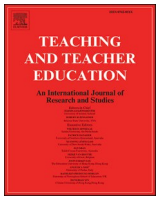
Teaching and Teacher Education 154 (2025) 104870

Contents lists available at ScienceDirect

Teaching and Teacher Education

journal homepage: www.elsevier.com/locate/tate



Research paper

"It starts with me!" Teachers' shifting perspectives on developing their practice away from fixed ability grouping

Phil Wright [a,*], Gillian Forrester [b]

[a] University of Cumbria, Lancaster, UK
[b] University of Staffordshire, Stoke-on-Trent, UK

ARTICLE INFO

Keywords:
Ability grouping
Implicit beliefs
Co-agency
Labelling
Activist professionalism
Mathematics

ABSTRACT

The negative and pernicious effects of fixed ability grouping in primary school classrooms are well-documented internationally. This case study of fifteen primary school teachers in England, used three cycles of practice exploration in mathematics, over a six-month period, providing opportunities for practitioners to consider the barriers and benefits of implementing an alternate, principle-based approach to fixed ability grouping. The teachers' perspectives highlighted benefits of an adjusted pedagogy and noted that at an individual-professional level they needed to address their implicit beliefs about children's learning capacity, adjust their professional language and trust children can make effective choices about their learning.

1. Introduction

International research, in both primary (ages 4–11 years and secondary schools (ages 11–16 years), related to the proliferation of fixed ability thinking and practices and their effects is wide-ranging (Anthony & Hunter, 2017; Boaler, 2005; Bradbury, 2021; Francis, Connolly, et al., 2017; Marks, 2016; McGillicuddy & Devine, 2020; Yarker, 2019). The studies based in a primary school context, are typically qualitative, with a focus on teacher's and children's perceptions of learner identities and their relation to ability grouping and thinking, with limited focus on learner outcomes. The studies in secondary school contexts however, more typically longitudinal and focus on learner outcomes. They tend to highlight students' experience of learning and self-concept within the groups to which they are assigned. Arguably, the marketised nature of education in the Organisation for Economic Co-operation and Development (OECD) member nations perpetuates the prevalence of ability grouping, and this has been underpinned by neo-liberal conceptions of teacher professionalism and accountability frameworks (Ball, 2021). These frameworks can be seen to have created a professional environment of "panoptic performativity" (Perryman, 2006, p. 155) within education. The architectures of monitoring and surveillance established within the panopticon bring about compliance and reduced pedagogic autonomy within teachers. The normalisation of thinking and practices related to 'fixed ability grouping' also, arguably, reduces a teacher's capacity to experience, explore or exhibit alternate approaches.

The case study drawn upon in this article sought the perspectives of fifteen primary school teachers in relation to the benefits and barriers to the implementation of an alternate pedagogy. Participants self-selected to explore the potential of an alternate approach to ability grouping through their daily work within the classroom. This study used the Pedagogy for Transformability (PfT) framework, which was developed from findings emanating from the Cambridge University, *Learning Without Limits Project* (Hart et al., 2004) (Fig. 1). It informed participants' pedagogic choices and their reflections on the effects of these choices. The framework also informed the research sampling, principles of participant engagement and choice of research tools, upholding the principles of Trust, Everybody and Co-agency, when seeking to understand teachers' perspectives about its potential effectiveness.

2. Literature review

2.1. Fixed ability thinking and practices: a critique

Chitty (2014) argues the current conceptions of 'ability' as a fixed entity (Dweck, 2000), have origins stemming from times of European Imperialism and growing 'eugenicist' thinking borne out of genetic determinism. Overtime and through unchallenged repetition (possibly by design, to bolster the status quo of the ruling classes and empirical powers) this understanding has been assimilated by populations around the world and underpins much of the current thinking in this area

* Corresponding author. University of Cumbria, Bowerham Road, Lancaster, LA1 3JD, UK.
E-mail address: phil.wright@cumbria.ac (P. Wright).

https://doi.org/10.1016/j.tate.2024.104870
Received 7 May 2024; Received in revised form 12 November 2024; Accepted 14 November 2024
Available online 17 November 2024

(Bourne, 1994). This now 'common-sense' conceptualisation of 'ability' seems to ignore the nature/nurture debate highlighted in Chitty's text and now forms an uncritical version of the vernacular use of 'ability' in both societal and educational contexts (Yarker, 2019).

Claxton (1990) challenges whether 'ability' is a relevant notion. He argues that in the context of education, children's capacity to learn ('ability') or proven learning outcomes ('ability') are more reflective of their learning history to date. He highlights how their current 'ability' is a construct of two elements; learning and life experiences they have been exposed to up until that point and the learning tools they have been supported to develop. These elements have either helped or hindered their social and emotional resilience and focus on learning and subsequently contributed to their sense of self as a learner, and current 'ability'. This position gains further credence through Boaler's (2021) work on brain plasticity and neurological science, highlighting the point that, provided with the right tools, opportunities, learning environment and learner identity, all children can learn.

The current educational climate, in the OECD states which have encouraged the marketisation of state education, ability grouping proliferates to ensure efficient and effective teaching, whilst rarely being specifically referenced in government policy (Yarker, 2011). Hamilton and O'Hara's (2011) study highlight four rationales for primary schools in Scotland adopting ability grouping: teaching efficiency, managing behaviour, tailoring education to group needs and supporting improvement in academic standards. These findings are borne out across a range of other studies, including those within a secondary school context (Bradbury, 2019; Francis, Archer, et al., 2017; Hartas, 2018; Marks, 2014; McGillicuddy & Devine, 2018; Taylor et al., 2019). Further studies (Alderton & Gifford, 2018; Francis, Connolly, et al., 2017; Nolan, 2012) highlight however, that ability grouping does not necessarily lead

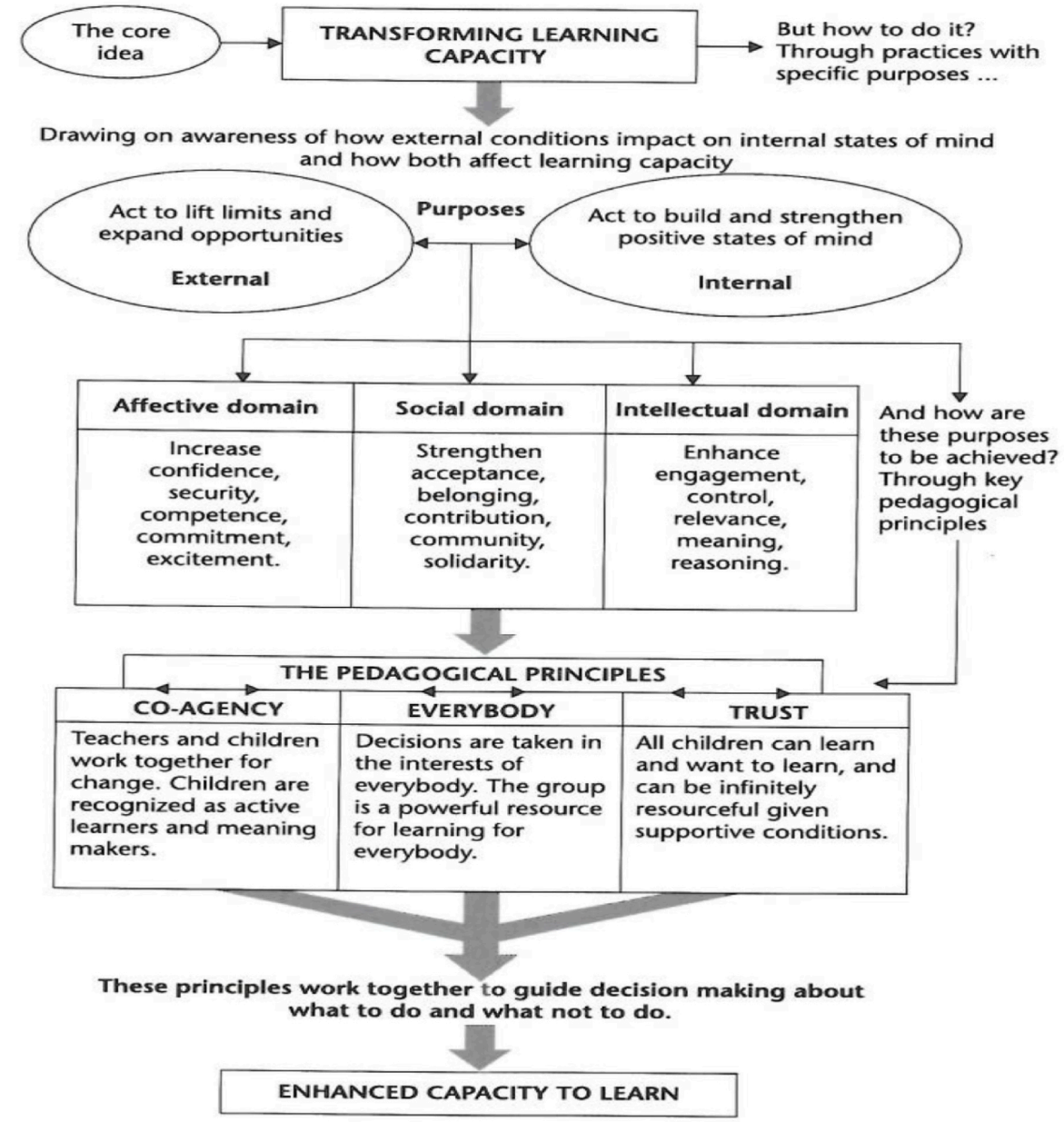


Figure 1.1 A practical, principled, pedagogical model

Source: Adapted from Hart *et al.* (2004).

Fig. 1. Pedagogy for Transformability framework (Hart et al., 2004).

to improved standards or behaviour, which therefore undermines the rationale of 'efficiency' and the effectiveness of grouping to 'tailor' learning to address individual learning needs.

The prevalence of ability grouping and thinking in primary schools is regularly reported in mathematics (Hallam & Parsons, 2013; Marks, 2016). The reasoning for this is potentially twofold, the demonstration of knowledge acquisition in mathematics is seen as fixed and stable (Lofstrom & Pursiainen, 2015) and also within society mathematical proficiency is seen as a universal marker of intelligence (Jorgensen et al., 2014), therefore groups are needed to address the perceived differing capacity for learning maths based upon baseline assessments in school.

Anthony and Hunter (2017), in their New Zealand-based study, suggest ability grouping is primarily of benefit to schools and teachers, while children are often disadvantaged by the approach. That is not to say that teachers are deliberately seeking to put their needs ahead of those of the children in their care, it more likely that the need for efficiency within an ever-increasing workload, grouping can be understood as a necessity. Furthermore, Yarker (2011:225) emphasises that teachers may feel pressure to engage with the discourses and practices of ability grouping as a means of "affirming professional competence" – contesting these normative approaches can be perceived as being "pedagogically naïve". As a result of workload, accountability mechanisms and normative expectations, engagement with these practices is consequently, largely unquestioned (Bradbury, 2019).

Returning to the notion that efficiency can be privileged over meeting the needs of all children in the use of fixed ability grouping, Marks (2014) talks to the fact that ability grouping can be seen as an act of educational triage. This is observed when the decision to address the learning needs of those currently lowest attaining (and unlikely to meet the national expectations) is sacrificed to meet the needs of those likely to 'survive' in statutory tests by meeting the minimum standard. However, this is just one of a number of negative and damaging effects of persisting with fixed ability grouping.

Research over numerous decades (Ball, 1981; Boaler, 1997; Campbell, 2021; Hargreaves et al., 2021) has highlighted how fixed ability grouping contributes to the reproduction of social hierarchies. The 'low ability' groups are typically populated by the most under-served groups in society (Connolly et al., 2019; Hallam & Parsons, 2013) and the approach is maintained on the evidence of self-fulfilling prophecies (Francis, Connolly, et al., 2017). Having been exposed to diminished teacher quality, restricted curriculum, unequal distribution of resource and high-quality learning environments and low expectations, those in the lowest groups subsequently achieve lower than their peers, thereby suggesting that it was right to have placed them in the lowest group in the first place.

McGillicuddy and Devine (2020) also state that the psycho-social positioning for children in the lower attaining groups is also adversely affected. Peer and teacher interactions, as well as physical positioning within the classroom, creates internalised non-learner identities and positions them as different from their peers. This is often exacerbated as they become 'othered' (McGillicuddy & Devine, 2018) or are treated like infants (Francis, Connolly, et al., 2017). Children also realise that their chance of moving groups is unlikely because there are limited opportunities to show what they can do, diminishing their sense of their self-efficacy (Bandura, 1997; McClaughlin, 2018; McGillicuddy, 2021). This in turn can lead to low self-concept as a participatory learner (Campbell, 2021).

Boaler's (2005) work with adults, who were allocated to lower groups or sets as children, highlights how these early experiences can lead to 'psychological prisons' from which it is hard to escape. As part of a longitudinal study of secondary school student outcomes, Francis et al. (2020), highlighted that the consequence of this psycho-social positioning has a 'snowball effect' on the self-fulfilling prophecies mentioned earlier, in so much as the gap in attainment outcomes, between the higher and lower groups grows exponentially over time as children assimilate the diminished learner identities they are cultivating.

2.2. Enhancing learning capacity: an alternative

The *Learning Without Limits Project* (Hart et al., 2004) created a framework for a *Pedagogy for Transformability* (PfT), which sought to provide at alternate approach to practices based upon notions and beliefs of 'ability' as a fixed entity. The framework foregrounds teachers' role in enhancing learning capacity. This emphasis on enhancing learning capacity, rather than focussing solely on learning outcomes, directs teachers' thinking towards the process of learning as well as the measurable outcomes of learning. The intention is to establish efficacious learning behaviours and positive self-concept which will impact children beyond their time in school.

Through reflexive engagement with the framework, teachers are encouraged to recognise the effects of their pedagogic choices (external conditions) on children's internal states of mind in the domains of the social, emotional, and academic. This is achieved by both lifting limitations on what learning children can engage with and by expanding the opportunities for children to engage with learning in a way meaningful to them. In this way it is intended that children will grow in confidence and sense of belonging and have more control and sense of purpose in relation to their learning. PfT advocates basing all pedagogic choices on addressing the principles of Trust, Everybody and Co-agency.

By design there is no blueprint or 'how to guide' to support these choices. The intent is for teachers to engage with the principles and framework in ways which are pertinent to them, their children and their context. Therefore, active reflexive engagement with the intent of their pedagogic choices is fundamental to the authenticity with which they enact the principles and take ownership of them. Marks (2016) highlights that adopting PfT requires teachers and children to move away from mindsets which accept notions of fixed ability or Entity Theory (Dweck, 2000). However, the challenge lies in providing teachers with the time and opportunity consider the effects of their practice and to work in communities of practice (Wenger, 1998), which offer the chance to critically reflect and adjust thinking (Marks, 2016; Woods, 2019; Florian and Spratt, 2013). This offers the potential for teachers to demonstrate activist professionalism rather than purely instrumental professional, as encouraged by accountability regimes (Sachs, 2016).

3. Methodology

The chosen methodological framework drew upon critical pedagogy and the works of Dewey (1933) and Freire (1970) – in particular their emphasis on reflection and action as a constantly iterative process. This was augmented by Kemmis (2010a), who highlights the centrality of participant perspectives and the importance of developing praxis within both teaching and research. This framework directed and justified a participatory approach in order to bringing new knowledge and understandings to the fore.

3.1. Research design

A case study design was adopted to ensure the emphasis of the study was teachers' perspectives. These varied perspectives created the bounded nature of the 'case'. As the study sought teachers' perspectives on the barriers and benefits of implementing an alternate pedagogy, rather than seeking to transform pedagogy, an exploration of practice rather than action research approach was undertaken (Bradbury, 2020).

3.2. Sample and ethics

The opportunity to engage with the research was presented to all twelve primary schools of a multi-academy trust (MAT). This provided the basis of a convenience sample (Bryman, 2016). The only criteria for inclusion in the study was membership of the MAT. Five schools chose to

engage in the research. Although the rationale for the decision to join the study was not requested it was noted that these schools were geographically local to one another and the first author's workplace, who was a local leader in education. Another common factor was that each school had recently had a 'Good' Ofsted grading following inspection. These factors potentially made engagement logistically viable and enabled the opportunity to explore new ideas in a timely manner before the next inspection.

To mitigate any additional or extraneous workload or excessive travel, the participants were divided into two communities of practice, which clustered schools local to one another together. Staff meetings were utilised to cover any engagement in research-supporting sessions, and participants understood, with the support of their school leadership, that they could explore any new practice to the extent to which they deemed was feasible for them, as a means of upholding their personal and professional well-being. Ethical approval was sought and granted and adhered to the ethical guidelines provided by BERA (2018).

The characteristics of the sample can be found in Table 1. The narrow range of school demographics is a limitation of the study in terms of wider representativeness of teachers' perspectives, however within this bounded case this was not imperative.

Table 1
Participant characteristics.

Community of Practice Descriptors				
CoP 1 (Schools A – D)	Formed of four church, first schools, with numbers on role ranging between 45 and 150. Three schools within the CoP are part of the same federation – within these schools only Y3, Y4 or Y3/4 teachers participated (no EYFS or KS1).			
CoP 2 (School E)	Formed of one church, first school. Teachers from all year groups participating.			
School Descriptors (A–E)				
	School Type		**Number on role**	**Year groups involved**
School A	Community, Middle School, Urban		152	1, 3, 4
School B	Church, Middle School, Rural		57	3/4
School C	Church, Middle School, Rural		64	3/4
School D	Church, Middle School, Rural		45	3/4
School E	Church, Middle School, Semi-rural		161	Rec, 1, 2, 3, 4
Participant Descriptors (Pseudonym + School Anonymiser)				
	Year group taught	**Experience (Years)**	**Number of schools taught in**	**Subject specialisms**
AbiA	3	SLT (23)	2	Art
BeckiA	4	ET (14)	9	Maths, PE & History
CharlotteA	1	ECT (2)	1	English
DanA	3	ECT (1)	1	Maths
EllieB	3/4	SLT (19)	10+	English
FlorenceB	3/4	ECT (1)	1	English
GillianC	3/4	SLT (26)	4	English
HannahD	3/4	RQT (4)	1	English & Humanities
IzzyE	3/4	ECT (1)	1	Computing
JoE	4	SLT (16)	1	English, SEND & Art
KaroE	2	SLT (30)	7	Maths
LizE	1/2	RQT (4)	2	English
MorganE	Rec	ET (20)	7	Maths
NoraE	1	ET (16)	2	Music & RE
OliverE	3	ET (9)	1	PE
Experience descriptors				
Early Career Teacher (ECT): 1–2 years of experience Recently Qualified Teacher (RQT): 3–5 years of experience Experienced Teacher (ET): 6+ years of experience Senior Leadership Team (SLT): Assistant or Deputy Head Teacher (classroom based)				

3.3. Research tools and processes

The project started with two Continuing Professional Development (CPD) sessions led by the first author. In the first session the origins and effects of fixed ability grouping were outlined, drawing on current research in the field (Alderton & Gifford, 2018; Francis, Archer, et al., 2017; Hamilton & O'Hara, 2011; Horn, 2007; McGillicuddy & Devine, 2018) and on the teachers' lived experiences in teaching and learning maths. The second CPD session centred on children's experiences of grouping in maths highlighted in Marks (2013) and moved on to explore together the *Pedagogy for Transformability* framework (Hart et al., 2004). Peer-led discussions were then facilitated to help participants determine some initial adjustments to their practice to explore, in relation to teaching maths. This approach drew on Freire (1970) and raising consciousness towards the need for action, and Dewey's (1933) work on the importance reflection leading to action.

Following the CPD sessions, the teachers implemented their adjusted practice, moving away from the in-class ability grouping, where each group, according to year-end assessment data, had a differentiated task or resources. After six to eight weeks, the participants met again to share their experiences in the pre-established communities of practice. These sessions were framed around core questions prompted by the first author to support collaborative discussion and peer-led pedagogic adjustments. The core questions were: What practices have you explored? What were the effects of these on you and the children? What were the challenges? Through these discussions, it was explained that the intention was for them to be mutually supporting and offer ideas, solutions, alternatives from their own experiences. The role of the first author was to facilitate, upholding an insider-outsider identity (Miller & Glassner, 2008) rather than acting as an external observer or expert imparting knowledge. This approach sought to replicate the principle-led approach of the pedagogy (Hart et al., 2004) the teachers were engaged in, where participants were co-agents in developing their understanding, trusted to find effective solutions in an environment that was purposed to the benefit of all.

The cycle of professional discussion in communities of practice, professional classroom-based pedagogic exploration, and review, was repeated twice more, before participants were interviewed about their experiences and understandings. This single, semi-structured interview (Bryman, 2016) was used to support participant reports and reflections about the practices they engaged with and on-going adjustments they may have made, the reasoning for these choices, and the effects on the children in their social, emotional and academic development.

Drawing on the metaphors of 'miner' and 'traveller' to describe the different purposes and approaches to interview, promoted by Kvale (1996), the study sought to understand the views of the interviewee rather than trying to verify them. Therefore, an inter-relational 'traveller' approach was taken - to work alongside the interviewee to co-construct the knowledge being shared, supporting the articulation of their meanings (Denscombe, 2017).

Sessions within the communities of practice and the interviews were recorded using a dictaphone and transcribed verbatim. Analysis and coding were undertaken manually by the first author. The unit of analysis was what was said, rather than analysis of interactions or patterns in discourse. Initially, the text was read and re-read to ensure the sense of the transcriptions, as a whole, was understood (Creswell & Creswell, 2018) and possible meanings behind words or explanations was not lost in the fragmentation of the text once the coding process began (St. Pierre & Jackson, 2014). Each text was then grouped deductively using the analytic framework in Table 2, which ensured a focus solely on text which was pertinent to the purposes of the study (Braun & Clarke, 2022).

Table 2
Analytic framework.

Theoretical concept: Kemmis (2009)	'Doings' (Practice)	'Sayings' (Understanding of Practice)	'Relatings' (Conditions of Practice)
Impact on children (Social & Emotional) Impact on children (Academic)	**What did teachers report, in terms of practices they explored and the impact on children? Adjusted practices & observed changes**	**What did teachers report in terms of their reasons for their practice and its impact on children? Professional & implicit theories**	**What did teachers in report in terms of accountability and its impact on children? Agendas related to Standards & Inclusion Research & autonomy**
Impact on self (Pedagogic choices) Impact on self (Pedagogic thinking)	**What did teachers report, in terms of practices they explored and the impact on themselves?**	**What did teachers report in terms of their reasons for their practice and its impact on themselves?**	**What did teachers in report in terms of accountability and its impact on themselves?**
Practice Architectures: Kemmis and Grootenboer (2008)	**Cultural - discursive**	**Material - economic**	**Social - political**

3.4. Analytic framework

The analytic framework utilises Kemmis' (2009) work related to capturing practitioner perspectives through a focus on their practices ('doings'), their understandings ('sayings') and how these are shaped by the different power relationships within their context ('relatings'). The interplay or, as Kemmis suggests, the 'dance' between these elements constitute teachers' enacted pedagogy. Kemmis notes that teachers' practices and understandings take place, and are developed, within practice architectures (Kemmis & Grootenboer, 2008) – practices nested within practices, which have been shaped over time for different social, economic and cultural purposes. The current over-riding practice architecture is, arguably, a neo-liberal conception of education, which guides what happens in schools, in classrooms, in teachers' individual pedagogic choices. These architectures arguably enable or constrain agency for teachers in making these choices (Edwards-Groves & Gray, 2008).

The core processes of thematic analysis (Braun & Clarke, 2022) were applied across the two different data sources in the project; discussions in the communities of practice sessions (three per group), and summative, semi-structured interviews (one per participant).

Following a deductive phase, an inductive approach to coding was employed to give primacy to the participants' perspectives. In the first wave of inductive coding semantic codes were assigned to data which provided reports of the same thing (Gibbs, 2007). Initial, tentative themes were developed through coding clusters, and then a further round of coding, which included codes to data which had latent relationship to the original semantic codes, was created to add richness and depth of the themes ultimately established.

Analysis was undertaken to interpret participants' perspectives on the benefits and barriers of implementing an alternate, principle-based approach (PfT) to fixed ability grouping, reflecting the perceived effects on themselves and the children.

4. Findings

The findings are presented to reflect typicality within the bounded case, as well as highlighting pertinent outlying perspectives. These outline the adjusted practices teachers reportedly engaged with, including the challenges they faced; the development of these practices and their growing understanding of the effect on the children; and the understandings they developed about themselves in relation to their practice. This mirrors the iterative narrative of the participants' experiences on their journey through the three cycles of exploration within the project and the 'dance' between their 'doings, relatings and sayings'.

4.1. 'Doings'–what did teachers report in terms of practices they explored and challenges they faced?

Over the course of the project, four practices were explored and discussed through the chosen actions of the participants: mixed ability grouping, choice of challenge, choice of learning partner and flexible intervention in-the-moment. The practices reported were undertaken by participants supported by on-going formative assessment, which informed future areas of exploration and adjustment. It is worthy of note, that some teachers, who were not maths specialists, initially chose to start their adjustments in English sessions, due to their perceptions complexity when teaching maths, particularly when compared to English.

> I think literacy is a calmer lesson - it seems more manageable. With maths you have got so many different things happening and so many possibilities that can happen within that lesson and it is being in the right place at the right time – AbiA

> I am more confident with literacy because that is my passion… with the maths because children can be capable at one area of maths and then really struggle with something else, there is a challenge managing it - CharlotteA

4.2. Mixed ability grouping

Four teachers initially explored 'mixed ability grouping' as alternative to fixed ability grouping. As they spoke about their approaches to mixed ability grouping there was nuance in what they did and their emerging understanding. These differences potentially reflected some of the implicit theories held by the teachers related to notions of ability.

In one class, shared by an experienced teacher and an early career teacher, mixed ability grouping consisted of *"using the middle as the glue to kind of stick the high and the low"* (DanA). This indicated that the children worked together collaboratively to address their mathematical learning, with mediation provided for those labelled as 'low ability' by those labelled as 'more able'. This approach is arguably based an understanding of children having a given amount of ability which can differ relative to others.

The choice of collaborative emphasis within this approach, created issues of pedagogic tension for both teachers – how would the needs of the higher and lower ability children be met without adequate stretch or scaffolds for the respective groups? Further to this, the reflection, *"I wouldn't want to think my child had spent their day teaching someone else"* (AbiA) suggests that there is a sense that within this approach the lower attaining children would have their needs met at the expense of the needs of the higher attainers being met.

Another teacher at School A had also explored utilising mixed ability groups, but had deliberately moved to paired work, based on on-going formative assessment, to ensure that each child was paired with someone more closely matched in their current understanding. This sought to enable partnerships where similar levels of understanding between the children created an *"achievable aspiration"* (CharlotteA). In this arrangement, the children would work independently but were able to collaborate with the person they sat next to. This approach was echoed in the other communities of practice,

> *I tried the* 'more *knowledgeable other', because I thought it would scaffold those lower ability children because if they are with someone who is*

above age relate expectations then they aren't going to get anything - IzzyE

Following discussions in the first community of practice session, the teachers determined the initial mixed ability approach employed by AbiA and DanA potentially, did not confront conceptions of 'ability' or give agency to the children involved, nor did it meet the needs of those children who were currently lower attaining or struggling with confidence in mathematics sessions. Simply stated, 'mixed' was not adopted as an alternative to 'fixed' ability grouping. Furthermore, it was not clear in the comments from DanA and AbiA whether, AbiA's more extensive experience, and likely embedded thinking, influenced DanA's less-experienced perspective.

However, three core practices, as mentioned above, were prevalent throughout.

4.3. Choice of challenge

All teachers reported offering three levels of challenge for the children to choose from following the introduction of the lesson. Some teachers reported that they insisted all children started at the first level and then moved through as they chose, before *"gradually taking it away so they could choose whether they started at silver"* (OliverE). The reference to 'gradually taking it away' was described by others as loosening control. This was typically done in a gradual manner, although one teacher reported letting the children *"take control"* from the outset. (CharlotteA). Participant concerns about children's ineffective choices and how these were managed overtime are addressed in later sections about teachers' sense of professional identity.

4.4. Choice of learning partner

The third, related approach, involved allowing the children to choose who they worked with – their learning partner. This provided children with two distinct aspects of agency, whereby the children would select their level of challenge and then go and sit alongside a partner of choice – someone who would support them with their work or someone they felt comfortable with. As GillianC articulates however, children had to demonstrate the effectiveness of their choices.

I am not afraid to step in if it isn't working with a child at any point in a lesson because we wouldn't be doing our jobs if we didn't – GillianC

In order to uphold the children's sense of agency in challenge or learning partner choices however, the children were often supported to more effective or challenging choices,

Even yesterday some of my children stayed on silver and I had to say to them 'if you are getting it and you're doing okay, don't be scared of having a go at the gold.' - KaroE

4.5. Flexible intervention

In most classes, participants explored how to create access to learning for children who were known to regularly struggle taking learning on board or were struggling with new learning during a lesson. Prior to the project, teaching assistants would typically be assigned to the 'low ability' group to guide and support them through the tasks, whilst the teacher might be supporting another group elsewhere. An adjusted approach involved having a space where the children could visit if they were finding the new learning tricky:

We have a surgery. A designated space in the classroom. They can access help from each other, the teacher, whoever and then go back to their own space - JoE

This intervention was competency-bound, and as soon as the children were able to access the learning independently again, following intervention from those working in the 'surgery', they returned to their place to continue. Importantly this form of intervention was available to, and encouraged for, children at all current levels of understanding – not just those deemed to be 'lower ability'.

Unfortunately, although 'low threshold, high ceiling' tasks in maths would fit well with the PfT principles (Milik & Boylan, 2013), opportunity for exploring these did not arise during the project. The scope and range of practices explored during the project is therefore a potential limitation within the study.

4.6. 'Relatings'–what did teachers report about their sense of professional identity when exploring the principles of PfT?

As the teachers explored providing children with choices over the types of challenges they engaged with during maths sessions, or who they worked alongside, or when they sought support, which maths resources they used, analysis of their comments. From the coding process, was captured in three recurring themes: Control, Competence and Confidence. These same themes were also present when analysing the participants' discussions about the effects of *Pedagogy for Transformability* on children. The themes were inter-related within the teachers' experiences, within the children's experiences and between the experiences of the teachers and the children, as illustrated in Fig. 2.

Initially teachers reported facing challenges in sharing control of the learning journey with the children as seen in the following statement:

It is the biggest mess with my head because it is just letting go and saying to them 'go and choose.' - BeckiA

They were concerned that children might make ineffective choices which might either damage a child's confidence, lead to poor behaviour or stall their learning. If these issues were to occur the teachers expressed concern that they may not appear by their peers or school leadership colleagues to be competent. This reflected teachers' sense of professional identity being rooted in good behaviour management, directing the children's learning and achieving high outcomes for children.

During the initial community of practice sessions, teachers were typically unsure when, or if, they should intervene if a child had made an ineffective choice of challenge or learning partner:

I am not quite sure how long to leave him choosing his own work before I can say 'is this the right challenge for you?' - EllieB

They were mindful of the centrality of meeting the needs of all children to their role, and without the structure of ability groups this was perceived as being harder to manage. Further to this, there were initial concerns about how this approach might affect outcomes in statutory tests.

We have been doing SATs so children haven't had much choice there but hopefully as this half term goes on, we can get away from all of that and get back into what we were doing at the start of the project - KaroE

On the other hand, captured in the next comment from the final interview, teachers recognised how their practice had been refocussed, and more closely met addressed agendas around inclusive and adaptive practice,

We're teaching for individuals now rather than the group … for every child it's like the learning is for them not for the group – MorganE

They recognised that in trying to be 'competent' by using grouping practices they had been 'capping' children's learning and subsequently used this new understanding as a spur to further explore and refine how to enable effective choices with the children.

Under my old system, I would have said 'you can do that one, and you can do that one' and would have put a lid on what they can do,

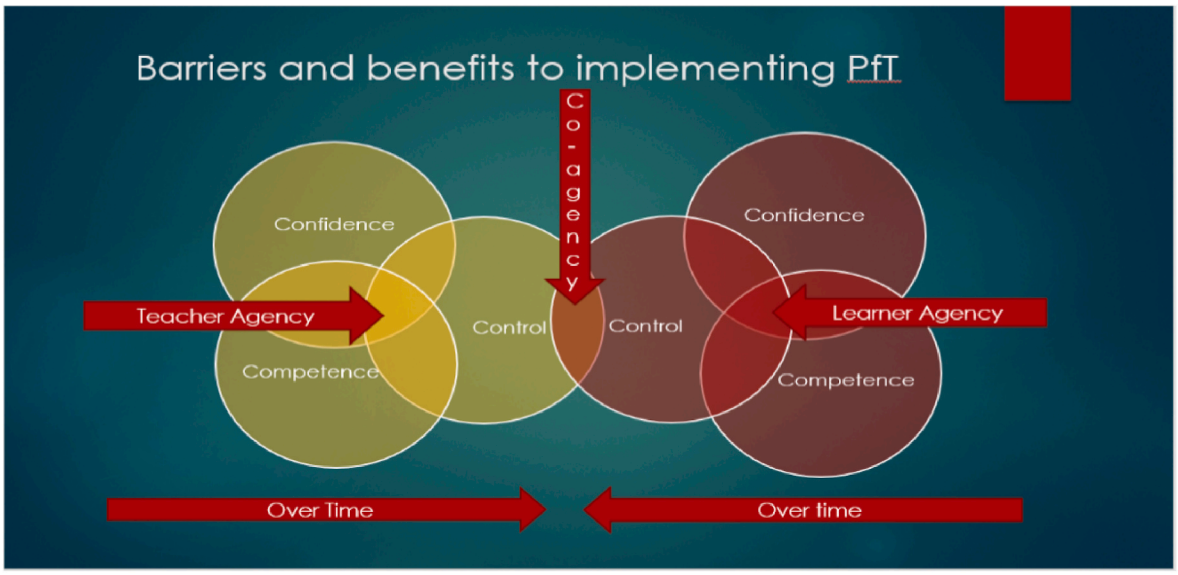


Fig. 2. The inter-relationship between themes, highlighting the reported barriers and benefits of PfT.

and they have just gone and shown me that clearly, I didn't know what I was doing – BeckiA

4.7. 'Relatings'–what did the teachers report about the children's response to the adjusted learning environment?

Teachers reported in their final interviews, that overtime, as they enabled children to take some control over their learning choices, they were surprised to see that children did typically make effective choices and were increasingly able to articulate why they had made a particular choice.

> *I have also learnt that I don't need to have so much control. They'll manage themselves and they'll learn to think about where they're sitting and how they're working* - KaroE

Effective choices were evident in the children's competence at accessing and assimilating the learning, which led to increased confidence in both their learner identity and at making effective choices. As teachers gradually established a culture of trust and refined how they intervened to support children's choices (often by simply asking the child to explain their reasoning) the teachers' sense of competence improved, and they gradually ceded more control and grew confidence to exercise the principle of co-agency.

As the new classroom culture was being embedded, it appeared that some children initially struggled with making effective choices. This was primarily due to ingrained learner identities, established through experiences to date of grouping practices.

> *They were perceiving things as, 'this is the hard piece of work or this is the easy piece of work', without you even saying those words. Those thoughts are already in their heads by the time they are in Year One* - CharlotteA

Teachers reported during community of practice sessions that some children initially selecting the 'easy' task because the children's perception of themselves, possibly as a result of prior grouping practices, was that they were not good at maths – with no reference to their current learning focus within the session; whilst others, who were currently higher attaining would simply select the challenges they perceived as the 'hardest' because that is what their status as a member of the former 'higher ability group' would have dictated, rather than selecting a challenge which matched their current learning need.

> *To start with they wouldn't challenge themselves but over time we have chipped away at that, and they're now more confident at choosing from a whole* range *of tasks* - GillianC

On these occasions, teachers learned to question children about what their current need was, and which task was best matched to it, with the encouragement that when they were confident to adjust their choice (because their current need had been met) they could move on. In this way learner agency was supported, encouraged and upheld, both in the short term and over the longer term as the decision-making process had been modelled and validated. It was further supported through establishing whole class understandings of what makes an effective choice,

> We had an active discussion with everybody about, 'Do you feel that is the right choice? What makes you think it is the right choice?' - FlorenceB

4.8. 'Sayings'–what did the teachers report about their understanding of the pedagogic principles of PfT?

As the project concluded teachers explained how the approaches they explored, both required, and created a culture of Trust within the classroom. The teachers recognised that this started with them and trusting the children to make effective and accountable choices about their learning. This was most clearly articulated by BeckiA:

> It is trusting them, that has to come from me. It starts with me.

As part of this process teachers understood the need to create a culture where it was acceptable to make mistakes, that struggling or working things through was part of the learning process, that it is important to 'have a go' – all understandings that teachers needed to accept themselves as they explored how to enact the core PfT principles.

In support of the principle of Everybody, teachers recognised the importance of the language they used and how the different learning challenges were presented:

> *I have noticed the impact of your choice of words and the way that you approach things is just massive. I am much more careful in my choice of language because you realise that you're limiting them with your language without consciously doing that, aren't you?* - HannahD

They increasingly described the content of the challenges rather than framing them as easier or harder, which supported the improvement of children's choice making.

I describe the challenges to the children and at the end of my exposition I explain to them if you have found this … have a go at … They know that they can choose something suited to their need, suited to what they're comfortable with – EllieB

They also started to re-frame how they spoke about children with colleagues, emphasising the temporal nature of children's capacity to learn, using references to current levels of attainment or not being able to access particular learning 'yet', rather than lower and higher ability.

There has been *a big challenge in the language I have used because that is habit, and it's quite tricky to break* – CharlotteA

They highlighted the challenge of adjusting the language they used, recognised how it shaped their sense of the children's 'ability' and how this can become fixed.

I've got two in my class who have done amazingly, and I wouldn't have given them a chance to even try the gold work this time last year because I wouldn't have thought them capable - KaroE

Further to this they noted the need to change to temporal references to children's understanding rather than rely on relative ability labels, which enabled their thinking to acknowledge each child's growing potential to learn.

This study sought to illuminate teachers' perspectives on the barriers and benefits to adopting PfT, as an alternative to practices premised in notions of fixed ability. Core themes of Control, Confidence and Competence were crafted from the Findings, which highlighted both the barriers and the benefits.

Teachers in this study pointed to three key challenges or barriers they worked to overcome in adjusting their practice; their implicit beliefs relating to 'cognitive ability' or intelligence; the importance of developing a new way to speak about or frame professional discussions related to different learner needs; and the centrality of establishing co-agency in cultivating efficacy in learner identities. These barriers frame the content of the discussion emanating from the findings.

5. Discussion

Within the context of teaching primary maths, teachers in this study highlighted the benefits of giving children the opportunity, coaching and trust to make effective choices about their own learning. When they did so typically children were able to make choices meaningful and relevant to their current learning needs. In doing this, the children were reportedly able to reframe themselves as effective learners and improved their competence and confidence in maths. If this was typically the case however, it poses the questions 'why don't more teachers work in this way, rather than grouping by perceptions of 'ability'?' or 'what barriers prevent them from doing so?'

5.1. Addressing teachers' implicit beliefs

According to Claxton (1990) our implicit beliefs about 'ability' are assimilated over time and are shaped through our experiences and understandings to date. Dweck and Yeager (2019) explain how these beliefs can profoundly influence how teachers choose to practice and equally how children can become framed as learners. These beliefs inform teacher expectations of children's likely outcomes and therefore the potential learning opportunities they may or may not be exposed to (Horn, 2007; Marks, 2016; McGillicuddy & Devine, 2018). These beliefs can also establish a restricted menu for teachers' pedagogic choices – potentially limiting them to what they experienced at school in their taught maths sessions or through an 'apprenticeship of observation' (Lortie, 1975) once they re-engage with school as a trainee or practitioner. The proliferation of ability grouping practices in maths means it is unlikely for trainees or practitioners to experience a school environment not structured around this approach (Hallam & Parsons, 2013) and therefore no alternate frame of reference is provided. This can be seen as a barrier to the implementation of PfT.

The challenge, therefore, in seeking to advance an alternative to ability grouping, centres on how teachers' implicit beliefs can be disrupted. Whilst the need for reflective practice is made explicit in the Teacher Standards (Department for Education, 2021) holding a mirror to your own practice with no alternate perspective, leads practitioners to only reflecting through a lens of what they already understand or 'believe'.

In schools, for current practitioners, when considering current workload pressures, performance related pay (and the emphasis on outcomes in maths within this), limited time to reflect and CPD typically focussed on 'one session, quick fixes' the opportunities to engage with additional or alternate lenses for reflection potentially becomes more limited. Therefore, creating communities of practice supporting practice exploration, either within or between schools, could possibly offer the context to provide multi-perspectival reflections in support of professional development. This might also support teacher agency and efficacy and create an environment where praxis is cultivated to ensure the needs of all children are met and the children develop participatory learner identities in maths (Solomon, 2007).

Within an education environment which rightly seeks to challenge disadvantage (Department for Education, 2016), it might be instructive to view the effects of current practices through the lens of children who are currently underserved, to determine the areas of practice that need to be revisited. Evidence strongly suggests that ability grouping adversely impacts those who are most underserved in society and contributes significantly to social reproduction (Francis, Connolly, et al., 2019, 2020; Hodgen et al., 2023). Further evidence suggests, that even where ability grouping is not entertained, notions of fixed ability thinking, particularly in maths, still persist and inhibit the outcomes and self-concept of those referred to as 'lower ability' (Marks, 2016; McGullicuddy, 2021).

5.2. Developing new language to frame learner needs

Teachers in the study highlighted how they became aware of their language choices, when talking about individual learners or groups, or maths tasks and challenges they presented for the children to engage with. They noted how their language choice related to 'ability' framed their expectations of what children might achieve. These expectations subsequently steered what curriculum content or pedagogy the children in their care received. Initially, as a choice of learning challenges were presented for the children to select from, these were framed as easier or harder, which then identified children as more or less 'able' depending on the challenge they chose. Therefore, much like advocating the practice of 'mixed ability' groups whilst maintaining fixed ability thinking in relation to who might work with who, framing challenges as easier or harder still became a limiting factor in promoting children's learner identities or self-concept.

An alternate vocabulary and terms of reference are needed - references which acknowledge the difference between 'ability' as a fixed entity or as a comparative to others (lower/higher) and references which highlight the temporal and changing nature of children's current understanding or capacity to learn. The language of 'ability' is pervasive throughout society and within education, and as such it is difficult to avoid as it can be used to support expedient communication and is also now embedded as part of the 'professional' vernacular (Yarker, 2011). Language choices for discussing children's learning needs which include 'currently' or 'yet', or refer to attainment rather than ability, may help practitioners to remember that learning is a process of developing capabilities, and part of this is enhancing children's capacity to learn not just improving their academic attainment.

In order to support a change in the language used, an alternate approach to pupil progress reviews could be adopted. These reviews are typically undertaken discussing the children by starting at either end of

the current attainment spectrum. However, if these reviews were undertaken by ordering children chronologically by birth, it is likely to demonstrate (particularly in Key Stage One and lower Key Stage Two) that typically children who are currently lower attaining are summer born. This could help reviewers recognise how readiness to learn (maturity) is the potential basis of lower attainment rather than perceptions of 'ability' when compared with autumn born peers. This would hopefully support the emergence of new language when discussing current attainment, helping to focus teachers on what has been achieved to date rather than comparative terms of ability, which can become learner identifiers.

5.3. Supporting co-agency

Within the Teacher Standards (Department for Education, 2021), significant emphasis is placed on engagement with and learning from research-informed sources. Much of content in the current framework for research-informed sources emphasises the science of learning. McGillicuddy and Devine (2020) argue this focus is a result of a performative understanding of how teachers teach and how learners learn and disregards the sociological and psychological aspects of learning. In order to support co-agency, the science, sociology and psychology of learning need to be addressed in combination with one another. This could provide teachers with a menu of approaches to support learning as a whole (learner identities and outcomes) rather than a recipe for partial learning success (outcomes alone).

Bandura (1997) promotes the notion that the foundation for learner agency is their belief in their self-efficacy – the belief that they can produce their desired outcomes through their actions. McLaughlin (2018) upholds this view, arguing that children's attitudes and beliefs about their self-efficacy are learned in school. These are supported or diminished through the interactions children have with their teachers and peers in the maths classroom – the ecologies of participation (Boylan, 2010). Where children are sat, who they sit with, what they are given to learn, how teachers articulate their expectations and interact with them publicly or individually, all act as part of children's psychosocial positioning of themselves as learners, and their understanding of their capacity to learn or be a learner. This is made visible most clearly in Marks, 2016, p. 62, when highlighting the example of Mrs Ellery's interactions in maths lesson.

Children need to have the opportunity and choices to take action in ways meaningful to them and see the results of their choices, in order to have agency (Boaler, Wiliam, & Brown, 2000 et al.; Hart et al., 2004; McLaughlin, 2018). This is part of an iterative process which cultivates increased self-concept as a participatory learner and belief in their self-efficacy. This is not in contrast to Bandura's point that self-efficacy is the foundation, it rather points to 'opportunity and choices' as a starting point for these foundational beliefs to be established and embedded. The creation of opportunities and choices, however, stems from the teacher and the learning culture they create – one potentially premised on Trust, Everybody and Co-agency. This requires teachers/trainee teachers to reflect on their own implicit beliefs about ability and children's capacity to learn, trusting that each child has the capacity to learn and, given agency in the learning design children can make effective choices.

Enabling children's choices about the type of challenge they engage with during lessons, to develop, embed or extend their learning, could be facilitated through providing opportunities for self-assessment. Following modelling, scaffolding and linking back into existing schemas – in line with the science of learning emphasis to pedagogy – children could draw upon their current understanding of a topic to choose which challenge or task best suits their current learning need. In this way, and with coaching as necessary, children develop their sense of agency, nurture positive learner identities and achieve the goals they were aiming for. There are various case studies highlighting how this approach – combining the science and psychology of learning – can be utilised to address the mastery agenda in mathematics (Boaler, 2016; Milik & Boylan, 2013). Self-assessment, informing children's learning choices can be utilised prior to new learning opportunities, as well as post-learning. This approach has the potential to create opportunities for children's successful agentic action and therefore support both beliefs self-efficacy and improved self-concept as an effective, participatory learner.

6. Limitations

This study was designed to support teachers in reflecting, adjusting their practice considering new understandings and having the opportunity to consider the impact of their work. However, as with all studies there are some limitations. From this study, it is difficult to determine whether changes would have happened more quickly, or have been embedded more deeply, if the communities of practice met more regularly, or whether the first author's role could have replicated a more 'insider' role in order to offer other approaches as teachers requested. Furthermore, two teachers suggested they would like to have seen PfT in action to provide a practical example to draw upon, however the project set out to encourage the participants to develop their own practices rather than replicate practice they had observed.

7. Conclusion

This study has shown, that from the perspective of the primary teachers in this case study, typically children confidence, competence and control improve with relation to their learning. However, barriers of teachers' implicit beliefs, limited professional language relating to children's needs and an imbalanced emphasis on the science of learning to guide practice, reduces teacher agency to support learner agency provide challenges to the successful implementation of PfT. Reportedly, each of these barriers and benefits can be removed and developed respectively, over time.

Drawing on the PfT framework, the outcomes of this study suggest that the starting point for any potential change is for teachers to trust children to be co-agents in their own learning, and the importance of teachers challenging their own implicit beliefs and adjusting the ways they think and speak about children's current learning capacity or perceptions of their 'ability'.

However, a new practice architecture needs to be developed (Kemmis & Grootenboer, 2008), one which creates time and space for teachers to reflect and make informed choices, guided principles which seek to enhance the learning capacity of all children (Marks, 2016). A move towards activist professionalism, rather than the controlled professional demanded within the neo-liberal educational agenda (Sachs, 2016), is needed to meet the needs of all children, as a move away from practices which underpin social reproduction (Francis, Connolly, et al., 2017, 2020; Hodgen et al., 2023). To achieve this, teachers need further opportunities to work within communities of practice, shaping and refining their understandings, practices and interactions (Kemmis, 2009). This is an adjustment which has been suggested for over decade (Marks, 2016; Sachs, 2016). As Woods (2019) states, working within the PfT framework is nothing new and shiny, it requires a principle-led, reflective approach to making pedagogic choices, rather than one determined by an accountability and market-led focus.

This study highlights time is needed for teachers to explore, through reflection and adjustment, alternatives to ability grouping in maths, and to have agency over their pedagogic choices. Equally, time is needed to enable children to have agency over their learning choices and to establish a learning culture where pedagogic choices are for the benefit of everybody. Participants in this study, typically suggest that when agency is provided, and opportunities are taken, whether as a teacher or learner, and all children's learning needs are met, a sense of self-efficacy can be added as tool to embed enhanced learning capacity.

As the primary focus of this research project was teachers'

perspectives it is pertinent this article concludes with a teacher's voice - one which captures the typicality of the voices contributing to this work.

> It is trusting them (the children). That has to come from me. It starts with me! - BeckiA

CRediT authorship contribution statement

Phil Wright: Writing – review & editing, Writing – original draft. **Gillian Forrester:** Writing – review & editing, Writing – original draft, Supervision.

Declaration of competing interest

No potential conflict of interest was reported by the authors.

Data availability

The data that has been used is confidential.

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