

The potential findings would provide data for how cold-calling affects teachers' expectations of pupils at the class level. Teacher expectations of the 'collective student' (Bromme, 2005), or class overall, might decrease, stay the same, or increase. This would demonstrate a relationship between how the information obtained during whole-class interactions is used by teachers to inform their expectations of what the class might achieve. In my experience, teachers can describe different classes as having an ability, which is generally a reference to the weighting of particular prior attainment groups within the class population. The potential findings might demonstrate changes to this form of labelling in a way which is different from individual changes. Additionally, if the expectation for the collective pupil increases, then the expectation for all children might increase in terms of the pitch of the lesson and learning activities. Although the school policy is to pitch the level of learning at age-related expectations regardless, there is a suggestion in the literature that teachers will steer their instruction according to levels of ability within the classroom (Lundgren, 1972) and there is still a school expectation of using assessment for learning to track the progress of the class overall. Whether

teachers adapted the pitch of their instruction is something which could have been investigated through the post-intervention focus group interviews.

The argument that teachers conceptualise pupil understanding for pupils collectively has been explored with different foci of enquiry. All studies have formed similar conclusions on how teachers follow a similar developmental pathway where they come to draw implications for children at the class level rather than individually (Lundgren, 1972; Calderhead, 1996; Bromme, 2005; Black and Wiliam, 2008). The potential findings might show that this also applies to expectations of potential achievement, depending on the impact of the intervention and the quality of the data collection during the planned focus group, and its subsequent analysis.

Comparing how any potential changes present themselves in the data at the individual and class level would be an important process in analysing the data: it would be insightful to explore any relationship which may have emerged. This would at least illustrate the extent to which interactions in the classroom contribute to a teacher's conceptualisation of children's potential achievement, and the teacher's awareness of this. For example, if there were no changes to individual children, but there was a change at the class level, it would be prudent to investigate this further to understand the reasons for it: it could potentially demonstrate the difficulty teachers might have in interpreting the amount of data they encounter during every day practice, as suggested by Bromme (2005). It might also demonstrate that additional action is required for teachers to consider the implications of increased class expectations on individual pupils, or vice-versa should overall expectations decrease. For example, directed reflection might provide a useful opportunity for teachers to consider the implications of the responses they hear through using cold-calling.

The potential findings would support the extension of how teachers use the construct of the ‘collective student’ when participation in whole-class interactions is increased. It would be important to investigate how teachers responded to pupils’ contributions which were less desirable to maintaining the pace and delivery of the lesson, and any impact this had on classroom practice and participants’ beliefs.

The potential findings might also demonstrate how teachers’ TOI could affect their interpretation of the responses given during whole-class interactions where cold-calling is used. Prawat’s (1992) argument that teachers tend to see pupils as fixed or stable might affect teachers’ interpretations of pupils’ responses as being indicative of the curriculum content or their delivery, rather than the pupils’ understanding of the subject matter. It is suggested that this also represents an entity TOI (which means that teachers are more likely to believe intelligence is fixed). If no changes to teachers’ conceptualisation of the collective student were gathered from the data collection, it would be important to analyse the responses of the focus group for indications of how teachers’ TOI might be presented in their language. This would provide a deeper insight into the relationship between their theories of intelligence and their expectations at the class-level.

Additionally and importantly, data regarding how cold-calling affects teachers’ expectations of the whole class, which would be collected from focus groups, might support the theorisation of how responses affect teachers’ expectations that have already been formed. Rubie-Davies and Peterson (2016) argue that expectations are relatively stable; however, changing the practice to incorporate a wider range of responses might affect the stability of expectations and the analysis of data from both RQ1A and RQ1B might demonstrate indicators which would support or contradict Rubie-Davies et al.’s

(2016) findings. The timing of the intervention, in the Spring term of the academic year, might also have affected these results, given that expectations are usually formed within the first fortnight of the academic year (Johnston et al., 2019).

A focus group was chosen as the research instrument to support the generation of theory which emerges from the contributions of the participants. This would have been important in verifying how the expectations of the participants align with the theoretical perspectives arising from the literature review, so that the literature could be used to interpret the data during the data analysis stage of the project. However, focus groups are not without their faults (Cohen et al., 2018) and one drawback is that in-depth interrogation of individual's responses is not necessarily possible. Surveying participants on how they monitor class understanding might have been more useful in ascertaining how the participants align with the theoretical framework of how teachers conceptualise the 'collective student', although the construction of this survey would have required careful consideration and self-reports might not necessarily have been accurate or fully comprehensive. Triangulation through using observation, focus groups and surveys, might have improved the accuracy of the data collection, thereby improving the quality and robustness of any conclusions which could then be made.

The questions asked as part of the initial focus group would have needed careful consideration so that changes to teachers' expectations could be successfully identified through subsequent analysis. Focus groups are an opportunity to gather large amounts of data efficiently (Cohen et al., 2018); however, the nature of group interactions means that it is possible that each participant's viewpoint might not be fully represented. This might have made comparison more difficult which would affect the validity of the data in being able to answer the research question. It would also have been important to have

established how teachers form expectations of their class rather than to have left this as an assumption, and it could have been the case that teachers were not fully aware of the theoretical construct of the collective student, or have understood how this might apply in their particular context. This might be affected by the way they currently teach, and the way their lessons are structured. As all participants teach in the same school, where teaching approaches and lesson structures are mainly consistent, it is suggested that variations in questioning style might be less diverse than if participants were from different schools. However, as all participants have different previous experiences and are given autonomy in how they question during lessons, as well as the fact they teach children of different ages, these variations might affect how teachers assess their class' understanding. It would seem more appropriate to establish during the data collection how teachers gain information about their class' understanding so that this could be compared against the theoretical approach described in the literature. Subsequent data analysis could then take this into account.

The sample size in this study is too small to be transferable. Qualitative data are not meant to be used to generalise from, but transferability is a consideration (Cohen et al., 2018). As the sample size only contained four teachers, the potential results might have shown similarities between the participants, but a larger sample size would enable a more secure conclusion on whether the findings are transferable. That said, the implications for the practice of the participant teachers, and others who might align with their approach to using information from whole-class interactions, could be deduced with more confidence. Certainly, an awareness of how the participants make inferences about the collective student is something which is important for the participants to be aware of so that they might exercise more critical consideration over how their perceptions are affected when using cold-calling as a tool to select pupils to participate.

4.3 Research Question 2

The potential findings would demonstrate how cold-calling affects teachers in terms of their self-efficacy: again, the intervention could cause it to decrease, result in no change, or to increase. It is suggested that this would depend on the interactions experienced in each of the participants' classrooms, and the teachers' individual responses to the answers they receive from their pupils. The potential findings are important because of the suggestions in the research literature that self-efficacy is positively related to teacher expectations. Moreover, Hattie (2015) suggests that collective self-efficacy, the total self-efficacy of teachers in an academic institution, has a significant affect on overall achievement. It might not, therefore, be desirable to introduce a strategy which has a negative impact on teachers' self-efficacy. However, it is also important to consider that the length of the intervention might affect the findings and so any change to self-efficacy might not be established or stable. This would be particularly relevant if there were negative change, as confidence with the strategy might grow, thus leading teachers to feel greater self-efficacy than when they first started with the strategy.

The use of an established scale to measure teacher self-efficacy before and after the intervention would provide for accurate data collection. Although the TSES provides a quantitative measure of overall teacher self-efficacy, the findings for this study would also be used to analyse changes to particular strands of self-efficacy as well. Pre- and post-intervention data would be collected and then analysed to establish if any change would have occurred, and what these changes might have been. The collection of quantitative data would, however, have only provided a quantitative measure of change, rather than have collected data which would have enabled an understanding of the relationship between the variables. Using the survey would allow conclusions to be formed about quantitative changes to self-efficacy which is the aim of the research question, although

further qualitative data might be a useful subsequent activity to understand the impact of the intervention in more detail. Significantly, in only using quantitative data, it might be difficult to attribute any change in teacher self-efficacy to the intervention alone, as other factors during the intervention could have had an impact. Use of a focus group to have corroborated the data, or to have added depth to the potential findings, would have been an appropriate method of mediating this issue, albeit with the limitations of focus groups previously discussed. Furthermore, the Likert scale used in the TSES also presents with limitations in that teachers' interpretation of the scale might affect the measurement of change. Again, the collection and analysis of qualitative data from a focus group could help with interpreting any change that is not evident from the TSES alone.

Increases in self-efficacy might occur due to the intervention's impact on individual teachers; however, the response of the pupils might also mediate the intervention's effect. Choi et al. (2019) found that teachers' self-efficacy increased when project-based learning was introduced into a Korean middle-school classroom but argued that the changes that this brought to practice might have initiated a response to the students which supported the increase of teachers' self-efficacy. Their research design made this too difficult to establish with any statistical power; however, from the model of how teacher expectations affect pupils' motivation (Johnston et al., 2019), it would be a logical possibility that if cold-calling positively affects pupils' motivation, an increase in motivation might therefore lead to an improvement in outcomes, which might then cause teachers to feel more self-efficacious than before. Dallimore et al. (2012) argue that cold-calling increases engagement, which might have a relationship with increased motivation (Johnston et al., 2019), but the change cold-calling can have on the classroom climate, which is described by Dallimore et al. (2012) as creating a warmer environment, is also a key feature of high

expectation classrooms (Rubie-Davies & Peterson, 2016) and therefore any change to the classroom environment might also mediate changes to self-efficacy.

Any potential change to teachers' self-efficacy would need to be interpreted within the context of changes to their expectations of pupils in order for any relationship to be established. Cold-calling might increase self-efficacy but this might be unrelated to changes to expectations, despite the suggestion of a correlation between the two factors (Johnston et al., 2019). Furthermore, it is thus far unestablished whether changes to teachers' expectations affects their self-efficacy, or whether teachers who have higher levels of self-efficacy have higher expectations because they have more belief in themselves to help pupils reach higher levels of achievement. Data arising from the focus group would provide an opportunity to capture a description of how these variables are related in the context of the participants.

The potential findings might provide an insight into the relationship between teachers' expectations and their self-efficacy. Importantly, it would provide an insight into whether high expectations predicts high self-efficacy, or whether high self-efficacy predicts high expectations. However, it would not be possible to establish such a predictor with any statistical power and therefore the potential findings would be limited in that they would only suggest ways in which the variables are related, which would need to be investigated further with an increased sample size.

The potential findings would also indicate how introducing cold-calling affects teachers' self-efficacy, which is so far yet to be investigated. This would be important as the practice is supported by influential educators but currently lacks the empirical data to

support its impact on pupils and teachers alike. In the study school context, the potential findings would provide an insight into the impact of the practice on teachers' self-efficacy.

The use of the TSES would have been appropriate because the considerations related to the accuracy and validity of the instrument were informed by empirical findings, and have been piloted and refined. This means that the use of the scale would have been appropriate in this study. The instrument includes 24 items which are subcategorised as factors under the names of instructional strategies, classroom management, and student engagement. Cold-calling might reasonably fall under all of these categories: it is an instructional strategy because it relates to questioning; it relates to classroom management because it relates to how participation is managed; and it is suggested that cold-calling increases student engagement (Sherrington & Stafford, 2018). It would therefore have been appropriate to have included all 24 items in the study because this would have permitted deeper analysis of the nature of any change to teacher self-efficacy.

The potential findings for the TSES would have allowed for factor analysis, where changes relating to a group of variables could have been identified. This would have demonstrated changes at the factor level for instructional strategies, classroom management, and student engagement. Because of the small sample size, it would have also have been possible to have analysed the data at the variable level of the scale. This analysis could have been used to have constructed questions for a focus group to discuss which could have provided a deeper insight into the potential findings than the scale itself would have revealed. Additionally, analysis at the variable level offered by the scale would have yielded more precise and specific insights into the nature of any potential change.

As the research instrument is an established questionnaire, analysis and interpretation of the data could have occurred with a confidence of accuracy and validity in its results. However, the quantitative data would only reveal whether change occurred or not, rather than reasons for the change, thereby limiting the understanding of the intervention's impact, and also limiting the attribution to changes to the intervention itself. Due to the reasonable possibility that self-efficacy might increase because of the intervention's impact on the pupils and the differences this would bring to pupils' achievement, it would therefore be difficult to attribute the change in self-efficacy to the intervention. Triangulation of any change would have been appropriate, which could have occurred through pupil interviews or teacher interviews. Whilst this was beyond the time constraints of the study, and would have had other methodological issues to consider to secure accurate and valid data, it would have provided additional information which could inform the response to the research question with more insightful detail.

It was an important ethical consideration to ensure that teachers were supported if they felt that the intervention was affecting their self-efficacy throughout the study. Although this finding would have been important for the purposes of the research question, it would have been at all times important to have reduced risk to the individual teachers. The theoretical justification for the strategy is that widening the participation field of pupils in the class would provide additional information to the class teacher during whole-class interactions that they would not normally access: it would not, however, change the validity of this information, which teachers would likely encounter through individual assessment procedures which exist as part of normal classroom practice. In the study school, teachers and teaching assistants work together to monitor children's understanding throughout the lesson, and aim to give feedback to each pupil in the lesson at least once, thereby accessing information about pupil performance. This would

mean that it is unlikely that asking for an answer from children who do not usually participate would present information to teachers which would negatively affect their perception of their own efficacy; rather, it would confirm a pre-existing expectation.

The small sample size would reduce the generalisability of this data, although this would be not an intended outcome of the study in any case. Any change related to the introduction of cold-calling might be useful to inform potential findings in any further, larger-scale investigations into the effect of its introduction. Additionally, the factors within the school in terms of how teachers are usually very aware of individual pupils' performance within lessons might be a useful contextual factor for others to consider when introducing such a strategy. Any indirect change to teacher self-efficacy which might arise from increased motivation to participate on behalf of the pupils would be an important conclusion from the study, although it is unlikely that such a conclusion could be supported from the data. However, if teachers' self-efficacy increased, investigation of pupils' responses to the intervention would be a useful in triangulating such a finding.

4.4 Research Question 3

The potential findings would provide an insight into the decisions teachers make when choosing which pupils are to respond to the questions they pose. Through pre-intervention discussions with the participants, it was revealed that these decisions might refer to: a pupil's perceived ability level; a child's apparent level of attention; or the child's belonging to a particular group, such as pupil premium. Other factors may have been established through the formal data collection process. The teachers' description of how the intervention has changed their approach will also be insightful as to the impact of the intervention on their practice. The data collected for this question might have supported the development of a theory which reflects how teachers' TOI affects the nature and addressees of in-lesson questions.

The potential findings would be varied in their value in terms of answering the research question. Whilst those obtained from the focus groups would reveal self-reported changes to teachers' approaches to questioning, which would provide a wider field of information than is currently available in the research literature, the fact that they are self-reported would limit the data to factors which the teachers are aware of. This would be useful to answer the research question in this study, but additional research instruments, such as observation or a case study, might have been more useful in tracking the changes which actually occurred alongside the intervention.

The potential findings would be useful in illustrating some of the choices that teachers make when selecting children to cold-call. Individual patterns of questioning could emerge from each participant's responses, which could then be compared across the sample to ascertain similarities and differences. If the potential findings revealed some data about these choices, this would be useful to either confirm some of the potential reasons suggested in the literature, or provide new information to add to the limited body of existing knowledge. Initial conversations showed that teachers' choices included making an assessment of understanding and the maintenance of lesson pace. Gaining more detailed responses from the participants, which might have included other reasons for asking questions, from the focus groups would inform how cold-calling might be used in a wider range of classrooms; the different reasons for making choices could affect the success of the intervention depending on differences between teachers, classrooms and other factors which have yet to be identified.

There are very few conclusions from existing research which could be used to inform the findings from this study. It would be insightful to compare the potential findings for this

research question with the suggestions from the literature that teachers are more likely to choose higher-achieving children to answer questions: this might not, however, be something which teachers are necessarily aware of and self-reporting might not produce sufficiently accurate data to allow the conclusion of such a pattern from this study.

The approaches to questioning could be compared against the participants' responses to RQ2 and analysis might demonstrate patterns between change to self-efficacy and approaches to questioning. This would be insightful in providing implications for practice and in forming conclusions about the impact of the intervention overall. Furthermore, exploration into potential patterns between how changes to teacher expectations relate to changes to questioning would provide an insight into the relationship between expectations of pupils and the types and frequency of questions asked. The small sample size and research instruments would make it difficult to ascertain if any changes between a change in expectations and a change to approaches to questioning were causal; however, future research into this area could take account of the factors which this study might identify.

The potential findings would provide a basis for beginning to understand the decisions teachers make when choosing pupils to respond to questions, and may illustrate some relationships between teachers' TOI, their expectations of pupils, and the interactions which they choose to make in the classroom. The data arising from teachers' discussion of their individual changes would also provide an indication of how purposeful the decisions they make are with regard to which pupils are selected to answer questions, in terms of teachers' justification of selecting particular pupils. An additional possibility is that by widening the field of children who might respond to a question, teachers might consider the types of question that they pose more deliberately. This would, however,

depend on their awareness and understanding of effective questioning, which is not something that would be developed as part of the intervention. This variable in participants' knowledge could affect the theory that would emerge from the data.

The careful organisation of the conversation and the questions I would pose to the focus group to yield the data needed for this study would affect the quality of the research overall. The lack of previous research means that there is also a lack of precedent in effective research into this particular area. Although this might not have affected the accuracy or validity of the data, it would have presented an additional margin of error in that the nature of the questions would be untested in soliciting the information required to answer the research question. This might have affected the quality of the pre- and post-intervention data.

A focus group was selected as the means of collecting the data to answer this research question because there was a lack of suggestion from the literature about possible theories to explain teachers' decision making. Focus groups are a type of interview (Cohen et al., 2018) and my role as facilitator of the focus group would have involved posing questions based on addressing gaps in the research and establishing the participants' existing approaches to asking questions, and generating questions during the focus group during particular exchanges in order to profit from the data arising. This would have required me to have concealed any biases or values relating to the intervention and approaches to questioning and not be judgemental in response to any contributions (Cohen et al., 2018). Any transgression on my part might have affected the quality of the data which would have been collected.

Due to the lack of existing findings to inform the analysis of this data, it would have been important to have used grounded theory to have generated emergent theory. Cohen et al. (2018) advise that grounded theory is consequential of systematic data collection. Glaser (1996) defines grounded theory as the 'systematic generation of theory from data' and Cohen et al. (2018) argue that as a means of analysis, grounded theory reflects the complexity of the context in which a phenomenon is investigated. The analysis of the data would therefore have been very important in the quality of the potential theory which might have been developed. It would have been important to have recognised the implicit theories that I as the researcher might have myself generated through the literature review because grounded theory requires the researcher to resist formulating theory too early (Cohen et al., 2018). Cohen et al. (2018) suggest a structured approach to generating grounded theory which includes theoretical sampling, coding, constant comparison, and identifying core variables and saturation, before developing the grounded theory. The adequacy of the theory can be evaluated using criteria from Glaser and Strauss (1967). These frameworks for the necessary approach and reflection would have provided a proven approach to theory generation, although any deviation from these structures might have therefore affected the satisfactory analysis of the data.

My role as an interviewer during the focus group data collection would have added an ethical dimension to the data collection. It would have been important to have emphasised my role as a researcher rather than as an Assistant Headteacher because of the ethical requirement that the research maintains the confidentiality of the participants (Cohen et al., 2018). There may have also been ethical issues which would have arisen from the focus on decision making. For example, participants' responses may have presented a bias towards or against particular groups of pupils, and this might have caused an ethical issue in terms of permitting the continuation of these choices in the

study school setting. The use of a pupil checklist to ensure that all pupils were selected across the day might have combatted this potential issue in terms of the impact of the intervention on children in the class, but further discussion with individual participants and stakeholders in the study school would have needed to have been pursued, should this have happened during the study.

In terms of change, the results might have been transferable if all teachers in the sample showed that their approaches to questioning changed in a similar way, or changed to a similar approach. If all participants in the study adopted a very similar decision making progress as a result of the intervention, further studies could explore this on a larger scale which might demonstrate the degree of transferability which could be expected.

5. Conclusion

The aim of this research and development project was to investigate the impact of introducing cold-calling on teachers' expectations of pupils' potential achievement. Despite a long-proven relationship between higher expectations and higher pupil outcomes, there has been a limited number of studies into implementing high-expectation strategies into practice, and even fewer on the impact of these strategies on teachers' expectations. A review of the existing literature revealed relationships between high teacher expectations, effective practice, teacher self-efficacy, teacher beliefs about ability, and pupil outcomes. The focus of this study was to ascertain the impact of cold-calling, a strategy which demonstrates an increased expectation of participation and arguably an increased expectation of teachers' belief that the person selected can answer the question, on teachers' beliefs about individual pupils, their class and their own efficacy, in addition to obtaining a deeper understanding into the reasons behind teachers' use of questioning of particular pupils. Investigating the impact on the teacher, rather than the pupil, was important in developing my own understanding of teacher change in addition to investigating the relationship between teachers' beliefs and practices and how changing practices might change beliefs.

5.1 What would I have been able to learn?

Although the depth and security of the implications for practice are limited due to the impact of Coronavirus on school closures, this study will still have a substantial impact on my future practice. Firstly, I now understand that high expectations are a culmination of practices which demonstrate to the pupils that a teacher believes that they can achieve at a relatively high standard. The reference point for this amount of progress does not necessarily need to be made aware to pupils in order for them to infer the expectation of the teacher. Merely sharing these expectations does not guarantee the effect of high-teacher expectations (Rubie-Davies, 2007): it is important for the classroom climate to

demonstrate these expectations and beliefs consistently, as the effect of expectations on pupils develops slowly and steadily across the year. Introducing one practice alone is unlikely to have the same impact on outcomes that high-expectation teachers can have, but the introduction of cold calling might be able to improve the expectations teachers have of their pupils, under certain criteria. For example, if teachers are more aware of the impact of expectations on pupils, and particularly how their behaviours convey these expectations, cold-calling might be able to demonstrate an opportunity for both the teacher to adapt their expectations, and to adapt their behaviours so that pupils begin to interpret higher expectations on them. An important mediator might be how a teachers' TOI affects their belief in the integrity of the strategy and how they implement it.

The suggestion in the literature that low- and average-attaining pupils benefit most from higher expectations, and that disadvantaged children are at risk of teachers having lower expectations of them means that cold-calling as a strategy to raise expectations would appear to be justified, given the implications of Dallimore et al.'s (2012) study which suggests that cold-calling increases pupils' willingness to participate and engage with the learning of the lesson. Although more focused research on the effect of cold-calling on pupils' perception of expectations in primary would confirm this, this potential impact warrants more widespread use of the strategy in my school context, and beyond. Its effect would perhaps be amplified by increasing awareness of the teacher expectation effect.

Due to changes in current practice mandated by responses to returning children to school safely, whole class questioning might need to be used more frequently to assess children's understanding. Cold-calling might therefore be a way in which teachers do

assess a wider range of children because other sources of data, such as marking books, might be less available.

5.2 What impact did collaboration have on the project?

The collaboration at each stage of this intervention was important to the direction and potential learning of the study. Discussing the concept of high expectations with different teachers across the last two years has mirrored the lack of a clear definition in the research literature, whilst contributing to my own understanding of the differences between teachers in how they view pupils' potential. A clear theme from speaking with the school improvement advisor and my current headteacher is that expectations should be high for all children and that teachers' practice should reflect this belief. Discussing cold-calling with teachers demonstrated that there was a tension between obliging with the suggested practice and maintaining the pace of the lesson. These considerations around self-perceived issues with teachers' short-term performance were in contrast with the potential long-term gains that increasing expectations can bring. The collaborative practice of discussing the ideas from the literature with the concerns about the practicality of introducing a strategy into practice meant that a more critical consideration could be gained of how such a strategy might be implemented.

The intervention itself would have been a collaborative process in itself due to the learning gained from teachers through the data collection, and the learning they would have gained from participating in the study and becoming more confident with using cold-calling. The discussion which would have arisen through the focus groups would have also provided an opportunity for the participants to have learned from each other, although the extent of this cannot be stated due to the school closure. The benefit of the participants teaching different age groups might also have provided nuance to the findings and potential barriers which are not suggested in the literature. For example,

those teaching in Year 1 might have found additional issues such as children's level of language and emotional responses to being chosen depending on their developmental milestones.

The learning achieved from the literature review and completion of this study will still be shared with the team of teachers at my school, and when discussing this project with colleagues, they have commented on their interest in the existing literature and potential impact of the intervention.

The school closure limited the collaboration involved in the project, which in turn has limited the overall findings of the project. If the intervention had shown promising results, using the participants to support the implementation of the strategy across the whole school could be potentially beneficial. By sharing their experience with other staff members, the collaborators in the project would be able to identify potential issues and solutions that the wider teaching team might face. Additionally, they could provide a source of expertise in using the strategy, particularly as they teach different age ranges across the school; this would provide a greater array of how the strategy could work in classrooms.

5.3 Concluding remarks

Teacher expectations matter to pupils' achievement. These expectations are conveyed through the behaviours teachers display which contribute to the classroom climate. Teachers who adopt these behaviours can demonstrate increased expectations, which when interpreted by pupils, positively affects their motivation and self-concept, which in turn causes them to adapt their own behaviours to make them more conducive to learning. Cold-calling can demonstrate that all pupils are expected to participate in the learning, and might demonstrate an increased belief that the person selected can also

achieve, not just to the typically higher-attaining children who would usually raise their hand. Whether hearing the responses of these children can affect usually stable teacher expectations cannot be concluded from this study due to the impact of school closures; however, the implications from the literature and consideration of potential findings are that such a practice should have a positive impact on children's achievement at least directly, through communicating an increased expectation to pupils. This may also affect teachers' self-efficacy and approaches to asking questions and is suggestive that the use of questioning in itself is a useful avenue of professional development for teachers to consider in raising the achievement of children, particularly those who are typically low- and average-attaining, and from disadvantaged groups. It has not been possible to conclude how introducing the strategy affects teachers' self-efficacy; however, by considering that such assessment data would ordinarily be available to teachers during other parts of a lesson, it could be argued that it is unlikely to have a negative impact. Indeed, if the impact of cold-calling is that children's motivation to succeed increases, the potentially improved responses from a wider range of children might indeed cause teachers' self-efficacy to increase. Given the relationship between high teacher self-efficacy and high expectations, this is an encouraging potential which would be worthwhile investigating, so that both teachers and pupils both feel more able to achieve at a higher standard, and that higher standards of teaching and learning, and outcomes, can be more readily achieved.

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