Open Research Online

EP TITLE

Advancing beyond familiar territory: mapping educators' scepticism of mixed attainment grouping in primary mathematics teaching.

EP ABSTRACT

Setting by attainment, in England, particularly in teaching primary mathematics, is a well-established practice and familiar territory for many educators. Learners' experiences of attainment grouping are well documented. Little attention, however, has been given to the educators' voices. This paper examines this gap in the research, and explores the possibility for participatory activist research to bring new insights. Building on the recommendations of previous research, a proposal is made that could create the conditions to map educators' scepticism. It examines underlying assumptions, values and beliefs around grouping by attainment and begins creating the route out of this familiar territory.

EP CHAPTER 1 Introduction

'Theoretical arguments ...carry little or no weight if they are set against long established and fondly cherished traditions.' H.C.Dent (1951 in Ottoway 1955, p91)

Some seventy years separate Dent's observation from some of the earliest research and literature presented in the extended literature review and research proposal. There are many theoretical arguments, arising from research and literature (spanning almost six decades), which advocate a move towards mixed attainment teaching and away from attainment grouping (Jackson, 2014; Reay; 2012;Macqueen, 2013; Archer et al. , 2018; Connolly et al, 2019). However, a recent paper by Bradbury (2018) revealed 62% of children aged between 3-7 years were routinely being grouped for mathematics (this rose to 81% for Phonics teaching). Bradbury's (2018) paper is not alone in attempting to disrupt the discourse of 'long established and fondly cherished traditions'.

A search in the Open University library returned 92 peer reviewed research papers, after filtering, with the majority of these focused on secondary school settings and a mere ten of those returned findings describing the research in a primary school with learners aged between 3 years and 11 years. Although Bradbury's (2018) paper adds to the growing conversation around setting in English primary schools, it has been necessary to refer to research from the secondary level of education, without which a literature review would have returned very few sources specific to this topic.

The gap only serves to strengthen the rationale for this proposed research as any findings could add to the understanding of setting within primary education and within mathematics education in particular. Furthermore, this proposed research answers the call from Jackson (2014, p 130) to explore 'the values and pressures behind selection in our schools, both primary and secondary'. Taylor (2016) did identify five key values and pressures and of those, this research proposal aims to explore 'the teachers' scepticism in using mixed attainment grouping' for the teaching of primary mathematics.

Mathematics is the curricular area where setting most consistently occurs throughout primary school Francis *et al*. (2017). It is important to explore educators' scepticism in order to be able to respect their differences of opinion, from the research. Through the cycles of the proposed participatory activist research, 'light can be shed on the matter' Foucault (2002, p188) and by returning repeatedly to the underlying values and pressures the research has the potential to reduce the scepticism. Yet it would be unethical to assume that this *will* happen through researching this sensitive topic (Appendix 2). Here, the research proposal treads gently, and democratically, inviting the participants of the research to examine their own 'reading of the world'. Freire (2017, p102). It is by exploring the advancement beyond familiar territory, this research neither seeks to reassure nor confirm, but instead contest truths as a way to co-constructing new ones. (The Open University, 2020a)

By identifying both Freire and Foucault's influence on the proposed research, the relationship to the module's themes of exploring issues that may be of benefit to the community in which the research is situated begins to be established. Freire's Pedagogy of the Oppressed (1993) and Pedagogy of Hope (2017) both explore social justice and education in low-income economies - although Brazil is now classed, by the World Bank (n.d.), as an upper middle-income nation. What is of interest here is that by drawing from Freire, by including the educators in the exploration of their own scepticism, the research endeavours to remain 'humanised' (Freire, 1993, p66). This is supported by the module material (The Open University, 2020b) which asserts the importance of developing 'an understanding of the human participants, their views and their practices by listening empathetically and developing close association through openness, collaboration and trust.' Similarly, Foucault (2002, p28-29) maintains that this proposed research could 'build a picture of truth when discourse allows facts to be built, as and when they occur.' Both these thinkers greatly influenced the conceptualisation of the research.

Whilst Freire and Foucault have provided a motivation and a general direction in which this research can travel, 'an accompanying map and directions' for reading that map (Kuhn, 1962, in Corbetta, 2003,p3) should lead to a more ethical and virtuous body of work (Openlearn, 2020a). With this in mind, the research is situated in the paradigm of critical theory. Ontologically, it takes the position that a truth may exist but this truth is open to being contested (The Open University, 2020a). This is highly valuable in relation to the specific pathway of setting by attainment grouping for primary mathematics teaching, as it is already an emotionally charged and polarised field of research.

The continued polarisation of debate on this topic was demonstrated in September 2014 when it was reported that the Education Secretary of the time intended to establish a policy to include the setting of learners, according to their ability. Whilst this statement was denied by the former secretary for state, its discussion in the wider media (Cook, 2014; Wintour, 2014; Husbands, 2014) served as a useful barometer, gauging the strength of emotion around the grouping of learners by ability within education. By co-constructing the knowledge that may come from this research, it is hoped that the acts of researching, publishing and disseminating could bring those with power closer together in order to achieve cooperation on any proposed future actions (The Open University, 2020a). This could have the power to transform the teaching of mathematics within the context of the urban primary school, a London borough or stimulate discourse through a trade union or social action group.

Seeking representation of the teachers' voices, to date underrepresented in the research on setting, the questions have moved from specifically suggesting that one approach *will* have an impact on educators' approaches to becoming necessarily participatory, with a greater focus on emancipation.

Four final guiding factors frame the direction of the questions (Coghlan, 2019, in Sharp 2019). First, the context of teaching in a pandemic as well as the mounting pressure from external bodies (government, OFSTED, media) to catch up and close gaps in learning (Williamson, 2021; Ofsted, 2020;Montacute and Cullinane, 2021) as a result of the COVID19 pandemic. Second, the quality of the relationships between myself, currently positioned as a strong advocate of mixed attainment grouping, researching alongside colleagues who have long practiced setting (Appendix 2, Ethics Assessment, Section 2, point 9). Third, the cycles of inquiry and action are collaborative and focused. Finally, the outcomes of the research lead to enhanced professional and personal understanding (here it would also be worth considering collegiate as an independent category) of the educators' scepticism of mixed attainment grouping and action that ultimately improves policy pertaining to the learning and teaching of primary mathematics. This improvement would show a commitment, in institutional policy, to mixed attainment grouping. Mindful of the ethic of doing no harm, the participatory process and negotiation should create opportunity for the negotiation and resolution of problems rather than the traditional system of imposing changes to practice.

EP CHAPTER 2 - Literature review - The Topic

Advancing beyond familiar territory: mapping educators' scepticism of mixed attainment grouping in primary mathematics teaching.

The title of this extended review of literature and research proposal may suggest a sense of feeling lost, yet these words were chosen with careful deliberation. Advancing *beyond familiar territory* indicates the influence of Foucault (2002, p42) where the phrase 'familiar territory' pertains, in this instance, to the use of attainment grouping for the teaching of primary mathematics. *Mixed attainment grouping* is also a deliberate choice, where mixed is defined as 'consisting of different qualities or elements' brought, in this research, by the children (Oxford online dictionary, 2021). Mixed could prove to be problematic from the research point of view as mixed could take the form of an infinite number of variables; a mixed attainment group could simply be three or more children picked at random or it could be an entire class of nine and ten year olds. This dilemma will be explored further in the research methods chapter.

A further decision was made to employ the term *attainment*, as opposed to *ability,* used in some research. The reason for this being that learners are generally allocated to groups according to academic attainment (based on tests, teacher assessment) as opposed to tests of perceived ability. This definition is further supported by a scheme widely used by English schools. In their teaching of primary mathematics - White Rose Maths (2021). Grouping and group are equally problematic in achieving clarity of definition. The Oxford dictionary of social work and social care, defines a group as 'A number of individuals with a shared sense of identity and/or who are bound together by interaction with each other.' Within the field of education, Lleras (2013, p1), defines grouping as 'the common educational practice of separating students based on actual or purported ability in the same grade into different instructional groups with differing levels of aptitude or achievement.' Note the use of 'purported'. Doubt is cast upon the judgements of ability being used for grouping the learners. This doubt is a valid point as will be explored later in this chapter. In the earlier definition, there is a suggestion that the grouping is a social enterprise, which encourages an interaction and has or leads to a common sense of

identity. This will form an important part of the research preparation. More worryingly, the first definition from social work uses the term bound. As will be shown later, children set in lower groups do indeed feel bound to this common identity of being lower than others and this bond can remain with them for life. (Boaler, 2017)

Leat, Read and Lofthouse (2015) point to the notion of contradiction and conflict as having a possible impact on this proposed research. As a result of examining the increasingly value-laden terms, in the titles of the key specialism-specific literature, it is perfectly reasonable to expect contradiction and conflict. From the 1940s to the 1990s, an analysis of 118 papers' titles highlights the use of terms such as comparison, study, effects and characteristics (Sukhanandan and Lee, 1998). There were two notable exceptions:

i)Rosenbaum (1976) 'Making inequality: the Hidden Curriculum of high school tracking' where tracking is the US term for streaming, and

ii)Draisey (1985 in Veenam, 1995) entitled 'Vertical grouping in the primary school - a positive view'

could be seen to draw attention to the growing debate around grouping children by attainment (setting and streaming) or age (vertically) in the US and UK. These two titles flag the sensitivity around pedagogical choices. Literature published between 1991 to the late 1990s uses less neutral language in the titles: survival, winners or losers, polarisation, failure and underachievers (Sukhanandan and Lee, 1998). Literature published on the topic of setting and streaming since the early 2000s is much more charged: sacrificial, saving, symbolic violence, necessary evil and master narrative (Open University Library search).

The shift in language choices for titles, around the topic of grouping by attainment, is important to note. For the critical theorist paradigm, power relations and particularly those of competing political groups is recognised as a mediator of knowledge (The Open University, 2020a). The effect of changing language in titles is further discussed in the critical narrative reflection.

At this juncture, the interpretative review of literature follows. In order to find the virtuous path advocated by Aristotle, this research must move beyond mere curiosity. Hammersley (2004) asserts that the audience is the primary issue. This view supports the need for research that not only addresses educators with respect but also provides motivation and markers to travel beyond familiar territory. In light of this, the review endeavours to explore the topic holistically, mindful that the findings should not be imposed upon educators. Rather, the three themes to be explored - identity, agency and inequity - could add landmarks or signposts to facilitate educators' advancement beyond their familiar territory.

THEME 1 - Identity

This chapter reviews the exploration of identity from the perspective of the educator. This is important in light of the three proposed research questions that may be later amended with participants of the research:

> RQ1 How do educators describe experiences of learning and teaching when grouping primary school-aged learners for mathematics?

> RQ2 How do educators describe experiences of observing the learning and teaching of mixed attainment grouping of primary school-aged learners for mathematics?

> RQ3 Following research and training, how do educators describe experiences of learning and teaching when using mixed attainment grouping of primary school-aged learners for mathematics?

A discussion of the methodology pertaining to these questions follows at the end of this chapter. However, it is useful to hold the questions at the forefront of the thematic review of the literature. It is useful, as they constitute the friendly voice of a satnav device guiding the research forwards with purpose, potential and protection (The Open University, 2020c). As the researcher, there may be times when the process requires redirection, especially in action research, which is where participatory activist research sits, but the initial three questions provide the starting point.

Encouraged by Ernest (n.d, p9), and his view of 'the complex and multifaceted connections between beliefs and attitudes to mathematics', the first theme of identity framed a key area of the extended literature review. Jackson (2014, pp 34-35) elicited the following notable responses from educators to his question about attitudes - to not grouping by attainment - across the primary curriculum:

'...what many theorists fail to realise is that there are 'A', 'B' and 'C' teachers in the same way as there are 'A', 'B' and 'C' children' *Headteacher, Coventry*

'Those who teach less gifted children are either dedicated or lack the drive of the 'A' stream teacher.' *'A' stream teacher, Croydon*

'Many 'C' stream teachers would not feel competent to teach children who are often brighter than themselves.' Headteacher, Huddersfield

The judgments that are being made of colleagues and fellow educators in this small extract are but a sample of how the impact of grouping is perceived to extend beyond the identity of the learner to the identity of the educator. This formation of identity did not remain within the educational establishment as a 'C' stream teacher noted that many of the public referred to her as someone who is only a bottom set educator. The implication being that her own capabilities must reflect those of the lowest attaining children in her group. These findings were later echoed in an extensive literature review carried out by Sukhanandan and Lee (1998). Teachers with the most experience and who are the most qualified are often assigned to the highest attaining group of learners. In what could be

seen as a self-fulfilling prophecy, teachers' identity becomes more or less valued depending on the set they teach as the results obtained from their learners contribute to the public face of the school. This is supported by the suggestion that the work of teachers 'demands the continuous negotiation of professional identity' Vahasantanen et al. (2008, in The Open University, 2018a).

Professional identity of the educator also seems indicative of whether they support the practice of mixed attainment teaching or not. This practice could be situated within any of the three main theories of learning: behaviourism, constructivism or sociocultural theories (Murphy in The Open University, 2019a). Yet, in research dating from the 1970s, educators who were identified as knowledge centred, encouraged competition and took a more traditional approach to discipline were more inclined to set. On the other hand, teachers, in the study, more inclined to advocate mixed attainment grouping were labelled as more permissive, child-centred teachers (Barker and Lunn, 1970, in Ireson and Hallam, 2001). What is not clear from Ireson and Hallam's discussion is whether this identification was imposed upon the teachers or self-identified. If, as suggested by Vahasantanen (2008), the teachers' identity undergoes a process of constant negotiation and that how a teacher identifies themselves (behaviourist, constructivist, socioculturalist) marries their level of scepticism for mixed attainment teaching, then this points to a possible pathway for advancing educators beyond familiar territory. This is a useful point to explore in relation to all three research questions and will be discussed later in the methodology aspect of this chapter.

This examination of professional identity through the literature is complex. Professional identity and agency are interrelated (The Open University, 2018a). The literature interrogated here has drawn attention to a possible link between professional identity and selection of attainment or mixed attainment grouping practices (Appendix 1, example2). The link between the individual educator's sense of agency and identity invites the second theme of this extended literature review into mixed attainment grouping practices for the teaching of primary mathematics.

THEME 2: Agency

This research takes the view that agency is emergent and dependent on the socio-cultural setting as defined by Priestley et al (2014, in the Open University, 2018b):

'Actors will always act by means of their environment so that the achievement of agency will always result from the interplay of individual efforts, available resources, and contextual and structural factors, as they come together in particular and, in a sense, always unique, situations.'

This is in keeping with the episteme of the chosen paradigm (critical theory) and has led to three research questions that are likely to create 'answers' through a conscious interplay as cycles of research and action evolve. These 'answers' to how educators describe their experiences and map their scepticism of mixed attainment grouping for primary mathematics teaching will emerge *depending on* the construction and mediation that occurs. (The Open University, 2020a). Reflecting further on the definition, the four criteria for achievement of agency may assist navigation through problems that arise in the research period.

The extended review of agency within the literature of the chosen topic is useful for helping to frame the current understanding of educator scepticism and the evidence on which this is based, particularly around the theme of agency. Taylor et al (2017, p330) identifies 'research evidence against setting and streaming is being overlooked by schools when it comes to 'ability' grouping practices.' The current drive towards evidence-informed practice from government, policy and professional unions as well as journals (Coldwell et al, 2017) makes this a particularly important point. With educators being encouraged by many within and out with their contexts to use research evidence to inform best practice, the scepticism towards mixed attainment grouping seems unfounded.

The environment (particularly driven by parental influence), the resources, the context, the structure of primary mathematics learning and teaching must, by default, be perpetuating the use of homogenous attainment grouping. Yet evidence of this is hard to

locate. As mentioned earlier, the widely used White Rose Maths Scheme does not advocate attainment grouping, nor does the structure of its resources. The National Centre for Excellence in the Teaching of Mathematics, in relation to secondary school children 'neither encourages nor discourages streaming, setting or mixed attainment teaching'. Recently published findings from Coldwell et al (2017) asserts:

'Most teachers interviewed did not feel confident in engaging with research directly, or feel able to judge its quality, relying on senior leaders and other organisations like the Sutton Trust and the Education Endowment Foundation (EEF).'

This has important implications for the proposed research. The structure of the three research questions builds time and opportunity to engage with and develop confidence with an optimistic view towards building a greater sense of professional agency.

Headteachers, as professionals who perhaps have the greatest agency in how children in their school are grouped for learning, cite the pressure from the National Curriculum Tests as the reason for grouping learners by attainment (Bradbury, 2018). This point and the link to power relations, however, was explored in earlier literature. Archer et al (2018, p 122) argued 'setting legitimises and hides the uneven distribution of power (and)...is a pedagogic action.' This negative impact of professional agency (negative in that it describes educators perpetuating the enslavement of some students to serve the success of others; some learners must form a 'bottom' group if there is to be a 'top' group) is understandable if not justifiable. However, the subjective language increasingly used when discussing this topic needs to be approached with caution. This will be an important consideration in the approach taken in the research design.

The 'pedagogic action' of setting could be argued to arise from the uneven distribution of power being exerted upon leaders, and creators of learning, from the high stakes testing environment. Reay (2012, p1) describes this relationship as akin to 'minnows being hunted by the pike', where there is clearly an imbalance of power and the actions of one

are deemed predatory. Archer et al (2018, p1) continue this notion of aggressive acts being perpetrated, in the familiar territory of attainment grouping, when they discuss the 'symbolic violence' of setting. Learners agree to being put into groups by attainment because they trust their educators are doing it to help them learn. Although it is important to note here that not all learners will agree and will not be docile in their acceptance, yet their actions and reactions simply affirm that their behaviour needs to be kept from the high achieving sets as it will disrupt achievement of the children placed in those sets. Research continues to emphasise the oppressive nature of the misguided sense of professional agency when educators ignore the research and continue to use attainment grouping. The scepticism of mixed attainment grouping ensures the 'achievement-motivation master narrative' (Zavala and Hand, 2019, p803) is the dominant discourse in school and so disadvantaged learners are themselves to blame for not achieving positions in the higher sets.

Chapter 3 will later explore the effect power has on educator scepticism in greater depth. It will also explore why this has created an apparent gap in teacher agency to take the research and act upon it to benefit the teaching of mathematics in the primary school.

The final theme closely bound to professional identity and agency - inequity - will now be explored.

THEME 3: Inequity

Where the familiar territory of setting learners by attainment for the teaching of primary mathematics is negatively affecting learners (Oakes, 1985 in Archer 2018; Wiliams and Bartholomew, 2004; Boaler et al, 2000), mapping educators' scepticism to the alternative (mixed attainment teaching) is justified. Macqueen (2013, p298) suggests it is justified where it reduces 'discriminatory social effects'. The aim of the English mathematics curriculum for primary schools states that all pupils should become fluent, reason mathematically and solve problems. The same document goes on to state

'Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.' (DfE, 2013, p3)

Inequity of provision seems to be built into the very documents guiding teaching practice in schools. Educators justify attainment grouping as a way for learners to be given the consolidation practice they require, as if all low attaining learners in mathematics require the same consolidation practice. William and Bartholomew (2004, p281) assert 'primary schools are making use of ability grouping because they believe that this will help improve scores on National Curriculum tests'. This is perhaps the greater driver than ensuring low attainers are given the consolidation practice they require.

Yet, if all of the consolidation opportunities afforded learners in lower sets is effective then the Education Policy Institute's report (Hutchinson, 2019) would not be pointing to the stagnation in the narrowing of the attainment gap between advantaged and disadvantaged learners. Whilst this extended review of literature has to concede that the gap, in primary schools, is continuing to close, disadvantaged learners, including those most likely to be positioned in lower sets, still lag 9.2 months behind their more advantaged peers. An interrogation of this gap is needed.

The 2019 annual report from the Education Policy Institute suggests negative factors acting on learners from socio-economically disadvantaged backgrounds alongside positive factors acting on children from socio-economically advantaged backgrounds creates this gap. Ball (2014, 29:00) elaborates on this point by indicating the role a family's financial resources play in supporting the education of learners from advantaged backgrounds: music lessons, sports clubs and academic tuition. The interesting point being made here, when examining the learners placed by educators in 'top' or 'middle' sets is that learners have come to school having received extra support that has made their attainment in the higher and middle sets more possible. These students, it could be argued, are not higher attainers through an innate ability. Rather, they have simply been better prepared for the attainment measuring systems as a result of life experiences.

A further study (Wright, 1986 and Strand, 2010, both in Strand, 2012), also draws attention to the impact of setting in exacerbating inequities for Black and Black Caribbean learners. With this in mind, and through the three proposed research questions, it may be possible to examine these inequities and for the educators' understanding to grow as new experiences are added through the research. Just as coordinates develop accuracy in mapping, these experiences may clarify the scepticism this research aims to explore.

The co-operative interaction of the research, the provocation of semi-structured interviews and the cycles of reviewing and acting may allow educators to reexamine grouping practices in a fresh light; the research may reveal a path to mixed attainment grouping practices that had not been considered previously.

Nussbaum (2003) in Robeyns (2006, p79) supports this view of education by encouraging the research to look beyond pedagogy to the development of the full human being, instead of stunting children in their emotional, personal and intellectual development . This is a powerful point within the theme of inequity and the educators' scepticism of mixed attainment grouping. Attainment grouping could be seen as an erosion of the dignity of the individual. This is starkly illustrated by Wiliam and Bartholomew's study (2004, p288)

which identified, from their sample of schools, that students in lower sets could be as much as three grades behind at GCSE than their peers in higher sets. A GCSE grade is not necessarily the be all and end all of education, yet the dignity that is associated with having done well in education is worth noting. A learner, Hannah, in Reay and William (1999, p345) worries:

'I'm really scared about the SATs [standard assessment tasks]. Mrs. O'Brien [a teacher at the school] came and talked to us about our spelling and I'm no good at spelling and David [the class teacher] is giving us times tables tests every morning and I'm hopeless at times tables so I'm frightened I'll do the SATs and I'll be a nothing'.

Capitalist, human rights or capabilities: whichever view of the purpose of education is held 'being a nothing' is not a valuable outcome. Both authors of this research recognise that this is a small sample of voices. However, this literature review and extended research proposal into the mixed attainment grouping of learners for the teaching of primary mathematics does attempt to map out the extent to which ... teacher identities and practices are being modified' (Reay and Wiliam, 1999, p352) and extend this to envisioning how education, particularly that of primary mathematics, could change for the better.

Discussion

This extended literature review and the interrogation of the ideas that have come before has attempted to identify why advancing beyond the familiar territory of attainment grouping for primary mathematics teaching is worthwhile. By reviewing the literature, the research focused attention on the identity and agency of the educator in order to create a more equitable education. Another important point for discussion is the lack of evidence demonstrating unequivocally that mixed attainment teaching contributes to equitable education and has a positive effect on educators' sense of identity and agency. One study, Taylor et al (2017, p334) describes in detail the process undertaken by researchers to engage schools with research into mixed attainment teaching:

16

'At the end of the (intensive) recruitment period, 122 mathematics departments and 85 English departments had been recruited to the Best Practice in Setting trial and 17 schools to the Best Practice in Mixed Attainment trial. Hence, although the team were eventually successful in recruiting and exceeding the targeted number of schools to the Best Practice in Setting trial (target 120 schools), it proved impossible to recruit the required number of schools to the mixed attainment trial, even for our far smaller intended sample (target 20 schools in the London area; achieved 17 across the country). This was despite incentives such as the association for schools with the Education Endowment Foundation (which plays well externally for schools and for inspection, given the implication of commitment to evidence based practice and to 'narrowing gaps') and a financial incentive for schools randomised to the control condition. This finding indicates a reluctance of schools to engage with mixed attainment practice.'

This could be disheartening from the point of a novice researcher proposing to research an area (educator scepticism of mixed attainment grouping for the teaching of primary mathematics) that faces such reluctance from teachers to participate. However, much has changed since 2017 and three key events suggest this extended literature review and research proposal have a role to play. First, increased scrutiny, in the UK as well as globally, of racial injustices sparked by the death of a George Floyd (Saffi, 2020) has brought issues of inequity to the fore, including within education. Growing public action over climate sustainability (McGrath, 2021) has highlighted the adverse impact of climate change on disadvantaged groups in particular and consequently has educators questioning how they can teach and best develop the capacity of learners for more sustainable futures (The Open University, 2018b). Finally, the global COVID-19 pandemic, which saw hastily arranged assessment procedures put in place negatively affecting learners in socio-economically disadvantaged areas (Mohamed, 2020). This was further highlighted in a study, which pointed to, 'findings (that) indicated that the gap between low and high attainers is also likely to increase considerably. Identifying ways to address this growing gap is a matter of urgency.' (Hodgen et al, 2020, p21).

In light of these three key events, it is with cautious optimism that this research finds its

place in studies of childhood, youth and education. Advancing beyond familiar territory may help to narrow the gaps between educators who advocate setting in mathematics and those who do not. Even more significantly, it may even emancipate educators from their scepticism and thereby address the negatives of attainment grouping. Careful framing of this research will be key to its credibility and dependability (The Open University, 2020d).

The framework will now be explored in chapter 3.

CHAPTER 3: Literature review - the conceptual framework

Walsh (2017, p13) asserts that ethical and rigorous research 'requires an extensive examination of the literature and an "open ear" to new ways of thinking and doing. It is an iterative process that requires reflection on your own assumptions and preconceptions. It requires dialogue with colleagues and where relevant, your participants.' Earlier, in the introduction of this extended literature review and research proposal, a suggestion was made that it would be unethical to assume that through the mapping of educators' scepticism of mixed attainment grouping for primary mathematics they *will* advance beyond familiar territory and abandon the practice of setting. This leads to one of the key theories driving this proposed research: 'knowledge and action are linked' (Murphy, n.d. in The Open University, 2018c).

In the previous chapter, it was evidenced that there is a gap between the research, spanning almost six decades, which indicates the negative impact attainment grouping can have on learners and learning, and the actual practice of educators, for whom the majority view is attainment grouping 'works' (Tereshenko et al, 2019; Hallam and Parsons, 2013; Reay, 2012; Macqueen, 2013; Zavala and Hand, 2019;Archer, 2018; Francis et al, 2017; Campbell, 2014;Parsons and Hallam, 2014; Connolly et al, 2019; William and Bartholomew, 2004). Aside from the recent increase in setting for phonics teaching in early primary, the research shows attainment grouping is prevalent mostly in mathematics teaching. A further critical finding from Francis et al (2017, p13) suggests 'mobilisation of alternative narratives with a ...discursive power' is the 'only way' to counter this 'relative lack of impact' of research on the scepticism of educators to mixed attainment grouping.

Foucault's influence on this proposed research, introduced earlier in chapter 2 relates discursive power to 'the practices (or operations) of discourses, meaning knowledge formations, not to linguistic practices or language use. The focus is on how knowledge is produced through plural and contingent practices across different sites.   Such an approach bridges a symbolic-material distinction and signals the always political nature of "the real" Bacchi and Bonham (2014, p173).

The 'political nature of the real' is an aspect worth exploring further. The policy and subsequent practice of using attainment grouping is politically driven. For example, in a speech made by a previous Conservative Prime Minister,

"Every parent knows that children do best when they're engaged at the right level of ability," he said. "So I want to see setting in every single school. Parents know it works. Teachers know it works. Tony Blair promised it in 1997. But it still hasn't happened. We will keep up the pressure till it does." (Cameron in The Guardian, 2006)

 this is reflected by the increasingly charged language of the most current research - which was examined earlier. This in itself could be one of the underlying reasons why the wealth of research, advocating a move away from attainment grouping, is largely ignored. Politicians. Policy is driven by their electorate. Research from one study (admittedly in the US and it would be interesting to see if a UK study achieved the same results) observed:

"I want my child to be tracked with peers of equal ability." A majority (74.4%) of the parents either agreed or agreed strongly with this statement' (Ansalone and Biagofa, 210, p7)

Returning to the educators' voice , it is reasonable to suggest that the extensive research has failed to heed the warnings of Wiliam and Bartholomew (2004, p279): '... the day to day practice of a teacher is so intimately linked to the teacher's personality, many aspects of teacher's practices are difficult to change'. Teachers, by virtue of their profession, are middle-class (Cambridge English Online Dictionary). It is not within the scope of this paper

to examine this further, but it may prove useful to 'keeping the ears open' throughout the period of action research and returning to the literature if teacher class proves to be worth closer scrutiny in terms of bias, shaping reality or mapping scepticism.

When teachers' own conceptual frameworks align more closely with the behaviourist epistemology, evidence discussed in chapter 2 indicated that educators were far less inclined to advance into the unfamiliar territory of mixed attainment teaching (Barker and Lunn, 1970, in Ireson and Hallam, 2001). This does not mean that educators' truths are static, fixed and ordered and will *never* use mixed attainment teaching. However, it is an ethical issue through the cycles of action research, that 'respect for the privacy, autonomy, diversity, values, and dignity of individuals, groups and communities' involved in the research is foremost in the discovery of alternative narratives to current scepticism (Oates in The Open University e, 2020).

From the extensive literature review, behaviourist and constructivist frameworks have been rejected, in favour of a socio-cultural view. Whilst the differences between the social constructivist and sociocultural are sophisticated, and some would argue two vital pieces of the same puzzle (Packer and Goicoechea,2000) it is important to clarify the lens through which the three research questions were shaped and how the seeking of understanding will be approached. Packer and Goicoechea (2000, p227) first draw attention to the novice and expert aspect of the sociocultural relationship for co-constructing knowledge.

The mantle of expert may not sit comfortably on this researcher. However, it cannot be denied to exist or to shape the revision of knowledge of participants. This is particularly true in the proposed research and how experiences of learning, in both attainment and later mixed attainment grouping are described by the participants. Following research and training, a shift from novice towards expert could alter the proposed research participants' knowledge of mixed attainment grouping and thereby emancipate them from their scepticism. This is irrespective of whether they feel bound by their scepticism or not. It is not entirely inconceivable that the framework may shift towards that of socio constructivism as the power relations between expert and novice become more balanced.

This is where the participatory activist research approach and constant revisiting and returning to literature may prove useful.

The proposed research is asking educators to advance beyond familiar territory. It is asking educators to map their scepticism of mixed attainment for the teaching of primary mathematics. The research does this through three key questions: mapping descriptions of their experiences of attainment grouping (through teaching and observing); mapping descriptions of their experiences of mixed attainment grouping (this time through observation only) and finally, after a period of research and training, to map descriptions of their experiences of mixed attainment grouping for the teaching of primary mathematics. Ontologically, the sociocultural theories suggest that the learning, if any, that participants will experience as they map their scepticism, will develop through being 'an integral part of generative social practice in the lived-in world (Lave and Wenger, 1991, p35). Where Lave and Wenger suggest 'full participation does justice to the diversity of relations involved in varying forms of community membership', this proposed research would strive to achieve just that. This 'justice to the diversity of relations' is critical to the purpose of knowing about teaching. As Cochran-Smith and Lytle (1999, in the Open University, 2019c) asserts, knowledge about teaching can be categorised thus:

-knowledge *for* practice   -knowledge *in* practice   -knowledge *of* practice

It could be argued further, that by taking part in this research, educators take the first steps and may come to understand that the nature of *their* reality is contested by the nature of the reality experienced by their learners and that this is particularly true when grouped by attainment for mathematics lessons. This will be outlined more fully in chapter 5. Consequently, this mediation and revision could alter the maps of scepticism being created throughout the period of the research. This step would support educators in 'freeing themselves from prevailing truths around setting and ease the adjustment to more complex and diverse' teaching. (Cohen, 2008, p17). Additionally, this mediation and revision could help to develop the understanding from the research to the practice. This point fundamentally takes the epistemic person into the realm of the sociocultural theories for it rejects the constructivist view (especially that of cognitive constructivism) where 'a

person is fundamentally unchanged by the construction of knowledge' Packer and Goicoechea, (2000, p228). This also connects to the notion of agency discussed in theme two, of chapter 2, where Priestley et al (2014, in the Open University, 2018b) refer to it resulting from the interplay of different factors.

Participants in this research, although sceptical, need to be open to the possibility of change. Ethically, leading the research, sensitivity to challenged personal identities as well as professional ones is a real concern. Yet, this is not a concern which should prevent the proposed research from taking place, rather an awareness and sensitivity to the power at play. Power, which Foucault would contend is always present.

With Foucault's concept of power always being at play, shaping the conceptual framework of the proposed research, one contradiction does arise. The sociocultural view, that learners are agentive (Murphy, n.d. in The Open University, 2019c) seems to be at odds with Foucault's suggestion of the need for docile learners. However, as the personal understanding of Foucault's work grew, the image of a self-regulating educator who is under the control of the norms of the policies, practices and preferences that have been accrued or developed through teacher education, continuing professional development and collegiate influence began to form (Mills, 2012). The place of this 'docile body' within the proposed research does not sit comfortably as it seems to suggest that 'achieving competence in socially valued activities' is the factor feeding educators' scepticism of mixed attainment grouping for the teaching of primary mathematics. Socially valued activities include preparing children for high stakes tests and this leads to the dominance of attainment grouping.   The difficulty of researchers to recruit schools to a trial of best practice in mixed attainment grouping practices demonstrated just how 'docile' educators have become (Taylor, 2017). The norms of current primary schools perpetuate the grouping by attainment practice; policy to have every child meeting expected standards perpetuates the scepticism with fewer colleagues' teaching practice (utilisation of mixed attainment grouping) illustrating a viable alternative. In light of this, it is a reasonable hope of the proposed research, to make the same shift as Foucault. That shift is from the docile bringing about 'normalisation' to 'biopower' bringing about 'disciplined, thoughtful,

practice constructions of the self that themselves reflect knowledge about what is proper, correct, educated, sophisticated, and sane' (Mills, 2010,p3) .

 The purpose of this proposed research is to gain a deeper understanding of educators' scepticism.   In particular, how educators make sense of attainment grouping practices (and later mixed attainment grouping) in their own minds and in their own words (Cropley, 2021, p5). This is important. The extended literature review has shown there is a wealth of research that indicates how *researchers* have made sense of the topic. The importance lies in there being very little shift in practice to adopting recommendations or findings from the academic research. By selecting a methodology that takes a qualitative approach, with a particular focus on educators, the research may help to shed light on how the educators' reality of grouping for teaching primary mathematics is constructed and deepen understanding of their scepticism towards mixed attainment grouping. This uncovering of the truth (Elhaggagi, 2021) could then point the way to actions that facilitate the reduction of scepticism.

Taking a qualitative approach is not new in this area of research. Nor is a quantitative approach. Randomised Control Trials, mixed method studies, longitudinal surveys, use of focus groups and case studies have all formed part of the rich landscape that examines grouping practices (Connolly et al, 2019; Macqueen, 2013; Parsons and Hallam, 2014; Zavala and Hand, 2019; Marks, 2016). What appears to be notable by its absence is a methodology that strives to uncover the educators' truths and this is why there could perhaps be a lack of influence from the research on the practice. Influence on policy, especially at government level, is purposefully omitted, as there is not enough scope within this research proposal to address impact on policy at that level.

It should be clear at this stage that one of the greatest concerns around the topic for this researcher, and many others, is 'with power relations, decision making and action' (Griffiths, 2009, p2). Through the methodology of action research, Griffiths cautions that any social justice achieved through this proposed research 'will always be subject to

revision'. As an educator, with almost 25 years of teaching experience, this is recognised as a positive, for revision brings hope and a fresh opportunity to challenge the hegemony of setting as well as to justify the position of mixed attainment grouping. This positionality is important and is not clear-cut. The personal internal struggle of this researcher to see educators' scepticism diminish, if not vanish, strains against an equally strong desire for participants in the research to envision, for themselves, how things could be better. Their truths may even reshape the truths of this researcher. In recognition of this struggle, guidance is provided by turning to Henderson (2010, p3) as she explores Drummond and Themessl-Huber's Deleuzian enrichment of the cyclical process of action research. This problem, and any others that may arise from the action research with its dialectical element, is a positive:

'...problems are not something to be overcome rather they give rise to thinking...they are...a positive to be played with through the affirmation of what is taking place in the actual opening up of the virtual background.' Henderson (2010, p3)

This 'virtual background' is the unknown element alluded to before; something *within* all participants that may come to be real through the action research process and impact on the cycles of the process. This unknown is exciting. It is also something that has driven the choice of 'describe' in each of the research questions and the use of concept maps to record these descriptions. This choice of verb, and open-ended method, leaves control of the content and its presentation to the participants. Coghlan (2010, p290) suggests 'Whilst we might not know yet if a particular current search is intelligent, we anticipate intelligent answers. Understanding occurs at the intellectual level of consciousness as we move beyond experience to explanation.' This explanation may help to develop an explanation of their scepticism and thereby advance their teaching. It is also recognised that this may not occur and thereby introduce a new problem. However, regardless of the problem or problems that do arise, this awareness ensures that the proposed research is carried out democratically, with integrity and importantly with regard to our social responsibilities (BERA, 2019).

The details for this research proposal can now be set out.

CHAPTER 4 - The research proposal

Advancing beyond familiar territory: mapping educators' scepticism of mixed attainment grouping in primary mathematics teaching.

The familiar territory, as identified in the extended literature review, has a number of key features. It is a territory where educators, since the early 1960s (Jackson, 2014) predominantly make the pedagogical decision to group learners by attainment. This decision is influenced by policy (DfE, 1997; OFSTED, 2013; Gove, 2007). This decision is influenced by practice. The introduction of in-school teacher training programmes such as School Direct, Teach First and SCITT (School Centred Initial Teacher Training) results in newly qualified teachers being introduced mainly to the dominant grouping practice of setting, particularly in phonics and maths. This decision is also influenced by the personal experiences, values, beliefs and cultures of the educator (Freire, 1996; Hallam and Parsons, 2013). Some would add class to this list (Wrigley, 2012; Reay, 2017).

Advancement beyond this territory has been identified, through the literature review, as necessary. It is necessary for a number of reasons; all are arguably of equal importance and interlinked. First, the impact on educators' identity and agency and the negative lifelong impact of the educators' decisions on learners' sense of self when grouped by attainment (Mulkey, 2005; Catsambis, et al 2001). Second, as a way to redress, if not completely eradicate, inequitable practice in education. (Boaler, 1997). Finally, to fulfill the legal requirement of state education:

'promote the spiritual, moral, cultural, mental and physical development of pupils at the school and of society, and prepare pupils at the school for the opportunities, responsibilities and experiences of later life.'   (DfE, 2013, p5).

Exploring educators' scepticism is the next step. It is the next step for a number of reasons. First, the wealth of research discussed in the literature review focuses predominantly on the voice and experience and outcomes of the learners (Tereschenko et al, 2019;Boaler et al, 2011)). Now this research proposal agrees with the validity of

that focus. It is welcomed and lends strength to this proposed research, for without learners, there is little need for the educator! Second, the path to improved education outcomes (be those based on the human capital model, rights or capabilities) requires the involvement of educators (Stoll, 1998). It also requires many other agents, but that is not within the realm of possibility for this research. Taylor et al (2017) cite educator scepticism as one of the barriers to adopting grouping practices based on mixed attainment. This research proposes to add to the topic by developing understanding of why that scepticism persists. For reaching, an understanding could lead to new directions for the advocacy of a more inclusive, socially just approach to primary mathematics education in particular.

Much of the literature review refers to mathematics education and the prevalence of setting or attainment grouping. This is where my positionality needs to be clarified. I have taught for 24 years. I have watched learners react or perhaps worse, submit, to the processes involved in grouping by attainment. I can hear the voice of one 11-year-old boy, raised in anger as he stood to knock over his chair and declare, 'No! I'm not in the dumb group!' I have listened as a senior leader explained how it was upsetting that we were withdrawing our own son from school as 'he is one of the high achievers' and that would impact, in its own small way, the schools' overall test results. Moreover, I have seen the opposite. I have seen educators make choices that oppose policy of setting and instead chosen to empower learners... and the conflict this brings to their sense of professional and personal identity.

It is by acknowledging these experiences and the part they play on positionality that this research proposal now further details the development of the research questions. In the beginning, the research question stood as:

What impact do best practice examples of a Learning without Limits (Hart, 2004) approach have in raising attainment in primary mathematics?

In light of tutor advice and developing understanding of the process of research in education, I began to spend much more time on the overarching title, which in turn led to

asking how understanding could be created. A significant point was coming across Striepe (2020) and her publication regarding concept mapping and semi-structured interviews. A skype conversation with Striepe (2021) confirmed the validity of these methods to explore the topic and my position in terms of uncovering truth. In light of this, and further advice (Elhaggagi, 2021) to consider the role of each word, the questions developed from 'What factors in the English primary school system contribute to scepticism about the benefits of mixed attainment teaching?' to 'Why are stakeholders skeptical about the benefits of mixed attainment teaching?' They now stand as three questions that will form the basis of the concept maps and semi-structured interviews through cycles of participatory activist research:

> RQ1 How do educators describe experiences of learning and teaching when grouping primary school-aged learners for mathematics?

> RQ2 How do educators describe experiences of observing the learning and teaching of mixed attainment grouping of primary school-aged learners for mathematics?

> RQ3 Following research and training, how do educators describe experiences of learning and teaching when using mixed attainment grouping of primary school-aged learners for mathematics?

The research design now follows.

CHAPTER 5 Research design, research methods and methods of analysis

There is a way to create education by asking questions and searching for evidence. It is creating education by asking about intentions, by determining their worth, by appraising resources, by identifying alternative strategies, and by monitoring and evaluating outcomes. It is creating education through systematic and critical enquiry. It is creating education through research.   Bassey (1992, p3)

These sage words of advice are the compass with which this novice researcher checks the direction of the overall approach to advancing beyond familiar territory. They confirm the bearings of the participatory activist research as it strives to develop understanding of educators' scepticism to mixed attainment grouping for the teaching of primary mathematics.

The ontological assumption, in the context of the socio-cultural conceptual framework and critical theory paradigm position, is that what can be known and how it can be known is continually contested by opposing groups but *may be* objective. This is an important distinction from the interpretivist paradigm where reality is said to be subjective. In light of the increasingly charged language of the most recent literature, the decision was made to *try to seek* objective truth (The Open University, 2020a). Participatory activist research has been selected as the appropriate methodology for the virtue that all the participants of the research are recognised and valued as knowers; their presence will help to co-construct knowledge that chapter 2 showed is yet to make any significant impact on shifting educators' grouping practices towards mixed attainment (Appendix 1, example 1).

Seeking the most suitable method to:

-facilitate this co-construction of knowledge,

-respect the truth that each participant brings to the proposed research,

-create opportunities for respectful and considered mediation

led to the selection of participatory learning and action - especially activist participatory research. In so doing, an opportunity is created for either this novice researcher to act as a facilitator or for an invitation to be extended to a more experienced researcher, in this topic area, to be invited as a catalytic presence. (Coghlan and Brydon Miller, 2014, p601). One possible ethical dilemma arising from this decision is the notion of 'actively contributing to the goals of the individuals and the groups involved in the research' (Pickerill et al, 2021, p3). The identification of mapping educators' scepticism of mixed attainment grouping, as a goal, by this novice researcher, may not prove to be a goal for any other educator in the current context. This could prove an obstacle in the recruitment of participants - as it has for researchers identified in the literature review. Turning to Pickerill (2021, p5), there appear to be seven interlinked actions that could point a way forward for the proposed research:

1. 'Learn more about the school and the context in which it is operating.'

Linking back to the research title, this is ensuring there is a solid understanding of the 'familiar territory' and what political, professional and personal dimensions (Noffke, 2021) may contribute to or help define the research problem so that it receives group investment. Where the school context may prove too small a base from which to involve participants, this novice researcher would suggest turning to the local unions representing staff involved in primary education. A strong supporting factor of this approach came to light in the literature review, where the National Education Union has already invited and published research exploring the impact of attainment grouping (Bradbury and Holmes, 2017). Exploration of participatory methods identifies that a 'World Cafe (WC)' approach could create the conditions necessary to include as many voices as possible in mapping

the familiar territory in order to find a common goal or problem. Löhr (2020, p9) :

'The WC process facilitated a broad exploration of the research topic, resulting in a large number of ideas. It is a good entry method in research, as it can bring out major themes and topics important for the group.'

This entry method as advocated by Löhr would prove useful as the first step of the participatory activist cycle. What is particularly important to note is the questions that would drive this World Cafe would contribute to the initial research question:

RQ1 How do educators describe experiences of learning and teaching when grouping primary school-aged learners for mathematics?

As the catalyst or facilitator, potential sub questions could be:

i) List factors that drive your decisions for grouping your learners for mathematics.

ii) Being mindful not to reveal colleague or learner identities, share any anecdotes you have overheard or observed, relating to children being grouped for mathematics - including interventions.

iii) Describe any moments when grouping practices have left you feeling uncomfortable or puzzled, dissatisfied or another adjective of your choosing.

iv) List questions you have around the issue of grouping by attainment/setting for mathematics.

Considering earlier struggles to recruit participants, this could create an opportunity for creating a community of educators who are *curious and willing* to advance beyond familiar territory. Taking Arnstein's Ladder of Citizen Participation as inspiration, this consultative step already takes the topic beyond educators implementing research because leadership teams or policy dictates. Rather it presents a significant step in the empowerment of educators to map their scepticism (if any), articulate a shared goal and then, within the participatory activist cycles, work towards that goal.

2. 'Connect with key individuals.'

The epistemology of the paradigm in which this research sits, will examine the way power relations mediate the knowledge required to address the identified problem. It is impossible, at this stage, to imagine who the participants would be, particularly if recruiting will come from beyond the single school context as a result of the World Cafe approach outlined earlier. Connecting with the maths lead within the school would be an extremely positive step as this recognises the great responsibility this post holder has within the organisation. It would also be extremely useful to consider inviting the maths mastery team for the borough in which the school is located, as this would bring a degree of subject specialist knowledge into the group. However, it is useful to note that although power does come with hierarchy and specialist knowledge - this is not guaranteed. Knowing previous research in this topic has struggled to recruit participants, this researcher's view is that it would be better to include and negotiate, as opposed to restrict participation, in order to embrace and negotiate conflicting power relations. With the deployment of learning assistants and higher level teaching assistants increasingly used to support intervention programmes, this group would be of enormous importance to include. This is also in keeping with the inclusivity element of the topic as a whole.

3. 'Make a research plan'.

At this stage of the research design, it is proposed to focus on one primary school over one academic year with the use of concept mapping (Appendix 1, example1) and semi-structured interviews as research tools. Note, research tools are not attached, as these would be negotiated with participants. Combining concept mapping with semi-structured interviews 'offers a more detailed depiction on a participant's perspective...as it provides an opportunity to reflect...explain... and... elaborate. (Striepe, 2020, p 12). However, it is reasonable to suggest that other participants (or indeed a more expert researcher) may suggest classroom or small group observations and video recording to capture further data. As an ethical researcher, committed to following BERA's principles of ethical research, participants will need to agree on what specific data is being collected, why, where it will be stored and for how long (Appendix 2, Ethics Assessment point 6). There

will also be the need to seek parental permission and indeed that of the children (Appendix 2, Ethical Assessment part 3). At all times, participants will have the right to withdraw from the research process. Having previously mentioned Arnstein's Ladder of Community Participation, it is also important to refer to Hart's Ladder of Young People's Participation (Hart, 1992, in The Open University, 2020f). Having identified the educators' voices as a clear gap in research to date, this does not automatically exclude young people's voices. Care will need to be taken that the young people, particularly in the later stages of the participatory activist cycle do not feel 'mixed attainment grouping is being *done* to them'. This novice researcher suggests that achieving rung 6 where 'adult initiated, shared decision with the young people' may add a further layer of complexity to the proposed research; it is a necessary and honourable one, which adds integrity to the process. Furthermore, it may be worth considering this proposed research as a pilot study upon which to draw lessons and improve the design.

4. 'Articulate the value of the research'

This is crucial to the success of the research proposal and one that was also echoed by the Education Endowment Fund recommendations (2019). Participants are busy with learning and teaching, as well as any number of other demands in their personal lives. The COVID19 pandemic is still to be contended with and it may require the researcher (novice or expert) to dedicate some time to volunteering in a way that frees time for participants. This contributes to the ethical consideration of doing no harm; participation in the research will not add undue burden to the day to day lives.

5. 'Spend time with participants'

Pickerill (2021) makes an interesting observation that it can be 'useful (for the researcher) to present themselves as an enthusiastic novice, rather than an expert'. Where this is true - the activist action research example given was building sustainable affordable housing - there appears to be no conflict with ethical considerations. However, for the purposes of this research proposal, were an experienced education researcher to participate, it could be construed as patronising, dishonest, and therefore preferable to be honest.

Sensitivity to educators who have a particular specialism in mathematics, as well as learning assistants and higher level teaching assistants who have spent large amounts of time, over many years, working with intervention groups and children with special educational needs may need extra consideration. The reason for this arises from the BERA guidelines (2019). Their individual dignity, which may stem from their work needs to be recognised. With the current COVID19 pandemic still impacting life and work, it may be necessary to put contingency plans in place. The use of online platforms may facilitate meetings and does not need to be necessarily seen as a negative.

6. 'Be present and stay on track'

Whether the role of the catalyst is taken by this novice researcher, an expert researcher or another member of the group, 'being present and staying on track' is often easier said than done - especially within the dynamic environment of a school! This could be further complicated if participants are drawn from across a wide range of schools within the borough or catchment area. However, with careful planning, with the group, from the very beginning and a culture of honesty and openness this should be achievable. It is certainly more likely to yield the systematic and critical enquiry advocated by Bassey (1992) and being able to make links in those informal moments can only add to 'increasing capacity to gain enhanced insights' of educators' scepticism of mixed attainment grouping. (Striepe, 2020, p12) These moments could also drive the cycles of the action research. A further benefit of being present is the opportunities this affords for triangulation of data of the research (Salkind, 2010), as data is sourced from multiple sources.

Before moving to the final point of dissemination, the methods of data analysis need to be examined. As concept maps and semi-structured interviews are proposed by this novice researcher, and as the research takes a participatory approach, the most appropriate approach could be grounded theory building. Wheeldon and Ahlberg (2012) suggest that this helps the researcher to keep an 'open mind'. The notion of collecting data first, from concept maps and semi-structured interviews, followed by a collaborative process of meaning making could possibly ensure that all voices and views are represented and emancipated. It could also be argued that this is in keeping with the

partnership and delegation rungs of Arnstein's ladder of participation, with participants in the research contributing to the analysis and ensuring further action is agreed and delegated as a result. This is particularly pertinent in relation to research questions two and three where participants first observe mixed attainment grouping before continuing with the concept maps and semi-structured interviews. This step is followed by a period of research and training in order to engage with the process of mixed attainment grouping. At these stages of the research cycle, 'being present and staying on track' may require an extension to the time span of the proposal. Participants may feel that one academic year is not sufficient to advance beyond the familiar territory of attainment grouping. This would require careful negotiation - especially with the institutional gatekeepers who are the 'essential mediators' of any research being able to take place. (Andoh-Arthur, 2019)

7. 'Share findings diversely and creatively'

This final point on the dissemination of the findings is important. Within the method of participatory activist research, there is the explicit call for researchers to help the participants achieve their goals. (Pickerill, 2021, p3). Ethically, there is a social responsibility to care for the professional and personal reputations of the participants whether the goal was achieved or not. Where the group accepts that the goal is to map the scepticism to mixed attainment grouping, there may be a destabilising effect as the impact of practice, which has focused on attainment grouping, begins to register. Earlier, in the literature review, the negative impact of attainment grouping was strongly identified. No teacher (or learning assistant and higher level teaching assistant for that matter) chooses to do harm to their learners. The realisation that a practice with which they have aligned themselves, does do harm will require careful and sensitive handling. This is perhaps something the group can discuss and put structures in place to mitigate, from the very outset. Again, in line with the BERA guidelines, a commitment to staying open to the possibility that mixed attainment grouping for the teaching of primary mathematics may lead to negative results (increased scepticism of educators, a detrimental impact on learners' attainment, identity) will help to ensure that ways to minimise or address these are considered.

By heeding the advice of Pickerill et al (2021) and striving *with the participants of the research - as well as independently-* to 'behave ethically as presented by Stutchbury and Fox (2009) *and* by considering, in depth, the four dimensions of ethical thinking - ecological, consequential, deontological and relational'- there is ground for optimism. Within a very small realm of influence, this proposed research could contribute to the creation of a more just and equitable education – for some learners at least. By inviting educators to advance beyond familiar territory and map their scepticism to mixed attainment grouping for primary mathematics, positive change could indeed be realised; education could indeed be created. (Bassey, 1992)

Negative or positive, diverse and creative dissemination is envisaged through professional journals, articles for participating union publications, an online article for the campaigning group website 'More than a score' and as a stimulus for a 'Teach Meet session'. Interest has already been voiced by a group that brings together educators, led by an academic, interested in teaching mathematics to mixed attainment groups. A key consideration will be whether the participants of the research are in agreement with these plans. Careful negotiation at the beginning of the proposed research will be necessary and may even highlight areas for dissemination not considered by this novice researcher. Constant critical reflection will be key.

P Postscript Narrative Critical Reflection - A letter to myself

A quiet space,

Lost in thought,

In the boys' empty room.

The end of summer 2021

Dear Anne,

I am writing this letter to you so you can take a moment to critically reflect on this enormous undertaking: your dissertation and your learning journey. Other people's judgements will determine the public value of your knowledge, understanding and skills but for now, take the time to examine your own development - personally, professionally and academically. All three are so closely intertwined in your mind (and heart) that separation may prove challenging - but try. For when you do, you may begin to see just how far you have travelled.

Do you remember how angry you were when you began? The rage that fueled your first steps on this masters' course. You hadn't noticed the rage building. You kept believing education and the experience for children could not possibly get worse. Children being degraded devalued, seen as limited and incompetent and feeling as if you were powerless to change anything. An answer had to be found. Why did so many teachers insist on grouping, and labelling, children by 'ability' when they came into the profession to improve children's lives?

This question sustained your studies through stage one and stage two of the course. Then Ellesar (as you've illustrated in appendix one, example 1) gave you two choices. You could either acknowledge, and then set aside, your subjectivity or you could embrace it. This was such an important moment, do you remember, for it made you re-examine your understanding of the paradigms. It made you sit for a moment and think about all those key thinkers you'd been devouring from Freire to Foucault and Reay. Were you just

adding their anger to your own and their thinking to your own without processing? And then all the researchers whose titles you explored in chapter two that reinforced your subjective stance. You were on the side of the right...and the righteous. But that was the problem. This wasn't, and isn't, a topic for sides. Taking sides - setting *bad* and mixed attainment *good* - would not move the academic conversation forward, never mind the professional one. And that was the turning point. You advanced beyond your own 'familiar territory'. Foucault was smiling then. You realised that this topic needed a more objective approach. It needed an objectivity that could be contested. It needed an objectivity that could be mediated and revised. Yet that objectivity could lead to the transformation that your subjective self was desperately seeking. You probably still have some work to do, on ensuring that your research proposal is objective. A critical friend could help you a lot with that but you've definitely found some new perspectives and even better - an understanding of those who notice children and learning in different ways.

Your journal helped you a lot. I hope you're going to keep that going. Look at the words you noted in appendix one, example two. Can you remember who inspired you there? Norma - Norma T Mertz. She was talking (in 2017, 00:01) about theoretical frameworks and how they frame what you see *as well as what you don't see.* And there was so much that you hadn't seen; there were so many truths that you did not have patience for because you were so convinced by your own world view. I'm still not sure you're ready to explain ontology to anyone else but what I do know is that you are much more aware of how this influences epistemology. I think you worked really very hard on this. I'm proud of you.

So now what? Well, Ellesar encouraged you to hold on to some of that original anger in one of your conversations. It will drive you and this carefully crafted map of a research proposal forward. Don't keep it to yourself. Don't let it sit on an electronic shelf somewhere. Take heart from mathematician Paul Lockhart's words (from 2002 on page 24) and through this dissertation and the research, realise his words:

'There is such breathtaking depth and heartbreaking beauty in this ancient art form. How ironic that people dismiss mathematics as the antithesis of creativity. They are missing

out on an art form older than any book, more profound than any poem, and more abstract than any abstract. And it is the school that has done this! What a sad endless cycle of innocent teachers inflicting damage upon innocent students. We could all be having so much more fun'.

And he is right. The educators are innocent. So take your new courage, your new knowledge and with the same (more objectively managed) fire in your heart - advance!

Sincerely,

Yourself

 (Slightly wiser but with *even more* questions needing answers)

TOTAL WORD COUNT: 11, 988

REFERENCES

Archer, L. et al. (2018) 'The symbolic violence of setting: A Bourdieusian analysis of mixed methods data on secondary students' views about setting', British educational research journal, 44(1), pp. 119–140. doi: 10.1002/berj.3321.

Andoh-Arthur, J. 2019. *Gatekeepers in Qualitative Research*. In: Paul Atkinson, ed., SAGE Research Methods Foundations. London: SAGE Publications, Ltd. <https://www.doi.org/10.4135/9781526421036854377> [Accessed 24 Aug 2021].
Ball, S. (2014) What's wrong with education policy? Seven Fallacies YouTube video [Online]. Available at https://www.youtube.com/watch?v=k9ZkF4WFraY (Accessed 23 August 2021)

Bacchi, C and Bonham J. (2014) 'Reclaiming discursive practices as ananalytic focus: Political implications' [Online] Accessed here https://rauli.cbs.dk/index.php/foucault-studies/article/view/4298/4726
(Accessed 23 August 2021)

 Bassey, M. (1992). Creating Education through Research. *British Educational Research Journal, 18*(1), 3-16. Retrieved August 24, 2021, from http://www.jstor.org/stable/1500589

Biafora, F. and Ansalone, G. (2010) 'Tracking in the Schools: Perceptions and Attitudes of Parents', Race, gender & class (Towson, Md.), 17(1/2), pp. 226–240.

Boaler, J., Wiliam, D. and Brown, M. (2000) 'Students' Experiences of Ability Grouping-disaffection, polarisation and the construction of failure', British educational research journal. Received 23 March 1999; resubmitted 27 July 1999; accepted 29 July 1999, 26(5), pp. 631–648. doi: 10.1080/713651583.

Boaler, J. and Selling, S. K. (2017) 'Psychological Imprisonment or Intellectual Freedom? A Longitudinal Study of Contrasting School Mathematics Approaches and Their Impact on Adults' Lives', Journal for research in mathematics education, 48(1), pp. 78–105. doi: 10.5951/jresematheduc.48.1.0078.

Bradbury, A. (2018) 'The impact of the Phonics Screening Check on grouping by ability: A 'necessary evil' amid the policy storm', British educational research journal, 44(4), pp. 539–556. doi: 10.1002/berj.3449.

Bradbury, A. and Roberts-Holmes, G. (2017) 'Grouping in Early Years and Key Stage 1: A necessary evil?' [Online] Available here: https://neu.org.uk/media/3191/view (Accessed 24 August 2021)

British Educational Research Association (2019) 'Ethical Guidelines for Educational Research, fourth edition (2018) Available here: https://www.bera.ac.uk/publication/ethical-guidelines-for-educational-research-2018-online

Cambridge Online Dictionary (2021) [Online] Available here: https://dictionary.cambridge.org/ (Accessed 23 August 2021)

Catsambis, S., Mulkey, L. and Crain, R. (2001) 'For better or for worse? a nationwide study of the social psychological effects of gender and ability grouping in mathematics', Social psychology of education, 5(1), pp. 83–115. doi: 10.1023/A:1012675523595.

Coghlan, D. (2010). Interiority as the Cutting Edge between Theory and Practice: A First Person Perspective. International Journal of Action Research, 6(2-3), 288-307. https://nbn-resolving.org/urn:nbn:de:0168-ssoar-414128

Coghlan, D., and Brydon-Miller, M. 2014, *The sage encyclopedia of action research*, vol. 2, SAGE Publications Ltd, London, , [Accessed 24 August 2021], doi: 10.4135/9781446294406.

Cohen, L. E. (2008) 'Foucault and the Early Childhood Classroom', Educational studies (Ames), 44(1), pp. 7–21. doi: 10.1080/00131940802224948.

Coldwell, M. et al (2017) Evidence-informed teaching: an evaluation of progress in England Research report [Online] Available here: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/625007/Evidence-informed_teaching_-_an_evaluation_of_progress_in_England.pdf (Accessed 23 August 2021)

Connolly, P. et al. (2019) 'The misallocation of students to academic sets in maths: A study of secondary schools in England', British educational research journal, 45(4), pp. 873–897. doi: 10.1002/berj.3530.

Cook, C (2014) 'Should England make setting and streaming compulsory?', BBC, 3 September [Online] Available at https://www.bbc.co.uk/news/education-29051923 (Accessed August 23 2021)

Corbetta, P. (2003) Social Research. London: SAGE Publications.

Cropley, A. J. (2019, 2 nd updated, revised, and enlarged edition). Qualitative research methods: A practice-oriented introduction for students of psychology and education. Riga, Latvia: Zinātne. (open access – doi: 10.13140/RG.2.1.3095.6888)

Department for Education (2021) 'National curriculum in England: mathematics programmes of study' [Online] Available here:
https://www.gov.uk/government/publications/national-curriculum-in-england-mathematics-programmes-of-study (Accessed 23 August 2021)

Department for Education (1997) Excellence for all children Meeting Special Educational Needs [Online] Available here :
http://www.educationengland.org.uk/documents/pdfs/1997-green-paper.pdf (Accessed 24 August 2021)

Department for Education (2013) 'The national curriculum in England Key stages 1 and 2 framework document' [Online] Available here:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/425601/PRIMARY_national_curriculum.pdf

Elhaggagi, E. (2021) 'Tutor Group Session on Methodologies (short version) [Mp4] Available here:
https://learn2.open.ac.uk/mod/connecthosted/viewrecordings.php?id=1709129&group=279595&filter=2 (Accessed 24 August 2021)

Elhaggagi, E. (2021) Tutor Group Adobe Room conversation with Anne Kagoya 23 June 2021

Ernest, P. (n.d.) 'The Philosophy of Mathematics' [Online] Available here:
https://socialsciences.exeter.ac.uk/education/research/centres/stem/publications/pmej/pome18/PhoM_%20for_ICME_04.htm (Accessed 23 August 2021)

Foucault, M. (2002) Archaeology of Knowledge. London and New York: Routledge

Francis, B., Mills, M. and Lupton, R. (2017) 'Towards social justice in education: contradictions and dilemmas', Journal of education policy, 32(4), pp. 414–431. doi: 10.1080/02680939.2016.1276218.

Freire, P. and Freire, Ana Maria Arauéjo (1998) Pedagogy of hope : reliving Pedagogy of the oppressed. New York: Continuum.
Freire, P. (2000) Pedagogy of the oppressed. 30th anniversary ed. New York ; London: Continuum.

Griffiths, M. (2009) 'Action Research for/as/mindful of Social Justice' The SAGE Handbook of Educational Action Research.

Gove, M. (2007) 'It's time for modern compassionate Conservative education policy' [Online] Available here: https://conservative-speeches.sayit.mysociety.org/speech/599789 (Accessed 24 August 2021)

Hammersley, M. (2004) 'Literature Review', in Lewis-Beck, M.S., Bryman, A. and Futing Liao, T. (eds.) *The SAGE Encyclopedia of Social Science Research Methods*. Thousand Oaks, CA: Sage Publications, pp. 578–580.

Henderson, L. (2010). A Deleuzian Framework for Participatory Action Research. 8th World Congress 2010: Participatory Action Research and Action Learning. [Online] Available here: https://www.research.ed.ac.uk/en/publications/action-research-forasmindful-of-social-justice (Accessed 24 August 2021)

Hodgen, J et al (2020) ' Remote mathematics teaching during COVID-19: intentions, practices and equity ' [Online] Available here: https://discovery.ucl.ac.uk/id/eprint/10110311/7/Hodgen_2020%20Remote%20mathematics%20teaching%20during%20COVID-19.pdf (Accessed 23August 2021)

Husbands, C, (2014) 'Setting by ability: what is the evidence?, 4 September [Blog]. Available at https://blogs.ucl.ac.uk/ioe/2014/09/04/setting-by-ability-what-is-the-evidence/ (Accessed 23 August 2021)

Hutchinson J., et al (2019) 'Education in England Annual Report 2019 [Online] Available here: https://epi.org.uk/wp-content/uploads/2019/07/EPI-Annual-Report-2019.pdf (Accessed 23 August 2021)

Ireson, J. and Hallam, S. 2001. Teachers' Attitudes to Ability Grouping. In: 2001. *Ability Grouping in Education*, London: SAGE Publications Ltd. pp. 106-126 Available at: <http://www.doi.org.libezproxy.open.ac.uk/10.4135/9781446221020.n5> [Accessed 23 Aug 2021].

Jackson, B. (2014) Streaming: An Education System in Miniature. London and New York. Routledge:

Lave, J. and Wenger, Etienne (1991) Situated learning : legitimate peripheral participation. Cambridge: Cambridge University Press.

Leat, D., Reid, A. and Lofthouse, R. (2015) 'Teachers' experiences of engagement with and in educational research: what can be learned from teachers' views?', *Oxford Review of Education*, 41(2), pp. 270–286.

Lleras, C. (2013). Ability grouping. In J. Ainsworth (Ed.), *Sociology of education: An a-to-z guide* (Vol. 1, pp. 1-3). SAGE Publications, Inc., https://www.doi.org/10.4135/9781452276151.n1

Lockhart, P (2002) ' The Mathematician's Lament' [Online] Available here: https://www.maa.org/external_archive/devlin/LockhartsLament.pdf Accessed 27 August

2021

Löhr, K., et al(2020) 'The "World Café" as a Participatory Method for Collecting Qualitative Data', International Journal of Qualitative Methods. doi: 10.1177/1609406920916976. [Online] Available here: https://journals.sagepub.com/doi/pdf/10.1177/1609406920916976 (Accessed 24 August 2021)

Macqueen, S. E. (2013) 'Grouping for inequity', International journal of inclusive education, 17(3), pp. 295–309. doi: 10.1080/13603116.2012.676088.

McGrath, M (2021) 'Climate change: 'No more excuses' at COP26 climate summit - poor nations' BBC [Online] Available here: https://www.bbc.co.uk/news/science-environment-57839368
Accessed 23 August 2021

Mertz Ph.D., N. T. 2017, *Norma T. Mertz Discusses Theoretical Frameworks*, SAGE Research Methods Video [Streaming Video] London, : SAGE Publications Ltd. Available at: <http://www.doi.org.libezproxy.open.ac.uk/10.4135/9781473985193> [Accessed 24 Aug 2021].

Mills, A. J., Durepos, G., and Wiebe, E. 2010, *Encyclopedia of case study research*, vol. 0, SAGE Publications, Inc., Thousand Oaks, CA, [Accessed 24 August 2021], doi: 10.4135/9781412957397.

Mohamed, E. (2020) 'Top student given F after exam is marked 'based on school's poor history' Metro Available here : https://metro.co.uk/2020/08/04/working-class-students-predicted-fail-exams-schools-historic-results-13081838/ Accessed 23 August 2021

Montacute, R. and Cullinane, C. (2021) 'Learning in Lockdown' [Online] Available at
https://www.suttontrust.com/wp-content/uploads/2021/01/Learning-in-Lockdown.pdf
(Accessed 23 August 2021)

Mulkey, L.M.. *et al.* The long-term effects of ability grouping in mathematics: A national
investigation. *Soc Psychol Educ* 8, 137–177 (2005). https://doi.org/10.1007/s11218-
005-4014-6

Murphy, P. (n.d.) A framework for thinking about learning and teaching. [Online]
Available here:
https://learn2.open.ac.uk/pluginfile.php/3037222/mod_resource/content/2/A%20framew
ork%20for%20thinking%20about%20learning%20and%20teaching.pdf (Accessed 24
August 2021)

OFSTED (2020) COVID-19 series: briefing on schools, October 2020 Evidence from
pilot visits to schools between 29 September and 23 October 2020 [Online] Available at
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachmen
t_data/file/933490/COVID-19_series_briefing_on_schools_October_2020.pdf
(Accessed 23 August 2021)

OFSTED (2013) The most able students Are they doing as well as they should in our
non-selective secondary schools? [Online] Available here:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachmen
t_data/file/405518/The_most_able_students.pdf (Accessed 24 August 2021)

Openlearn (2020) Becoming an ethical researcher, Session 5:Researchers behaving
ethically

Ottaway, A. K. C. (1955) Education and Society : An Introduction to the Sociology of Education.. New York : Grove Press

Oxford Online Dictionary (2021) [Online] Available at https://www.oxfordlearnersdictionaries.com/definition/english/mixed (Accessed 23 August 2021)

Oxford Reference (2021) [Online] Available at https://www.oxfordreference.com/search?btog=chap&isQuickSearch=true&pageSize=20&q=group&sort=relevance (Accessed 23 August 2021)

Packer, M. J. and Goicoechea, J. (2000) 'Sociocultural and Constructivist Theories of Learning: Ontology, Not Just Epistemology', Educational psychologist, 35(4), pp. 227–241. doi: 10.1207/S15326985EP3504_02.

Pickerill, J., et al (2021). 'Participatory Activist Research' in Barron, A., Browne, A.L., Ehgartner, U., Hall, S.M., Pottinger, L. and Ritson, J. (eds.) Methods for Change: Impactful social science methodologies for 21st century problems. Manchester: Aspect and The University of Manchester. [Online] Available here: http://aspect.ac.uk/wp-content/uploads/2021/03/Jenny-Pickerill-A4-Guide.pdf (Accessed 24 August 2021)

Reay, D. (2012) 'What would a socially just education system look like?: saving the minnows from the pike', Journal of education policy, 27(5), pp. 587–599. doi: 10.1080/02680939.2012.710015.

Reay, D. and Wiliam, D. (1999) "I'll Be a Nothing': Structure, Agency and the Construction of Identity through Assessment', British educational research journal, 25(3), pp. 343–354.

Robeyns, I. (2006) 'Three models of education: Rights, capabilities and human capital',

Theory and Research in Education, vol. 4, no. 1, pp. 69–84.

Rosenbaum, J.E. (1978) 'Making Inequality: The Hidden Curriculum of High School Tracking. . New York: Wiley, 1976. 238 pp. $13.95', Social Forces. The University of North Carolina Press, pp. 1274–1275. doi: 10.1093/sf/56.4.1274.

Saffi, M. (2020) 'George Floyd killing triggers wave of activism around the world' Guardian 9 June 2020 [Online] Available at https://www.theguardian.com/us-news/2020/jun/09/george-floyd-killing-triggers-wave-of-activism-around-the-world Accessed 23 August 2021

Salkind, N. J. 2010, *Encyclopedia of research design*, vol. 0, SAGE Publications, Inc., Thousand Oaks, CA, [Accessed 24 August 2021], doi: 10.4135/9781412961288.

Sharp, C. (2019) 'Action learning and action research: genres and approaches', Action Learning: Research and Practice. Routledge, pp. 317–321. doi: 10.1080/14767333.2019.1655974.

Stoll, L. (1998) *School culture* [Online], London, Institute of Education. Available at: http://www.educationalleaders.govt.nz/ content/ download/ 483/ 3690/ stoll_article_set3_2000.pdf (Accessed 24 August 2021).

Strand, S. (2012) 'The White British-Black Caribbean achievement gap: Tests, tiers and teacher expectations', British educational research journal, 38(1), pp. 75–101. doi: 10.1080/01411926.2010.526702.

Striepe, M. (2020) 'Combining concept mapping with semi-structured interviews: adding another dimension to the research process', International journal of research & method in education, pp. 1–14. doi: 10.1080/1743727X.2020.1841746.

Striepe, M. (2021) Zoom conversation with Anne Kagoya, 23 February

Stutchbury K. and Fox, A. (2009) Ethics in educational research: introducing a methodological tool for effective ethical analysis, Cambridge Journal of Education, 39:4, 489-504, DOI: 10.1080/03057640903354396

Sukhanandan, L and Lee, B. (1998) 'Setting, Streaming and Grouping by Ability: A review of the literature' [Online] Available at: https://www.nfer.ac.uk/streaming-setting-and-grouping-by-ability-a-review-of-the-literature/ (Accessed 23 August 2021)

Taylor, B. et al. (2017) 'Factors deterring schools from mixed attainment teaching practice', Pedagogy, culture & society, 25(3), pp. 327–345. doi: 10.1080/14681366.2016.1256908.

The Guardian Newspaper, (2006) 'Extend ability setting to every school, says Cameron' 9 January 2006 Available at https://www.theguardian.com/education/2006/jan/09/schools.uk2 (Accessed 27 August 2021)

The Open University (2018a) EE830 Unit 7.5 'Professional identity and agency' Milton Keynes, The Open University

The Open University (2018b) EE830 Unit 3 'Global drivers for change' Milton Keynes, The Open University

The Open University (2018c) EE830 Unit 5.5 'Education policy and views of knowledge' Milton Keynes, The Open University

The Open University (2019a) EE831 Unit 5.3 'Knowledge about teaching' Milton Keynes, The Open University

The Open University (2019b) EE831 Unit 7.3 'Dialogic Pedagogy' Milton Keynes, The Open University

The Open University (2019c) EE831 Unit 5.3 'Types of knowledge about teaching' Milton Keynes, The Open University

The Open University (2020a) E822-20J Unit 3.1: LT   Paradigms, frameworks, methodologies and methods, Milton Keynes, The Open University

The Open University (2020b) E822-20J Unit 1.4: Your positionality as a researcher, Milton Keynes, The Open University

The Open University (2020c) E822-20J Unit 5.1 : Developing your research questions, Milton Keynes, The Open University

The Open University (2020d) E822-20J Unit 10.4 : Data analysis, quality and trustworthiness', Milton Keynes, The Open University

The Open University (2020e) E822-20J 'Ethics Principles for Research with Human Participants' [Online] Available here:
https://learn2.open.ac.uk/pluginfile.php/3112016/mod_resource/content/1/Ethics-Principles-for-Research-with-Human-Participants-April-2019.pdf (Accessed 23 August 2021)

The Open University (2020f) E822-20J 'Unit 2.4   The value of practitioner or close-to-practice research' Milton Keynes, The Open University

Vahasantanen, K. (2015) 'Professional agency in the stream of change: Understanding

educational change and teachers' professional identities', Teaching and teacher education, 47, pp. 1–12. doi: 10.1016/j.tate.2014.11.006.

Veenman, S. (1995) 'Cognitive and Noncognitive Effects of Multigrade and Multi-Age Classes: A Best-Evidence Synthesis', Review of educational research, 65(4), pp. 319–381. doi: 10.3102/00346543065004319.

Walsh, L.. 2017. The Challenges and Benefits of Developing a Rigorous Conceptual Framework in Your Research. London SAGE Publications, Ltd. Available at: <http://www.doi.org/10.4135/9781473975026> [Accessed 24 Aug 2021].

Wheeldon,J. and Åhlberg, M. (2012). *Visualizing Social Science Research: Maps, Methods, & Meaning*. Thousand Oaks, CA: SAGE Publications, Inc. Available at: <http://www.doi.org.libezproxy.open.ac.uk/10.4135/9781483384528> [Accessed 24 Aug 2021].

White Rose Maths (n.d.) The Journey to Mastery [Online] Available here https://whiterosemaths.com/latest-news/the-journey-to-mastery/ (Accessed 23 August 2021)

Wiliam, D. and Bartholomew, H. (2004) 'It's not which school but which set you're in that matters: the influence of ability grouping practices on student progress in mathematics', British educational research journal. Received 16 December 2002; accepted 17 April 2003, 30(2), pp. 279–293. doi: 10.1080/0141192042000195245.

Williamson, G (2021), New education recovery package for children and young people [Online], Available at https://www.gov.uk/government/news/new-education-recovery-package-for-children-and-young-people (Accessed 23 August 2021)

Wintour, P. (2014) 'Compulsory setting: schools face being forced to separate pupils by ability', 3 September [Online] Available at https://www.theguardian.com/politics/2014/sep/03/schools-separate-pupils-ability-setting (Accessed 23 August 2018)

World Bank (n.d.) 'World Bank Country and Lending Groups' [Online] Available here https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups Accessed 27 August 2021

Zavala, M. del R. and Hand, V. (2019) 'Conflicting narratives of success in mathematics and science education: challenging the achievement-motivation master narrative', Race, ethnicity and education, 22(6), pp. 802–820. doi: 10.1080/13613324.2017.1417251.

Appendix 1   **EMA reflection evidence grid**

Category	Feedback received, targets achieved and areas developed and worked on	How did this shape my dissertation
1. Knowledge and Understanding: Targets, reflections or feedback relating to knowledge and understanding of links between theory and practice, such as would enable an enquiry into an area of interest to be undertaken.	TMA01 FEEDBACK : ';We have two ways to approach this interesting positionality: 1)Attempt to minimise your subjectivity wherever possible to more objectively and externally approach the issues…which would mean acknowledging your personal and professional ties to the issue but then taking active steps to not bring those into the research exploration and potential plan forwards. 2) Embrace and recognise the importance of your own positionality here: perhaps through narrative/biographical methodologies or even ethnographic. This would mean not just acknowledging your personal and professional insider feelings but actually building these into the story, account, understanding, analysis and approach you take to the ideas and concepts.	While exploring ideas of positionality throughout the units of this module and developing skill in navigating the sage databases of research, I built up a reading list of materials and a bank of videos that helped me to adopt position 2, to which I was instinctively drawn. Reaching out to Michelle Striepe and being able to talk through her work on concept mapping in research helped me to see how a practice I used with learners could be adapted as a research tool and David Coghlan who responded to an e mail in which I had said how his video on action research had helped me to visualise how the extended literature review could become action (see discussion in research methods section)

Category	Feedback received, targets achieved and areas developed and worked on	How did this shape my dissertation
2. Practical and/or Professional Skills: Targets, reflections or feedback relating to being able to reflect critically and constructively, in light of the ideas and frameworks presented in the module, on thinking, practice and organisational impact and how these might be developed.	RESEARCH JOURNAL: ON 19.2.21 I observed: 'MY TRUTH (original capitalisation) about maths and setting is constructed through the lens of my experiences just as others construct theirs. To inform others' truths about maths and setting I need to construct experiences that possibly create or introduce new lenses to them.'	This brought me back to one of the principles of ethical research form the Open University: Honesty: At the heart of all research, regardless of discipline, is the need for researchers to be honest in respect of their own actions in research and in their responses to the actions of other researchers, at every stage in the research process. I kept this at the forefront of my mind as I interrogated the literature, observed the language shift and tried to understand why the researchers' truths were not marrying with the educators' truths. This drove the entire body of the dissertation as I came to realise that where my truths aligned with the researchers' truths, this was not the universal case and I strove to make sense of this in chapter 2 and 3 of the dissertation.

Appendix 2

E822 Ethical Appraisal Form

Masters: Education, Childhood and Youth

NB: it should be noted that The Open University is unable to offer liability insurance to cover any negative consequences students might encounter when undertaking 'in-person' data collection. It is therefore very important that you follow appropriate research protocols not least in seeking Gatekeepers' permissions to undertake any data collection within your setting and adhere to ethical principles for the safety of yourself and your participants.

Because ethical appraisal should precede data collection, this form should be included with TMA02 for those developing a Small-Scale Investigation and included as part of the submission for the EMA for those submitting an Extended Literature Review and Research Proposal.

Fill in section 1 of this document with your personal details and brief information about your research.

For section 2, please assess your research using the following questions and click yes or no as appropriate. If there is any possibility of significant risk please tick yes. Even if your list contains all "no" you should still return your completed checklist so your tutor/supervisor can assess the proposed research.

Section 1: Project details

a.	Student name	Anne Kagoya	
b.	PI		
c.	Project title	*Advancing beyond familiar territory: mapping educators' scepticism of mixed attainment grouping in primary mathematics teaching.*	
d.	Supervisor/tutor	Ellesar Elhaggagi (currently but may change following award of masters qualification)	
e.	Qualification	Masters in Education	✓
		Masters in Childhood and Youth	☐
f.	MA pathway (where applicable)	Extended Literature Review and Research Proposal (Learning and Teaching)	
g.	Intended start date for fieldwork	To be negotiated with, in the first instance, the institutional gatekeeper. IN the second instance, with the appropriate unions for school staff involved in learning and teaching *followed by the respective gatekeepers of linked institutions.*	
h.	Intended end date for fieldwork	One year from the start date	
i.	Country fieldwork will be conducted in *If you are resident in the UK and will be conducting your research abroad please check www.fco.gov.uk for advice on travel.*	England	

Section 2: Ethics Assessment		Yes	No
1	Does your proposed research need initial clearance from a 'gatekeeper' (e.g. Local Authority, head teacher, college head, nursery/playgroup manager)?	✓	☐
2	Have you checked whether the organisation requires you to undertake a 'police check' or appropriate level of 'disclosure' before carrying out your research?[1]	✓	☐
3	Have you indicated how informed consent will be obtained from your participants (including children less than 16 years old, school pupils and immediate family members)? Your consent letters/forms must inform participants that they have the right to withdraw from the study at any time.[2]	Once setting is confirmed, this will need to be done	☐
4	Will your proposed research design mean that it will be necessary for participants to take part in the study without their knowledge/consent at the time (e.g. covert observation of people in nonpublic places)? If so have you specified appropriate debriefing procedures? [3]	☐	✓
5	Does your proposed design involve repetitive observation of participants, (i.e. more than twice over a period of more than 2-3 weeks)? Is this necessary? If it is, have you made appropriate provision for participants to renew consent or withdraw from the study half-way through? [4]	✓ _Provision to renew consent will be built in	☐
6	Are you proposing to collect video and/or audio data? If so have you indicated how you will protect participants' anonymity and confidentiality and how you will store the data?	✓ A possibility if participatory activist researchers deem this useful then institution policies will be followed	.

---

[1] You must agree to comply with any ethical codes of practice or legal requirements that maybe in place within the organisation or country (e.g. educational institution, social care setting or other workplace) in which your research will take place. If required an appropriate level of disclosure ('police check') can obtained from the Disclosure and Barring Service (England and Wales), Disclosure Scotland, AccessNI (Northern Ireland), Criminal Records Office (Republic of Ireland), etc.

[2] This should normally involve the use of an information sheet about the research and what participation will involve, and a signed consent form. You must allow sufficient time for potential participants to consider their decision between the giving of the information sheet and the gaining of consent. No research should be conducted without the opt-in informed consent of participants or their caregivers. In the case of children (individuals under 16 years of age) no research should be conducted without a specified means of gaining their informed consent (or, in the case of young children, their assent) and the consent of their parents, caregivers, or guardians. This is particularly important if your project involves participants who are particularly vulnerable or unable to give informed consent (e.g. children under 16 years, people with learning disabilities, or emotional problems, people with difficulty in understanding or communication, people with identified health problems). There is additional guidance on informed consent on the Masters: Education and Childhood and Youth website under Project Resources.

[3] Where an essential element of the research design would be compromised by full disclosure to participants, the withholding of information should be specified in the project proposal and explicit procedures stated to obviate any potential harm arising from such withholding. Deception or covert collection of data should only take place where it has been agreed with a named responsible person in the organisation and it is essential to achieve the research results required, where the research objective has strong scientific merit and where there is an appropriate risk management and harm alleviation strategy.

[4] Where participants are involved in longer-term data collection, the use of procedures for the renewal of consent at appropriate times should be considered.

7	Does your proposal indicate how you will give your participants the opportunity to access the outcomes of your research (including audio/visual materials) after they have provided data?	✓	☐
8	Have you built in time for a pilot study to make sure that any task materials you propose to use are age appropriate and that they are unlikely to cause offence to any of your participants?	✓	☐
9	Is your research likely to involve discussion of sensitive topics (e.g. adult/child relationships, peer relationships, discussions about personal teaching styles, ability levels of individual children and/or adults)? What safeguards have you put in place to protect participants' confidentiality?	✓	☐
10	Does your proposed research raise any issues of personal safety for yourself or other persons involved in the project? Do you need to carry out a 'risk analysis' and/or discuss this with teachers, parents and other adults involved in the research?	✓ Institution and government guidelines re COVID19 will be followed	☐
11	Will financial inducements (other than reasonable expenses and compensation for time) be offered to participants?	☐	✓
12	Will the study involve recruitment of patients or staff through the NHS or the use of NHS data?	☐	✓

If you answered 'yes' to questions **12**, you will also have to submit an application to an appropriate National Research Ethics Service ethics committee (http://www.nres.npsa.nhs.uk/).