How Growth Mindset Interventions Are Operationalised
In Primary Schools

A thesis submitted to the University of Manchester for the degree of Doctorate
in Educational and Child Psychology in the Faculty of Humanities

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Word Count: 20531 words (excluding appendices, acknowledgements, declaration and copyright statement)
Abstract

Growth mindset is a concept which is gaining in popularity in schools and the media, largely inspired by the work of Carol Dweck. The idea that intelligence is not fixed, but malleable and that it is possible to inspire children and young people to achieve their best, is attractive to parents and educators alike. A body of evidence exists for the positive effects of a growth mindset in areas of activity as diverse as sporting prowess and economic achievements. Schools worldwide are increasingly adopting growth mindset to support their pupils either through bespoke interventions or through whole-school, cultural approaches.

A systematic literature review was completed to find out about practice in primary schools, to address the question: How is the growth mindset concept informing interventions in primary schools? A PRISMA framework was used to structure the review, with studies being screened to make sure they met with agreed inclusion criteria. A weight of evidence framework was employed to improve the judgement around the quality and relevance of the selected studies. Studies were assessed using a pre-existing framework to see if they were of suitable quality. The included studies gave positive support for the use of growth mindset but the research field lacked rigour in its description and evaluation of interventions.

A piece of exploratory, qualitative research was conducted to determine the nature of a whole-school growth mindset initiative in a British primary school. The study employed focus groups and semi-structured interviews and involved the children from a year 5 class as co-researchers in a collaborative, participatory research design. The data from interviews, questionnaires and focus groups was transcribed and thematic analysis applied. The research findings gave support for growth mindset and demonstrated insight into the learning pertaining to the group of children who acted as co-researchers.

A final section to the project involved a discussion around evidence-based practice and practice-based evidence and the difficulties of conducting research in a complex, real-world situation, which is constantly changing. The implications for policy and practice are considered, together with thoughts on how the concept of collaboration between education practitioners and researchers, who are university-based, can be developed.

A strategy for the promotion and public evaluation of the research was presented, to include a multi-strand approach of dissemination through journal and magazine articles,
discussion workshops for primary school teachers and presentations to conferences, with the children being enabled to participate in this process, especially in disseminating information to other school communities.
Declaration

I declare that no portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.
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Acknowledgements

I wish to thank the following people who have supported my studies:
My husband Paul and my sons, Greg and Pete, for your love, patience, encouragement, coffee and hugs
My mum, for having the foresight to persuade me to learn to touch-type in the 1980s ‘because computers might be used a lot more one day’ and for showing me it is never too late to start something new
My dear church family and my DECP prayer buddies, Fungisai and Emily, for your prayers, practical help and tireless affirmation
My tutors, especially Caroline Bond and Kath Tyldesley, for your teaching, guidance and endless wisdom
My TEP colleagues, for your good cheer and for holding out a helping hand whenever I stumbled
My placement colleagues, for your understanding of the size of the mountain I have been climbing and for sharing your expertise and knowledge to support my journey
The staff and pupils of St. Mary’s School, for providing a safe space for my research skills to grow.

This thesis is dedicated to my dear brother-in-law, Theo, who died just before I embarked on the DECP programme. The knowledge of his enthusiasm for my professional endeavour has kept me going on this long and twisting doctoral journey. I will treasure each day of this new chapter of my life, mindful that while I am still on this earth, there is work to be done.
Introduction
This introduction to the thesis provides an overview of the three separate papers, as a complete work. It sets out the background to the research, which focuses on the use of growth mindset interventions in primary schools, how these are operationalised and how these are viewed by pupils. The rationale that underpins the research questions and aims of the papers is explained. The axiological, ontological and epistemological stance of the research and the previous professional experience of the researcher are described. Papers one and two have been formatted to meet the publication requirements of Educational Psychology in Practice (EPiP) (Appendix 1). Given the collaborative nature of the research in paper 2, this will be published jointly with staff from the school, with their affiliation provided. Paper three sets out the dissemination strategy for the research, including publication in EPiP.

Background to the thesis and preliminary work
The research presented in the thesis was commissioned by the University of Manchester together with an independent provider of Educational Psychology Services and a primary school in Greater Manchester. The researcher has a background in primary and secondary education in mainstream settings.

This work represents part of the assessment requirements for the University of Manchester Doctorate in Educational and Child Psychology. An initial interest in the topic of growth mindset was engendered by the researcher’s involvement in a whole-school, growth mindset framework in a mainstream high school. The intervention was not formally evaluated prior to the researcher leaving this employment to start the DECP training course. However, anecdotal evidence from colleagues and pupils demonstrated that the approach was thought to be effective in motivating pupils to overcome challenges in their work. The researcher had found the concept of growth mindset a strong motivation for embarking on professional training and a doctoral course of study. The opportunity to explore the theory behind the approach and its effectiveness in more detail was welcomed.

As a trainee educational psychologist, the researcher has found that the need to investigate what motivates children and young people to learn is even more important, given the pressures that pupils face in a regime of testing and ‘striving to be best’ (Lambert, 2014; Dweck, 2015). Those who do not immediately achieve success may simply give up. Referrals
to educational psychology services are sometimes made on behalf of pupils who appear to have lost all motivation for learning. It is important, therefore, for educational psychologists to find ways to support schools in motivating pupils for learning. It is equally important that this support is designed based on the available evidence (Kratochwill & Stoiber, 2002). This research is also situated within a specific context of interrelated social and political dimensions pertinent to the time when it was written.

The research presented here builds on the researcher’s pilot study (Savvides, 2018), completed during the first year of doctoral training. Staff perceptions of a growth mindset intervention were examined, through semi-structured interviews and reference to school documentation. The study revealed a whole-school, embedded approach that has been well established over four years. The principles of growth mindset (Dweck, 2000) were presented in a framework for learning called ‘Learning Powers’, (Appendix 2) which, in line with much of the literature, takes account of the value system and attitudes that persist within a school culture and which can be beneficial or otherwise but which are best not ignored (Claxton & Carr, 2004). These are referred to as ‘dispositions’ (Claxton & Carr, 2004) and also ‘orientations’ (Dweck, 2000). When this part of the curriculum, described as the ‘learning curriculum’ (Claxton & Carr, 2004), is overtly described to children by teachers, a culture of metacognition develops, where both adults and children openly talk about the process of learning and teachers can “powerfully scaffold students’ learning trajectories and direct the students’ attention towards aspects of their own performance” (Claxton & Carr, 2004, p.93). In this vein, children will discuss their performance in relation to previous achievements and become more concerned with outperforming their own record than with outperforming their peer group (Martin, 2015). This has resulted in a general dissatisfaction with one-off testing as a way of measuring progress and a move towards “value-added assessment models” (Martin, 2015, p.134), with a number of proposals emerging around growth goal setting (e.g. Elliot et al., 2015; Martin, 2015). There is a danger in “high stakes testing”, which may be inadvertently “creating an atmosphere that works against true growth in both students and educators” (Dweck, 2015, p. 244). The pilot study was disseminated to the school and to other schools in the area through a SENCO network event.
Thesis outline with study aims/research questions

Following this initial, exploratory study, two purposes for the thesis as a whole were postulated, given that the research in this area is at an early stage, especially for primary schools. The first purpose was to examine how growth mindset interventions were being operationalised in primary schools specifically and the second was to look in more detail at the pupil perceptions of the intervention in the school that was the focus for the pilot study. This arose from the researcher’s concern that it was the enthusiasm of young people for the approach in her previous work that had inspired her to look in more detail at what was happening in classrooms and what the pupil perceptions of this were. This is missing from other studies seen by the researcher during preliminary scoping, with the majority of school-based case studies tending to focus on pupils’ attitudes to learning and whether they had a growth mindset rather than seeking their perceptions of the interventions and their opinions on the concept’s utility.

The first aim of the research was to establish what the pupil perceptions were of the growth mindset intervention and the second was to explore the benefits of a participatory model in eliciting pupil voice.

Positioning of the data

The research for paper two was conducted in one primary school in Greater Manchester. The researcher was not known to the school prior to the study. However, the Educational Psychology Service provider, which was part of the commissioning team, identified the opportunity for research and introduced the researcher to the school. It is possible that this pre-existing relationship had an effect on the research findings, since the school had a vested interest in being seen at their best to outside agencies and may, for example, have selected exemplary rather than representative classes to participate in the research. The involvement of children as researchers may have mitigated for this to some extent, since the school would be viewed through the eyes of the pupils rather than their teachers.

The case study represents the analysis of qualitative data from one school setting. It may be the case that the collection of additional qualitative data would have added more depth to the findings of the study.
Axiological position
Axiology is defined as the study of value. In the following section, the researcher reflects on the values held that underpin the research and impact the rationale for the research. The researcher subscribes to two beliefs that have had an impact on the process of research. Firstly, the researcher believes that all children should be given the best opportunities to develop and thrive both academically and emotionally in the education system. This belief is underpinned by an acceptance that equality of opportunity is paramount in the provision of education in a fair society. It requires that all children should be enabled to make progress with their learning, to whatever next step is available to them, regardless of their starting point or previous setbacks. Secondly, the researcher believes that every individual has the ability to develop to be ‘the best that they can be’ if they are given the right opportunities and encouragement. This belief is positioned within the present research, since the researcher’s understanding is that the concept of growth mindset supports pupils to view learning opportunities and their own potential for learning in a positive light.

Ontological and epistemological position
Ontology is the study of reality and how this is constructed, while epistemology is the study of knowledge, what is meant by knowledge and how this is both obtained and understood. The researcher has adopted a stance of critical realism (McEvoy & Richards, 2006). Critical realism seeks to address the middle ground between positivism and social constructionism. It acknowledges that knowledge and phenomena – in this case a growth mindset approach – exist separately from social construction but that each person brings to the situation their own unique perspective and understanding of processes and conventions. This is reflected in paper one, as the different ways that growth mindset was constructed and evaluated in primary schools was critically explored, through examining contexts and mechanisms which might enable growth mindset to be effective with this age group. It also fits with the exploration of a framework for learning in paper two, which spans the whole of school life, both inside and outside the classroom. The focus on context and mechanisms, rather than identifying an objective ‘truth’ informed the choice of focus groups and semi-structured interview methods, which enabled the exploration of aspects of the school context through the perspective of the children. It is inevitable that individual children brought their own,
unique understanding to the study and that this may be, collectively or individually, different from that of the adults who worked with them. The researcher, too, brought a unique perspective to the research, both in the analysis of data and in the selection of data deemed to be important for analysis. This was a co-constructed process, with input from the pupils of the school, who were actively encouraged as co-researchers through the participatory research model. It was important, too, for the researcher to maintain the stance of ‘invited guest’ in the school and to treat with respect both the staff and pupils in the handling of data. This was not to the extent of using good rapport inappropriately in a way that might compromise the information being requested, but more of an ‘insider researcher’ stance (Kvale & Brinkman, 2009), having a genuine interest in the research outcomes. The tensions that exist around feedback in schools (Martin, 2015) were important in reporting the research findings, when the researcher needed to be mindful of the way that such feedback on school practices might be received by teaching staff.

References


Paper One: How does Growth Mindset Inform Interventions in Primary Schools? A Systematic Literature Review

Manuscript formatted in accordance with the requirements of Educational Psychology in Practice

This project was funded through England’s Department for Education (DfE) National College for Teaching and Learning (NCTL) ITEP award 2015-2019.
Abstract
Growth mindset interventions, initially based on evidence from experimental studies, are widely used in schools internationally. This systematic literature review focuses specifically on the use of growth mindset in primary schools, whether as a bespoke intervention or as an embedded cultural practice, to examine how the approach is operationalised. Six data bases were searched between August 2018 and February 2019, resulting in 131 hits to be screened. Following screening, ten papers were selected for the final review. These were assessed for methodological quality and appropriateness of focus. Findings indicate that research in this area is generally small scale and a mixture of process and outcome evaluations of whole school and targeted interventions. More rigorous implementation and outcome studies are needed in this emerging field. Implications for Educational Psychology and school practice are discussed, together with limitations of the present review and suggestions for future research.

Introduction
Implicit theory describes the notion that individuals have different beliefs about their intelligence, believing this to be either fixed or malleable. Dweck (2000) coined the term ‘Self-theory’ in describing how beliefs we have about ourselves and the world have a considerable effect on our motivation for learning and our ability to overcome setbacks and challenges. According to Self-theory, sometimes referred to as implicit theory, those with a fixed mindset’ react badly to failure, often giving up altogether at the first difficulty, whereas those with a growth mindset see failure as a normal part of working towards improvement and will welcome challenge as an opportunity to learn. The positive response to failure is said to have the effect of increasing academic success and individual potential (Dweck, 2006). Conversely individuals with a fixed mindset value end results over the learning experience itself (Dweck 2017), and failure is to be avoided, since this is perceived to demonstrate that they are not as intelligent as they originally thought.

Implicit theory and the concept of growth mindset have been adopted by both academics and educationalists, framing this as a way to improve learning outcomes for individuals. Several interventions are now being used in schools internationally. These include those heralded by charitable organisations such as the Project of Education Research That Scales
Research into growth mindset interventions tends to evaluate brief interventions, aimed at fostering pupils’ incremental theories of intelligence and thereby improving their motivation and success in learning. There has been a particular focus on secondary school interventions (e.g. Donohoe, Topping & Hannah, 2012; Farrington et al., 2012) and short-term experimental studies (Hochanadel & Finamore, 2015).

A recent meta-analysis by Sisk, Burgoyne, Sun, Butler and Macnamara (2018), investigating the effectiveness of growth mindset interventions, found no statistically significant relationship between growth mindset and academic achievement. However, the study did demonstrate that the interventions may be of some benefit to those who are of low socio-economic status, a finding which is supported by other studies (e.g. Claro, Paunesku & Dweck, 2016).

Dweck (2006) provides information about laboratory studies with a variety of age groups. However, what is less clear is the evidence for the use of such interventions in primary or elementary schools (hereafter called ‘primary’) and, specifically, what constitutes a growth mindset intervention in a primary school. Systematic literature reviews are important in informing the value or direction of evidence-based practice (Bond et al., 2013). Reviews looking at the use of growth mindset in schools, such as the one by Sisk and colleagues (2018), are starting to emerge. However, there does not appear to be a systematic review of growth mindset interventions in primary schools alone.

As the research evidence available to primary schools appears to be sparse, it was decided to conduct a systematic review of recent literature to answer the following research question:

How is the growth mindset concept informing interventions in primary schools?

**Method**
The researcher initially adopted an evaluative approach to the literature review, which was consistent with their epistemological position of critical realism. The review aimed to
evaluate the effectiveness of studies focusing on a bespoke growth mindset intervention or pedagogy, or a whole-school cultural approach to the teaching of growth mindset.

**Literature Search Strategy**
The present review used a search strategy that was based on the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) (Moher et al., 2009). Figure 1 outlines the search strategy in detail.
Identification of Studies

Five data bases were systematically searched between August 2018 and February 2019 to find relevant papers for inclusion. These were: Applied Social Science Index and Abstract (ASSIA), Web of Knowledge, PsychInfo, Education Resources, information Centre (ERIC), Electronic Theses Online Service (ETHOS). In addition, web searching was conducted using Google Scholar until saturation was reached with no new studies being identified.
The search terms used were “growth mindset” AND “elementary school” OR “primary school”. Other search terms such as “learning framework” or “learning dispositions” were trialled at the scoping stage but yielded no useful papers and were removed. The January 2009 to February 2019 date range was chosen as the study of mindsets is likely to have developed following Dweck's 2006 exposition of the mindset concept and initial scoping indicated that most literature has appeared during the last five years, with a ten year time frame making it most likely that all relevant research would be captured in the review.

Inclusion and exclusion criteria were established, following the work of Woods and colleagues (2011) and Ezzamel and Bond (2016), in order to maintain focus on the research question and to efficiently eliminate studies that would widen the scope of the review beyond the research question.

Inclusion criteria were:

- More than one child in a growth mindset intervention
- An evaluation of a programme/intervention
- Has utility in an education context by explicitly describing the implications of the intervention for educational outcomes or by including an outcome measure relating to an educational outcome, such as improvement in writing skills demonstrated through use of more complex writing structures
- Intervention in a primary school setting
- An empirical study i.e. includes the collection of qualitative or quantitative data
- Written in English
- Published between January 2009 and February 2019

Exclusion criteria are listed in Appendix 3. Excluded studies are listed in Appendix 4.

Quality
A quality screening process of methodological quality (weight of evidence A) (Gough, 2007) was carried out on the papers selected for inclusion. The framework cited by Woods et al. (2011) was applied to qualitative studies. One point was awarded for each of 12 criteria to a maximum of 12 points. Studies were deemed to be high quality if they were awarded 9-12 points, medium quality for 5-8 points and low quality for 0-4 points. Quantitative studies
were also rated using criteria as used by Woods et al. (2011), which lists seven criteria and awards a maximum of 8 points. Quantitative studies were deemed to be of high quality if they were awarded 6-8 points, medium quality with 5-6 points and low quality with 1-3 points. Any studies with a mixed methods design were assessed using both qualitative and quantitative frameworks, with the higher rating of the two being awarded as the final score. The review frameworks are included in Appendix 3.

To ensure consistency of coding 25% of papers were dual coded. Refinement of the framework to allow for 0.25, 0.5 and 0.75 ratings meant that agreement of 100% could be achieved on all the papers.

The included studies were exploratory in nature and a mixture of process and outcome evaluations. It was not possible to evaluate the appropriateness of methodology used (weight of evidence B). The researcher therefore decided to broaden the focus of the review to determine how growth mindset approaches inform practice in schools rather than focusing solely on evaluating the effectiveness of the interventions. Studies were also rated for appropriateness of focus (weight of evidence C) (Gough 2007). The three judgement criteria for this were: matched to the needs of a primary setting or primary school pedagogy, clearly described growth mindset intervention and sufficient detail to replicate the research, with one point awarded for each (Appendix 6).

In this literature review, all studies were given at least medium quality on weight of evidence A or C. Given the emergent nature of the field, all ten papers were included in the review, in order to evaluate the available literature as comprehensively as possible. Three of the papers were unpublished theses. Theses have the added advantage of not being subject to the same word count as journal articles and therefore afforded more detailed information about methodology.

**Findings**
Details of all 10 papers are listed in Table 1 below.
<table>
<thead>
<tr>
<th>Research Study and Location</th>
<th>Focus of Study</th>
<th>Design</th>
<th>Setting</th>
<th>Sample/Participant s</th>
<th>Description of Intervention or whole-school approach</th>
<th>Outcome</th>
<th>Follow up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andersen &amp; Nielsen (2016), Denmark.</td>
<td>Evaluation of growth mindset reading intervention.</td>
<td>Randomised controlled trial (controls treatment as usual).</td>
<td>Primary Schools.</td>
<td>1587 ‘second-grade children’; 72 classrooms.</td>
<td>Parents trained and read daily with child using growth mindset approach for 3 months; incentives from class teachers.</td>
<td>Post intervention treatment group, 2 months progress on reading scores compared to controls, using Narrative Assessment Protocol (Justice et al., 2010).</td>
<td>At 7 months intervention group, one month advance on reading scores compared to controls.</td>
</tr>
<tr>
<td>O’Brien et al. (2015), Australia.</td>
<td>Whether an Inquiry Pedagogy in maths teaching can foster/ support growth mindset.</td>
<td>Qualitative video data analysis.</td>
<td>Primary school.</td>
<td>One Y5 class teacher and 27 pupils.</td>
<td>Examination of Inquiry Pedagogy in one lesson where a maths challenge was presented nine months after the start of the project.</td>
<td>‘Facing ambiguity and doubt’ embraced as challenge. Specific practices that encouraged growth mindset identified through thematic analysis of video data.</td>
<td>No follow-up.</td>
</tr>
<tr>
<td>Rienzo et al. (2014), UK.</td>
<td>Evaluation of a growth mindset intervention and teacher training in growth mindset.</td>
<td>Mixed methods.</td>
<td>30 primary schools, England.</td>
<td>286 Y5 pupils, intervention group (n=144) and control group (n=142). For the training, 15 schools for intervention (628 pupils) and 15 schools for control group (877 pupils).</td>
<td>Six-week course of mentoring and workshops in growth mindset for intervention group (controls – six weeks study skills intervention), followed by a four-week course with ‘business partners’. Teacher training over two half day sessions, on use of growth mindset in the classroom (no training delivered in control).</td>
<td>At 10 months, intervention group 2 months additional progress in English and Maths (Progress in English and Maths measures, GL Assessment) and higher scores on growth mindset measures Dweck (2000).</td>
<td>4 and 10 months; 10 month results reported.</td>
</tr>
<tr>
<td>Schrodt (2015), USA.</td>
<td>Relationship between mindset instruction and performance motivation for writing.</td>
<td>Mixed methods, ‘convergent parallel’ data analysis.</td>
<td>Kindergarten class (age 5), private, elementary school.</td>
<td>27 children, n =14 experimental, n=13 control group</td>
<td>Writers workshop instruction plus growth mindset (control group – just writing instruction).</td>
<td>Experimental group more progress in their writing as measured by writing score and qualitative analysis of writing quality, than control group.</td>
<td>No follow-up</td>
</tr>
<tr>
<td>Author (Year), Location</td>
<td>Research Question</td>
<td>Methodology</td>
<td>Sample</td>
<td>Findings</td>
<td>Follow-up</td>
<td></td>
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<td>-------------------------</td>
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</tr>
<tr>
<td>Seaton (2017), UK</td>
<td>Evaluation of teacher training in growth mindset</td>
<td>Mixed methods.</td>
<td>Cluster of schools: 1 high school and 5 primary schools.</td>
<td>37 teachers attended initial training; 17 attended further 5 training sessions; 8 attended final training event. Teachers trained in growth mindset principles, became 'mindset champions' in schools.</td>
<td>Improvements in staff and pupil mindset attitudes; increased staff confidence. Staff growth mindset assessed using Theories of Intelligence Self-form for Adults (Dweck, 2000) pre-post.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teal (2012), USA</td>
<td>Effect of school leadership on teacher perceptions of growth mindset and teacher behaviours.</td>
<td>3 school case studies.</td>
<td>3 metropolitan public elementary schools.</td>
<td>Purposive sampling: 3 head teachers in schools with increase in economically disadvantaged students, focus group of class teachers, interviews with individual teachers. Head teachers favouring growth mindset observed in how they supported staff, to determine effects on staff motivation and efficacy.</td>
<td>Descriptive/qualitative. Variable staff comments regarding practice; some progress noted in supporting 'impoverished students'. No follow-up.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vallejo (2018), USA</td>
<td>How growth mindset instruction is embedded in school culture.</td>
<td>Phenomenological case study, data includes interviews, artefacts and observations.</td>
<td>One elementary school.</td>
<td>Purposive sample - one elementary school recognised for implementing growth mindset school culture. 15/20 teachers teaching for 5+ years volunteered and trained in growth mindset approach. School used a growth mindset school culture since opening in 2014 (approaches described included sharing of growth mindset strategies between teachers and teachers conducting their own growth mindset reading and research).</td>
<td>Benefits described for staff and pupils including celebrating failure, embracing challenge, teaching socio-emotional strategies and the modelling of growth mindset by teachers. No follow-up.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Overview of studies
The included studies took place in schools that were American (Schrodt, 2015; Teal, 2012; Truax, 2018; Vallejo, 2018), British (Fraser, 2017; Seaton, 2018), Danish (Andersen & Nielsen, 2016), Australian (O’Brien et al., 2015) and Romanian (Laurian-Fitzgerald & Roman, 2019).

Sample sizes were between 15 and 1587. Children in primary schools were the focus of nine studies. Seaton (2017) evaluated a cluster of one high school and five primary schools and was included, because evidence from primary schools was reported separately. Participants in five studies were teachers; one study had participants who were school leaders and one study focused on children as participants but also involved their parents in the intervention (Andersen & Nielsen, 2016).

The ten studies consisted of four qualitative, five mixed methods and one quantitative design. Of the qualitative studies, three used a case study design. Two of these studied a single school (Fraser, 2017; Vallejo 2018) and one was a comparative case study of three schools (Teal, 2012). The other qualitative study analysed video data from one classroom (O’Brien et al., 2015). All five mixed method studies synthesised data from surveys, interviews, focus groups and artefacts (Laurian-Fitzgerald & Roman, 2019; Rienzo et al., 2014; Seaton, 2017; Schrodt, 2015; Truax, 2018). One study (Andersen & Nielsen, 2016) used a Randomised Controlled Trial design and reported quantitative data.

Type of Programme
Three of the papers describe an embedded, whole school approach to growth mindset (Fraser,2017; Teal, 2012; Vallejo, 2018). The remaining seven papers describe a bespoke intervention (Andersen & Nielsen, 2016; Laurian-Fitzgerald & Roman, 2019; O’Brien et al., 2015; Rienzo et al., 2014; Schrodt, 2015; Seaton, 2017; Truax, 2018; Vallejo, 2018). Details are also referred to in Table 1, under the column ‘Description of intervention or whole-school approach’.

The focus of the included papers was either on a process of programme evaluation (Fraser, 2017; Laurian-Fitzgerald & Roman, 2019; O’Brien et al., 2015; Seaton, 2017; Teal, 2012; Truax, 2018; Vallejo, 2018) or an outcome of programme evaluation (Andersen & Nielsen, 2016) or both (Rienzo et al., 2014; Schrodt, 2015). Details of the outcomes are included in
Table 1 under the column, ‘outcomes’. There is also a column titled ‘Focus of study’ for further information.

**Method of Analysis**
This study sought to explain and understand how growth mindset is operationalised in schools rather than explore the effectiveness of the intervention because there was insufficient evidence for an evaluative synthesis. The included papers were a mixture of qualitative and mixed methods, with one quantitative study. This therefore presented a difficulty in aggregating the findings. In acknowledgement of this issue, a configurative approach to synthesis of the data was indicated as a more appropriate way of understanding the findings from a range of methodological perspectives (Thomas et al., 2017). In configurative, systematic literature reviews, the focus is on generating new understandings and explanations from existing research. To answer the research question, ‘How is the growth mindset concept informing interventions in primary schools?’, each paper was read iteratively in relation to the question and relevant data were extracted and organised in a table (Table 1). The results are reported narratively in the following sections.

**Defining growth mindset**
Studies chosen for this review reference Dweck’s definition of growth mindset (2006), which is believing ‘that your basic qualities are things you can cultivate through your efforts’ (Dweck, 2006, p.7).

All studies focused on the learning process and motivation for learning when facing challenge, but there were some differences in how this was operationalised across studies, with the link between the intervention and growth mindset principles being weak in some cases. This happened when growth mindset was a part of the intervention but not its unique focus. For example, one study taught in the context of cooperative learning (Laurian-Fitzgerald & Roman, 2019), one taught growth mindset within an inquiry pedagogy and specifically in maths (O’Brien et al., 2015), two used it in the context of a writers’ workshop (Schrodt, 2015; Truax, 2018), one encouraged reading practice (Andersen & Nielsen, 2016), and one made reference to careers and successful individuals in the local community (Rienzo et al., 2014). These additions to the interventions made the growth mindset element difficult to extrapolate, although there was recognition of this in the
design of the studies, with a ‘treatment as usual’ control group in three studies, where just the growth mindset element was omitted (Laurian-Fitzgerald & Roman, 2019; Rienzo et al., 2014; Schrodt, 2015) and a detailed examination of aspects of inquiry pedagogy in the third (O’Brien et al., 2015).

**Evaluation of outcomes**
The studies included in this review were predominantly exploratory, indicating that researchers are still exploring ways in which growth mindset might be effective at whole school or subject levels. Although not all studies focused on quantifying outcomes, the studies did explore elements of growth mindset that may contribute to effectiveness. The role of praise, for example, was referred to in several studies, with many describing the shift from ability praise to process praise (e.g. Schrodt, 2015; Seaton, 2017). The way that praise was delivered had a direct effect on how well pupils cope with both challenging tasks (Teal, 2012) and mistake-making (Truax, 2018).

The included studies either evaluated the intervention process or an outcome of the intervention, with two studies evaluating both and including a self-report system to gauge motivation after the intervention (Rienzo et al., 2014; Schrodt, 2015). Of the studies that evaluated intervention outcomes (Andersen & Nielsen, 2016; Rienzo et al., 2014; Schrodt, 2015), all three examined a task-oriented outcome, ranging from measuring a skill such as reading (Andersen & Nielsen, 2016), to an assessment of basic skills, comprising both numeracy and literacy (Rienzo et al., 2014). The detail about self-reported motivation gave qualitative information about how the intervention was viewed by teachers and in some cases pupils, but meant that it was more difficult to judge the effects of the intervention in a way that reliably separated this from a treatment-as-usual condition. This situation was not helped by the lack of a control group for some of the studies (e.g. Fraser, 2017; Teal, 2012), making it difficult to demonstrate a specific effect relating to the growth mindset intervention.

**How growth mindset informs primary school interventions**
Several studies focused more on how growth mindset was used rather than the extent to which it was effective. Four ways that growth mindset interventions were being used in the
included studies were identified and are reported in the following sections. These are: providing a script for teachers; providing a framework for learning; encouraging evidence-based practice in the teaching profession; supporting pupils who are socio-economically disadvantaged. These are listed in table 2 below.

**Table 2: Four ways that growth mindset interventions are employed in primary schools in the included studies**

<table>
<thead>
<tr>
<th>Ways that growth mindset is employed in school</th>
<th>Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Providing a script for teachers</td>
<td>Fraser, 2017; O’Brien et al., 2015; Rienzo et al., 2015; Schrodt, 2015; Seaton, 2017; Vallejo, 2018.</td>
</tr>
<tr>
<td>Providing a Framework for Learning</td>
<td>Andersen &amp; Nielsen, 2016; Laurian-Fitzgerald &amp; Roman, 2019; O’Brien et al., 2015; Rienzo et al., 2014; Schrodt, 2015; Truax, 2018.</td>
</tr>
<tr>
<td>Encouraging Evidence-based Practice in the teaching profession</td>
<td>Fraser, 2017; Seaton, 2017; Teal, 2012; Vallejo, 2018.</td>
</tr>
<tr>
<td>Supporting pupils who are socio-economically disadvantaged</td>
<td>Rienzo et al., 2014; Schrodt, 2015; Teal, 2012; Vallejo, 2018.</td>
</tr>
</tbody>
</table>

1. **Providing a script for teachers**

The language used by teachers was seen as important in the included studies. Schrodt (2015) included a mindset checklist for teachers to allow for reflection on language used. Several of the studies referenced the use of process praise over ability praise and this encouraged pupils to take on challenges (e.g. Rienzo et al., 2015; Schrodt, 2015). Evidence was provided in pupil comments in interviews and focus groups (e.g. Seaton, 2017; Schrodt, 2015).
Within a growth mindset framework, mistakes provide an opportunity to learn (Dweck, 2006). Fraser (2017) noted that mistake-making was an area that required focused attention for some children and needed to be actively promoted as part of the new script used by teachers. While there was evidence in focus group data that some pupils were using mistakes positively and accepting challenge, there was frustration expressed by others who found mistakes difficult (Fraser, 2017). Vallejo (2018) used the language of ‘celebrating failure’. Truax (2018) described the negative effect of ability-focused feedback in the control group, where pupils were then fearful of making mistakes. The language used by pupils and their teacher was cited as a factor in enabling pupils to persevere in the face of challenge (O’Brien et al., 2015; Schrodt, 2015; Seaton, 2017).

2. Providing a Framework for Learning
Given the wide range of approaches described in the present review, it may be preferable to conceptualise growth mindset as a framework for learning, which then sits alongside other interventions. This was the case in those studies where growth mindset was being taught as part of an intervention that also took in other skills (Andersen & Nielsen, 2016; Laurian-Fitzgerald & Roman, 2019; O’Brien et al., 2015; Rienzo et al., 2014; Schrodt, 2015; Truax, 2018). It is particularly true of research which presented a single school case study (Yin, 2014) and provided detail of a whole-school, embedded culture (Fraser, 2017; Seaton, 2017; Teal, 2012; Vallejo, 2018). Fraser (2017), for example, described a whole-school, embedded framework that is based on growth mindset principles. The study makes the case for growth mindset to be part of the school ethos and over a sustained period (in this case, three years). Children’s active engagement in metacognitive reflection was demonstrated through focus group and interview data. There was evidence of reflection on practice and dialogue between teachers and pupils about learning. The work was described in a way that was very specific to the context, giving increased social validity (Bell et al., 2015). This type of study strengthens the evidence base when placed alongside other studies that are similar but in slightly different contexts (Levensson & Priøtz, 2017), such as the studies by Teal (2012) and Vallejo (2018).
3. Encouraging Evidence-based Practice in the teaching profession

Most of the studies in this review were completed by teachers as researchers, with one study being devised and implemented by an external research team (Rienzo et al, 2015). Fraser (2017) appeared to be a visiting researcher for her study in a Scottish primary school but was evaluating the practice of teachers within the school, while Andersen and Nielsen (2016) collaborated with teachers to collect data about children reading at home.

The high proportion of teachers as researchers reflects an increase in interest in the theory behind the practice, as well as an increase in teacher knowledge and expertise. Six of the studies (Fraser, 2017; O’Brien et al., 2015: Seaton, 2017; Teal, 2012; Vallejo, 2018) highlighted themes such as increased collaboration between colleagues and the way that staff were inspired to conduct research on an individual basis. Fraser (2017) noted that teachers were involved in their own reading for research, although it was not stated what was actually read. Parents, too, had been included in the training, although the extent of their involvement was not specified.

4. Supporting pupils who are socio-economically disadvantaged

Of the ten studies, four did refer directly to the positive outcomes achieved by pupils of lower socio-economic status (Rienzo et al., 2014; Schrodt, 2015; Teal, 2012; Vallejo, 2018). This is consistent with the findings of previous research (e.g. Claro, Paunesku & Dweck, 2015). In one study (Rienzo et al., 2014), children of lower socio-economic status were closer to significant difference between pre- and post-measures of progress based on academic achievement measures than their more affluent peer group. A case study of several schools (Teal, 2012) described, in data from interviews, the perceived advantages of growth mindset afforded to children from poorer homes and also cited the increase in children into their school from economically disadvantaged households as the motivation for wanting to implement the growth mindset approach.

Discussion

This systematic literature review examined how the concept of growth mindset was being operationalised in real-world, primary educational settings. Given the popularity of growth mindset in UK primary schools it was surprising to find so few studies focused on this area. It was promising to note that consistent with previous reviews (e.g. Sisk et al., 2018) growth
mindset was used to target motivational and academic outcomes. The included studies showed that growth mindset was being used to support primary school interventions by providing a script for teachers and a framework for learning, and by encouraging evidence-based practice within the teaching profession. It was also noted as useful to support pupils from socio-economically disadvantaged backgrounds.

Growth mindset, then, is used by primary schools to provide a script for teachers and a framework for learning. However, one difficulty that was found in this review was in the number of studies that reference growth mindset but use an intervention which is entirely bespoke to their school setting. Studies in this review referenced growth mindset and Dweck’s work (2000; 2006). However, growth mindset is an element of the intervention rather than having a discreet focus. This makes it difficult to extrapolate the growth mindset element such that this could be replicated in other schools. Only two of the interventions (Schrodt, 2015; Truax, 2018) provide sufficient detail for the intervention they use to be replicated and this is important for research into the use of interventions to be applicable to new schools and settings (Lendrum & Humphrey, 2012). The focus on a growth mindset element such as process praise would be a good foundation for further effectiveness trials in primary school settings. Indeed, the application of a growth mindset script by teachers was a strength in the studies, with the emphasis on growth mindset elements such as process praise and the reframing of mistakes as learning opportunities, together with the embracing of challenge. These features are consistent with previous studies (e.g. Donohue et al., 2012). There is a need to be clear about the link between theory and practice, so that the theory of change through the application of growth mindset is explicit in the application of the approach and in the way its success is measured.

The studies presented here demonstrated a range of approaches to research by teachers, with nine of the ten interventions implemented by teachers within their own schools. This gives the advantage of good ecological and social validity, since the practitioners had good knowledge of the local context of their school and a better understanding of what would be effective (Bell et al., 2015; Robinson & Bond, 2017). There was the disadvantage for practitioner researchers in that they had various levels of professional responsibility in their schools in addition to their research (Lock et al., 2015) and differing levels of knowledge about implementation science to support their introduction of changes to practice.
Collaborative research between schools and universities can overcome these challenges as schools can benefit from the academic rigour of the university and the universities can benefit from the inside knowledge and in-depth study of a real-world context (Bell et al., 2015). There are nevertheless encouraging signs of the benefits of a whole-school, growth mindset ethos which provides a framework for all learning. This is a feature of other studies describing work with older pupils (Hochanadel & Finamore, 2015; Lambert, 2014). It may be necessary to carry out further exploratory studies in primary schools to determine what it is that makes such a whole-school framework both beneficial for learning and socially valid (Bell et al., 2015). There is a need for more collaborative studies which include more rigorous outcome measures. This is particularly important in an educational climate where schools are increasingly encouraged to invest in evidence-based interventions (Education Endowment Foundation, 2018).

The growth mindset interventions in some of these studies were used to support pupils who were socio-economically disadvantaged. A meta-analysis (Sisk et al., 2018) found a more noticeable effect for growth mindset strategies for pupils who were from a lower socio-economic background and the present review supports this finding. One possibility for this is that pupils who start out with lower aspirations rise more readily to the challenge of expecting more for themselves (Reay, 2017).

Overall, there was insufficient rigour in the conceptualisation and description of interventions or evidence from outcome evaluations to be able to describe growth mindset as an evidence-based practice in primary schools (Boyle, Connolly & MacKay, 2016). This reflects the exploratory nature of much of the research. Exploratory studies are important in identifying social validity and determining factors that are important for the design and delivery of the intervention to be effective. However, more rigorous outcome evaluation is also needed.

**Limitations of the Current Review**

The present study aimed to evaluate how growth mindset interventions are being used in primary schools. The review was limited due to the small number of peer reviewed studies available and therefore included three unpublished doctoral theses (Schrodt, 2015; Teal, 2012; Vallejo, 2018). The authors of all the included studies were largely positive about...
growth mindset interventions and it is possible that other findings that were less positive have not been published, due to publication bias (Woods, McArdle & Tabassum, 2014). If teachers are motivated to use the approach, it is important that university-based researchers collaborate with them to produce more rigorous research to explore its effectiveness more thoroughly.

Recommendations for future practice
Educational Psychologists are well-placed to open dialogue with schools around theories of intelligence and systemic approaches to learning. The studies included here demonstrated how the approach could be used with other approaches, so that it can be part of embedded practice. Studies by Andersen and Nielsen (2016) and Fraser (2017) showed how growth mindset interventions can be part of a partnership between schools and parents.

An important contribution for Educational Psychologists may be to support staff training in schools and to provide depth to the psychological theory that underpins growth mindset interventions. Educational Psychologists are well positioned to support schools in the implementation of effective systems (Pellegrini, 2009), including the development of whole-school approaches. Collaboration between schools and the academic community can enhance this by providing access to research literature and the generation of knowledge in real world settings.

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Paper Two: Children’s perceptions of a growth mindset intervention in a British primary school

Manuscript formatted in accordance with the requirements of Educational Psychology in Practice

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Abstract
Growth mindset is growing in popularity in schools, to motivate pupils and encourage them to accept challenges. The evidence base consists largely of experiments using bespoke interventions for a fixed period. However, research is starting to emerge that examines the embedded nature of whole-school interventions, but this is at an early stage.

This research constitutes an exploratory study of a whole-school growth mindset initiative in a British primary school, examining how the concept has been operationalised and how it is viewed by pupils.

The study is a single-school case study, using a participatory research design. Participants were eight pupils from Year 5, who also acted as co-researchers and 28 pupils from Year 3. Focus groups with the Year 5 pupils were employed by the researcher. Semi-structured interviews and a questionnaire were designed and presented to Year 3 participants by the Year 5 co-researchers. The researcher kept a research diary. The data were thematically analysed using a semantic, inductive approach.

Four overarching themes were generated. These were: pupil perceptions of growth mindset/learning powers; mistakes as an opportunity to learn; utility of growth mindset/learning powers: successes and challenges; reflection on the research process. The findings supported the use of growth mindset and demonstrated insight into the research process from the Year 5 co-researchers. Implications for the school and for future practice are considered.

Introduction
This introduction sets out the background to growth mindset, its links to incremental theories of intelligence and its application in a variety of fields, including its use in school pedagogy. Questions are raised as to the nature and quality of research conducted in this area thus far. The rationale for the present research is presented, in contributing to the literature around growth mindset in primary schools and use of a participatory approach.

The concept of growth mindset is popular in mainstream culture and in psychological theory and is based on the work of Carol Dweck (2000, 2006), who demonstrated that the achievement of pupils was improved when they believed that intelligence, and therefore the ability to succeed, was increased through effort (Dweck, 2000; Dweck & Leggett, 1988).
Pupils with a growth mindset or incremental view of intelligence performed better in challenging tasks than those with a fixed mindset or entity view of intelligence.

The concept of growth mindset has been researched in a variety of fields. Dweck’s own research began with the concept of ‘learned helplessness’, first identified in animal experiments (Seligman & Beagley, 1975). She found that while some children thrive in the face of challenge, others react with fear and avoidance when learning becomes difficult (Dweck, 2017). She and other researchers began to make the link between motivation and achieving the best learning outcomes in all circumstances (e.g. Ryan & Deci, 2000). The concept of incremental (growth) and entity (fixed) mindsets emerged in the 1980’s (Dweck, 2006) and has been researched in fields such as anxiety (Schleider & Weisz, 2018), losing weight (Burnette & Finkel, 2012) and prejudice (Sassenberg & Moskowitz, 2005).

Studies of this phenomenon in UK schools are starting to emerge (Seaton, 2017; Fraser, 2017; Rissanen et Al., 2019). A growth mindset approach can motivate children and builds resilience (Fraser, 2017), supporting pupils to respond to challenge as required by Ofsted (2015). However, there is recognition in the literature that if pupils have been encouraged to embrace failure as an opportunity, this may conflict with a ‘target-driven culture’ (Lambert, 2014, p. 50), where pupils are under pressure to produce the right answers (Boaler, 2013).

Claims for the benefits of a growth mindset strategy are often made on the basis of short-term, discreet interventions or laboratory studies (e.g. Schleider & Weisz, 2018). The research around the use of growth mindset interventions in primary schools appears to be at an early stage and the studies have been mainly evaluative of process rather than outcome (Savvides & Bond, under review). However, there is evidence to support further investigation of growth mindset and in particular, its application to primary pedagogy, where learning in a broad context is important (Hattie, 2009).

Some schools have adopted a growth mindset approach to motivate children. However, Dweck accepts that the concept of growth mindset is sometimes poorly explained to pupils (Dweck, 2017) and that schools vary in their ability both to understand and to use this strategy. There is an absence of clear guidance for schools regarding whole-school growth mindset approaches and frameworks for learning. It is argued that when the ‘learning
curriculum’, is overtly described to children by teachers, a culture of metacognition develops, where both adults and children openly talk about the process of learning and teachers can “powerfully scaffold students’ learning trajectories and direct the students’ attention towards aspects of their own performance” (Claxton & Carr, 2004, p.93). Children discuss their performance in relation to previous achievements and become more concerned with outperforming their own record than with outperforming their peer group (Martin, 2015). This has resulted in a general dissatisfaction with one-off testing as a way of measuring progress (Amrein & Berliner, 2002) and a move towards “value-added assessment models” (Martin, 2015, p.134), with a number of proposals emerging around growth goal setting (e.g. Elliot et al., 2015; Martin, 2015). However, as Dweck (2015) points out, “high stakes testing” may be inadvertently “creating an atmosphere that works against true growth in both students and educators” (Dweck, 2015, p. 244).

Some studies have elicited the views of pupils about growth mindset (Lambert, 2014; Fraser, 2017). These studies indicate that pupils valued the intervention but the authors remained cautious, with one noting that it was likely that pupils said what was expected of them (Lambert, 2014). Further research is therefore needed into how pupils view a long-term, embedded, growth mindset framework in their school.

Participatory research is a “multi-informant approach to data collection” (Hill et al, 2017). Where children are involved, it focuses on the voice of the child as central to the research. It can increase the participation of children in all aspects of the settings where they live and are educated (Burton, Smith & Woods, 2010; United Nations, 1989, articles 12 and 13).

Participatory research was identified for the present study as a method to move beyond eliciting children’s views to including pupils in data collection and interpretation (O’Kane, 2001) and dissemination (Yardley, 2014). It highlights the importance of empowering participants through the research process. This was deemed necessary to mitigate the power imbalance that might otherwise be perceived by the children, making them reticent to speak out about their school experience. This process enables the researcher to co-create the direction of the research with participant-researchers and facilitate the creative exploration of the data in ways not originally foreseen by the researcher.

Given the popularity of growth mindset in schools (Dweck, 2006), the present study explored an embedded, whole-school approach from a pupil perspective. The group of Y5
pupils participating in the research had experienced the school’s growth mindset approach since its introduction in 2014.

The research was commissioned by the school, together with their supporting educational psychology service, to evaluate their use of growth mindset. The school had introduced a growth mindset approach over several years. The decision was made to focus the study on the group of pupils who were in year 5, who had been at the school from the programme’s inception.

The following research questions were investigated:

- How was a growth mindset intervention in a primary school perceived by pupils?
- How was a participatory research process perceived by pupils?

**Methodology**

**The School**

The research took place in an urban, two-form entry primary school in Greater Manchester, where a whole-school, embedded growth mindset approach had been well established over four years. The principles of growth mindset (Dweck, 2006) were presented in a framework for learning called ‘Learning Powers’, which, in line with much of the literature, takes account of the value system and attitudes that persist within a school culture (Claxton & Carr, 2004). The framework was introduced following an Ofsted report that required the school to introduce more challenge for pupils. Growth mindset values are incorporated into the seven areas proposed by Claxton and adapted to suit a bespoke school framework (Appendix 2). A pilot study by the researcher (Savvides, 2018), highlighted the positive way that the new initiative had been introduced in line with implementation theory (Lendrum & Humphrey, 2012). A holistic approach emerged that was easy to apply without adding to workload and supported pupils in every aspect of school life, including friendships and positive classroom behaviour.

For the current research, questions were developed collaboratively with the lead teacher in the school and in consultation with other members of staff to foster a sense of joint ownership (Boyatzis, 2002).
Study Design

The present study explores pupil perception of a whole school, embedded, growth mindset approach through a participatory process and outcome evaluation. The researcher was interested to hear the views of one group of children in Year 5 of a primary school, who had been at the school when the approach began and to support them in eliciting the views of Year 3 children.

The research adopted an epistemological stance of critical realism (McEvoy & Richards, 2006) which enabled the researcher to consider the study of structures and processes relating to growth mindset in school, but also gave emphasis to the meaning placed on these by the people who experienced them in a real-life context. The research followed a participatory process and outcome evaluation design in a single, case study school with embedded units of analysis (Appendix 15) (Yin, 2009) and received ethical approval from the host institution in November 2018.

Participants

Purposive sampling was used to select a school which had a growth mindset learning framework already in place. The selected school was part of the research commissioning group. In consultation with staff, one class of Year 5 children and one class of Year 3 children were purposively chosen to participate in the study. A group of eight, Year 5 pupils opted in to be co-researchers and a class of 28 Year 3 pupils completed surveys and interviews designed by the Year 5 co-researchers. Additionally, the Year 5 co-researchers gave a presentation to the year 3 class to request their participation. The Year 5 pupils also undertook the early stages of thematic analysis.

Method

A focus group was held with the eight Year 5 co-researchers and themes identified to direct the research (Appendix 12) (Stothard, Woods & Innoue, 2018). The focus group utilised activities to facilitate the exchange of ideas (Colucci, 2007).

Two taught sessions covering data collection and data analysis were delivered to the co-researchers. An interview schedule and a questionnaire were developed collaboratively (Appendix 13 and 14), to ensure the role of the children in directing the research (Kellet,
2005) and these were administered by the Year 5 co-researchers. A final focus group with the same Year 5 group was used to reflect on the research process and growth mindset.

The researcher kept a research diary to note observations, including a school assembly on learning powers, and to record decisions made around ethical conduct and safeguarding of participants. This enabled the researcher to build a narrative around events with a reflective commentary (Altrichter & Holly, 2005).

Care was taken in the contracting of the research design with the school to ensure that any unforeseen or unexpected views expressed by child participants in the course of the research would be handled sensitively and with due regard for those involved, particularly if issues were raised that were either unwanted or difficult to hear. The published report ensures anonymity of participants and anyone they refer to. The school wished to be identified as a partner in the research; it would have been possible for the school itself to be unnamed if the findings had merited this. It was also made clear to school staff and pupils that there would be no link between the findings of the research and performance evaluation of adults or children in school. Furthermore, the research proposal received ethical approval from the researcher’s university.

Data Analysis

The data from the Year 3 pupils were analysed by the Year 5 pupils, using a block and file approach (Grbich, 2012). The researcher then analysed data from the Year 5 focus groups, whilst incorporating the codes generated by the Year 5 co-researchers. The transcribed focus groups and interviews were subjected to a six-stage thematic analysis which was semantic and inductive, with some latent elements being considered (Braun & Clarke, 2006; 2019). Furthermore, Appendix 17 clarifies which codes were generated by the Year 5 co-researchers (those with an asterisk) and which were generated by the university researcher.

Nvivo software (QSR International Pty Ltd., 2016) was used to organise the resulting data sets and to enable the drawing of a theme map to support the writing of a descriptive narrative of the findings.
Findings
The data contained 15 codes which were organised using an NVivo Codebook (Appendix 17) and informed by the codes identified by the children as co-researchers (marked with an asterisk in the codebook).

From the list of codes, four overarching themes were labelled to provide a narrative structure for the findings. These are illustrated in the theme map below, in relation to other themes.

![Theme Map](image)

**School context**
Learning Powers is the framework used within the school (Appendix 2) and based on Claxton’s Learning Dispositions (Claxton & Carr, 2004). It facilitates the situation of growth mindset within the normal running of the school and within wider school policy, such as behaviour and homework practices. The framework is reflected in displays, featuring bespoke artwork and linking the framework to Bible verses in line with the school’s Christian ethos. In an assembly noted in the research diary by the researcher, pupils were given certificates and stickers for demonstrating use of the learning powers with specific examples of the task they had completed.
Theme 1: Pupil perceptions of Growth Mindset/Learning Powers

The Year 5 co-researchers referenced many of the learning powers when discussing what makes a good learner, such as: “Good learners are curious... good learners ask lots of questions” [P7]; “Good learners never give up” [P6], (a reference to the learning power: ‘be resilient’).

There was respect for the framework, with one pupil commenting: “With the learning powers, I think they make it better... and they keep improving” [P7]. There were examples of pupils applying these strategies in their work: “So if we don’t know what to do... we can use cooperation with your partner” [P5]. This last comment was corroborated by the researcher’s observations in the classroom, where the pupils arrived and settled to work, supporting each other in finding solutions to problems such as navigating computer technology. Coloured cups were used as a signal, to show whether pupils needed support from a peer or the teacher.

The Year 3 pupils were positive in their comments, with the most popular choices of learning power being: cooperation, “because you can learn from each other”; being creative, “because I like to write a lot”; and challenge yourself, “because you’re always challenged by the teacher”, suggesting that they appreciated being challenged in their work. When asked how they would feel without the learning powers, one pupil said that: “It would make my work not improved”.

The Year 5 co-researchers were not unanimous in their praise, though, with one pupil saying that he had “not really benefitted from them... I think that over the years, I’ve already got used to it... I think it’s kind of for... the younger years that have just came in” [P3].

Another Year 5 pupil was appreciative of the framework but sceptical about how it was conceived: “The learning powers are good but... I don’t really think they thought about what they were putting on there, because I think they just wanted to spell out St. Mary’s’ first letters because if you look there... it spells out St. Mary’s” [P5].

Theme 2: Mistakes as an opportunity to learn

Resilience and challenge involve making mistakes along the learning journey. This feature of the growth mindset approach was picked up by the Year 5 group in their first focus group...
and became a theme in the interview schedule and questionnaire. When the Year 3 pupils were asked how they felt about making mistakes, most responded positively, such as: “Mistakes help you learn”; “feel good because you can learn from it”; I can always do it different the next time”; “challenged so [pupil] improves”. Just one Year 3 pupil noted that they would be: “worried, because if you forgot to read it, it might be wrong”.

There was some ambivalence around mistakes. In the Diamond Nine activity (Kagan & Kagan, 2009) the pupils responded with: “Good learners think that when you get things wrong, that is a way that you learn” [P2] and “You learn from mistakes because you learn not to do that… not to make that mistake again” [P4]. However, when discussing this theme in relation to the classroom, their answers revealed mixed emotions: “I would feel confused” [P5]; I would feel a bit nervous and stressed” [P2]; “It’s really scary” [P7]. This is important to note, since these comments referred to a lesson that had been observed by the researcher and these emotions were not apparent in the classroom. The comments related to an instance where a right answer was required and highlights the difficulty of balancing a growth mindset agenda within a context that requires measurement of performance for both pupils and teachers.

**Theme 3: Utility of Learning Powers/Growth Mindset: successes and challenges**

There is a tension between the growth mindset framing of mistakes as learning opportunities and the pressure that the children feel to produce the right answer. This was apparent in the Year 5 data collection with Year 3 pupils. Their reflections on the process suggested that they had been given what were perceived as ‘right answers’ and attracted concern in their Year 3 participants of getting the answers ‘wrong’. Some repetition of answers occurred due to the proximity of children working together. The following was observed by a Year 5 co-researcher:

> There was about four…people sat on the same table and started agreeing with each other and then they asked me for help and then I seen all their answers and it was the exact same [P3].

Another Year 5 pupil commented: “I don’t think they were telling the truth about what they felt because…everyone…was like…five on the first question” [P5]. This did lead to a discussion in the focus group which followed, where it was pointed out that the group had
not really talked about a fixed mindset at all and what that might look like: “because even though it’s like...bad...sometimes people will have ...they will have a fixed mindset and we’ve not mentioned anything about that” [P8]. This led to a reflection on the responses from Year 3 pupils:

When [P8] was talking about ...the Year 3 kids having a fixed mindset, well... some of the year 3 kids had a growth mindset...because when I was switching the sheet, some of the Year 3 kids see the answers and they copied them and when I was switching the sheet...the year 3 kids weren’t looking...and the one with the growth mindset had some more fascinating answers than the one with the fixed mindset” [P2].

There is recognition from the Year 5 co-researcher that the growth mindset of the Year 3 pupil contributed to a better quality of output.

**Theme 4: Reflection on the research process**

This theme dominated the second focus group, where the group reflected with clarity on their role as researchers, how they had influenced the process and what they could do differently. They were perceptive around the issue of influencing answers, aware that their Year 3 participants wanted ‘right’ answers and noticed the effect on the data. They found their own thoughts reflected in their participants’ responses and this enabled them to reflect on their role as participant-researchers and how the meaning of responses was shaped by the environment in which the data were collected.

One issue raised in this context was the dilemma between reassuring the Year 3 children during the research process and separating them from peers to allow honest answers. In planning, the Year 5 co-researchers demonstrated creativity in their suggestions to “create a safe space where everyone can be appreciated”. However, the Year 5 group expressed some frustration with the responses they were getting, with one saying: “The two people I interviewed, they were like saying ...’what she said’” [P4]. This led to suggestions around managing the research differently, such as: “put them in a classroom where they can’t see each other” [P7] and “they should do it in silence unless they need help from us” [P7].
Despite these concerns, there was recognition of the balance between controlling the research process and unnerving their participants: “I think that...you shouldn’t be too strict with the Year 3s because then they’ll get too scared and then they’ll just start...writing down whatever...you want them to” [P3].

There was honesty from the Year 5 co-researchers that the data collection process had been fun but challenging. One noted: “You have to, like, focus yourself” [P8] and another: “If we do the questionnaire again...maybe they could write by themselves because we did a lot of writing and my hand started aching” [P2]. They also had difficulty persuading some of their young participants to focus appropriately on the project, commenting: “they were messing about with the Year 6...the prefect...so maybe they could be well behaved” [P2].

There was nevertheless satisfaction in completing the work: “I enjoyed helping people” [P3] and “It was just really good on that, I enjoyed it” [P4].

There was discussion with the Year 5 co-researchers around how they might share in dissemination. The plans are on hold at present, due to the national health emergency.

Discussion
This study presents an exploratory, participatory case study of a growth mindset intervention in a mainstream, British primary school, examining pupil perceptions of the intervention and their perceptions of a participatory research project. Four themes were identified from the data. These were: Pupil perceptions of growth mindset/learning powers; mistakes as an opportunity to learn; utility of learning powers/growth mindset: successes and challenges; reflection on the research process.

The data reflects the embedded, whole-school nature of growth mindset practice at this primary school. This is similar to the work described by Fraser (2017) and Seaton (2017). It is different from the short-term, targeted interventions that are a feature of much of the literature to date (e.g. Rienzo et al., 2015; Farrington et al., 2012).
Pupil Perceptions of the Application of a Growth Mindset Intervention

The present case study demonstrates that pupil perceptions of a whole-school learning framework are complex and to some extent depend on the views and experiences of individual children, which may differ. Within the Year 5 research group, there were conflicting views and, it could be argued, differing levels of understanding of the self-theory (Dweck, 2000) that underpinned their school’s learning framework. This is similar to the findings of other studies (Teal, 2012; Truax, 2018).

The pupil perceptions of the application of growth mindset in their school were broadly positive. They valued the challenge that they received from their teachers, together with an environment where mistakes were seen as learning opportunities. This is consistent with the original research by Dweck and colleagues (Dweck, 2017). The vocabulary used by Year 5 co-researchers and their Year 3 participants was reflective of their school environment, where growth mindset is embedded, so that the children are less aware of it, as is the case in previous case studies (e.g. Fraser, 2017; Lambert, 2014). Some ambivalence was apparent around how safe the children felt to make mistakes. The Year 5 discussion around the uncomfortable emotions that mistakes provoke was similar to the findings of other researchers (Fraser, 2017; Truax, 2018). It had been noted that this is an area demanding constant attention by teaching staff and there is a need to repeat and revisit teaching on this topic on a regular basis. The whole area of testing in schools has been found to be of concern to researchers, who point to the difficulties created by a climate of fear (Amrein & Berliner, 2002).

This research focused on one case study school, where the concept of growth mindset was incorporated into a school-wide learning powers framework, based on the work of Claxton (Claxton & Carr, 2004). Pupils appeared uncertain about the origins of the learning powers and some thought that the acronym pertaining to the school’s name was more important than the statement of each learning power. Growth mindset is taught as a separate topic in school as ‘Growth Mindset Week’ and the researcher was able to view pupil workbooks relating to this. It appeared that some of the Year 5 pupils had not made a connection between growth mindset and learning powers and perhaps the list of learning powers has become so familiar in school that teachers are not commenting on these or explaining them as they might have done when the framework was new in school. Although the learning
powers were used overtly in a school assembly observed by the researcher, with rewards given based on the use of learning powers, this was within a context of the powers being a normal part of the vocabulary and structure of school life. It may be that more explicit or regular explanation of the background to the learning powers would support the children’s acceptance and understanding of the theoretical background to the framework. This follow-up work is recognised as important in the maintenance of interventions (Lendrum & Humphrey, 2012). The social validity of the intervention as perceived by pupils is important for its success (Bell et al., 2015).

Pupil Perceptions of the Research Process

It was important to the researcher to involve pupils in the research process. Encouraged by other research involving children as researchers (Kellet, 2005; Burton et al., 2010; Hill et al., 2017), pupils were involved in the planning, execution and evaluation of the research. It is hoped that dissemination can follow. The pupil co-researchers showed insight in their understanding of the ethical considerations of involving Year 3 participants, in creating a supportive environment. This caused difficulties in copying of answers and some distractions. Kellet (2005) comments on the journey from ‘research on, through research with to research by children’ (p.27). The difficulties faced by the Year 5s in managing their Year 3 participants were a reminder of the problem for children with power relations in an environment where they themselves are subject to the authority of adults (Kellet, 2005). They had rightly made it clear to the Year 3s that they had the right to withdraw from the research but were frustrated when the younger children did not complete tasks or requested assistance, such as with writing. It demonstrated the problem of compliance with perceived expectations (Larsen, 1974). A Year 5 pupil’s assertion that some Year 3s were giving the answers that were expected revealed a depth of insight into the research process and how it was a problem to decide which answers were ‘true’ and which were given in the spirit of ‘what was required’.

Other researchers have previously found that the demands on pupil and teacher time can be onerous (Burton et al., 2010) and this is an area to carefully contract with participating schools in future projects. This case study school was generous with time in facilitating the
project. Research visits were timed in order to cause minimum impact to school schedules and this was a factor in maintaining a good relationship with the host school.

Implications of the research

The school which was the focus of this case study is well placed within a cluster of schools in an urban area to share good practice and to encourage others to explore the concept of growth mindset. The findings suggest that more can be done to be explicit about the background to the framework used in this school. It would be helpful to revisit the framework for pupils who are new to the school or who have been at the school for several years and are therefore so accustomed to this way of thinking that reflection on practice would benefit from being strengthened (Lendrum & Humphrey, 2012).

Educational psychologists are well placed to support schools in the implementation of growth mindset, in a way that emphasises the importance of carefully planned and consistent application of theory to practice (Miller & Frederickson, 2005). It may be that a growth mindset programme could be developed or adapted for primary children in such a way that the effectiveness of the programme could then be measured in a consistent and meaningful way across different primary school settings. The programme may be developed as an intervention with particular reference to motivating disaffected or disadvantaged pupils, or as a practical, whole school approach as illustrated in this case study.

The attitude of pupils to mistake-making needs attention and pupils need to feel safe to pursue a trial-and-error approach without fear of recrimination. This is an area where educational psychologists can provide guidance.

There remains, too, the prospect of further collaboration between university-based researchers, Educational Psychology professionals and school communities, to promote the active participation of pupils in research projects that have a direct bearing on their experience of school and the improvement of their school experience (Burton et al., 2010).
Limitations of the Research

The present study is a single-school case study and it would be necessary to carry out further studies of this type to be more certain that the findings of this study are being replicated in other schools or can be relevant to the work of different contexts (Yin, 2014).

Whilst every effort was made to include the Year 5 co-researchers at all stages, this study does not represent a piece of children’s research but rather an adult-led, participatory research study. Children’s research is ‘different from and complimentary to adult research’ (Kellet, 2005, p.14). Scrutiny and academic rigour are still required, together with due concern for ethical practice and this does imply a level of adult control when the research is conducted within a primary school.

A power imbalance was perceived between the Year 5 co-researchers and their Year 3 participants and it may have been better to interview their own, Year 5 peer group, as examples of peer-on-peer research reported by Kellet (2005) demonstrate insight in the interviewing process that was lacking in this research, where there were concerns from participants about giving expected responses.

Future Directions for Research

There remains a need for further research into the use of growth mindset as a framework for learning in primary schools. These include the development of appropriate ways to evaluate its impact on motivation and achievement, through the development of bespoke evaluation measures pertaining to growth mindset or through the objective measurement of motivation for learning or academic outcomes. There is also a need for impact measurement at an organisational level, since growth mindset is frequently framed as a systemic intervention.

References


Paper Three: Dissemination of research to professional practice

Introduction
In this paper, the researcher considers the link between professional practice in educational psychology and the evidence base that underpins practice. It examines the relationship between evidence-based practice (EBP) and practice-based evidence (PBE). This will relate particularly to the topic of growth mindset, as presented in papers one and two of the thesis. It will be discussed in relation to school settings, where there has traditionally been some resistance towards the use of evidence from research (Goldacre, 2013). However, this has changed in recent years through the work of the Education Endowment Foundation and similar organisations, who provide guidance documents for schools (e.g. Rienzo, Rolfe & Wilkinson, 2015).

The standards of proficiency for practising educational psychologists (EPs) include the need to ‘engage in evidence-based and evidence-informed practice’ (HCPC, 2015). Evidence-based practice (EBP) is defined by the American Psychological Association (APA) as ‘the integration of the best available research with clinical expertise in the context of patient characteristics, culture and preferences’ (APA, 2006, p. 273).

Evidence-based Practice
The concept of EBP originated in the field of medicine, where medical practitioners were required to support decisions around treatment based on systematic reviews of available research (Cole & Dunsmuir, 2018). This was to provide the most effective treatment as well as reducing the risk of harm, within a framework of cost-effectiveness. Whilst there are differences between medicine and education, there are similarities in their endeavours, in that they seek to learn from experience and to use the particular skills of individuals in their context (Goldacre, 2013).

A traditional view of scientific evidence focuses on the use of randomised controlled trials (RCTs), with the systematic review of several of these seen as the top of the evidence-based hierarchy. The literature pertaining to the work of EPs demonstrates a broader view (Robinson, Bond & Oldfield, 2018). In common with health practitioners, three elements emerged as important to EPs in their choice of evidence: best available evidence; the characteristics of clients; the available resources. This points towards the context of EP
work as well as the evidence base as being important to the success of any intervention (Bell et al., 2015).

Systematic reviews and meta-analyses have both been used as acceptable methods to synthesise research from diverse sources and to interpret or aggregate the results for the benefit of practice (Boyle, Connolly & Mackay, 2016). These are seen as secondary data analysis, in that they revisit and evaluate existing data from the primary research studies of others (Glass, 1976) and are considered within professional practice in both health and education as a high quality of evidence (Scottish Intercollegiate Guidelines Network, 2015).

A good quality systematic review is characterised by having clear research questions, sufficient detail within the search strategy for this to be replicated, together with a clear synthesis of the data from across the included studies (Boyle et al., 2016). Whilst meta-analysis is not a requirement of systematic review (Boyle et al., 2016), this technique of synthesising statistical data from a number of studies pre-dates the use of systematic review (Glass, 1976, 2000) and provides a useful research tool to collate results from a number of studies in primary as well as secondary research (McCartney et al., 2004).

EBP has become an accepted and expected part of economic costing for both health and education fields and this is increasingly the case for educational psychology, where there is the requirement to recommend evidence-based interventions and to consider the budgetary implications of recommendations that are made. There are nevertheless some reservations about the over-reliance on evidence that is generated through RCTs or the systematic review of such. The notion of ‘best available research’ relies on a context where assumptions are made about the nature of scientific knowledge (Gulliford, 2015). Concerns have been raised that the use of RCTs leads to an over-reliance on the methodology used at the expense of the quality of the evidence (Kennedy & Monsen, 2016). Furthermore, it could be argued that there is limited use of research findings in real-world contexts, since the original research studies involve the participation of a motivated research team working in optimum conditions (Kasari & Smith, 2013). This can be a difficulty for EPs as they seek to influence teachers and especially special educational needs coordinators, who may be highly motivated themselves but need to convince others to implement change. Indeed, it is only when research is applied in real-world settings such as the school classroom that inconsistencies and difficulties with the research direction start to emerge (Argyris, 2004).
With the wealth of interest in educational practices among EPs and teachers, it is unsurprising that there has been a search for other methods of finding out about what works well. Even in the field of medicine, case studies have been used to forward the use of drugs such as penicillin and insulin (Sur & Dahn, 2011). Similarly, in psychology, a universal intervention sometimes begins as that which works well to meet the needs of a pupil or group of pupils and this starting point becomes the springboard for further investigation (Frederickson, 2002). The definition of EBP offered by the APA (2006) is sufficiently broad to allow for the use of innovative techniques to be safely trialled by practitioners and to keep an open mind about interventions that do not as yet have a convincing evidence base (Woods, McArdle & Tabassum, 2014).

Whilst EBP is expected of EPs, it is noted that the profession has historically been reticent in favouring research evidence over and above personal experience (Fox, 2003). A study from eighteen years ago (Bramlett, Murphy, Johnson, Wallingsford & Hall, 2002) found that only 47% of school psychologists in the United States referenced journal articles in their work, while 83% reported that they used their own experience to inform practice. In the United Kingdom, there has been a move to doctoral level training for EPs, with the first cohort in 2006 (Frederickson, 2013). It is likely that there will be a better focus on research as important to practice going forwards, particularly given its inclusion in HCPC guidelines for practitioners (HCPC, 2015). The dissemination of research within the school community is a vital role played by EPs and is one area of work which distinguishes the profession from others where there is less attention to rigorous scientific evidence. (Norwich, 2005).

**Practice-based Evidence**

The role of practice-based evidence (PBE) is also described within the HCPC guidelines (HCPC, 2015). PBE involves the trialling of approaches or interventions by practitioners in a real-world context, to determine whether there are grounds for further research to support the intervention and to add to the evidence base, which may inform future decision-making (Frederickson, 2002). It may be that case study designs are employed (Yin, 2009) in order to examine the context of an intervention and the factors that support or impede its success (Lendrum & Humphrey, 2012). PBE may, therefore, fill the gap between the work and initiatives that happen in the classroom and the need for evidence to support its efficacy before introducing the initiative more widely.
One example where there is a lack of contextual evidence is in the teaching of growth mindset in schools, where schools have adopted the concept of Self-theories proposed by Dweck (2000) with some enthusiasm and not always with a regard for research evidence. Dweck’s work is supported by laboratory-style, controlled experiments (Dweck, 2017).

Paper one is a response to the need for further, real-world evidence to support the use of growth mindset in primary schools and examines specifically how the theory has been taken and applied by schools. This systematic literature review revealed that much of the research thus far undertaken in primary schools is practitioner-led and qualitatively evaluated. It provides a starting point to examine the evidence-base for growth mindset as this is operationalised in primary schools, acknowledging that this is very much led by practitioner-enthusiasts who are ‘trying things out’. Whilst schools are often viewed as the recipients of research, it should be noted that the research presented in paper two was commissioned by the school together with their supporting EP service, which presents the school as actively involved in research in their own right.

The Need to Disseminate Research
Dissemination of research is essential for there to be change in educational practice. One definition of dissemination is ‘a planned process that involves consideration of target audiences and the settings in which research findings are to be received’ (Wilson, Petticrew, Calnan & Nazareth, 2010, p.2). There would appear to be little point in carrying out research unless the results are to be made available to those who will make use of it. This is particularly relevant to the research around growth mindset, since it is the practitioners who work in school who are more likely to be in a position to take this forward than the academics who might read journal articles as part of wider research studies. It is surprising, therefore, that some commentators have noted the dissemination of research to be of secondary importance in the minds of those who undertake it in a traditional academic context (Keen & Todres, 2007) and that, when it is undertaken, it tends to be through journal articles which are more accessible to academics than practitioners.

There is some debate as to whether dissemination should be a top-down, passing on of knowledge or a more collaborative process and part of the generation of the knowledge itself, the notion of a ‘Two-way communication between equals’ (Green, 2014). This does not however, allow for the researcher’s role in pinpointing the salient details of research
from an informed and reflective stance (Bell et al., 2015). This shared aspect of dissemination is pertinent to the papers represented here, since the original research study and its pilot (Savvides, 2018), were commissioned by a primary school in conjunction with their EP service, with this wider group of stakeholders having a vested interest in the sharing of research findings.

It has been proposed elsewhere (Harmsworth & Turpin, 2000) that a dissemination strategy should be planned ahead of the research. This may be difficult to achieve, since it is sometimes the outcomes of research that lead to an appreciation of the audience for whom the findings are most important.

In the case of paper two, the researcher used a participatory model, collaborating with both research commissioners and participants throughout the process. The results of the research could not be predicted but the dissemination process was always going to include the school, the children as co-researchers and the school’s wider community.

A model of dissemination is proposed by Harmsworth and Turpin (2001). This starts from the premise that researchers cannot necessarily have influence over the communities who would most benefit from their findings in a way that would result in changes to practice. The proposal is therefore that the impact of research is considered on three levels:

1. **Dissemination for Awareness**

The aim of this level of dissemination is that researchers seek to make their research available to those who might at some point choose to read it, even if they do not at the present time wish to have detailed knowledge of it. The aim is that they may refer to the research if they encounter a particular problem. For the current research, the commissioner was interested to know how growth mindset was perceived and whether it was achieving what they had hoped, which may be of interest to other schools seeking to implement this intervention.

2. **Dissemination for Understanding**

At this level, the communities who are the recipients of the research are not only aware of the research but also understand its content. This might include awareness of barriers and
facilitators specific to the research context which might also be potentially generalizable to other settings.

3. Dissemination for Action

At the third level, receiving communities would have both awareness and understanding of the research such that they are willing to change their practice as a result of their reading. An important element of this phase of dissemination for papers one and two is the enthusiasm of the commissioning primary school and the children who acted as co-researchers, which provides a firm foundation for the persuasion of others to try out similar projects in other primary schools, having implemented change themselves as a result of the research. This further adds to the body of available evidence and provides further opportunities for pupils to participate and lead in research studies.

There have been concerns about how the efficacy of research is judged before it is disseminated. In the case of medical research, it has been noted that clinical trials are not always conducted with those who need the medical intervention, such that results may not be transferable to real-world situations (Glasgow, Vogt & Boles, 1999). For research involving growth mindset, it could be argued that the problem is skewed in the opposite direction, with real-world, context-embedded research studies such as those by Fraser (2017) and Lambert (2014) being difficult to evaluate in a way that would satisfy the requirements of ‘efficacy worthy of dissemination’. The focus has been on small-scale exploratory studies, which makes it difficult to draw conclusions about effectiveness or efficacy. It is feasible that some research studies have not been disseminated previously, because they do not appear to demonstrate measurable results, with only the most promising studies, such as those cited above, finding a publisher. This goes beyond the well documented phenomenon of publication bias, where editors choose to publish studies with favourable outcomes (Ferguson & Brannick, 2012) and speaks more of researchers who may doubt that their findings have relevance outside of the immediate context in which they work (Bell et al., 2015).

There is a further issue around both the ability and the willingness of teachers to access academic articles to inform their practice. This is particularly pertinent to papers one and two, where the findings are useful to EPs but also to teachers and educational leaders in
directing their practice. If teachers are the target audience for this work, it is important to consider how best to reach them and to accept that this may be through publications such as magazines and the education section of national newspapers as well as the more traditional academic journal route. However, it should be remembered that EPs can provide the ‘steer’ that leads teachers to research and that therefore EP journals should not be overlooked. The Educational Endowment Foundation have completed good work in raising the profile of EBP in schools (e.g. Rienzo, Rolfe & Wilkinson, 2015) but there is further work to do in this area.

Research Implications of Papers One and Two.

Introduction
The effective dissemination of research papers provides support to the practice of professionals, especially EPs and teachers. The implications of the findings of research for practice should be considered to inform the dissemination plan. For this report, the implications for practice are described at the level of the research site, namely the commissioning primary school, for the wider community of schools within the cluster served by the commissioning EP service (the organisational level) and at the level of professionals, including EPs.

Implications for the Research Site
The findings from the first paper are important for all those in schools seeking to improve the motivation of pupils. The findings, though tentative, point to the potential usefulness of growth mindset as a framework for learning, with particular promise in raising the aspirations of pupils who might otherwise be at risk of academic underachievement. The paper focuses on a small number of studies and the fact that research in this area is at an early stage provides inspiration for practitioners to seek further answers in the direction of this work and to ask more questions of the existing research base, as well as conducting further studies.

Paper two is relevant to the research site because of the involvement of pupils as co-researchers. Their knowledge of the school context, together with the scrutiny afforded by independent university researchers, provides an in-depth picture of a framework for
learning which is fully adapted to suit its own, real-world context (Bell et al., 2015). Furthermore, the dissemination of the research further enhances the school’s status as a resource base for schools seeking to use similar approaches and the status of the researcher pupils, who can transition to high school knowing that they have contributed to an initiative at their school, that their voice has been heard and they have been taken seriously as co-researchers. The novel contribution of paper two lies less in the detail around growth mindset and more in the evaluation of the approach by the children, since their impression was not entirely as the original intervention had been intended.

Details within the methodology of paper two will be of interest to other practitioners who seek to involve pupils in further research projects. The use of Kagan structures (Kagan & Kagan, 2009) to facilitate collaborative working and the sharing of ideas could be used in other studies. Indeed, the concept of establishing focus groups in a way that benefits the needs and strengths of pupil researchers is worthy of note (Colluci, 2007). Having their views heard and sharing their knowledge in this way will boost the confidence of pupils in a way that will support them going forwards to high school. Furthermore, the presence of university researchers in the school has further raised the profile of the school’s growth mindset framework for learning and provided further encouragement to teachers in the use of the approach.

**Implications at the Organisational Level**

As well as the obvious benefits to the commissioning school the findings of papers one and two also have implications at the organisational level and this is taken here to mean the usefulness of the research to other schools. The school where the research took place is part of a group of schools served by the commissioning EP service, which provides a bespoke network for dissemination both through an annual conference and through cluster group meetings. The research had a particular and deliberate focus on primary schools and it is the implications of the research findings for primary schools which is of particular note. The collaborative nature of the research project and of paper two in particular, means that the findings will have social validity (Bell et al., 2015), in that the teachers to whom the findings are presented will be receiving the information within a context of real-world primary education, rather than a remote academic study. Yin describes the ‘analytic
generalisation’ of case studies, meaning that multiple case studies, when viewed together, represent an opportunity to provide an expansion of existing research rather than providing a ‘particularising analysis’ of specific knowledge (Yin, 2009, p.15). In this way, the present case study can be viewed alongside other, similar case studies to gain a broader picture.

An important implication from paper two is the need to balance a classroom ethos of challenge and learning through mistakes within a culture of standardised testing. The views of pupils in this regard are an important voice amongst writers and researchers who have already raised this difficulty (Dweck, 2015; Hattie, 2000). This provides an example of why some dissemination would need to be planned after the research is complete, due to the involvement of the host school and the need to sensitively report findings in a way that is respectful to both staff and pupils.

Implications of the research at the Professional Level
The implications of research findings at a professional level will include the training of teachers in growth mindset approaches by EPs, together with ongoing support and evaluation of interventions. Training in the use of growth mindset as embedded practice or as a discreet intervention, will be strengthened by the research presented in paper two, which increases the social validity of the approach and makes it more likely that practitioners will change the way they work following training. The approach is likely to be attractive to school managers, because it does not involve the addition of expensive resources but rather a change to the language, emphasis and culture of school ethos. EPs can thus be involved in change management at a whole-school level.

Training could also be useful for EPs because it is the researcher’s observation that teachers are more accepting of growth mindset interventions, while EPs continue to be sceptical about the largely qualitative and tentative evidence base for the theory. This could be due to errors of judgement in schools relating to the (now discredited) theory pertaining to learning styles (Newton, 2015). This dichotomy of opinion could become the subject of future research projects.

Strategy for Dissemination and Measuring Impact
The model proposed by Harmsworth and Turpin (2000) was used as a framework for the dissemination of the findings from research papers one and two. The main method of
dissemination was through the naturally located network of schools with the commissioning school at the centre of the network within the local authority and within the EP service which works with the schools. A pilot study (Savvides, 2018) is already available on the website of the commissioning EP service. Beyond this, the research was disseminated through the researcher’s own professional practice as a Trainee EP and this will be developed later, on qualification as an EP. The personal introduction to the researcher is important because it then signposts teachers to the website, should they wish to read the research paper.

Papers one and two have also been submitted for publication to academic journals. An article based on the findings of paper two and focusing on the participation of children in research, will be submitted to an educational magazine. Another option would be to write a ‘blog’ that could be accessible to teachers and researchers. Finally, an abstract of paper two has been accepted for presentation by an international conference aimed at psychology and educational professionals.

**Dissemination for Awareness**

This part of the model fits well with the planned magazine article and the presentation of the research to schools. At this level, those who hear of the research may have a professional role within a primary school such that they could become an influencer. However, it is more likely that those who hear of the research will not actively use the information but may return to it at a later date when a school improvement plan is required or if the demographic of a school changes in such a way that a more creative approach to the curriculum is required. The findings from paper two would suggest that a growth mindset approach could be a way to provide a framework for a whole school ethos that could take a school in a new and more academically or socially successful direction. Others may refer back to the research because they want a framework or methodology for a piece of collaborative research with a local university or with children and teachers from the school.

Similarly, the researcher hopes, through professional dialogue, to keep growth mindset on the agenda for schools, to promote the approach in consultation and to encourage colleagues to explore this as an option for disaffected pupils. It is possible that some of the
colleagues who hear of the research in this way may take their ideas forward to the next stage of the dissemination model and begin to actively seek out reading material connected to the research, as well as reading papers one and two directly. The use of correct key words when the papers are submitted for publication will increase the likelihood that they will be found online for those seeking information.

**Dissemination for understanding**

The magazine article and blog are designed for clarity and ease of access, so that teachers who are unaccustomed to reading academic journals will readily be able to engage with the content. Some of those who read the magazine or blog will not be in a position of leadership or authority but will nevertheless be able to suggest changes in school practice to decision makers. All primary teachers have a level of autonomy in the way that they manage their class curriculum and it is possible that teachers who are not in leadership roles may nevertheless be in a position to set up a collaborative research project with their pupils should they so wish, leading them into the next, dissemination for action category. Similarly, it is possible that school leaders who can access the research in an accessible format may go on to add the growth mindset approach or participatory model in their professional practice in school. Finally, EPs who access the research, through the reading of press reports or the full research papers, may go on to use either approach in further research or as part of systemic work with a school or group of schools.

**Dissemination for Action**

The magazine article and blog are aimed at readers who may use the research in their practice. It is hoped that many will engage with the research at the level of dissemination for action. The commissioning primary school and its partners are in a strong position to advocate for the success of the approaches used and to garner support from primary colleagues across a number of schools. As uptake of the idea of collaboration between pupils, teachers and university emerges, it is hoped that this can become a model for future research projects, to enable the strength of context-embedded, real-world interventions to be rigorously investigated through collaboration with university colleagues. The annual training conference of the supporting EP service would provide a platform to facilitate this.
Readers of the research in academic journals may fall under the category of dissemination for action if they are completing interventions in schools and choose to use a similar participatory methodology. In addition, some EPs working within schools may be in a position to be invited to bring about change through their own direct work with schools which would also constitute action following reading of the research.

Finally, the dissemination of the research at conferences may similarly bring about changes in practice. Paper one demonstrates clearly the international interest in growth mindset approaches but at the same time highlights the lack of pupil engagement or involvement in the research generally. There are opportunities for this work to influence those who would return to diverse educational systems to keep the rights and the voice of the child central to their work (Woods & Bond, 2014).

**Evaluation of Impact**

The impact of media articles may be judged in the present time through social media. Most publications invite online response, which remain in the public domain. Similarly, it would be possible for readers to contact the researcher through email correspondence. However, these channels would only provide a narrow view of the actual interest created, since the researcher is aware that responding to articles tends to be restricted to those who have a specialist interest and have the time to spare. Articles may be edited by media proprietors so the only way to be certain of content would be through academic journals and conferences.

The impact of publishing through an academic journal may be easier to measure, given that the number of online ‘Hits’ for an article and whether it is then referenced in others is counted numerically. However, this says nothing of the levels of engagement proposed by Harmsworth and Turpin (2000) and whether an article produced action.

The researcher will have a better grasp of the impact of the research at a local level, however. There is interest in papers one and two among schools in the researcher’s local authority. This is some distance from the research commissioning school and represents an opportunity to disseminate through training and to follow this up with support for school-based projects afterwards. The pupils from the research school and their teacher could be involved in this work, either in person or through video technology.
The most tangible impact of the research is the effect that it has had on the commissioning primary school, in terms of raising its profile as a resource school for its local area and as the first research project representing a collaboration between the school and the university which, it is hoped, will be the first of many.

Finally, the impact of the research on the group of year five pupils who acted as co-researchers has been encouraging; they now wish to set up future research projects of their own and will be transitioning to high school with full confidence in their own research abilities.

References


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Appendices

Appendix 1: Educational Psychology In Practice (EPiP) Author Guidelines

The defining feature of Educational Psychology in Practice is that it aims to publish peer refereed articles representing theory, research and practice which is of relevance to practising educational psychologists working primarily in UK contexts. In its focus on applied psychology it occupies an important complementary position to those journals which emphasise the experimental work of academic psychologists. Whilst the majority of articles submitted to the journal are written by practising psychologists in the UK, submissions are welcomed from outside the profession and from outside the UK.

The journal particularly recognises that relevant applied psychological theory and practice frequently crosses cultural and state boundaries and consequently the journal promotes an interdisciplinary and international approach, reflected in articles which report major pieces of research, debate issues, detail project evaluations, note research, and describe aspects of professional practice. Content also includes book and software reviews and brief resource updates. Educational Psychology in Practice is the major publication of the Association for Educational Psychologists, the professional association and trade union for over 3000 educational psychologists in England, Scotland, Wales and Northern Ireland.

Educational Psychology in Practice accepts the following types of article:

- Research or Review Article
- Brief Report
- Research Note
- Practice Article
- Article Reflecting on Practice

Peer Review

Taylor & Francis is committed to peer-review integrity and upholding the highest standards of review. Once your paper has been assessed for suitability by the editor, it will then be
double blind peer reviewed by independent, anonymous expert referees. Find out more about what to expect during peer review and read our guidance on publishing ethics.

**Preparing Your Paper**

**Research or Review Article**
- Should be written with the following elements in the following order:
- Should be between 2000 and 6000 words.
- Should contain an unstructured abstract of 150 words.
- Between 5 and 6 **keywords**. Read making your article more discoverable, including information on choosing a title and search engine optimization.

**Brief Report**
- Should be written with the following elements in the following order:
- Should be between 1500 and 2000 words.
- Should contain an unstructured abstract of 150 words.
- Between 5 and 6 **keywords**. Read making your article more discoverable, including information on choosing a title and search engine optimization.

**Research Note**
- Should be written with the following elements in the following order:
- Should be between 800 and 1000 words.
- Should contain an unstructured abstract of 150 words.
- Between 5 and 6 **keywords**. Read making your article more discoverable, including information on choosing a title and search engine optimization.

**Practice Article**
- Should be written with the following elements in the following order:
- Should be between 1500 and 2000 words.
• Should contain an unstructured abstract of 150 words.

• Between 5 and 6 *keywords*. Read making your article more discoverable, including information on choosing a title and search engine optimization.

*Article Reflecting on Practice*

• Should be written with the following elements in the following order:

• Should be between 1500 and 2000 words.

• Should contain an unstructured abstract of 150 words.

• Between 5 and 6 *keywords*. Read making your article more discoverable, including information on choosing a title and search engine optimization.

*Style Guidelines*

Please refer to these quick style guidelines when preparing your paper, rather than any published articles or a sample copy.

Please use British (-ise) spelling style consistently throughout your manuscript.

Please use double quotation marks, except where “a quotation is ‘within’ a quotation”.

Please note that long quotations should be indented without quotation marks.

*Formatting and Templates*

Papers may be submitted in Word or LaTeX formats. Figures should be saved separately from the text. To assist you in preparing your paper, we provide formatting template(s).

Word templates are available for this journal. Please save the template to your hard drive, ready for use.

A LaTeX template is available for this journal. Please save the LaTeX template to your hard drive and open it, ready for use, by clicking on the icon in Windows Explorer.

If you are not able to use the template via the links (or if you have any other template queries) please contact us here.

*References*
Please use this reference guide when preparing your paper.

An EndNote output style is also available to assist you.

**Checklist: What to Include**

1. **Author details.** All authors of a manuscript should include their full name and affiliation on the cover page of the manuscript. Where available, please also include ORCIDs and social media handles (Facebook, Twitter or LinkedIn). One author will need to be identified as the corresponding author, with their email address normally displayed in the article PDF (depending on the journal) and the online article. Authors’ affiliations are the affiliations where the research was conducted. If any of the named co-authors moves affiliation during the peer-review process, the new affiliation can be given as a footnote. Please note that no changes to affiliation can be made after your paper is accepted. Read more on authorship.

2. You can opt to include a **video abstract** with your article. Find out how these can help your work reach a wider audience, and what to think about when filming.

3. **Funding details.** Please supply all details required by your funding and grant-awarding bodies as follows:

   For single agency grants
   
   This work was supported by the [Funding Agency] under Grant [number xxxx].

   For multiple agency grants
   
   This work was supported by the [Funding Agency #1] under Grant [number xxxx]; [Funding Agency #2] under Grant [number xxxx]; and [Funding Agency #3] under Grant [number xxxx].

4. **Disclosure statement.** This is to acknowledge any financial interest or benefit that has arisen from the direct applications of your research. Further guidance on what is a conflict of interest and how to disclose it.

5. **Data availability statement.** If there is a data set associated with the paper, please provide information about where the data supporting the results or analyses presented in the paper can be found. Where applicable, this should include the
hyperlink, DOI or other persistent identifier associated with the data set(s). Templates are also available to support authors.

6. **Data deposition.** If you choose to share or make the data underlying the study open, please deposit your data in a recognized data repository prior to or at the time of submission. You will be asked to provide the DOI, pre-reserved DOI, or other persistent identifier for the data set.

7. **Geolocation information.** Submitting a geolocation information section, as a separate paragraph before your acknowledgements, means we can index your paper’s study area accurately in JournalMap’s geographic literature database and make your article more discoverable to others. More information.

8. **Supplemental online material.** Supplemental material can be a video, dataset, fileset, sound file or anything which supports (and is pertinent to) your paper. We publish supplemental material online via Figshare. Find out more about supplemental material and how to submit it with your article.

9. **Figures.** Figures should be high quality (1200 dpi for line art, 600 dpi for grayscale and 300 dpi for colour, at the correct size). Figures should be supplied in one of our preferred file formats: EPS, PS, JPEG, GIF, or Microsoft Word (DOC or DOCX). For information relating to other file types, please consult our Submission of electronic artwork document.

10. **Tables.** Tables should present new information rather than duplicating what is in the text. Readers should be able to interpret the table without reference to the text. Please supply editable files.

11. **Equations.** If you are submitting your manuscript as a Word document, please ensure that equations are editable. More information about mathematical symbols and equations.

12. **Units.** Please use SI units (non-italicized).

*Using Third-Party Material in your Paper*
You must obtain the necessary permission to reuse third-party material in your article. The use of short extracts of text and some other types of material is usually permitted, on a limited basis, for the purposes of criticism and review without securing formal permission. If you wish to include any material in your paper for which you do not hold copyright, and which is not covered by this informal agreement, you will need to obtain written permission from the copyright owner prior to submission. More information on requesting permission to reproduce work(s) under copyright.

Luke 18:1-8

God Will Answer His People

Then Jesus told them that even the smallest prayer of a person who never stops praying, is heard by the Lord. He also said that if we pray, we must pray with faith.

Once a man was a judge in a town. He did not care about anyone. He also did not care what people thought about him. In that town, there was a woman whose husband had died. She came every day to the market and said, “There is a man who is doing bad things to me. Give me my rights!”

The judge did not want to help her. After a long time, the judge thought to himself, “I don’t care about good. And I don’t care about what people think. But this woman is bothering me. I’ll give her what she wants, and she will leave the town. But I don’t want to help her.”

The Lord said, “When there is a woman about to have children, and she is working hard, she will always give them what they need. He will not be able to answer them. Tell you, God will never let a prayer go unanswered. No matter how long it takes or how hard it is to solve problems, God will always hear and help those who ask in faith.”

Matthew 25:14-30

A Story About Three Servants

Again, it tells about a man going on a journey, who gave his servants their wealth to invest. To one he gave five talents, to another two, and to another one. And after a long time, the master returned to them. The man who had received five talents brought the other five. “Master,” he said, “you entrusted me with five talents. See, I have gained five more.”

The man who had received two talents said, “Master, I have gained two more. You have been faithful with a few things; I will put you in charge of many things. Come and share your master’s happiness!”

The man who had received one talent said, “Master, I have only one talent. I am not going to invest it in anything where you would not have received more. But I was afraid and went out and hid my talent in the ground. See, here is what belongs to you.”

The Lord said, “You must be wise and fill your lamp while you are still in light. Those who have, will have more; those who do not have, will be given to them. Those who do not use what they have, will have it taken from them. And those who work will be given reward.”
### Appendix 3: Review Frameworks

**D.Ed.Ch.Psychol. 2017**

**Review framework for qualitative evaluation/ investigation research**

**Author(s):**

**Title:**

**Journal Reference:**

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<td><em>e.g. rationale vis-à-vis aims, links to previous approaches, limitations</em></td>
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<td><em>e.g. description, justification; attrition evaluated</em></td>
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<td>Well executed data collection</td>
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<td><em>e.g. clear details of who, what, how; effect of methods on data quality</em></td>
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<td><em>e.g. researcher can evaluate fit between categories/ themes and data.</em></td>
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<td><em>e.g. impact of researcher, limitations, data validation (e.g. inter-coder</em></td>
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<td><em>validation), researcher philosophy/ stance evaluated.</em></td>
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<td><em>e.g. schedules, transcripts, thematic maps, paper trail for external audit</em></td>
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<td>Negative case analysis, <em>e.g.</em></td>
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<td>*e.g. contrasts/ contradictions/ outliers within data; categories/</td>
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<td>themes as dimensional; diversity of perspectives.</td>
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<td>Clarity and coherence of the reporting e.g. clear structure, clear account linked to aims, key points highlighted</td>
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<td>Evidence of researcher-participant negotiation of meanings, e.g. member checking, empower participants.</td>
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<td>Emergent theory related to the problem, e.g. abstraction from categories/themes to model/explanation.</td>
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<td>Valid and transferable conclusions e.g. contextualised findings; limitations of scope identified.</td>
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<td>Evidence of attention to ethical issues e.g. presentation, sensitivity, minimising harm, feedback</td>
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### References


## Review framework for quantitative evaluation research

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**Title:**

**Journal Reference:**

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<td>Focus on a specific, well-defined disorder or problem</td>
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<td>Comparison with treatment-as-usual, placebo, or less preferably, standard control</td>
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<td>Use of manuals/ protocol/training</td>
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<td>Fidelity checking procedure/supervision of intervention</td>
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<td>Sample large enough to detect effect (from Cohen, 1992)</td>
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<td>Use of outcome measure(s) that has demonstrably good reliability and validity</td>
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### References


## Appendix 4: Exclusion Criteria

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<td><strong>Scope</strong></td>
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<td>EC1</td>
<td>Includes one or no children involved in a Growth Mindset intervention.</td>
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<td>EC2</td>
<td>Reports on an intervention that is researcher-manipulated i.e. an experimental rather than an evaluative study.</td>
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<tr>
<td>EC3</td>
<td>Does not provide evidence of educational benefit or utility.</td>
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<td>EC4</td>
<td>Uses data that has not been collected in a primary or elementary school setting</td>
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<td><strong>Study type</strong></td>
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<td>EC6</td>
<td>Does not involve an evaluation of an intervention. Commentary or opinion not based on an empirical study of intervention outcomes.</td>
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<td>EC7</td>
<td>Is a commentary or discussion piece</td>
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<tr>
<td>EC8</td>
<td>Is a meta-analysis or systematic literature review</td>
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<td><strong>Time and place</strong></td>
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<td>EC9</td>
<td>Not written in English</td>
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## Appendix 5: Excluded Papers

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## Appendix 6: Overall Weight of Evidence Table

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<th>Study</th>
<th>Overall Quality of Evidence (Weight of evidence A)</th>
<th>Appropriateness of focus (Weight of Evidence C)</th>
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<tr>
<td>Andersen &amp; Nielsen (2016)</td>
<td>7 (medium)</td>
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<tr>
<td>Fraser (2017)</td>
<td>8.25 (high)</td>
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<tr>
<td>Laurian-Fitzgerald &amp; Roman (2019)</td>
<td>6.25 (medium)</td>
<td>1 (low)</td>
</tr>
<tr>
<td>O’Brien et al. (2015)</td>
<td>6.25 (medium)</td>
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<td>Rienzo et al. (2014)</td>
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<td>Schrodt (2015)</td>
<td>10.5 (high)</td>
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<td>Seaton (2017)</td>
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<tr>
<td>Teal (2012)</td>
<td>8 (medium)</td>
<td>2 (medium)</td>
</tr>
<tr>
<td>Truax (2018)</td>
<td>7.5 (medium)</td>
<td>3 (high)</td>
</tr>
<tr>
<td>Vallejo (2018)</td>
<td>11 (high)</td>
<td>2 (medium)</td>
</tr>
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</table>
Appendix 7: Extracts from selected studies in paper one demonstrating how common themes were identified across studies to support the synthesis of findings

Fraser (2017): language used by teachers – script developed from growth mindset intervention informs way that teachers speak to their pupils.

Examples of 'growth mindset script' developed by teachers (Schrodt, 2015).

Vallejo (2018): example of reference to use of common vocabulary especially in relation to process praise and the re-framing of mistakes as opportunities to learn.

These are certainly things you can try in your own writing today and every day, but keep in mind you may very well discover other ways to describe your topic while working today.

If you do, let us know during the share.

I can tell you worked really hard. You put in a lot of effort!

Did you make a mistake? That is great! What can we learn from it?

Are you stuck? What can you do to keep going? (You may point to the anchor charts.)

The first major finding of the study is that teachers utilizing growth mindset use common "growth" vocabulary. Fourteen of 15 participants (93%), referenced 64 times, emphasized the importance of common “growth” vocabulary to provide continuity amongst all school staff and model appropriate ways to praise effort and reframe failure. Similarly, the growth minded word “yet” was referenced by eight participants (53%) as a caveat to rationalize poor performance and help students understand the learning process. Further examples of growth minded vocabulary were noted in correspondence with parents, at school assemblies, and in motivational posters surrounding the campus. It was evident to the researcher that using common “growth” minded vocabulary was noted in all daily interactions and proved to be a substantial element in creating and maintaining continuity throughout a growth mindset school culture.
Appendix 8: Ethical Approval Email

Low Risk Ethics Application Received: 2018-5099-7458 (Automatic Email from the UoM Ethical Review Manager (ERM) system)

donotreply@infonetica.net

**Please ensure you read the contents of this message. This email has been sent via the Ethical Review Manager (ERM) system on behalf of the University of Manchester.**

Dear Mrs Heather Savvides, Dr Caroline Bond

Thank you for submitting your low risk ethics application for your project entitled: Pupil Perceptions of Growth Mindset; Ref: 2018-5099-7458 which has now been approved by your supervisor and logged by the Ethics Administrator.

For those undertaking research requiring a DBS Certificate: As you have now completed your ethical application if required a colleague at the University of Manchester will be in touch for you to undertake a DBS check. Please note that you do not have DBS approval until you have received a DBS Certificate completed by the University of Manchester, or you are an MA Teach First student who holds a DBS certificate for your current teaching role.

If anything untoward happens during your research or any changes take place then please inform your supervisor immediately.

**This approval is confirmation only for the low risk Ethical Approval application.**

Please let us know if you have any additional queries by emailing:PGR.ethics.seed@manchester.ac.uk.

Best wishes,

Mr Liam Grindell

Environment, Education and Development School Panel PGR
Appendix 9: Child Participant Information Sheet

Growth Mindset and Learning Powers Research Study

Who we are

Hi, my name is Mrs. Savvides. I am a trainee educational psychologist and my job is finding out about schools and pupils like you at the University of Manchester.

Would you like to help me with my work about Growth Mindset? You don't have to if you don't want to.

What are we doing?
Educational psychologists work at finding out the best way you can be taught so that school works really well for everyone. They need your help to be able to do this, so that you can have a say in what works best. The reason for this research is to find out what you think about Growth Mindset and Learning Powers and if there is something good about it that other schools need to know.

Your class have been using your Learning Powers for a long time so we want to find out what it is that is special about them from you, before you go to high school.

What do you have to do?

If you want to help, I will ask you to:

- Take part in a discussion group, which I will record (just sound – no video).
- Do some activities in the group to help us find out what you think about Growth Mindset and Learning Powers
- Have a go at putting some questions together for other classes to answer.
  - Help with collecting data (the answers to your questions).

Afterwards we will put all the information together so that you can see what you and the other children in your school think. Then we can let other schools know how special yours is and help them to learn from you.

Would that be ok?

Who gets to see your answers?

Your answers will be on the recording but no one can see you and you don’t need to use your name so only the people in the room when we record will know what you said. We will ask everyone in the group to keep the group ‘confidential’, which means that they won’t tell anyone what you said.

Your teacher will not get to see your answers.

I will keep your answers for 5 years and then I will destroy them.

If you want to know more, please ask your family or the person who looks after you as I have given them a lot of extra information about this.

What Do you Do Now?

If you have any questions please ask me, your family or the person that looks after you.
Let me know if you would like to take part.

Thank you for reading this!
Appendix 10: Parent of child participant information sheet

University Of Manchester
Research Participant Information Sheet

Pupil Perceptions of a Growth Mindset Framework at St. Mary’s Primary School

This information sheet should be read in conjunction with The University privacy notice

Your child is being invited to take part in a research study. The study is part of my work towards a professional doctorate at the University of Manchester. Before you decide whether you wish your child to take part, it is important for you to understand why the research is being conducted and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Please ask if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish your child to take part. Thank you for taking the time to read this.

Who will conduct the research?

Heather Savvides: heather.savvides@postgrad.manchester.ac.uk

Supervising tutor, Caroline Bond: Caroline.bond@manchester.ac.uk

Manchester Institute of Education,

School of Environment, Education and Development (SEED),

Ellen Wilkinson Building,

The University of Manchester,

Oxford Road,

Manchester M13 9PL

Research Partner, Teresa Regan, Managing Director, Catalyst Psychology:

www.catalystpsychology.co.uk
What is the purpose of the research?

As you know, St. Mary’s school have a Learning Powers framework for all of their school activities. This is a framework which is backed up by research to say how effective it can be in motivating children and getting them learning as much as they can. The school have been so impressed by what they have seen of Learning Powers that they have invited the University of Manchester, together with Catalyst Psychology, to run a research project looking at the programme in more detail. The research project started in January 2018 to look at what the staff thought of the programme. The next stage will look at what the children think about it. We hope that this will provide a lot of information about how to make Learning Powers really work in any school so that other schools will benefit.

Why has my child been chosen?

Your child is in a class who have been using the Learning Powers framework in school for a long time. It would be brilliant to get an idea of their thoughts on the programme before they all leave for high school. Your child would be part of a small group doing the research together so they would not be on their own.

What would my child be asked to do if they took part?

In order to get the best involvement and the best research experience for the children, we hope that they will be actively involved in the project as researchers themselves. This means that they will take part in ‘focus groups’ (group discussions that will be recorded and transcribed) and some of them will be involved in putting together a questionnaire to find out what the other classes in the school think about Learning Powers. Once all the information is collected, some of the pupils will be able to help the researcher to look for themes and ideas in the data if they wish.

What will happen to my personal information?
All the information collected by the researcher and by the children themselves will be anonymous so that no individual child will be named or recognisable. All the results will be reported in general terms and it may not be possible to identify and discard any individual responses once the data analysis process has started. The final report will take the form of an academic paper for the University of Manchester. It is possible that the report will be published in one or more academic journals or presented to teachers and professionals at staff training events or conferences.

- Data from the research will take the form of audio recordings (voice only) of focus groups, classroom observations, interviews with staff and documents such as school policies.
- Names will not be recorded and any items which would identify a child or member of staff will be removed.
- Data will be analysed at the University of Manchester by Heather Savvides with help from the students in small groups in school.
- Data will be stored on the password protected ‘p’ drive of the university’s computer system. Data will be archived by the university for five years then destroyed.
- The researcher will not need to collect, record or store any personal information relating to children who take part in the research.
- The researcher would like to use name stickers or badges to help with the focus groups but will keep these at the school.
- The researcher will use a University of Manchester approved transcriber to transcribe the focus group discussion. The recording will be sent and returned by encrypted email and the transcript will not contain any details that might identify the school or the pupils.

We are collecting and storing this personal information in accordance with the General Data Protection Regulation (GDPR) and Data Protection Act 2018 which legislate to protect your personal information. The legal basis upon which we are using your personal information is “public interest task” and “for research purposes” if sensitive information is collected. For more information about the way we process your personal information and comply with data protection law please see our Privacy Notice for Research Participants.

The University of Manchester, as Data Controller for this project, takes responsibility for the protection of the personal information that this study is collecting about you. In order to comply with the legal obligations to protect your personal data the University has safeguards in place such as policies and procedures. All researchers are appropriately trained and your data will be looked after in the following way:
The researcher at the University of Manchester will have access to your personal identifiable information, that is data which could identify you, but they will anonymise it as described above as soon as is practical. However your consent form will be kept for the duration of the project and no longer than 5 years. These will be scanned and stored on the University P drive and the original copies will be destroyed.

You have a number of rights under data protection law regarding your personal information. For example you can request a copy of the information we hold about you. This is known as a Subject Access Request. If you would like to know more about your different rights, please consult our privacy notice for research and if you wish to contact us about your data protection rights, please email dataprotection@manchester.ac.uk or write to The Information Governance Office, Christie Building, University of Manchester, Oxford Road, M13 9PL at the University and we will guide you through the process of exercising your rights.

You also have a right to complain to the Information Commissioner’s Office, Tel 0303 123 1113

Will my child’s participation in the study be confidential?

Your child’s participation in the study will be kept confidential to the study team and those with access to your personal information as listed above. All the research will take place on the school site, so your child will remain in the care of their school and school staff during the focus group discussions. The researcher would speak to the school’s safeguarding lead if there was any need for concern about the wellbeing or safety of a child in the group, including your child.

What happens if I do not want my child to take part or if I change my mind?

Taking part in the research is entirely voluntary. It is up to you to decide whether or not your child takes part. If you do decide that your child can take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide that your child can take part you are still free to withdraw your consent at any time without giving a reason and without detriment to yourself. However, it will not be possible to remove your child’s data from the project once it has been anonymised and forms part of the dataset as we will not be able to identify your child’s specific data. This does not affect your data protection rights.

Your child will need to be audio recorded as part of the research. They should be comfortable with the recording process at all times and they are free to stop recording at any time. It may still be possible for them to be involved in the research if they don’t want to be recorded but they would not be able to take part in the discussion group that will be recorded.

Will my data be used for future research?

The completed research will form a research article for publication which will be available in the public domain and which will name the school and some members of staff as co-authors. However, this article will not contain anything that would identify your child. Other researchers who work in the school may refer to this article in their research. They will not be able to identify you or contact you in any way.

Will I be paid for participating in the research?
There is no payment for participating in this research project.

**What is the duration of the research?**

The research will involve two focus (discussion) groups of 40 minutes each, one in the autumn term and one in the summer term. The researcher will be visiting the school during the academic year 2018-2019.

**Where will the research be conducted?**

All the research will take place at your child’s school.

**Will the outcomes of the research be published?**

The research may be published in a professional journal as a short research article. It will be available to read at the school should you wish to see it at the end of the research.

**Disclosure and Barring Service (DBS) Check**

Both the researcher and her supervisors have been cleared by the DBS to work with children and vulnerable adults.

**Who has reviewed the research project?**

The project has been reviewed by the University of Manchester Research Ethics Committee.

**What if I want to make a complaint?**

Please contact the researcher or her supervisor in the first instance:

**Supervising tutor, CAROLINE BOND:**

[Caroline.bond@manchester.ac.uk](mailto:Caroline.bond@manchester.ac.uk)

**Tel:** 0161 2753686

**Formal Complaints**

*If you wish to make a formal complaint or if you are not satisfied with the response you have gained from the researchers in the first instance then please contact*

The Research Governance and Integrity Manager, Research Office, Christie Building, University of Manchester, Oxford Road, Manchester, M13 9PL, by emailing: [research.complaints@manchester.ac.uk](mailto:research.complaints@manchester.ac.uk) or by telephoning 0161 275 2674.

**What Do I Do Now?**
If you have any queries about the study or if you are interested in taking part then please contact the researcher(s)

**Heather Savvides, researcher:**
heather.savvides@postgrad.manchester.ac.uk

**Supervising tutor, CAROLINE BOND:**
Caroline.bond@manchester.ac.uk

**Tel:** 0161 2753686

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This Project Has Been Approved by the University of Manchester’s Research Ethics Committee
[ERM Reference Number 2018-5099-7458]
Appendix 11: Parent of child participant consent form

### Participant Consent Form

**Growth Mindset and Learning Powers: Research at St. Mary’s Primary School**

**Consent Form**

If you are happy for you/your child to participate please complete and sign the consent form below

<table>
<thead>
<tr>
<th>Activities</th>
<th>Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 I confirm that I have read the attached information sheet (Version 1, 11/10/18) for the above study and have had the opportunity to consider the information and ask questions and had these answered satisfactorily.</td>
<td></td>
</tr>
<tr>
<td>2 I understand that my child’s participation in the study is voluntary and that they are free to withdraw at any time without giving a reason and without detriment to them. I understand that it will not be possible to remove their data from the project once it has been anonymised and forms part of the data set. I agree to my child taking part on this basis</td>
<td></td>
</tr>
<tr>
<td>3 I agree to the focus groups being audio recorded.</td>
<td></td>
</tr>
<tr>
<td>5 I agree that any data collected may be published in anonymous form in academic books, reports or journals and that even though the school or members of staff may be named in the report, my child will not be identified.</td>
<td></td>
</tr>
<tr>
<td>7 I agree that the researchers can feedback any results of the study to me through the school.</td>
<td></td>
</tr>
</tbody>
</table>
I understand that there may be instances where during the course of the focus group information is revealed which means that the researcher will be obliged to break confidentiality and this has been explained in more detail in the information sheet.

I agree for my child to be part of this study

Data Protection

The personal information we collect and use to conduct this research will be processed in accordance with data protection law as explained in the Participant Information Sheet and the Privacy Notice for Research Participants.

________________________  ________________________
Name of Participant            Signature            Date

________________________  ________________________
Name of the person taking consent            Signature            Date

Consent forms will be scanned and stored on the University P drive. Original copies will be destroyed.
Appendix 12: Focus group schedule

Focus Group: Activity Oriented Questions (Colucci, 2007)

Free Listing
Participants are asked to write a list of all the things that they like about the Learning Powers framework in school. Lists can be completed alone, in pairs or collectively with a flip-chart.

Ranking Activity
Using a ‘Diamond Nine’ framework (Kagan & Kagan, 2009), participants could be asked to rank nine statements about ‘what makes a good learner’. Statements could be a mixture of growth and fixed mindset ideas to spark discussion about how the Learning Powers framework helps them to be good learners or they could be a list of the Learning Powers used in school to demonstrate students’ attitudes towards them. The diamond nine arrangement (illustrated below, figure 1) allows for some equal ranking but requires one item to be put first so prompts group discussion.

Figure 1: Diamond Nine Diagram

Example statements
A good learner tries again if they don’t get it right the first time.
A good learner needs to get everything right straight away.

Choosing among alternatives
Participants choose between two items; this could be an extension of the diamond activity above or a separate activity with new questions e.g. what helps best with homework.

**Magic Tools and Fantasy**

Using story and imagination, the participants could be given a key which will unlock a secret box with the perfect solution to learning inside. The key (an antique or interesting key) is passed around the group who make suggestions as to what might be in the box.

**News Bulletin**

The participants put together a news article about Learning Powers which they could then share with the head teachers of other primary schools who they think should know about it.

**References**


Appendix 13 Interview schedule

Interview questions by
[Pupils 2, 6, 7 and 8]

1.On a scale of 1-10 how do you feel about school (where 1 is not good and 10 is great)?
2.What is your favourite learning power and why?
3.How do you feel about growth mindset?
4.Do you enjoy school? Why/why not?
5.How do you feel when you make a mistake and why?

Interview questions

6.If you did not have learning powers in your school how would you feel?
7.Do you feel good when you learn new things? Why or why not?
8.Do you like being creative with your work? Yes/No. Why/why not?
9.Do you feel safe in school? Yes/no. Why/why not?
10.How much do you like learning (on a scale of 1 – 10, where 1 is not at all and 10 is lots)?
Questionnaire

Your name is not on this and all your answers will be private. No one will be cross with you because of your answers. Don't answer unless you want to.

1. Do you like school? Circle the number: 1 2 3 4 5

(1 = not much, 5 = a lot)

2. Do you like the learning powers? Yes/No.
Why/why not?

3. Is having a growth mindset hard for you? Why or why not?

4. Do you mind if you get something wrong? Why or why not?

5. Do you think you are clever or smart?

6. Do you care about what others think of your work?

7. Do you feel like working hard is worth it even if you fail?
8. Does growth mindset help you? If so, how?

9. Which learning power helps you the most? Why/how?
Appendix 15: Case study protocol with units of analysis

The table below lists the units of analysis for the case study and how these relate to the research questions (Yin, 2015).

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Proposition</th>
<th>Units of Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>• How was a growth mindset intervention in a primary school perceived by pupils?</td>
<td>‘An embedded, whole-school mindset framework has benefits for motivation of pupils, and for their academic outcomes and wellbeing’.</td>
<td>Unit of analysis 1: pupil perceptions of the implementation of growth mindset principles in school Unit of analysis 2: pupil perceptions of the utility of growth mindset principles in school Unit of analysis 3: pupil perceptions of incremental and entity theories of intelligence Unit of analysis 4: pupil perceptions of their motivation for learning.</td>
</tr>
<tr>
<td>• How was a participatory research process perceived by pupils?</td>
<td>‘Pupils have benefited from participating in the research through increased confidence, motivation and sense of self-worth.’</td>
<td>Unit of analysis 5: pupil levels of confidence and sense of personal value in the school community Unit of analysis 6: pupil reflection on research process.</td>
</tr>
</tbody>
</table>
Appendix 16: NVivo coding sample
Appendix 17: Code book

Pupil Participation Growth Mindset

Pupil-led codes are marked with an asterisk; these were generated collaboratively.

All other codes were generated by the researcher.

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Effort</td>
<td>Trying hard and not giving up; facing up to challenge (‘Challenge yourself’ is a learning power); seeing effortful activity as beneficial to learning.</td>
</tr>
<tr>
<td>embedded practice</td>
<td>Aspects of school life that are so ‘usual’ that the children do not notice them.</td>
</tr>
<tr>
<td>*good learners</td>
<td>Features of a good learner.</td>
</tr>
<tr>
<td>*learning powers</td>
<td>References to the framework as used by the primary school based on the work of Guy Claxton.</td>
</tr>
<tr>
<td>being resilient</td>
<td>One of the learning powers – do not give up at the first hurdle, keep going.</td>
</tr>
<tr>
<td>cooperation</td>
<td>One of the learning powers – working together as a team.</td>
</tr>
<tr>
<td>challenge</td>
<td>One of the learning powers – ‘Challenge yourself’.</td>
</tr>
<tr>
<td>metacognition</td>
<td>Learning about learning; comments that show reflection on learning and how it is happening.</td>
</tr>
<tr>
<td>*Mistake making</td>
<td>Mistakes as learning opportunities or as hurdles/embarrassment in the classroom.</td>
</tr>
<tr>
<td>perseverance</td>
<td>Keeping going when it is difficult (similar to effort, ties in with the ‘keep improving’ and ‘make it better’ learning powers).</td>
</tr>
<tr>
<td>Putting participants at ease</td>
<td>Planning around making Year 3 pupils feel comfortable; reality of working with Year 3s</td>
</tr>
<tr>
<td>Quality of responses</td>
<td>Issues around Year 3s copying answers or saying what we wanted to hear. Contrast between this and Year 5 pupils being honest and challenging in what they said.</td>
</tr>
<tr>
<td>Research process</td>
<td>What it felt like to be the researchers; what could be done differently next time.</td>
</tr>
<tr>
<td>teacher feedback</td>
<td>Comments about what teachers say and the language they use when talking about children’s work.</td>
</tr>
</tbody>
</table>
Appendix 18: Photographs showing thematic analysis

1. Pupils’ classroom work in progress
2. Detail of questionnaire responses
3. Detail of focus group transcript alongside notes from interviews.

1. Pupils’ classroom work in progress

2. Detail of questionnaire responses
3. Detail of focus group transcript alongside notes from interviews.
### Appendix 19: Table of Themes

<table>
<thead>
<tr>
<th>Detail of code (codes marked with an asterisk chosen by Year 5 co-researchers)</th>
<th>Sub themes</th>
<th>Over-arching themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>*learning powers cooperation challenge being resilient Making it better Keep improving Use cooperation with your partner Being creative Challenge yourself Rewards for use of learning powers Assemblies Behaviour and homework policies Being resilient in the research process Learning powers are useful Working as a team perseverance Keeping going when it is difficult (similar to effort, ties in with the ‘keep improving’ and ‘make it better’ learning powers).</td>
<td>Cooperation Stay curious Be resilient</td>
<td>Pupil perceptions of growth mindset/learning powers</td>
</tr>
<tr>
<td>embedded practice Aspects of school life that are so ‘usual’ that the</td>
<td>Whole-school ethos</td>
<td></td>
</tr>
<tr>
<td>children do not notice them.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reward assemblies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Links to Bible verses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coloured cups in class (Red = I need help)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Familiarity (with learning powers)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dissatisfaction with learning powers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uncertain of origins of learning powers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perception that it was devised for younger children</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limitations of the framework</td>
<td></td>
<td></td>
</tr>
<tr>
<td>metacognition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning about learning: reflection on learning how learning is happening.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*good learners</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Features of a good learner:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curious, ask lots of questions, never give up.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Mistake making</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mistakes as learning opportunities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Challenged to make it better</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worried about mistakes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confused/stressed about mistakes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<p>| metacognition | Good learners | Mistakes as an opportunity to learn |</p>
<table>
<thead>
<tr>
<th>teacher feedback</th>
<th>Fear of mistakes versus opportunity to learn</th>
<th>Utility of growth mindset: Successes and challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers help us</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teachers challenge us</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language used by teachers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Praise for using learning powers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Effort</td>
<td>Perceived pressure to produce right answer</td>
<td></td>
</tr>
<tr>
<td>Trying hard and not giving up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facing up to challenge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>seeing effortful activity as beneficial to learning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>growth mindset pupils gave better answers than fixed mindset pupils</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research process</td>
<td>Control over process</td>
<td>Pupil perception of research process</td>
</tr>
<tr>
<td>Need to focus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Criticism of participant behaviour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What it felt like to be the researchers; what could be done differently next time.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality of responses</td>
<td>Quality of responses</td>
<td></td>
</tr>
<tr>
<td>Giving the right answer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copying answers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saying what we wanted to hear</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed and growth mindset in responses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Issues around Year 3s copying answers or saying what we wanted to hear. Contrast between this and Year 5 pupils being honest and challenging in what they said.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Making Year 3 pupils feel at ease; reality of working with Year 3s</td>
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<td>Feeling stretched by the work</td>
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<td>Enjoyed helping people</td>
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<td>Enjoyable but challenging</td>
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Appendix 20: Teaching research techniques to Year 5 Co-researchers

Two lessons of 40 minutes each were delivered to the pupils who were to act as co-researchers, based on the work of Burton, Smith & Woods (2010). The lessons used a range of Kagan structures (Kagan & Kagan, 2009) to present materials and to stimulate discussion, such as pair-share and round robin as follows:

**Lesson 1: Data Collection Methods**

1. **Warm-up activity:** pass an object round the group to denote who speaks, everyone to say who they are and (e.g.) which is their favourite cake and why.
2. **Introduction to research,** why we might want to know more about something or understand properly how something works: linking this to pupil’s previous knowledge of scientific inquiry e.g. in science lessons and the need for a ‘fair test’ (TEP speaking, pass object around the group to invite comment e.g. what do you think are the skills you would need to be a good researcher, when did you set up a ‘fair test’ in science?).
3. **Introduction to research about learning,** finding out why and how we learn things, how this can improve the way we learn in school (TEP to introduce, pass round group to remember what makes a good learner activity from the first focus group, what we might want to find out about learning in school).
4. **Pair share activity:** what would you like to find out about growth mindset? How might you go about collecting that information.
5. **This leads on to an introduction to data gathering techniques** such as interviews, questionnaires and focus groups (making reference to the children’s existing knowledge of the first two – television interviews, interviews for a job and questionnaires in a consumer context, whether you liked a product, what your opinion is about something – and reminding them of the first focus group that has already taken place and how the recording of what was said becomes ‘data’).
6. **Pupils write down some interview questions and pilot these in pairs.**
7. **The lesson ends with an activity in pairs again,** deciding what considerations they would need to take into account when choosing to do interviews or focus groups, how they would make their year 3 participants feel at ease, how the way that the data is collected may affect the quality of the data.

**Lesson 2: Data Analysis Methods**

1. **Warm up activity:** ‘hot seat’ interviews (pupil or researcher pretends to be a different character). How useful was the interview in finding out information? Which questions worked best?
2. **Introduction to data analysis,** discussion around the difference between qualitative – collecting ideas, thoughts, feelings and quantitative – answering questions such as how long or how many.
3. **Exercise in qualitative analysis:** using post-its from the first lesson, collect thoughts and ideas together in sets that are similar, looking for common themes from different interviews. Using a ‘block and file’ approach (Grbich, 2012).
4. **Return to the previous session of how to conduct the data collection,** organisation of groups to do e.g. interviews and how this will work. Practicalities of working in the school classrooms and keeping everyone safe.
Appendix 21: Photograph of children’s writing during lesson activities described in Appendix 20 in relation to making participants feel at ease.