Exploring morphological instruction and implementing changes in practice to support spelling in South West primary schools in England.

Submitted by Liam Parsons, to the University of Exeter as a thesis for the degree of Doctor of Educational, Child, and Community Psychology, May 2020.

I certify that all material in this thesis, which is not my own work, has been identified and that any material that has previously been submitted and approved for the award of a degree by this or any other University has been acknowledged.

Signature:

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Abstract

Background: Spelling is an essential skill to learn for primary school pupils. Despite this, many pupils in the United Kingdom are underperforming in this area. One promising approach in addressing this problem is morphological instruction (MI), the explicit teaching of the morphemic structures of words. This two-phase study investigated the role of educational psychologists in supporting teachers to deliver MI.

Methods: The first phase was an investigation of how teachers delivered MI pre-training, as well as the factors that were impeding or supporting their teaching practice. I collected data through interviews with teachers and school leadership team members, as well as through observations of literacy lessons. The second phase concerned the development, delivery, and evaluation of a further training programme in MI, which was informed by the insights generated in the first phase of the study. The aims of the second phase were to evaluate how the training programme has affected teaching practice from the perspectives of teachers and children who showed low morphological awareness. I collected data through questionnaires, interviews, focus groups with children, and lesson observations. I analysed the data from both phases using thematic analysis, content analysis, descriptive statistics, and narrative profiling.

Findings: Key findings from the first phase showed that teaching staff perceived themselves to lack sufficient knowledge of morphology and that teaching staff had a paucity of pedagogical strategies available to them. Key findings from the second phase showed that the training programme had led to changes in teaching practice, resulting in a greater depth of metalinguistic discussions in class, and a higher level of pupil engagement with spelling lessons.

Conclusions: Educational psychologists may develop an important role in supporting teachers to deliver morphological instruction. I discuss my findings with reference to the broader literature on child development and literacy instruction.

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Chapter 1: Introduction

In this chapter, I provide background knowledge for this research, including the context and relevance of morphological instruction (MI) to the field of educational psychology. Following this, I discuss my background and its relevance to the study. Finally, I summarise the rationale underpinning my research questions.

1.1. The Nature and Importance of Spelling

It is difficult to overstate the importance of high-quality literacy instruction for children and young people. Literacy is regarded as a skill that is necessary for functioning in everyday life (Shanahan & Shanahan, 2008). Researchers have correlated competence in literacy with success in numerous domains, including wider academic attainment (Department for Education, 2012), socio-economic success (Organisation for Economic Cooperation and Development, 2009), prosocial behaviour (e.g., avoidance of criminal activities; Beck & Harrison, 2001), and even health maintenance (Berkman et al., 2004). A report by the European Union (2012, p. 11) summarised the importance of literacy: "Literacy is about people's self-esteem, their interaction with others, their health and employability. Ultimately, literacy is about whether a society is fit for the future."

It is disconcerting that so many children struggle with basic literacy skills. A high proportion of pupils are consistently failing to meet the expected governmental standards. In the 2019 Statutory Assessment Tests, 27% of children in Year 6 did not meet the government's expected standard for reading, and 22% did not meet the expected standard for spelling, punctuation, and grammar (Department for Education, 2019). Moreover, international comparisons of literacy show mixed results for children from England; while English children show above-average confidence in reading, they show below-average enjoyment of reading (McGrane, Stiff, Baird, Lenkeit, & Hopfenbeck, 2017). This lower enjoyment of reading is particularly concerning as weaknesses in literacy skills may be self-

perpetuating. Nuttall (1996, p. 127) coined the term, "the vicious cycle of the weak reader," whereby children with weak literacy skills disengage from learning processes, thus falling further behind. This point aligns with the so-called *Matthew effect* (Stanovich, 1986), or the idea that disadvantage in literacy begets further disadvantage, widening the gap between struggling spellers and the rest of the population. The presence of a vicious cycle implies the need for an early intervention approach to prevent literacy difficulties from compounding. Therefore, it is important to determine which methods of literacy instruction and remediation are most effective for children in the upper primary years.

One of the fundamental components in developing literacy is proficiency in spelling (Schaars, Segers, & Verhoeven, 2017). Many theorists have suggested that reading and spelling are contingent on the same cognitive processes (e.g., Caravolas et al., 2012; Shanahan, 1984). Beyond this, the exact nature of the relationship between reading and spelling in the developmental context is mostly unknown (Schaars et al., 2017). However, there has been empirical evidence showing reading instruction to have a positive effect on spelling skills (Shanahan, 2006), and spelling instruction to have a positive effect on reading skills (Weiser & Mathes, 2011; Graham & Hebert, 2011). As such, researchers have posited that there exists a bidirectional relationship between these skills (e.g., Abbott, Berninger, & Fayol, 2010). As Snow, Griffin, and Burns (2005, p. 86) note: "Spelling and reading build and rely on the same mental representation of a word. Knowing the spelling of a word makes the representation of it sturdy and accessible for fluent reading." As such, being able to recognise a word rapidly is essential for comprehension (Perfetti, 2007; Perfetti & Adlof, 2012). Rapid word recognition frees up cognitive resources. These resources can then become involved in comprehension processes. Thus, improved spelling skills may facilitate the effective retrieval of the orthographic representations needed for comprehension while reading (Perfetti & Stafura, 2014).

In order to develop proficiency in spelling, learners need to develop an understanding of the relevant spelling system. The challenge of this task varies between languages (Frost, 2012): Some spelling systems (such as Spanish or Italian) can be described as *orthographically shallow*, meaning that the relationship between graphemes (i.e., letters) and phonemes (i.e., sounds) is relatively consistent across words. Other spelling systems (such as French or English) are *orthographically deep*, meaning that the relationship between graphemes and phonemes is relatively inconsistent. For example, in English, the single letter grapheme < k> can be pronounced as /k/ , while the phoneme, /k/, can be represented by the graphemes < c> , < k> , < ck> , < ch> , or < que> (Bowers & Bowers, 2017). Moreover, within English, less than half of spellings can be predicted from phonological rules alone (Crystal, 2003). This fact has led to many educationalists labelling English orthography as irregular (Bowers & Bowers, 2017). However, this is a mischaracterisation of the language; The English spelling system can be better understood as a complex representation of various forms of linguistic components, including *orthographic*, *etymological*, *morphological*, and *phonological* information (Bowers & Bowers, 2017). Orthographic knowledge refers to structural information regarding how words are represented in writing, including rules for how letters represent speech sounds, rules regarding which letters can and cannot be combined, and positional and contextual cues relating to letter placement (Apel, 2011). One example of this is the illegality of having three of the same consecutive letters in any word. Phonological knowledge refers to an understanding of phonemes, the fundamental units of sound in a language, and how letters symbolise these sounds (Treiman, 2017a). For instance, the word <cat> contains three phonemes (/k/, /**æ**/, and /t/) which each correspond to a single-letter grapheme. Etymological information concerns the origins of the form and meaning of words (Devonshire & Fluck, 2010); For example, the English word <sign> is historically linked to the Latin word, <signum>. Finally, morphological knowledge concerns the

understanding of the units of meaning within a language and how letters represent these meanings (Oz, 2014); For example, the word <jumped> can be morphologically analysed into the <jump> root element and the <-ed> suffix. There is some consensus within the research community that the development of spelling proficiency is contingent on pupils' competence in manipulating various kinds of linguistic information (Bowers & Bowers, 2017; Daffern, 2017). However, the manner in which different kinds of linguistic information relate to each other remains contentious (for various discussions around this topic, see Bowers & Bowers, 2017; Daffern, 2017; Rastle, 2018; Treiman, 2017b).

Despite this contention, there are some particularly promising reasons to specifically explore the role of morphology in spelling. Firstly, the English language is *morphophonological,* meaning that English words are highly regular at the morphological level (Venezky, 1970, 1999). Secondly, researchers have found a significant role of *morphological awareness* (MA) in spelling development. MA is the "conscious awareness of the morphemic structure of words and their ability to reflect on and manipulate that structure" (Carlisle, 1995, p. 194). MA accounts for a high proportion of variance in spelling performance, especially in older learners (Arnbak & Elbro, 2000; Deacon & Dhooge, 2010; Deacon, Kirby, & Casselman-Bell, 2009; Nunes, Bryant, & Bindman, 1997). Thirdly, studies of morphological instruction (MI) suggest that targeted support in morphology can have a significant impact on spelling outcomes (Goodwin & Ahn, 2010, 2013). These three points are expanded upon further in the following chapter (see section 2.2.).

1.2. A Role for Educational Psychologists

Emphasising the scale of illiteracy, researchers at the World Literacy Foundation (2019) have found that:

- Low reading and writing skills cost the global economy £800 billion each year.

- The cost to the UK economy each year is estimated to be £80 billion.
- Around 15% of adults in the UK can be described as functionally illiterate.

The World Literacy Foundation (2019) recommended that the government should commit more resources towards literacy initiatives, and one of their specific suggestions is for further training programmes on literacy. This research project is a contribution to the development of such training programmes.

The role of the educational psychologist (EP) can be contextualised within the social justice framework (Schulze, Winter, Woods, & Tyldesley, 2017), which emphasises the promotion of equality, non-discrimination, and freedom (Schulze, Winter, Woods, & Tyldesley, 2019). Illiteracy is a barrier facing many of these disadvantaged people (World Literacy Foundation, 2019). As discussed in the previous section, literacy mediates some of the most valuable outcomes that people can achieve: wellbeing, prosocial behaviours, and academic success. Therefore, it is within the EP remit to support initiatives to cultivate literacy. Moreover, EPs often hold insights regarding the psychological processes underpinning literacy development (British Psychological Society, 2017), meaning that they are well placed to offer consultation and training regarding literacy-based interventions. Corroborating this point, EPs have a considerable history of delivering effective literacy interventions (e.g., Clay, 1993; Nugent, 2010; Scott et al., 2010). While there is a wealth of studies focused on literacy interventions, there is a sparse evidence base considering the role of MI in literacy interventions, especially when considering the theoretical merits of such an approach (Bowers & Bowers, 2018). Therefore, the use of morphology as a means of providing literacy interventions is a relatively neglected area that EPs could explore further.

Morphology may be relevant to the EP role in terms of consultation, assessment, and formulation. In relation to assessment, Cameron's (2006, p. 289) injunction proposed that EPs should be involved in "uncovering mediating/psychological variables which link

particular situations with specific outcomes." One such variable that mediates spelling outcomes is MA; Therefore, raising the profile of MA may be a productive step towards developing professionals' understanding of spelling development. A raised awareness of morphology would have implications for EPs' consultation practices. Many psychologists have argued against deficit-focused discourses around students, as these can result in negative labelling and poorer outcomes for children (e.g., Wilding & Griffey, 2015). Furthermore, children and young people with spelling difficulties often have specific weaknesses in phonological awareness compared to other areas (Bowers & Bowers, 2017). If MA is a relatively intact skill possessed by students, this may provide a means by which a learner's relative strengths can be discussed. This emphasis on strengths as well as weaknesses is likely to lead to a more holistic formulation of a child's literacy needs. Thus, it may be useful for EPs to be mindful of MA when engaging in consultation and assessment to encourage and contribute to a holistic understanding of literacy.

1.3. My Positionality

In order to provide a rationale for the research, it is useful to refer to Pillow's (2010) consideration of reflexivity. On this view, researchers should "be critically conscious through personal accounting of how the researcher's self-location…position and interests influence all stages of the research process." Pillow (2010, p.179). The rationale for this research is partially situated in my personal and professional history. Here, I offer a critical perspective on my positionality, and how I believe this has affected my research.

Axiology is concerned with the researcher's values throughout the process of research (Guba & Lincoln, 2005). These values can have a substantial impact on the execution of research. As an educationalist, I perceive literacy to be among the most valuable subjects for young people to learn. This is because literacy mediates all other learning and understanding one can achieve in life. This value served as the primary impetus for my choice of research

topic. As noted above, illiteracy is a sizeable social problem; Within my history as a teacher, I worked closely with children who were disadvantaged as a result of their barriers regarding literacy. I developed a strong sense of compassion for those who struggled against their literacy barriers. These experiences form part of my motivation to undertake this study.

In approaching this study, I primarily consider myself to be conducting *insider research*. Insider research refers to studies in which the researcher is directly involved with or connected to the research setting (Robson, 2002). Insider research is contrasted with *outsider research*, whereby such a connection does not exist. I see myself as an insider researcher because I have worked as a teacher for five years before starting this project. Additionally, as a trainee educational psychologist, I regularly work within educational settings such as classrooms. Banks (1998) jettisons the dichotomy between insider and outsider research, arguing that one's positionality is based on the intellectual and cultural distance of the researchers from the community of interest. Based on my professional history and values, I perceive myself to be very close to the community of interest. However, I do not view myself purely as an insider researcher, because I have left the teaching occupation. This complex status as a partial insider researcher may be considered as both an advantage to be capitalised upon, and a disadvantage to be addressed (Floyd & Arthur, 2012); This point is further explored in the discussion chapter of this thesis (see section 9.1.).

Following my time as a teacher, I worked on a research project that was aimed at promoting literacy outcomes through the delivery of a combination of morphology, phonology, and etymology. In preparing myself for this role, I investigated the relevant literature, finding the case for teaching children morphology to be compelling. This research convinced me that MI could be a powerful tool to support young people in overcoming the barriers imposed by illiteracy. However, I felt as though much of the research conducted to date relied on an exclusively quantitative methodology aligned with the approach known as

variance theory (Mohr, 1982); This approach deals with variables and the correlations between them. In contrast, there is a lack of qualitative research derived from the *process theory* approach (Mohr, 1982), which focuses on a localised analysis of the processes by which specific events occur. Therefore, I decided to focus my doctoral research on addressing this gap.

1.4. Summary

In summary, I have discussed the nature and importance of spelling, and highlighted the role of morphology in learning to spell. Following this, I have argued the EP has a valuable role in supporting literacy development. I then reflected on my own positionality in relation to MI, and the impetus behind this research. In the next chapter, I provide a review of the relevant literature, and outline the rationale underpinning my research questions.

Chapter 2: Literature Review

In this chapter, I provide a literature review containing a critical analysis of relevant key areas. I have taken a narrative review approach; Therefore, I aim to summarise previous research as well as seek new study areas for exploration (Ferrari, 2015). The narrative review approach has strengths relating to flexibility and the capability to address more than one question simultaneously; I deemed this flexibility essential in navigating the heterogeneous fields of literacy development and pedagogical change. I conducted searches of Scopus, Science Direct, and PsychInfo, using various combinations of the following keywords: morphology, morphological instruction, spelling development, training transfer, INSET, the role of the educational psychologist, pedagogical change, and spelling intervention. This search strategy yielded approximately 200 articles, including primary research, discussion articles, meta-analyses, and systematic reviews. I reviewed the abstracts of these articles to determine their relevance to my study. Furthermore, I examined citations in studies of interest in order to identify additional relevant papers. Following my literature review, I provide the research questions that underpin my study.

2.1. Spelling Development

Traditionally, spelling development theories considered progression in spelling ability as a staged process (Ehri, 1985; Frith, 1980; Gentry, 2000). According to these models, learners must first establish phonological knowledge before developing morphological or orthographic knowledge (see Figure 1.1 for a visual representation of such a theory). The evidence informing such models has been compiled through cross-language studies and underpinned by highly influential theoretical models (e.g., Ziegler & Goswami, 2005). Treiman (2018a) notes that such theories capture fundamental aspects of spelling development, such as the recognition of the value of phonological knowledge and that learning to spell involves more than rote visual memorisation of letter sequences. As a

consequence of these influential stage theories, teaching practices centred on developing phonological awareness (i.e., phonics) have proliferated (Treiman, 2018a).

Figure 1. Gentry's (2000) model of spelling development.

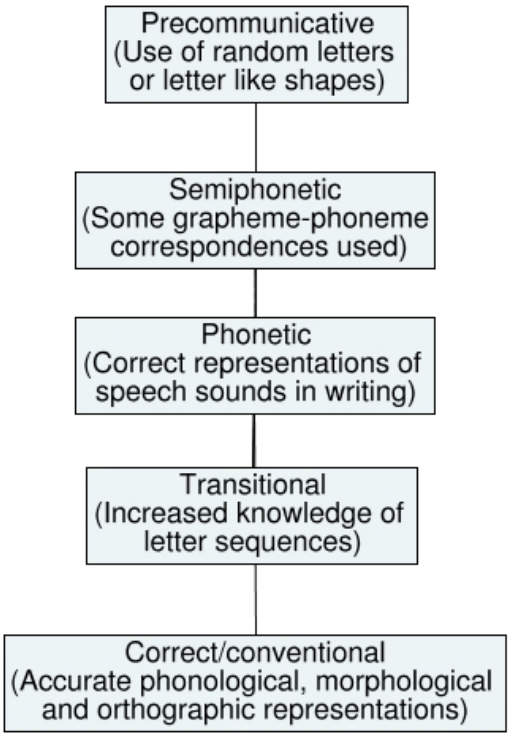


Figure 1. Gentry's (2000) model is an example of the traditional staged theories of spelling development, with the learner achieving competence in phonological knowledge before developing competence with other forms of word knowledge.

More recently, there have been substantial challenges to stage theories of development, and the associated emphasis on phonics instruction. For instance, Devonshire, Morris, and Fluck (2013) suggested that stage theories of spelling are reductionistic, arguing instead that convincing theories of spelling should account for the role of learners' environments. These authors note that, since phonics practice is prevalent in the initial stages of education, it is unsurprising that most children appear to develop phonological knowledge in the initial stages of literacy education. Others have argued that phonics represents English in a limited or flawed way (Bowers & Bowers, 2017; Treiman, 2018b). Moreover, competing

theories have arisen regarding spelling development, which hold significant theoretical support. For example, the statistical learning model (for a review, see Treiman, 2018a) holds that learners' spelling reflects the regularities in words they encounter. From this viewpoint, the role of implicit learning is emphasised, with learners developing sensitivity to a variety of forms of linguistic information simultaneously, including morphological information. This statistical conceptualisation of how children employ morphological knowledge has been argued to better explain the variability in children's performances compared to explanations that assume children consciously implement morphological rules (Pacton & Deacon, 2008). Another challenge to stage theories arises from triple word form theory (Daffern, 2017), which holds that spelling is contingent on the coordination of multiple kinds of linguistic information: phonological, orthographic, and morphological word forms. This theory is underpinned by the assumption that learning to spell involves learning to store and analyse three word forms, but that instructional approaches in spelling can influence this learning (Garcia, Abbott, & Berninger, 2010). Finally, constructivist stances hold that children build hypotheses about how writing works. Children test these hypotheses against the writing that they see, developing, discarding, or modifying hypotheses on this basis (Treiman, 2017a). Each one of these perspectives dislocates phonological knowledge from its position of primacy in learning to spell. Indeed, empirical studies have found that the developmental pathways linked to spelling may not be as linear as stage theories might imply (Devonshire et al., 2013; Garcia, Abbott, & Berninger, 2010; Sharp, Sinatra, & Reynolds, 2008). More recently, Daffern (2017) conducted multivariate analyses on primary age pupils' spellings, finding that the most powerful predictive models of spelling proficiency incorporate morphological, orthographic, and phonological knowledge. Moreover, morphological knowledge (Carlisle 2003; Treiman 1993) and orthographic knowledge (Abbott & Berninger,

1993) both show independent contributions to children's spelling proficiency from as early as six years old (Wolter, Wood, & D'Zatko, 2009).

In summary, numerous studies undermine stage theories of spelling development, instead suggesting a conceptualisation of spelling development that is non-linear and continuous (Daffern, 2017). This conceptualisation highlights the role of other types of linguistic knowledge in spelling proficiency. Within this conceptualisation, there is likely to be a central role for morphology. As noted in the introduction, English orthography is more regular on the morphological level than on the phonological level. In their review of over a decade of research, Bryant and Nunes (2004) convincingly demonstrated the essential role of morphological knowledge in learning to spell. These authors posited a developmental path in the spelling that is highly influenced by morphology; this is evidenced by the overgeneralisations often done by young children in the application of morphological rules (e.g., the pluralisation of <catfish> as <catfishes>). Moreover, the ability of children to create morphologically plausible pseudo-words based on spoken words, as well as their ability to correctly pseudo-words in spelling, suggests that children implicitly learn morphological rules from a young age.

2.2. Why Morphology Matters.

There are numerous reasons to consider the role of morphology in spelling specifically. Firstly, spellings in English are far more regular on a morphological level than on a phonological level (Venezky, 1970, 1999); this regularity may be exploited by learners to aid memory, promote understanding, and generate motivation (Bowers & Bowers, 2017). To illustrate this, Bowers & Bowers (2017) use the example words <sign>, <signal>, <design>, and <signature>. These words constitute a morphological family, where all the words share a common morphological base element. English speakers are often presented with differing pronunciations of the base, <sign>: /sɪgn/ (in <signal> and <signature>), /zaɪn/ (in <design>),

and /saɪn/ (in <sign>). However, the orthographic structure, <sign>, is consistent. The morphological relationship between these spoken words is opaque phonologically but transparent orthographically. The fact that the <gn> in <sign> and <signature> maps onto different pronunciations is not evidence of a poorly organised spelling system; rather, this is evidence of English being well organised as a system that consistently marks connections in meaning. This property of the language may be useful for promoting learning; long-established findings from cognitive psychology hold that well-organised information is easier to retain (Gernsbacher, 1991; Marton & Säljö, 1976; Tulving, 1962). Moreover, morphemes contain information relating to semantic, syntactic, and phonological properties, all of which are useful for those learning to spell. For example, the word <mishap> contains the letter string <sh>, but it is not pronounced as /ʒ/. This pronunciation results from the morphemic structure of the word, which separates the <s> and <h>, preventing them from coming together as a digraph. These facts about the English language lend credence to the claim that morphology can be understood as "a binding agent" (Bowers, Kirby, & Deacon, 2010, p. 168; see figure 2 below). On this stance, morphology draws together different kinds of word knowledge, such as knowledge relating to the meaning of words, alongside knowledge relating to the spelling structure of words. Therefore, knowledge of morphology may enhance the quality of lexical representations (Bowers et al., 2010; Kirby & Bowers, 2018; Perfetti, 2007).

Figure 2. Morphology as a binding agent (model from Kirby & Bowers, 2018)

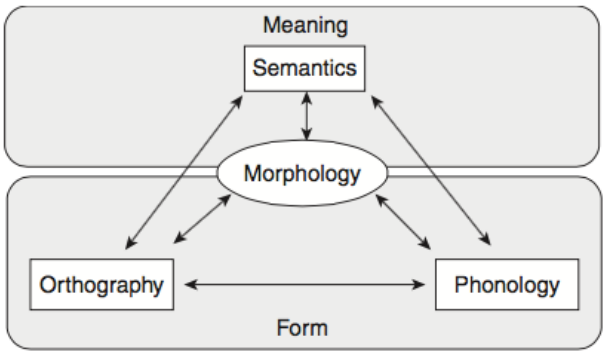


Figure 2. This model positions morphology as a central concept in developing high-quality lexical representations in learners.

The morphological regularity of English implies an important role of morphological knowledge in spelling proficiency. Consequently, it is useful to understand the role of morphological awareness (MA) in spelling. MA contributes in several ways to spelling proficiency in learners (Nagy, Berninger, & Abbott, 2006). Firstly, MA can enable more efficient storage of spelling information in their mental lexicons (Baayen & Schreuder, 2006; Perfetti, 2007). For example, low MA spellers may have to memorise every verb's past tense form, while a learner with high MA may instead learn relatively few suffixes, such as <-ed>, which can be added to a range of verbs. Secondly, low MA may impede learners from producing new words by combining previously learned morphemes (Bowers & Bowers, 2017). For example, a learner with low MA may be unable to combine the prefix <de->, the base element <struct>, and the suffix <-ion>, to form the word <destruction>. Therefore, learners with low MA may be ill-equipped to spell words they have not encountered before. Thirdly, low MA may prevent pupils from thinking beyond grapheme-phoneme correspondences, which may influence their selection of words to spell during composition, which in turn may lead to lower levels of spelling practice. Furthermore, less able pupils are likely to have weaker phonological processing skills, which may not link to their morphological processing skills; Therefore, MA may be a cognitive route to literacy that is

relatively intact (Elbro & Arnbak, 1996). As such, teaching practices which focus on morphology are highly promising.

As pupils move through the education system, they require higher levels of MA to access curricular content. For example, the National Curriculum (2013) emphasises the importance of children being able to recognise and apply scientific vocabulary and refers to terms such as <hypothesis> or <evaporate>, which contain multiple morphemes. Without sufficient MA, spellers may become confused between words that share the common phonological properties of <un->, as in <onion>, or words that share the orthographic properties of <un->, as in <uniform>. Crosson and McKeown (2016) note that children in primary school are faced with words that exponentially increase in complexity as they progress through the education system. An understanding of the morphological regularity of words is likely to be highly supportive for children in navigating this increasing complexity.

Additionally, morphology may be a means of promoting enjoyment and engagement in learning to spell. If a significant problem in cultivating literacy in children is disengagement from writing (Nuttall, 1996), then it stands to reason that a more enjoyable method of instruction would be valuable for supporting children's writing. Morphology may be the source of such enjoyable spelling instruction (e.g., Chua, 2015; Goodwin & Perkins, 2015; Manyak, Baumann, & Manyak, 2018). Indeed, researchers have suggested that teaching morphology can foster a higher level of *word consciousness* in pupils (Anderson & Nagy, 1993). Word consciousness refers to awareness and interest in words and their meanings (Graves & Watts-Taffe, 2008). Anderson and Nagy (1993) describe word consciousness as involving both a cognitive and affective stance toward words and word learning. The development of word consciousness is likely to represent a means of both raising learner's engagement and progress in literacy. Cultivating engagement might be a particularly useful application of MI given findings that children in England typically enjoy

reading less than average compared with children from other European countries (McGrane et al., 2017).

Supporting the arguments raised above, morphological awareness (MA) has been shown to be a significant predictor of various literacy outcomes, especially for older children (Arnbak & Elbro, 2000; Deacon et al., 2009; Deacon & Dhooge, 2010; Fowler & Liberman, 1995; Nagy et al., 2006; Nagy, Carlisle, & Goodwin, 2014; Nunes et al., 1997; Oz, 2014). Most of this evidence focuses on the products of spelling processes, such as spelling accuracy. For instance, Deacon and Dhooge (2010) found that children between seven and nine are sensitive to the base elements of words (e.g., the <win> in <winning> or <wins>), meaning that learners show consistency in spelling the base element correctly. Deacon et al. (2009) conducted a longitudinal study with 115 seven-year-old participants; these authors found that MA was a robust predictor of spelling outcomes while controlling across multiple variables, including age, verbal and non-verbal intelligence, and phonological awareness. Fowler and Liberman (1995) found correlations between MA and spelling progress measures in primary school-aged children (aged seven to nine) while controlling for age and vocabulary. In a longitudinal study, Nunes et al. (1997) found that an oral MA measure predicted spelling outcomes in children independently of intelligence or phonological awareness. Such evidence supports the position that MA makes a unique contribution to the development of spelling proficiency. In a review of studies from 2006 to 2016, St-Pierre (2018) reported that primary school children display an increasing knowledge of, and sensitivity to, morphological knowledge, as they move through the school system. St-Pierre (2018) argues that this constitutes evidence for the value of MI, arguing that teaching pupils to use morphological knowledge systematically could be a powerful means of supporting spelling.

2.3. Spelling Instruction

Traditional theories placed primacy on the role of phonological knowledge in spelling instruction. This stance has become prominent in both research and classroom communities. For example, the Rose Report (2006) has had a considerable influence over the National Curriculum (Department for Education, DfE, 2013); The authors of this document posited that phonics-based learning is essential in learning to read and write. However, the document contains no mention of morphology and only a single reference to orthography. Moreover, phonics strategies are becoming increasingly dominant in the education system (Brooks, 2016). This emphasis on phonics-based strategies reflects a commitment to the staged models of spelling development, as discussed in section 2.1.

Several studies have been conducted examining teachers' attitudes and instructional practices linked to spelling (Daffern & Critten, 2019; Doyle, Zhang, & Mattatall, 2015; Fresch, 2007; Graham et al., 2008; Johnston, 2001). The findings of these studies suggest that teachers:

- rely on so-called 'traditional' methods of instruction, such as repetition or testing (Fresch, 2007; Johnston, 2001).
- make few attempts at differentiating their spelling instruction (Graham et al., 2008).
- use a narrow range of strategies when teaching spelling, focusing primarily on phonics-based approaches (Daffern & Critten, 2019). This is particularly concerning as studies suggest that phonics instruction is minimally effective (d = .09) for pupils aged seven to 12 (for a meta-analysis, see Ehri, Nunes, Stahl, & Willows, 2001).

Moreover, according to several studies, teachers lack confidence and awareness of the appropriate pedagogical strategies for spelling (Daffern & Critten, 2019; Graham et al., 2008; Johnston, 2001).

2.4. Morphological Instruction

Systematic reviews and meta-analyses of MI show a consistent body of research supporting its application in schools for different literacy outcomes (see Bowers et al., 2010; Carlisle, 2010; Galuschka et al., 2020; Goodwin & Ahn, 2013; Goodwin & Ahn, 2010; Reed, 2008). Goodwin and Ahn (2013) found an effect size of d = .30 for MI on spelling outcomes, while Bowers et al. (2010) found a somewhat higher effect size (d = .49). Other results from these reviews and meta-analyses include that MI is particularly effective for children of lower ability (Bowers et al., 2010; Galuschka et al., 2020; Reed, 2008) and the youngest learners in formal education (Bowers et al., 2010; Carlisle, 2010; Goodwin & Ahn, 2010, 2013).

With regard to children in primary school, MI has been shown to benefit spelling proficiency in numerous studies (Goodwin & Ahn, 2010, 2013). These benefits have been found several times for children in the Key Stage Two age range. For instance, Nunes, Bryant, and Olsson (2003) reported that MI improved morphological knowledge in 8-year-old children through a twelve-session intervention via oral language games. This study focused on teaching pupils how to generate new words by adding affixes (e.g., changing the word <magic> to <magician> by adding the <-ian> suffix). Arnbak and Elbro (2000) studied the impact of MI on dyslexic students between 10 and 12 years of age through an oral language intervention. These authors found that MI led to gains in spelling knowledge of specific words approximately twice as large as those in the control condition. Kirk and Gillon (2009) found that a writing-based MI intervention led to improved spelling skills for children with specific spelling difficulties compared to a control group. In a quasi-experimental design, MI was shown to be effective for primary school children in spelling outcomes (Devonshire & Fluck, 2010). This intervention involved nine lessons each lasting 35 minutes. Pupils were taught rules regarding combining morphemes (e.g., consonant doubling when adding a vowel suffix) and etymological traits of spelling (e.g., the <w> in <two> serves to mark out the meaningful connection to the words like, <twin>, <twice>, and <twelve>).

Moreover, in a randomised, controlled study, Devonshire et al. (2013) found that MI improved young children's spelling proficiency compared with phonics-based strategies in primary school pupils. This intervention assessed spelling through daily lessons lasting 15-25 minutes over six weeks. These sessions focused on teaching pupils how the English writing system works as an interaction of morphology, etymology, and phonology. In summary, the intervention studies described above suggest that it is possible to increase children's MA through explicit training.

It is noteworthy that the body of evidence supporting MI is heterogeneous; For example, the meta-analysis conducted by Goodwin and Ahn (2013) contained studies of participants ranging from infants to adolescents. Moreover, studies in MI have employed a substantial range of pedagogical techniques, making it difficult to ascertain the empirical support for discrete teaching strategies. Despite the lack of empirical evidence supporting the efficacy of specific instructional techniques, there has been a range of theoretically oriented arguments regarding how MI should be enacted. For example, Daigle, Berthiaume, Ruberto, and Wolter (2018) suggested that MI be grounded within principles such as active learning, explicit instruction, and the co-construction of knowledge. Bowers and Bowers (2017) make similar arguments for MI, suggesting that the most effective learning occurs when learners can reason and hypothesise about the nature of the spelling system. However, there is a need for further evidence to determine the optimal conditions for the delivery of MI. In their summary of the research, Castles, Nation, and Rastle (2018) argue that, while MI is likely to benefit the acquisition of literacy, the form of instruction likely to be most effective remains unclear.

2.5. Morphology in the Curriculum

The importance of morphology for spelling is recognised to some extent within the National Curriculum (2013). Writing is described as being contingent upon "spelling quickly and

accurately through knowing the relationship between sounds and letters (phonics) and understanding the morphology (word structure) and orthography (spelling structure) of words" (National Curriculum, 2013, p. 5). Moreover, it is recommended that pupils should "be taught to understand and apply the concepts of word structure so that they can draw on their knowledge of morphology and etymology to spell correctly" (p. 36). The curriculum emphasises how learning the history of words, and the relationships between them can support spelling skills. For example, the morphological link between the words <conscience> and <science> is considered as a way of emphasising how these words are historically linked, and thus share a spelling structure. However, despite these references to morphology, the focus of the National Curriculum rests on phonics-based practice. For Year 5 and 6 students, the following guidance is provided (p. 41):

> It is essential that pupils whose decoding skills are poor are taught through a rigorous and systematic phonics programme so that they catch up rapidly with their peers in terms of their decoding and spelling.

Similarly, for Year 3 and 4 students, it is suggested that (p. 33): "Pupils who are still struggling to decode need to be taught to do this urgently through a rigorous and systematic phonics programme so that they catch up rapidly with their peers." As such, it can be seen that phonics instruction holds a position of primacy in the National Curriculum. Richmond, Burn, Dougill, Raleigh, and Traves (2017, p. 4) criticised the curriculum as having "an obsession" with synthetic phonics, the practice of teaching children to convert graphemes into phonemes, and then to blend the phonemes into recognisable words. Echoing earlier research cited in this review, these authors argue that the National Curriculum aligns with an outdated, linear view of reading development. On this viewpoint, phonics is seen as the only method by which learners may obtain core reading skills. This focus on phonics instruction in

the UK cannot be adequately understood without reference to the broader socio-political context of literacy instruction. The *reading wars* (Castles et al., 2018) refers to the heated historical debate between advocates of phonics methods and advocates of whole-language methods (i.e., methods that focus instruction on the reading of whole words). This debate has been characterised by "antagonistic and entrenched dualism" (Soler, 2017, p. 430). Following the reading wars, phonics-based approaches have become prevalent in the UK, especially in primary education (National Curriculum, 2013; Richmond et al., 2017; Soler, 2017). Indeed, meta-analyses contain suggestions that phonics-based approaches are highly effective in developing the literacy skills of young children (Camilli, Wolfe, & Smith, 2006; Ehri et al., 2001); This has led to a de-emphasis on whole-language approaches (Soler, 2017). The dominance of phonics-led approaches is perhaps most prominently represented via the introduction of the phonics screening test in 2012 in state schools, a standardised assessment for five-year-old children to ascertain their phonemic awareness.

In her analysis of the history of literacy policy in the UK, Soler (2017, p. 423) discusses the rise in prominence of phonics as being a part of the "growing support for a quantitative reductionist approach to early-reading programmes". Soler argues that phonics-led approaches have an advantage within the UK political climate as a form of literacy instruction that is compatible with specific forms of measurement and assessment, and thus subject to free-market forces such as commercialisation and privatisation. Additionally, Soler argues that the positioning of phonics is justified by an appeal to scientific legitimacy, as represented by systematic reviews and meta-analyses.

However, the scientific evidence supporting phonics has been challenged in recent times (e.g., Bowers & Bowers, 2017; Bowers, 2020). Bowers (2020) reviewed 12 meta-analyses relating to phonics-based interventions, finding that there is little or no evidence that phonics-led approaches are more effective than many of the most common alternative

methods used in school. These findings led Bowers (2020) to conclude that the UK educational policy is overly committed to phonics. As an alternative, Bowers (2020) suggests literacy interventions which focus on teaching the inter-relationship between morphology, etymology, and phonology as a promising line of research.

In summary, a focus on synthetic phonics may cohere with previous academic conceptualisations of spelling development. However, as described in the preceding section, there are strong theoretical and empirical arguments to consider a less linear, integrative conceptualisation of spelling development. In particular, there have been several studies completed with children in the Key Stage Two age range, which suggest that MI might be effective in this context (Bowers, 2006, 2012; Bowers & Kirby, 2010; Devonshire et al., 2013).

2.6. Changing Literacy Practices in Schools

Guidance from national documents provides only a partial view of the practices adopted by teachers in their spelling instruction. This is because there can be a disconnect between what is prescribed in national guidance and what occurs in real-life practice in schools. As Hattie (2003, p. 2-3) notes:

> Interventions at the structural, home, policy, or school level is like searching for your wallet which you lost in the bushes, under the lamppost because that is where there is light. The answer lies elsewhere – it lies in the person who gently closes the classroom door and performs the teaching act –the person who puts into place the end effects of so many policies, who interprets these policies, and who is alone with students during their 15,000 hours of schooling.

It is therefore important to generate knowledge regarding how spelling instruction is enacted in classrooms, and how this can be improved. It has been noted that the achievement of

sustained improvements in educational practices can be challenging (Fullan, 2009; Houchens & Keaster, 2015; Hurry et al., 2005). Within schools, one common approach in reaching school improvement involves In-Service Training sessions, which are delivered to teachers as part of their continuous professional development. An enduring issue in this endeavour is the transfer of training, which is the "degree to which knowledge, skills, and abilities learned at training are applied to the job" (Bates, Cannonier, & Hatala, 2014, p. 386). In understanding this phenomenon, Georgiades and Phillimore (1975) have argued that an interactionist standpoint is necessary; consideration should be given to both the individual and their organisation as interacting entities. In their influential text, Georgiades and Phillimore (1975, p. 315) challenge:

> the myth of the hero-innovator: the idea that you can produce, by training, a knight in shining armour who, loins girded with new technology and beliefs, will assault his organisational fortress and institute changes both in himself and others at a stroke.

This interactionist stance has been borne out in much empirical literature. For example, a seminal meta-analysis on the transfer of training (Baldwin & Ford, 1988) emphasised the interaction between organisation level factors, individual-level factors, and the design of training. The meta-analysis conducted by Baldwin and Ford was the first of many reviews and analyses of the training transfer literature (e.g., Blume, Ford, Surface, & Olenick, 2017; Grossman & Salas, 2011; Blume, Ford, Baldwin, & Huang, 2010; Baldwin, Ford, & Blume, 2009; Cheng & Hampson, 2008; Burke & Hutchins, 2007; Cheng & Ho, 2001). An interesting facet of this body of research is the level of discord between the results of studies. There have been many different factors in many different models put forward relating to how to achieve training transfer. Cheng and Hampson (2008) noted that there are inconsistencies in the field, which are a significant problem in the research. Blume et al. (2010) concurred with this view, observing a lack of empirical synthesis between studies; for

example, these authors found discrepancies between methods of measurement used by different studies (e.g., differences between self-reported measures and other-reported measures). Grossman and Salas (2011) noted that the list of relevant factors relating to transfer has grown to the point of unhelpfulness and proposed deeper research regarding *how* different factors affect training transfer. Another limitation of much of the transfer literature is that it is cross-sectional; many of the studies have focused on studying relevant phenomena at a fixed point in time (Blume et al., 2017). In response to this limitation, Blume et al. (2017) more recently proposed an iterative, dynamic model to explain transfer, whereby transfer is seen as a process that unfolds across time. In Blume et al.'s (2017) paper, the authors suggested that more studies be conducted which consider aspects of training transfer, such as feedback cycles that occur across time, or individual patterns of behaviour throughout training transfer.

Over recent decades, there has been a considerable increase in academic research relating to the impact of training on teaching practice (e.g., Borko, 2004; Bradley, Conner, & Southworth, 1994; Joyce & Showers, 1995, 2002; Sansom, 2017; Shah & Yousaf, 2018). It has been noted that this evidence base has developed "patchily" (Cordingley, 2015, p. 54) over the years. Mirroring the wider research around organisational development, many researchers have argued that the research around professional teacher training has been too simplistic and reductionist (Borko, 2004; Opfer & Pedder, 2011; Timperley & Alton-Lee, 2008). For example, Timperley and Alton-Lee (2008) argued that professional development programmes should address the interplay between teacher knowledge, beliefs, and attitudes; These authors criticise teacher training programmes which offer decontextualised messages regarding how instruction should be delivered.

It has been observed that there had been little consensus regarding how training programmes work (Kennedy, 2016). Opfer and Pedder (2011, p. 379) argue for a construal of

teacher learning "as a complex system representing recursive interactions between systems and elements that coalesce in ways that are unpredictable but also highly patterned."

In line with a construal of schools as complex organisations, researchers have made various findings regarding teacher training. Drawing on various kinds of empirical and theoretical support, Desimone (2009) posited that teacher training should be embedded in the day-to-day experiences of teaching, and can take the form of co-teaching, mentoring, or reflection on real lessons. In an analysis of various teacher-training programmes, Kennedy (2016) argued that a critical component of a teacher-training programme should focus on making meaningful experiences for teachers that they can apply to lessons. Additionally, training programmes are more effective when they occur over a sustained duration (Desimone & Garet, 2015; Garet, Porter, Desimone, Birman, & Yoon, 2001; Kraft, Blazar, & Hogan, 2018). Another component of effective teacher training concerns active learning; programmes have been found to be more effective when teachers are given opportunities to give feedback, practice skills, or deliver presentations on core learning (Desimone & Garet, 2015; Kraft et al., 2018). Furthermore, a focus on school leaders is advisable, as it has been found that training transfer is more effective when teacher training is aligned with school leadership priorities (Desimone & Garet, 2015).

Due to the complex and dynamic aspects of schools, Kennedy (2016) has argued that lists of effective design features are likely to be limited. Rather, one must adapt the knowledge gained from empirical findings to transform practice in schools effectively. Zhao, Pugh, Sheldon, and Byers (2002, see figure 3) proposed a two-axis scale which can be used to understand the potential success of training transfer; through the capacity of relevant individuals to change. On the vertical axis is the distance of the innovation from existing practice, referring to how different a novel teaching strategy is from what would otherwise be employed. On the horizontal axis is the dependence on resources, referring to the demands

that the teaching strategy will place on them. Zhao et al. (2002) suggest that the closer the innovation is to existing practice, the easier it will be to adopt.

Figure 3. Likelihood of innovational success (Zhao et al., 2002)

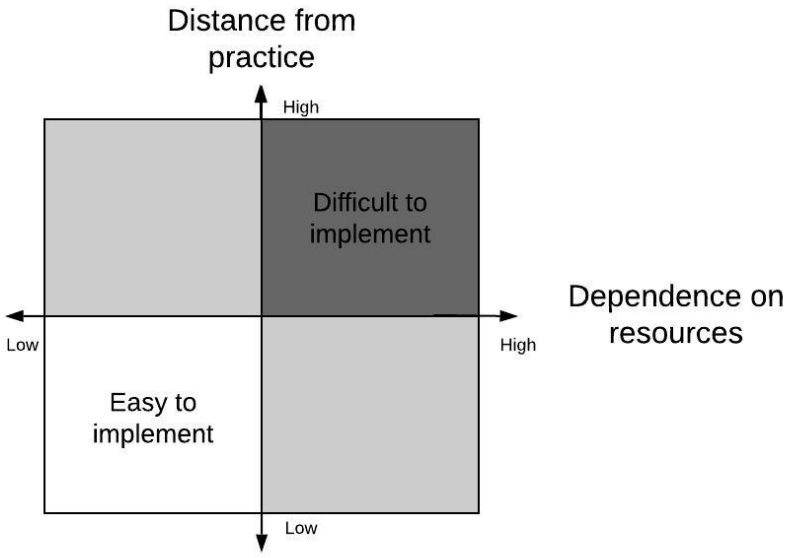


Figure 3. Through their model, Zhao et al. (2002) suggested that the closer an innovation is to existing teaching practices, and the fewer resources it consumes, the more easily it can be implemented.

Aligning with the model put forward by Zhao et al. (2002), Desimone and Garet (2015) found that professional development programmes designed to develop specific tasks (such as increased references to print while reading aloud) are more likely to be successful (e.g., Piasta et al., 2010; Sailors & Price, 2010).

A particular component that academic research has focused on is content knowledge. Grossman, Wilson, and Shulman (1989, p. 27) define this as "the 'stuff' of a discipline: factual information, organisational principles, [or] central concepts." If teachers do not have appropriate levels of content knowledge, then their practice may be impeded (Hurry et al., 2005; McNeill, 2018; Moats, 2014). This idea has been codified as the *Peter effect* (Binks-

Cantrell, Washburn, Joshi, & Hougen, 2012), whereby teachers are unable to provide to students knowledge, attitudes, or skills that they themselves lack.

Indeed, there is a body of evidence suggesting that typical teacher knowledge of morphology may not be sufficient for optimal instruction (Washburn & Mulcahy, 2018; Purvis, McNeill, & Everatt, 2016; Hurry et al., 2005). As such, it has been suggested that further research should investigate how to develop teacher knowledge of morphology (Fielding-Barnsley, & Purdie, 2003; Washburn & Mulcahy, 2018). Moreover, to improve pupils' MA, teachers also require adequate pedagogical content knowledge (Shulman, 1987), which is knowledge regarding how they must transform their conceptual understanding of morphemes into a form that can be accessed by their students.

Within MI specifically, there has been very little research on how to improve teacher practice in MI. There have been calls for further studies on this topic (Purvis et al., 2016; Washburn & Mulcahy, 2018). I only uncovered four such studies during this review, that of Hurry et al., (2005), Herrington and Macken-Horarik, (2015), Lauterbach, Benedict, Yakut, and Garcias, (2020), and Newton, (2018). Hurry et al. (2005) conducted their study in two parts. Firstly, these authors investigated teacher knowledge of morphology, as well as how morphological instruction was enacted in classrooms. Secondly, they delivered a literacy course lasting ten sessions to teachers over one school term. This course provided information on morphology and provided teachers with practical materials to assist in lesson delivery. Hurry et al. (2005) found that making a difference in teachers' knowledge about morphology was relatively easy. However, these authors described significant challenges in achieving sustained improvements in teacher practice. Hurry et al. (2005, p. 204) concluded their paper by arguing that the "ingredients for change in pupils' performance appear to be teacher knowledge and dedicated teacher time." Herrington and Macken-Horarik (2015) aimed to improve the teaching of spelling via a training programme to facilitate a

morphologically informed approach to instruction. These authors reported benefits to the children's spelling outcomes, as well as to the confidence of teachers in delivering instruction. In her thesis, Newton (2018) investigated the role of a morphologically oriented professional development programme in supporting the academic vocabulary instruction of teachers of primary-school-aged pupils. In this longitudinal case study, Newton's programme led to teachers changing their practice relating to academic language, resulting in greater levels of teaching approaches focused on student-directed problem-solving, collaborative learning, and the development of metalinguistic knowledge. Newton (p. 161) concluded her paper by suggesting that "teachers need time to engage in extended, focused study of the linguistic and morphemic structures of academic vocabulary so that they can develop their knowledge of this instructional domain and enrich students' experiences with academic vocabulary." Lauterbach et al. (2020) developed and delivered a programme to improve secondary school science teachers' MI to support pupils with learning difficulties. These authors found that the training programme had a significant impact on both teachers' subject knowledge as well as students' knowledge of vocabulary.

2.7. Summary and research questions

In summary, I have reviewed the following areas of relevance to my research: spelling development, the significance of morphology, spelling instruction in schools, and how teaching practices can be changed. I have concluded that morphology is a crucial component of literacy development. MA, the ability to reflect on and manipulate the morphemic structure of words, can be improved in children through training. However, the form this morphological training should take remains unclear, as there has been substantial heterogeneity in the studies conducted previously. Moreover, very little research has explored how training in MI can best support teaching practice. Therefore, the overall aim of this study

is to investigate how a MI further training programme can change teaching practices and how these practices support children with low MA.

My study was divided into two phases. The first phase was an exploration of the existing facilitators and barriers towards effective MI within the Key Stage Two context. The second phase was a study of the programme's implementation following training, with a particular focus on how the training programme affects learners who are low in MA. I utilised the findings from Phase One of the study to inform the training programme of Phase Two. This action afforded me multiple advantages in designing the training programme. Firstly, I was able to tailor the programme to capitalise on the facilitators of effective MI, which were observed in Phase One. Secondly, I was able to address the barriers that were identified by teachers and senior leaders in Phase One. The data from Phase One supported me in my evaluation of how teachers transformed their instruction over time.

The research questions for Phase One are as follows:

1. What pedagogical practices are employed by teachers when delivering MI in the Key Stage Two context?
2. How do teachers and senior leadership staff perceive the role of MI in teaching spelling in the Key Stage Two context?
3. What are the (a) facilitators and (b) barriers identified by Key Stage Two teachers and school leadership team members regarding effective MI?

The research questions for Phase Two are:

1. What changes in morphological instruction practice in the classroom occur as a result of the implementation of the further training programme?
2. What are the (a) facilitators and (b) barriers to the implementation of an MI further training programme, as perceived by teachers in a Key Stage Two setting?

3. How does the further training programme affect low MA pupils' experiences of spelling?

Chapter 3: Methodology

This chapter begins with a restatement of the research aims and questions for both phases of the study. Following this, I outline the philosophical assumptions underpinning this research. Subsequently, I provide a discussion of the methods used in my study. Finally, I discuss the trustworthiness of my data and the ethical considerations informing my research. I carried out this research between February 2019 and March 2020 (see appendix 1 for a timeline).

3.1. Aims of the Research.

The aims of this research are illustrated in table 3.1.

Table 3.1.

Research aims and questions

	Phase One	**Phase Two**
Aim	To investigate how school staff provide MI and the factors that impede or support this.	To investigate how a MI further training programme can change teaching practices and how these practices support children with low MA.
Research questions	What pedagogical practices are employed by teachers when delivering MI in the Key Stage Two context?	What changes in MI practice in the classroom occur as a result of the implementation of the further training programme?
	How do teachers and senior leadership staff perceive the role of MI in teaching spelling in the Key Stage Two context?	What are the (a) facilitators and (b) barriers to the implementation of an MI further training programme, as perceived by teachers in a Key Stage Two setting?
	What are the (a) facilitators and (b) barriers identified by Key Stage Two teachers and school leadership team members concerning effective MI?	How does the further training programme affect low MA pupils' experiences of spelling?

3.2. Philosophical Assumptions

Research efforts are guided and informed by their philosophical assumptions. Therefore, it is essential to be explicit regarding these assumptions to facilitate the reader in interpreting the results. In this section, I discuss the ontological and epistemological foundations of this study.

3.2.1. Ontology

Ontology refers to the basic form and nature of reality (Heron & Reason, 1997). The ontological position of this research is that of *realism*. Realism is an umbrella term encompassing a range of perspectives. Generally, philosophical realism refers to "the view that entities exist independently of being perceived, or independently of our theories about them" (Phillips, 1987, p. 205). Realism is a flexible ontology, compatible with different epistemological standpoints. For example, some researchers associate realism with positivism and the methodologies associated with quantification (Given, 2008). Conversely, the realist constructivist stance holds that, while reality exists independently of our minds, our understanding of this reality is inevitably subjectively interpreted (Maxwell & Mittapalli, 2010). The realist position is a useful stance for social research, particularly concerning education (Robson, 2002); This is because realism is a productive stance for conducting mixed-methods research, enabling collaboration between qualitative and quantitative data. Realism may be a particularly appropriate ontological stance where research aims require the application of multiple methodologies; As such, inquiry on the realist level incorporates a more generative, nuanced perspective (Robson, 2002). This mode of investigation is particularly salient to the research aims, as the objective of this study is to generate contextualised knowledge regarding (a) how MI is perceived and delivered by school staff and (b) how a training programme can be designed to effectively support teaching practice.

3.2.2. Epistemology

Crotty (1998, p. 3) defines epistemology as "the theory of knowledge embedded in theoretical perspective and thereby in the methodology." As with ontology, one's epistemological stance inevitably guides research efforts. In order to best align with the research aims of this study, the epistemological perspective I have chosen for this research is that of pragmatism (McCarthy, 2005). Like realism, pragmatism is best understood as a broad term and has been interpreted very differently by different theorists. Commonly, pragmatism is understood as the view that knowledge can only be arrived at through the combination of action and reflection (Dewey, 1907; Tashakkori & Teddlie, 2010). Pragmatism privileges actionable knowledge above other kinds of knowledge (Morgan, 2007). Pragmatism can be linked to mixed-methods research, with methods being chosen based on their utility in answering the research question at hand (Mertens, 2010; Tashakkori & Teddlie, 2010). Morgan (2007) emphasises *abduction*, *intersubjectivity*, and *transferability* in research aligned with pragmatism. Abduction refers to moving back and forth between the processes of induction and deduction. Therefore, abduction can be seen as rejecting the dichotomy between induction (associated with interpretivist research) and deduction (associated with positivist research). Transferability concerns the factors that make research either generalisable or context-bound. Intersubjectivity relates to the focus on the processes of communication and shared meaning. I sought to explore how MI is enacted in light of these processes.

3.3. Phase One: Methods

The aim of Phase One was to generate rich data regarding how MI is perceived by school staff (senior leaders and teachers), how MI is delivered by teachers, and the factors that impede or support these practices. To accomplish this, I employed two tools for data collection: semi-structured interviews and lesson observations (for schedules, see appendices 2 & 3, respectively). I chose to use multiple data collection methods to align with Denzin's

(1970, p. 310) notion of triangulation, involving "a complex process of playing each method off against the other so as to maximise the validity of field efforts."

3.3.1. Participant Sample.

I recruited four primary schools in the South West of England through opportunity sampling. I sent generic recruitment emails (see appendix 4) to local schools to initiate contact. Following this, I arranged further discussions to determine which professionals would participate in the study. In table 3.2., I provide some details on each of the schools gathered from governmental data in 2019.

Table 3.2.

Details of participating schools (taken from governmental data)

	School 1	**School 2**	**School 3**	**School 4**
Reading Progress score	Well above average	Average	Average	Well below average
Writing progress score	Above average	Average	Average	Average
Last Ofsted rating	Good	Good	Outstanding	Outstanding
Religious character	Church of England	Church of England	None	None
Pupils with SEN support	10-20%	0-10%	0-10%	20-30%
Pupils eligible for free school meals.	10-20%	10-20%	0-10%	40-50%

In order to maintain confidentiality, I pseudonymised all teaching staff who were involved in my study as per table 3.3.

Table 3.3.

Pseudonyms of teaching staff participants from both phases of the study.

	School 1	School 2	School 3	School 4
Year 4 teacher	Collin	Daveed*	Charlemagne	Chester*
Year 5 teacher	Betsy*	Olive	Gilbert/Jeffrey **	Maurice*
Literacy Lead	Ozzy	Siobhan	Zara	Fatima
Headteacher	X	X	X	Leah

Note. *Participants marked with an asterisk participated in both Phase One and Phase Two.

**Jeffrey was recruited in Phase Two of the study as Gilbert had left the school.

From each school, I interviewed a Year 4 teacher, a Year 5 teacher, and a literacy lead professional. Additionally, I interviewed a headteacher from one of the schools. Therefore, I interviewed 13 professionals in total. I chose this cohort because each professional held a perspective relevant to the research questions, but the group also exhibited enough variation of experiences for adequate sample *specificity* (Malterud, Siersma, & Guassora, 2015). Specificity concerns the participants belonging to the specified target group while also exhibiting some variation within the experiences to be explored. As per the demographic details of the schools I recruited, my sample had some substantial variance relating to socioeconomic status (using eligibility for free school meals as a proxy), existing ratings in reading and writing (as per official statistics), and quality of teaching (using governmental measures as a proxy).

The "information power" model put forward by Malterud et al. (2015; see figure 4) underpinned the rationale for recruitment procedures; These authors proposed that there is an inverse relationship between the information the sample holds and the need for a large sample size. On this account, sample size can be determined based on the interacting factors of study aim, sample specificity, the use of established theory, quality of dialogue, and analysis strategy. The sample size of 13 is justified for the following reasons. Firstly, the research questions focus on a relatively narrow aim: to investigate MI in primary schools. This narrow aim corroborates the need for a small sample size. Secondly, the sample chosen for this study is highly specific (teachers and school leaders), meaning that participants are likely to offer highly dense, relevant knowledge to the research questions. Thirdly, the quality of dialogue was judged to be reasonably likely to yield high-quality data; this is because I am familiar with standard teaching practices, as well as the linguistic concept of morphology. Fourthly, the data collection methods were in-depth semi-structured interviews, supported by data gained from observational methods. I considered this triangulation likely to yield rich data.

Figure 4. Information power model (from Malterud, Siersma, & Guassora, 2015.)

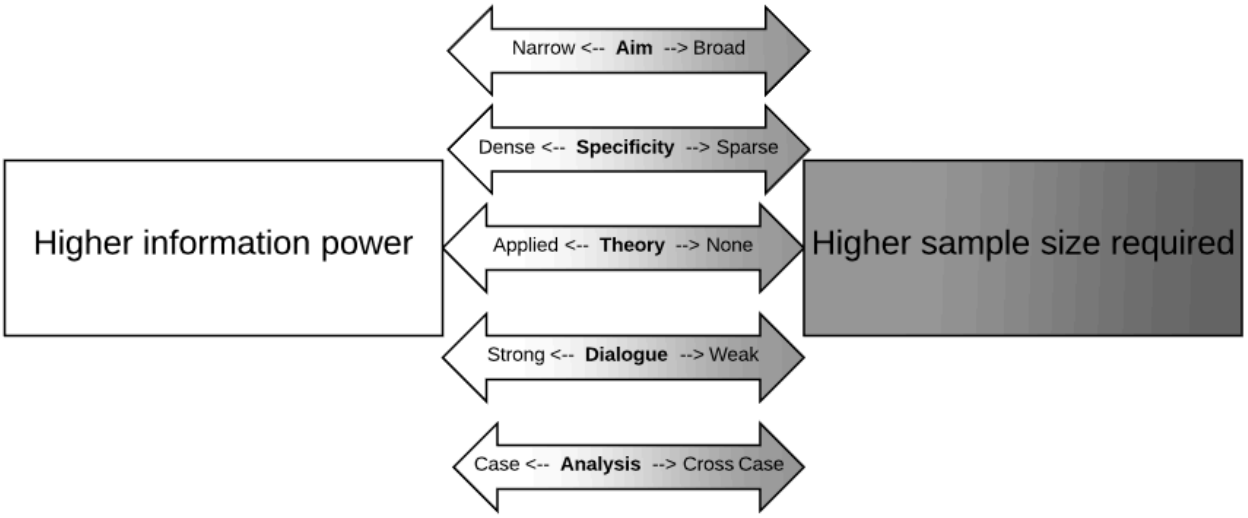


Figure 4. This model illustrates five areas that determine the information power of a sample; A low sample size is sufficient if the research design is high in the dimensions represented.

3.3.2. Development of the Semi-structured Interview Schedule.

Semi-structured interviews enable the researcher to guide the data collection process towards answering the research questions. Simultaneously, the format provides the participant with a degree of freedom regarding what they discuss, how much they wish to express, and how to structure their responses (Drever, 1995). This freedom is particularly advantageous as the primary function of the interviews was to gather data regarding school staff perceptions of MI. In order to collect this data, I devised an interview schedule using a hierarchical focusing structure (Tomlinson, 1989), whereby initial questions were broad and general, and gradually became more specific. This structure enabled me to draw out the respondent's interpretations and understandings through open-ended questioning and minimal interviewer interjections. I developed an interview schedule to elicit data regarding specific research questions (for rationale linking research questions and interview questions, see appendix 2)

3.3.3. Development of the observation schedule

As a means of gathering data, direct observation has been criticised as being vulnerable to observer biases. The use of a structured schedule of observation with defined categories can support researchers in overcoming this difficulty (Robson, 2002). As such, I developed an observation schedule for this research. This schedule was initially based on the International Comparative Assessment of Learning and Teaching (ICALT; Van de Grift, 2007), and adapted to collect data on MI (see appendix 3). The ICALT is a widely recognised tool for classroom observation and is regarded as particularly useful for supporting the professional development of teachers (Bell, Dobbelaer, Klette, & Visscher, 2019). Within the ICALT framework, effective teaching is separated into six domains: creating a safe learning climate, efficient classroom management, clear and structured instructions, activating teaching methods, adjusting to inter-learner differences, and teaches learning strategies. These domains are hierarchical, meaning that effective teaching in the earlier domains enables effective teaching in the later domains (e.g., the delivery of clear and structured instructions facilitates the delivery of activating teaching methods). I chose to use the ICALT over other, similar observation tools because I felt the hierarchical nature of the tool would yield useful insights into teachers' MI practice. To narrow the focus of observations to relevant factors, I refined the MI observation tool into four areas (see table 3.4.). The sections relating to the creation of a safe and stimulating learning environment and efficient classroom management were omitted to focus the observation on phenomena which are relevant to the research questions. This change also served to reduce the attentional demands on myself as an observer, thereby improving the feasibility of data collection. Additionally, several items were reworded to focus the observations on MI specifically.

Table 3.4.

ICALT domain names and explanations

Domain	Explanation
Clear and structured instructions	This refers to setting clear goals, providing useful feedback, introducing content in a staged manner, and providing opportunities for students to apply new morphological knowledge in an increasingly independent way.
Activating teaching methods	This refers to activating students' prior morphological knowledge and stimulating students to apply this knowledge to develop new content and skills.
Adjusts to inter-learner differences	This refers to modifications of instructional content and approaches to accommodate inter-learner differences in morphological instruction.
Teaches learning strategies	This refers to approaches that support students in applying linguistic and metalinguistic strategies relating to morphology in learning activities.

Additionally, I took unstructured field notes during each observation to describe the processes of the lesson in light of the research questions. I analysed field notes to account for potentially unforeseen factors relevant to the research questions.

3.3.4. Pilot

Both the interview schedules and the observation schedules were piloted in May 2019. I conducted these pilots with a literacy lead and a class teacher, respectively, each of whom had no further involvement in the study. As a result of these pilots, I made one change to the

interview schedule. The rapport building question was changed from “Why did you come into the teaching profession?” to “Can you tell me about your role?”.

3.3.5. Data collection

Interviews

I conducted semi-structured interviews with the participants listed in the recruitment section: eight teachers, four literacy leads, and a headteacher. Initially, I provided a clear statement of the purpose of the interview to each participant prior to their engagement (see appendix 5 for the information sheet and consent form). The interviews were conducted in each professional’s school, in a quiet room. Each interview lasted between 25 and 45 minutes. I audio-recorded each interview for later transcription and analysis.

Lesson observations

I conducted observations of seven teachers’ MI lessons: four of these observations were in Year 4, and three were in Year 5. I initially provided teachers with a statement of the purpose of the observation before the lesson. Each observation lasted between 20 and 50 minutes. All of the lessons involved the teacher delivering instruction related to literacy. Four teachers predominantly focused on spelling instruction. Three of the teachers focused on prose writing. During these lessons, I acted as a non-participant observer, whereby I watched the lessons but did not participate in any other way. I scored each teacher’s performance in line with each domain of the modified ICALT (see appendix 3). I completed both the structured observation schedule and field notes during these lessons, although this process often lasted for several minutes after the lessons. I completed my observations contemporaneously in order to improve the trustworthiness of the data I collected. Following these lessons, I invited teachers to discuss what I had observed at a later, convenient time. I made this offer in order to engage in member-checking, whereby my interpretations of lessons would be enriched through discussion with participants (Lincoln & Guba, 1985), as well as to provide a

format for teachers to ask any questions or voice concerns. However, all teachers but one declined this offer. One teacher engaged in a short discussion with me about the lesson and agreed with all the points I raised.

3.3.6. Data analysis

My data analysis procedures are illustrated in figure 5.

Figure 5. Model of analytical procedures undertaken

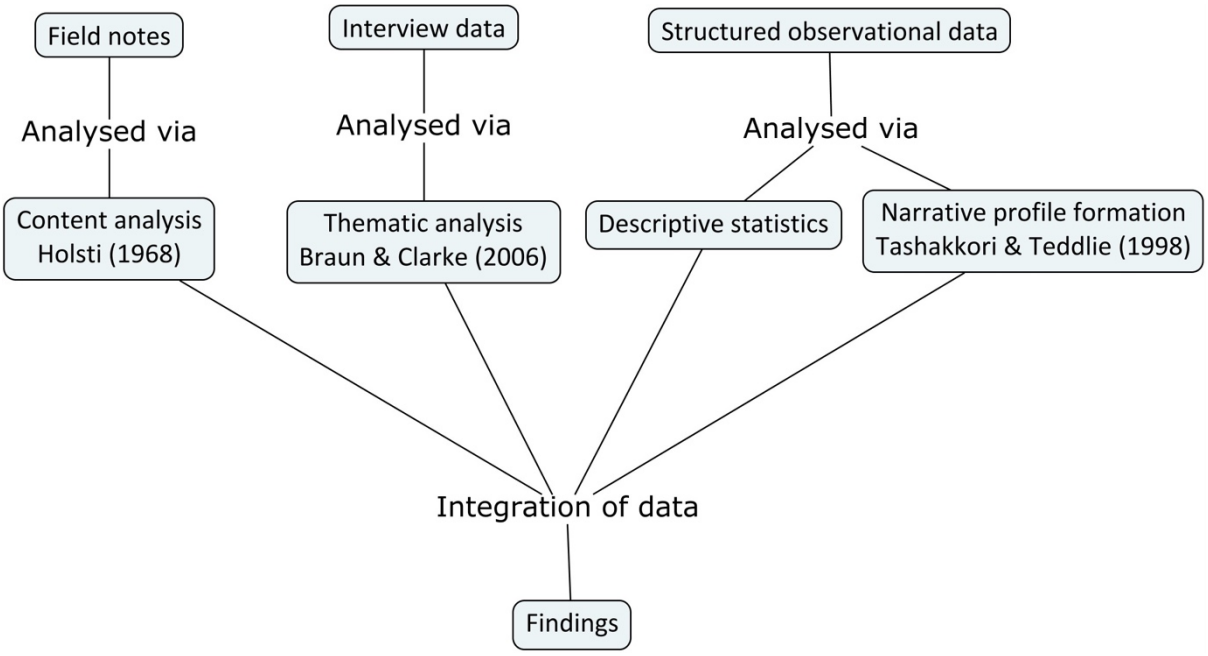


Figure 5. This model represents how my data were analysed in relation to their methods of collection.

Interview data

I analysed my interview data in line with the thematic analysis procedures as described by Braun and Clarke (2006, 2019). This process is outlined in table 3.5.

Table 3.5.

Thematic analysis steps and explanations.

Stage	Procedure
Data familiarisation	I read transcriptions repeatedly, searching transcriptions for meaning, patterns, and other areas of interest. Initial notes and ideas were made alongside the transcripts (see appendix 6 for excerpt).
Initial code generation	I developed codes using an abductive approach, whereby some codes were data-driven, and others were derived from relevant literature (see appendix 6).
Search for themes	I categorised codes into different themes. This coding was initially achieved using topic or orientating concepts that codes were clustered around. I used thematic maps to organise codes into themes and sub-themes. At the end of this stage, I produced candidate themes (for the emerging thematic map, see appendix 7).
Reviewing themes	Themes were assessed and refined based on their appropriateness concerning the research questions. Following the completion of this stage, I produced a thematic map (see appendix 8 for an example) relating to each research question.
Defining and naming themes	I derived the names of each theme and sub-theme from my thematic maps. I then examined the original data to ensure appropriacy to each candidate theme. I defined each theme, and subsequently re-analysed the data to check the definitions were appropriate. Themes, definitions and examples of data were recorded in tabular format in preparation for reporting the results.
Producing the report	I wrote up my analysis as part of this document.

Observational data

I analysed my field notes as per an adaption of Holsti's (1968) approach (see table 3.6.). I chose to use this approach to scaffold myself in systematically summarising and analysing the contents of my field notes.

Table 3.6.

Content analysis steps.

Step	Task
Identification of categories	I reviewed and coded the collected data (see appendix 9 for example)
Allocation of constructs to categories	I grouped the free-text responses into themes (see appendix 10 for table)
Tabulation of results	I collapsed the groups found into broader thematic categories
Establishing the reliability of the category system	I consulted with a colleague (another doctoral student) to review the 'fit' of grouped themes with broader categories.
Summary by meanings	I converted the categories into a visual format (see appendix 11)
Summary of frequency of construct occurrence in each category	I recorded the frequencies in my analysis of results.

I calculated descriptive statistical data from the ICALT schedule to summarise the results, which were represented via their median score. I chose to use the median as the appropriate measure of central tendency as my sample size was small, and the median is relatively robust

to the effects of outliers (Miles & Banyard, 2007). In order to integrate these quantitative data into my analytical approach, I *qualitised* the descriptive statistical data. Qualitising involves transforming quantitative data into a qualitative form (e.g., obtaining narratives to explore the meaning of numerical data; Onwuegbuzie & Teddlie, 2003; Sandelowski, Voils, & Knafl, 2009; Tashakkori & Teddlie, 1998). This process of qualitising followed the technique of Tashakkori and Teddlie (1998), with narrative descriptions being constructed from quantitative data. In this stage, the statistical data regarding each section of the ICALT schedule were transformed into qualitative data by assigning categories of excellent, good, fair, and poor to each subscale score. These categories were based on the possible range of scores on each subscale (1-4). For example, if a teacher scored over 21 out of 28 in the 'Active teaching methods' section, I assigned them a category of "Excellent" in that section (see appendix 12 for an example of a narrative profile).

3.4. Phase Two: Methods

The aim of Phase Two was to investigate how a MI further training programme can change teaching practices and how these practices support children with low MA. In order to meet this aim, I designed a further training programme; This programme took place over three sessions with each member of staff attending three sessions (see appendices 13 and 14 for slides relating to the training session and coaching sessions, respectively). The first session lasted 90 minutes, and the second and third session lasted 45 minutes each. The sessions were spaced approximately three weeks apart from each other. The training programme was informed by insights generated during Phase One, alongside theoretical and empirical knowledge from previous studies. The following is a summary of the further training programme.

3.4.1. Developing a Training Programme

a. Training session 1

The initial training session was structured to last 90 minutes. I delivered two of these sessions in September 2019 to engage with all relevant professionals. I invited class teachers of Year 4 and Year 5 pupils, as well as Literacy Leads in each of the schools from Phase One of the study. Each initial session was facilitated by a PowerPoint presentation (see appendix 13). Firstly, I explained the morphophonological nature of English (Venezky, 1999); I discussed with teachers that English orthography can be viewed as a well-ordered system through the lens of morphology (see section 1.1. for further details). I provided numerous examples of English spellings which preserve morphological regularity (e.g., the function of <g> in <sign> to preserve the connection to other words such as <resignation> or <signal>). This information was included in the training so that teachers understood the linguistic rationale for teaching morphology.

Secondly, I shared relevant insights from developmental and cognitive psychology with teachers. The group then discussed developmental models of literacy acquisition such as triple word form theory (Garcia, Abbot, & Berninger, 2010), statistical learning approaches (Deacon & Sparks, 2015), and constructivist models (Deacon & Dhooge, 2010). The role of MI with regard to these models was also explained to teachers, focusing on the idea that learners appear capable of drawing on different kinds of linguistic information throughout their literacy development (see section 2.1. for further details). Teachers were also presented with some underpinning theories from cognitive psychology, such as the structure building framework (Gernsbacher, 1991) or the deep learning model (Marton & Säljö, 1976), which emphasise the role of comprehension in the durability of learning.

Thirdly, I provided teachers with relevant subject knowledge relating to morphology. I chose to incorporate subject knowledge acquisition into the programme as this was identified as a weak area by teachers in Phase One. This section of the programme covered three key areas, which were chosen to address weaknesses in teacher subject knowledge.

Initially, the four different kinds of structural spelling units were discussed: prefixes, suffixes, roots, and connecting vowels (Carstairs-McCarthy, 2017). Following this, I explained the suffixing rules to teachers (e.g., when adding a vowel suffix to a word ending in a single, silent <e>, the <e> is dropped, as in <please/ + ed → pleased >). Teachers were then taught the difference between *free roots,* wherein a word's root element can be expressed independently as a word (e.g., the <act> root in <action>), and *bound roots,* where the root element of a word cannot be expressed without other affixes present (e.g., the <rupt> root element of <disrupt>).

Fourthly, I presented teachers with pedagogical strategies and tools to support their delivery of MI. These were based on the explicit instruction model (Archer & Hughes, 2011) and included *modelling*, *guided practice*, and *autonomous practice*. Modelling refers to demonstrating key skills and clarifying the decision-making processes needed to complete a task or procedure by thinking aloud as one performs the skill. Guided practice refers to regulating the difficulty of practice opportunities during the lesson and providing students with guidance in skill performance. Autonomous practice refers to providing opportunities for students to practise the skills they have acquired independently. These strategies were chosen as focal points because my analysis of Phase One data suggested explicit instruction was congruous with the pedagogical practices already being employed by teachers; Teachers already appeared competent in using explanation and modelling before engaging in the programme. Additionally, I explained the 'spelling out morphemes' strategy to teachers, whereby the morphological structures of words are spoken aloud in a manner which chunks morphemes, which is likely to improve retention (Fonollosa, Neftci, & Rabinovich, 2015).

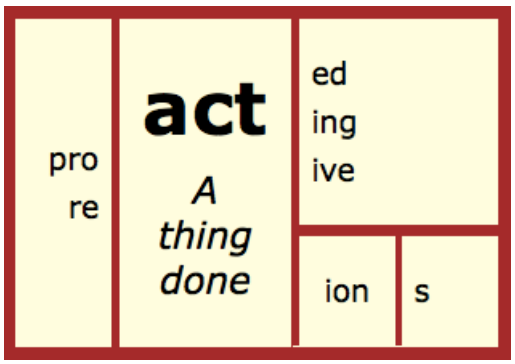
I also provided an example of a *word matrix* and *word sums* (see figure 6). Word matrices represent the members of a specific morphological family centred around a root element. Word sums represent the decomposition of words into their constituent morphemes,

as well as the various suffixing conventions, such as the removal of the single silent <e> when adding a vowel suffix. These tools were chosen for two key reasons. Firstly, in accordance with principles of cognitive psychology, these tools facilitate the construction of *cognitive schemata*, which are "cognitive constructions that help to reduce the cognitive burden on working memory, because they allow categorising multiple elements of information as a single element" (Schnotz & Kürschner, 2007, p. 475). Moreover, word sums and word matrices can be used to facilitate effective MI through the explicit instruction model of teaching (for a discussion of explicit instruction and morphology, see Daigle et al., 2018). This is because the tools visually represent the connections between root elements and affixes, which can facilitate verbal explanations of morphological structures. Secondly, I chose these tools because they scaffold teachers' understanding of morphology for themselves. This scaffolding is important as the first phase of the study showed that teachers often lack subject knowledge and confidence relating to morphology. Moreover, the broader academic literature references the lack of subject knowledge as a substantial barrier towards effective MI (Hurry et al., 2005; Purvis et al., 2016; Washburn & Mulcahy, 2018). Thirdly, the word matrix can be seen as a *low threshold, high ceiling task,* meaning that they enable all students to work at their development levels while simultaneously providing opportunities to extend learning (Boaler, 2016; Chamberlin, 2019). This self-differentiating nature of word matrices was deemed important based on the relative weakness of teachers in differentiating their instruction, as identified in Phase One (see section 4.1. for further details). Fourthly, researchers have previously used word matrices and word sums successfully in quantitative studies (Bowers & Kirby, 2006; Bowers & Kirby, 2010; Devonshire et al., 2013), finding the tools to be effective in improving literacy outcomes for children. Finally, the provision of a word matrix represents a specific, concrete activity for teachers to engage their pupils. As noted by Desimone and Garet (2015), the uptake of clear, discrete strategies is more tractable

than deeper efforts to change teacher behaviours in a broader, more complex manner. Considering the length of time at my disposal to run the training programme, I deemed this to be a realistic goal.

Fifthly, I presented some additional resources to the teachers for discussion. I discussed how a lesson in morphology might be enacted, using a lesson template and PowerPoint presentation I had designed (see appendices 15 and 16 for the lesson template and PowerPoint presentation, respectively). I also listed the other resources which may have been useful to teachers: 30 word matrices based on statutory spelling words from the National Curriculum, worksheets for practising suffixing rules, and useful websites including the mini-matrix maker, a tool for constructing word matrices; the word searcher, a tool for discovering words that share spelling patterns; and Etymonline, an online etymology dictionary (see appendix 17). I provided these tools to scaffold teachers' confidence and pedagogical knowledge in delivering MI, to align the programme with curricular objectives, and to lessen the demands on teacher time.

Figure 6. Example word matrix and word sums



pro + act + ive → proactive

re + act + ing → reacting

re + act + ed → reacted

act + ion + s → actions

Figure 6. The word matrix for <act> represents some of the members of its morphological family centred around the root element. The word sums represent the decomposition of the members of the family into their constituent morphemes.

Pilot

I piloted the training programme in August 2019 with a teacher who has experience teaching Key Stage Two pupils. Following this, the programme was discussed to improve the clarity, cohesion, and relevance to teachers. As a result of this piloting, the following changes were made to the initial training session:

- I included a reference to morphology as defined within the National Curriculum in order to align the training programme with teachers' aims explicitly.
- I included PowerPoint presentations based on word matrices as resources to reduce time-demands on teachers.
- I added an overview of the structure the training programme would take (i.e., one initial training session and two coaching sessions).

b. Training sessions two and three: Coaching

Instructional coaching refers to a collaborative process whereby the coach supports the teacher in incorporating research-based practices into their teaching (Knight, 2007). In order to facilitate the development of participating teachers, I arranged two coaching sessions in addition to the initial training session for each teacher to attend. Each coaching session lasted approximately 45 minutes, and the sessions were spaced around three weeks apart, occurring between October and December 2019. I chose to incorporate coaching sessions into the programme for several reasons:

- There is a robust empirical research base supporting the application of coaching in various contexts (Cox, Bachkirova, & Clutterbuck, 2014).
- Effective teacher training programmes incorporate active learning principles, where teachers are given opportunities to give feedback, practise skills, or deliver presentations on core learning (Desimone & Garet, 2015; Kraft et al., 2018).
- Researchers have shown teacher training programmes to be more effective when programmes are conducted over a sustained duration of time (Desimone & Garet, 2015; Garet et al., 2001; Kraft et al., 2018). The coaching sessions served to extend the duration of the programme and thus maintain teachers' focus on their professional development concerning MI.
- As noted by Desimone (2009), coaching approaches aim to facilitate self-directed learning. This kind of learning is likely to be more durable.

To structure these coaching sessions, I utilised the GROUP model of coaching (Brown & Grant, 2010; see table 3.7. for details). The GROUP model of coaching is derived from the GROW model of coaching (Goal, Reality, Options, Way forward; see Whitmore, 2002), but modified in recognition of the complex social context in which the coaching occurs (Brown & Grant, 2010).

Table 3.7.

The stages of the GROUP model.

Stage	Description
Goal	The group is asked to clarify what they want to achieve from each session.
Reality	Awareness of present realities is raised. The current situation is examined, with particular focus on how the current situation is impacting the group's goals.
Options	The available options are identified and assessed. Solution-focused thinking and brainstorming are encouraged.
Understand others	The group focuses on their responses to the content being discussed. The group connects to the best emerging future.
Perform	The group is assisted in determining next steps. The best options are considered. Individual and group action plans are made. Discussions are held for maintaining motivation and ensuring accountability.

I chose to employ this model for several reasons. Firstly, researchers have found the GROUP model to be effective in promoting change at the school level (Brandmo, Aas, Colbjørnsen, & Olsen, 2019; Flückiger, Aas, Johnson, Nicolaidou, & Lovett, 2017). Secondly, in line with models of training transfer (e.g., Blume et al., 2017), the GROUP model addresses the social component of training transfer. As noted by Blume et al. (2017, p. 7), "successful transfer attempts could lead to more peer and supervisory support for transfer as others begin to see its value, thus creating a reinforcing cycle that creates positive spirals leading to more use and more opportunity to use the trained skills." Thirdly, the GROUP model is time-efficient, in

that multiple participants can be coached at the same time. This time-efficiency means that the group coaching model might be considered more viable in light of the time pressures on teaching professionals (Morgan & Bates, 2018).

3.4.2. Participant sample.

Following the training programme, I recruited five teachers who had attended the three sessions for interviews and observations. Within this sample, four of the teachers had been interviewed and observed during Phase One. One teacher, Maurice, had been interviewed during Phase One but was unable to be observed due to personal circumstances. One of the teachers was new to their setting; I pseudonymised this participant as 'Jeffrey'. The other teachers, Daveed, Betsy, and Chester, retained their pseudonyms from Phase One (see section 3.3.1.).

In order to access pupils with low MA, I recruited three of these teachers in two schools who had taken part in the training programme. I delivered a whole class spelling assessment (Spelling multi-morphemic words task; Apel, Diehm, & Apel, 2013; see appendix 23) to two Year 5 classes and one Year 4 class in February 2020. Through this assessment, I identified the five lowest-scoring pupils in each class whom I then invited to attend a focus group. These participants were aged between eight and 10. Two of these focus groups contained five children, and one included three children, as two of the participants opted out. I pseudonymised child participants as per table 3.8.

Table 3.8.

Pseudonyms of child participants.

Year 4	Year 5 (1)	Year 5 (2)
Piers	Fiona	Clive
Eoin	Michael	Aoife
Pippa	Marcus	Adam
Larissa	Kate	
Taylor	Chris	

3.4.3. Development of the semi-structured interview schedule.

I designed an interview schedule to explore how the morphology further training programme was enacted by teachers in the classroom (see appendix 18). The schedule was developed in accordance with the principles described in the previous section in that it followed the hierarchical questioning approach (Tomlinson, 1989; see section 3.3.2. for more details) but was tailored to address the research questions of Phase Two (for interview question rationale, see appendix 18).

3.4.4. Development of observation schedule

In order to explore the differences that have resulted from engagement with the further training programme, I observed lessons using the same observation schedule as in Phase One of the study (see section 3.3.3.). Additionally, I developed a fidelity checklist to assess the fidelity of teaching practices observed to the principles of the further training programme (see appendix 19). I assessed fidelity in line with the key recommendations for effective MI provided by Daigle et al. (2018), alongside principles from the model of explicit instruction (Archer & Hughes, 2011): activation of prior knowledge, modelling of key processes, active participation opportunities offered, provision of feedback to learners, pedagogical

differentiation, and supporting students in organising knowledge. Additionally, teachers were assessed on their demonstrations of morphological knowledge; This assessment was undertaken because inadequate subject knowledge was identified as a barrier to effective teaching, both as part of Phase One analysis, as well as in the broader literature (see section 2.6.). Additionally, as in Phase One, I took unstructured field notes to gather data more inductively.

3.4.5. Development of teacher questionnaires

I chose to use questionnaires to gather additional data from teachers as they were progressing through the programme. Several factors guided this decision. Firstly, questionnaires are a time-effective manner of collecting data. Secondly, the questionnaires placed less pressure on participants to produce an immediate response. Thirdly, as the questionnaires were completed anonymously, this arguably reduced social desirability biases (Lavrakas, 2008), whereby participants would present their answers in accordance with what they believed I wished them to say. The questionnaire items were chosen deliberately to address specific research questions (see appendix 20). I designed the questionnaires to collect both quantitative and qualitative data regarding how teachers' practices have changed over the training.

3.4.6. Development of focus groups schedule

I employed focus groups to enable an in-depth exploration of the collective ideas held by pupils relative to their spelling outcomes (for schedule, see appendix 21). The use of focus groups is advantageous for various reasons. Firstly, focus groups provide an open and supportive environment in which people can discuss quite sensitive issues (Wilkinson, 1998). I considered a supportive environment to be important as the pupils had low MA and may have found the topic of spelling to be emotionally challenging. Secondly, focus groups mimic real-life conversations, with participants talking to each other, rather than to a researcher.

Therefore, participants might be more likely to use their real vocabularies for discussing a topic (Kitzinger, 1994). Thirdly, focus groups are a time-effective method of collecting data in comparison to, for instance, one-on-one interviews. I designed the focus group schedule to align with hierarchical focusing principles (Tomlinson, 1989).

3.4.7. Development of child questionnaire

In order to gather quantitative data regarding how children with low MA have been affected by the further training programme, I developed a questionnaire (see appendix 22 for the questionnaire and a rationale). Through this questionnaire, I sought to generate complementary numerical data to be triangulated against the qualitative data I had gathered via the focus groups. The questionnaire was developed to assess student perceptions of MI in a range of areas: self-efficacy, engagement during lessons, and the perceived usefulness of morphology. This questionnaire consisted of 12 Likert scale items on a scale of 1-10. Additionally, two items were included at the beginning of the questionnaire as a means of ensuring all children understood the task.

3.4.8. Data collection

Interviews

I delivered semi-structured interviews with the teachers I recruited in four schools between January and March 2020. Each teacher had begun the further training programme at least four months before being interviewed. I recorded each interview for transcription. The interviews lasted between 20 and 30 minutes. I provided teachers with an information and consent form before commencing the interviews. I then invited teachers to ask questions regarding the research before beginning the recording. Throughout the interviews, I attempted to draw on the recommendations of Lincoln and Guba (1985). For example, these authors recommended the importance of maintaining a good pace of conversation and rounding off the interview positively.

Observations

I observed lessons in five classes across four schools. These observations were arranged with teachers during the final session of the training programme. Before observation, I asked teachers to deliver a typical lesson in morphology as per their current practice. The lessons observed lasted between 20 and 40 minutes each.

Focus Groups

I conducted three focus groups with 13 children in total across two schools. These sessions began with some general rapport building activities. Subsequently, the groups discussed how they had experienced MI following the training programme. The groups lasted between approximately 15 and 30 minutes each.

Child questionnaires

Following the focus group discussion, I provided each member of the group with a questionnaire. The entire group completed the questionnaire at the same time. In order to account for difficulties that children may have had with understanding the items, I read each item aloud and answered any questions that the children had. Following this, I allowed each child the opportunity to ask me any questions, and then debriefed and thanked them for their participation.

3.4.8. Data Analysis

The procedures taken to analyse my data are illustrated in figure 7.

Figure 7. Data analysis procedures for Phase Two

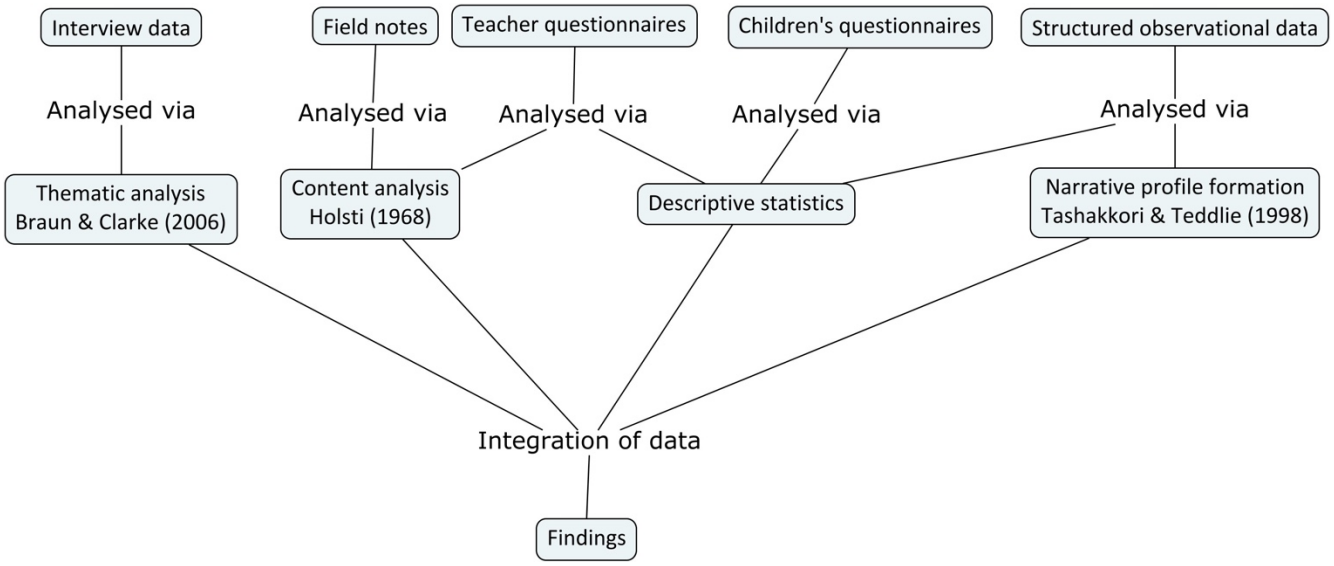


Figure 7. This figure represents the analytical procedures I have undertaken in relation to the appropriate method of data collection.

Interviews and focus groups

I systematically analysed the interviews and focus groups as per Braun and Clarke's (2006) framework (see section 3.3. for further details; see appendix 18 for rationale linking research questions to interview schedule).

Observations

I used descriptive statistics to compare the ICALT observational data collected pre-training to the observational data gathered post-training. Additionally, I used the quantitative data gathered from observations to create narrative profiles (see section 3.3.6. for further details on this process; Tashakkori & Teddlie, 1998). I analysed the field notes through Holsti's (1968) content analysis approach (see section 3.4. for more details). Holsti (1968) described content analysis as an objective and systematic technique for generating inferences. From this, I calculated the frequency of codes. However, Joffe and Yardley (2004) argue that the frequency of information is not a direct indicator of its importance. Therefore, the findings

section reflects both high-frequency codes as well as codes which are particularly salient to the research questions.

Teacher questionnaires

I analysed the questionnaires through descriptive statistics for the quantitative data. I analysed the qualitative data through a content analysis approach (Holsti, 1968).

Child questionnaires

I analysed the questionnaires through descriptive statistics, computed using Microsoft Excel. Through this analysis, I discovered the median of the Likert scale items. I then used this data to construct different graphs to summarise the findings, which are presented in the next chapter.

3.5. Trustworthiness of the data collected

Researchers have divided trustworthiness of data into five areas: *credibility, dependability, transferability, confirmability* and *authenticity* (Guba & Lincoln, 1994; Lincoln & Guba, 1985). Credibility refers to the truth of the data or the participant views and the interpretation and representation of them by the researcher (Polit & Beck, 2012). Dependability refers to the constancy of the data over similar conditions (Polit & Beck, 2012). Confirmability refers to the researcher's capacity to show that the data represent the participants' behaviours and not the researcher's biases or viewpoints. Transferability refers to the capacity of findings to be applied to other settings. Authenticity refers to the ability and extent to which the researcher expresses the feelings and emotions of the participant's experiences in a faithful manner (Polit & Beck, 2012). In this section, I discuss the measures taken to improve the research design in each of these areas.

Firstly, to enhance the credibility of findings, I engaged in the following actions:

- Prolonged engagement: I conducted the study between May 2019 and February 2020, having met with teachers and observed their lessons on multiple occasions during this

period. This had the advantage of facilitating my building of rapport and trust with participants.

- Triangulation: My use of both qualitative and quantitative methods provided rich data (Onwuegbuzie & Leech, 2005), which enabled a more in-depth exploration of teacher views and practices relating to morphology. The study design enabled triangulation of data across collection tools (questionnaires, interviews, direct observations, and focus groups), time (across 10 months), and participants (school leaders, teachers, & pupils) (Willig, 2008).
- Negative case analysis: During my analysis, I searched for elements of the data that do not support or appear to contradict patterns or explanations that are emerging from data analysis. For example, I observed one teacher deliver a lesson that was based on discovery-learning principles during a lesson (For a discussion of the topic, see Bakker, 2018). I considered this as a candidate theme, but through exploring the rest of my data-sets, I determined that discovery-learning was not a supported theme in my data.

In order to improve the transferability of the findings, I engaged in *thick description*; This process is described by Lincoln and Guba (1985) as a way of achieving a type of external validity. By describing a phenomenon in sufficient detail, one can begin to evaluate the extent to which the conclusions drawn are transferable to other times, settings, situations, and people.

In order to enhance the dependability of findings, I engaged in an external audit; I had a fellow trainee educational psychologist examine both the steps taken in analysing my data and the conclusions I arrived at. This action was undertaken to evaluate the accuracy and determine whether or not the available data supported my interpretations of the findings.

In order to enhance the confirmability of my findings, I undertook the following actions. Firstly, I used several structured observation and interview schedules to guide my data collection. Shenton (2004), emphasised the value of deriving data collection methods from successful studies. In this study, I utilised observations, focus groups, interviews, and questionnaires as methods to collect data, all of which are recognised in mixed-methods research (Kroll & Neri, 2009). In addition, I designed the data collection tools before collection, in order to ensure that data were collected in the same manner across the four schools selected for the study. Moreover, I included direct quotes from participants to make my interpretations of the data transparent. Additionally, before beginning my data collection, I took explicit steps to interrogate my positionality regarding my research (see section 1.3.). Malterud (2001, p. 484) noted that "Preconceptions are not the same as bias, unless the researcher fails to mention them."

In order to enhance the authenticity of my findings, I undertook the following actions. Firstly, in my write-up of the results, I included multiple direct quotes from participants. This served to frame my results within language that was meaningful to participants. Secondly, in order to capture the perspectives of relevant parties, I collected data directly from school leaders, teachers, and children. Throughout my interviews, I offered the participants opportunities for clarification, supporting them in conveying themselves in a transparent manner.

3.6. Ethical Considerations

3.6.1. Phase One

Throughout my research, I adhered to the principles established by the British Educational Research Association (BERA, 2018) and the University of Exeter for conducting ethical research. I received ethical approval from the University of Exeter ethics committee on the

22nd February 2019 (see appendix 24 for ethical approval certificate). Before engaging in data collection, a participant information sheet and consent form were prepared to contain information about the research for relevant school staff (e.g., Y4 and Y5 teachers, literacy leads, and headteachers, see appendix 5). I pseudonymised participant details in all data collection processes following their involvement. All data from participants were stored on encrypted hardware. These data were deleted following the completion of the data analysis. Following participation, I debriefed each participant regarding the nature of the research (as per guidance from the BPS, 2014).

3.6.2. Phase Two

Child participants

Before administering the measure of MA, I created a consent form and information sheet for distribution to carers (see appendix 25). These consent forms conveyed the nature of the research, details relating to confidentiality and anonymity, and information regarding participants' right to withdraw at any point during the study. As part of this form, I provided contact details for myself and my supervisors to ensure any carer could contact me with questions or comments. Additionally, I provided children with consent forms immediately prior to collecting data from them (see appendix 26). Finally, throughout the data collection with children, I emphasised that the participants could withdraw from the programme at any point at no cost to them.

Teacher participants

The information sheets conveyed that teachers could cease their participation with the study at any stage by contacting the researcher. As in Phase One, all data from participants were stored securely, and data were deleted following the completion of analyses. When

participants had completed their involvement in each stage of the study, I debriefed them. These debriefings provided the same information as described for Phase One.

3.7. Summary

I began this chapter with a discussion of the philosophical assumptions underpinning my research. I justified my ontological position (i.e., realism), and epistemological position (i.e., pragmatism) in light of my research questions. Following this, I outlined the methods I have employed in this study. I described and justified my data collection techniques, including my use of opportunity sampling, the development of appropriate interview and observation schedules, my piloting of instruments, and other procedural data relating to my data collection. I also explained and justified my analytic procedures: thematic analysis, content analysis, descriptive statistics, and narrative profile formation. I have summarised the further training programme I developed and explained the rationale underpinning this programme. I have outlined the methods by which I ensured the trustworthiness of my research. Finally, I described the ethical considerations that have underpinned my research. In the following chapter, I will discuss the results of my study.

Chapter 4: Phase One findings

In this chapter, I present the findings regarding how teachers delivered MI and the factors that facilitated or impeded this delivery. My results are arranged in accordance with the research questions, which are presented below.

1) What pedagogical practices are employed by teachers when delivering MI in the Key Stage Two context?
2) How do teachers and senior leadership staff perceive the role of MI in teaching spelling in the Key Stage Two context?
3) What are the (a) facilitators and (b) barriers identified by Key Stage Two teachers and school leadership team members concerning effective MI?

As described in the previous chapter, these results have been constructed using a variety of analytic methods: thematic analysis, descriptive statistics, narrative profiling, and content analysis.

4.1. P1 RQ 1: What pedagogical practices are employed by teachers when delivering MI in the Key Stage Two context?

In this section, I provide descriptive statistics from the structured observation schedule that are relevant to the investigation of which pedagogical practices are employed by teachers when delivering MI in the Key Stage Two context (see figure 7). Following this, I provide a summary of the findings from my qualitative analysis of lesson observation and interview data for each theme (see table 4.1.).

Descriptive statistics

Figure 7. Lesson observation data.

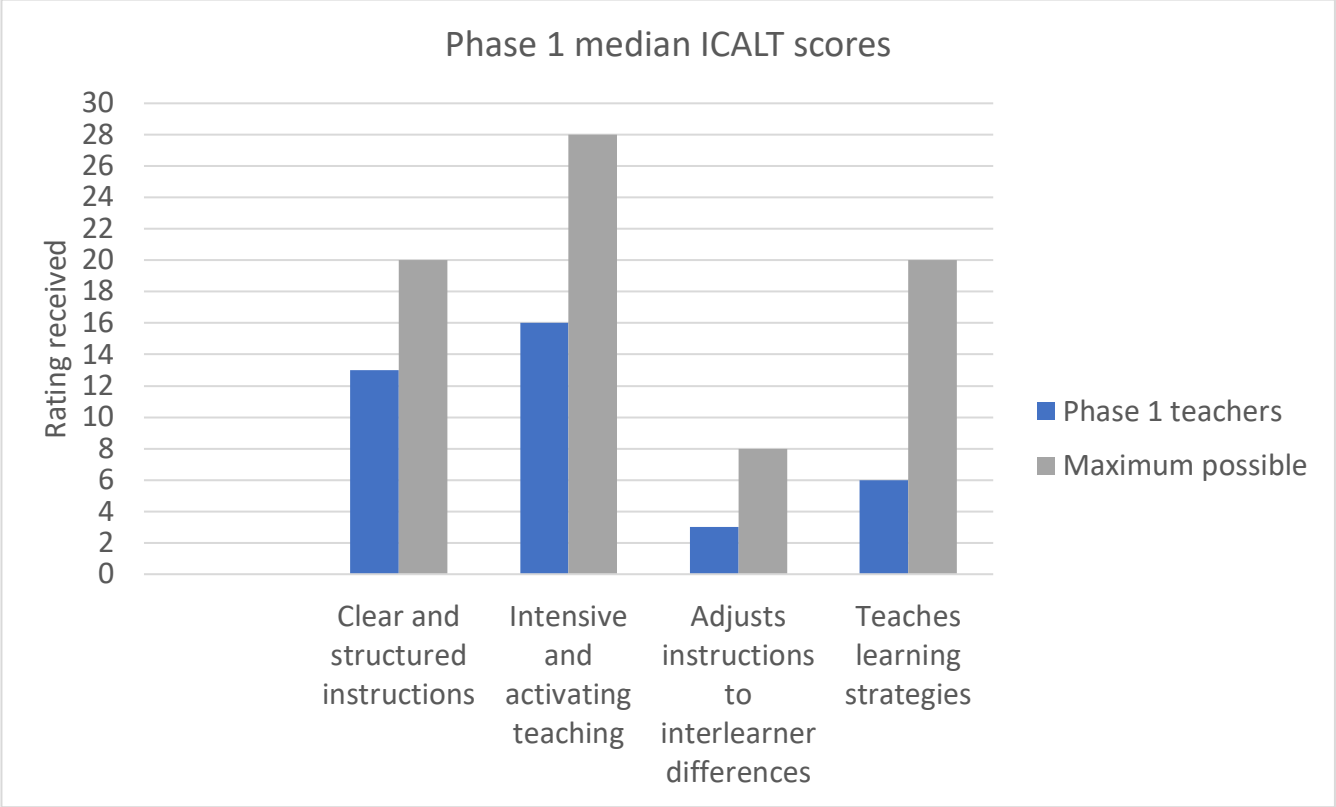


Figure 7. This chart illustrates the median scores of observational data obtained by teachers from each ICALT category.

For clarity, the descriptions of each area of the ICALT tool are restated here. The domains of the ICALT are hierarchical, meaning that high scores in the earlier sections of the measure enable high scores in the later sections of the measure. The 'Clear and structured instructions' section refers to setting clear goals, providing useful feedback, introducing content in a staged manner, and providing opportunities for students to apply new morphological knowledge in an increasingly independent way. The 'Activating teaching methods' section refers to activating students' prior morphological knowledge and stimulating students to apply this knowledge to develop new content and skills. The 'Adjusts to inter-learner differences' section refers to modifications of instructional material and approaches to accommodate inter-learner differences in morphological instruction. Finally, the 'Teaches

learning strategies' section refers to methods that support students in applying linguistic and metalinguistic strategies relating to morphology in learning activities. I scored each teacher based on a single lesson in MI. The scores for each domain were based on the frequency of behaviours I observed during the lesson which satisfied each category.

The teachers attained the highest relative score in the 'Clear and structured instructions' section, indicating that teachers' pedagogical practices involved a high level of clear stages, goals and feedback. The teachers also obtained a relatively high score in the 'Activating teaching methods' section. Conversely, teachers obtained the lowest relative score in 'Teaches learning strategies', indicating that teachers showed limited use of approaches to support children in linguistic and metalinguistic strategies. Teachers also scored low in the 'Adjusts to inter-learner' differences section, indicating limited use of differentiation during lessons.

Narrative profile analysis

In this analysis stage, the categories below represent the possible range of scores on each subscale (1-4). For example, if a teacher scored over 21 out of 28 in the 'Active teaching methods' section, I assigned them a category of "Excellent". My analysis yielded two distinct profiles of teachers: those who were 'enabled', referring to the teachers who scored highly in the first two sections of the ICALT, and those who were 'non-enabled,' referring to the teachers who scored low in the first two sections. I chose the label of 'enabled' to reflect the hierarchical nature of the ICALT, noting that strong scores in the first two sections were likely to facilitate high scores in the later sections. The profiles of the teachers are represented below in graphic format (see figure 8 and figure 9). The strong distinction between the two kinds of teachers, coupled with the results from the observational data, indicate substantial variation in teaching approaches employed.

Figure 8. Narrative profiles of ‘non-enabled’ teachers from Phase One

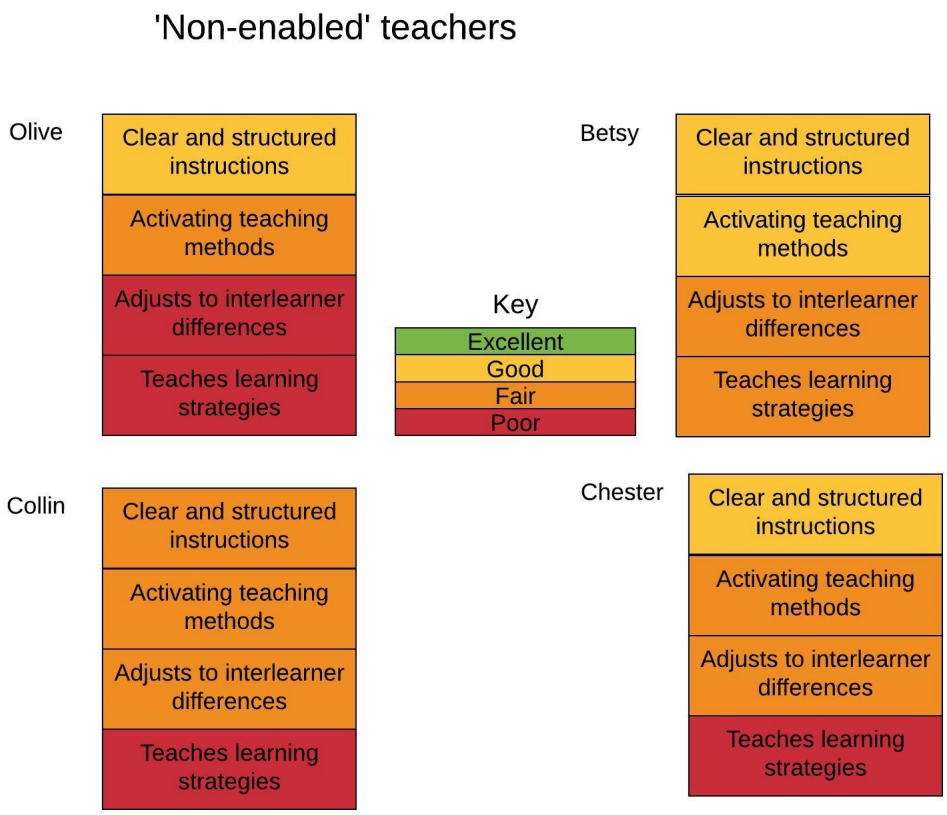


Figure 8. Narrative profiles of ‘non-enabled’ teachers from Phase One, referring to the teachers who did not show receive high scores in ‘Clear and structured instructions’ and ‘Activating teaching methods’.

Figure 9. Narrative profiles of 'enabled' teachers from Phase One

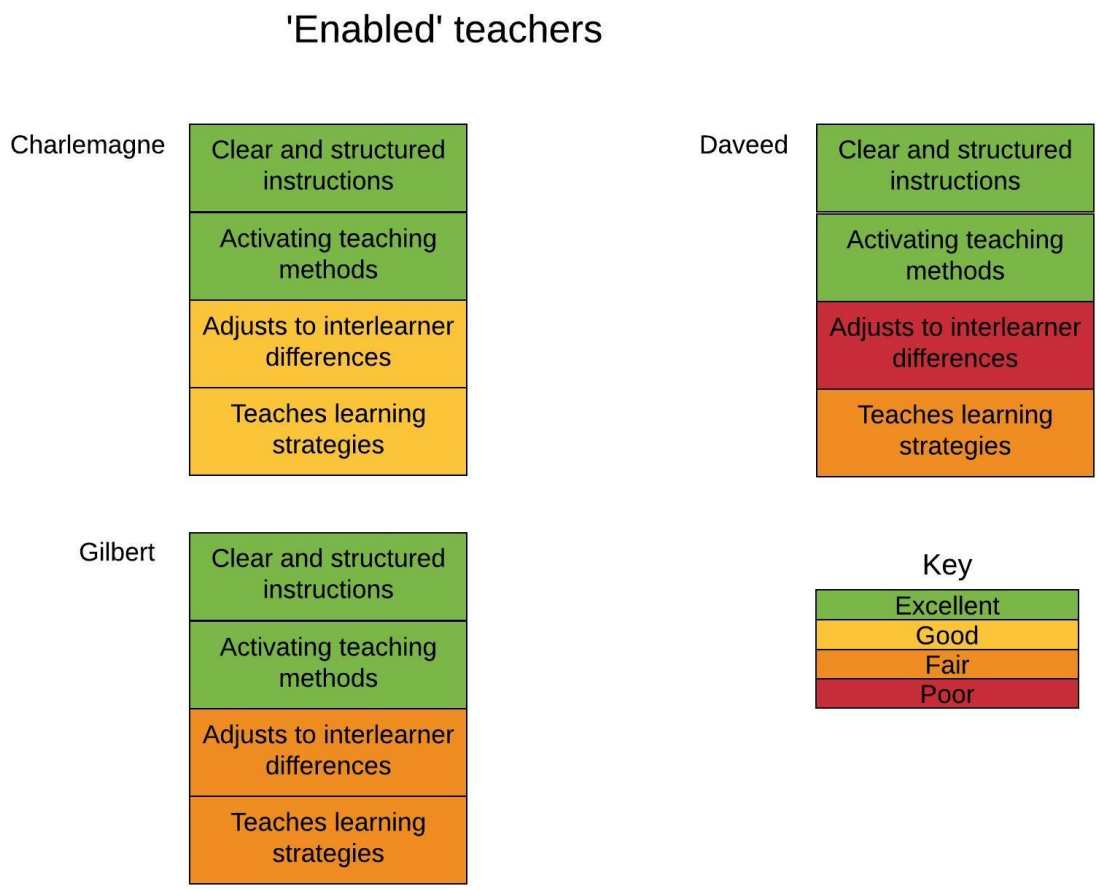


Figure 9. Narrative profiles of 'enabled' teachers from Phase One, referring to the teachers who received high scores in 'Clear and structured instructions' and 'Activating teaching methods'.

In table 4.1., I summarise the themes and sub-themes in relation to the research question: What pedagogical practices are employed by teachers when delivering MI in the Key Stage Two context?

Table 4.1.

Summary of themes in relation to P1 RQ1

Theme	Sub-theme
Verbal explanation	Sharing lesson rationale Explaining rules
Cooperative learning	Paired work Peer marking
Contextualisation	Dictation Sentence work Creative activities
Corrective feedback	Rote learning Teacher feedback

Verbal explanation

The most commonly used strategy I observed during lessons was verbal explanations of concepts related to morphology. For example, Charlemagne began her lesson by orally explaining the <-ous> suffix, and that it can be attached to numerous root elements to change these roots into adjectives. More broadly speaking, teachers spent a large amount of their lessons orally explaining the rationale for their lesson during the introduction period, elaborating on different morphological concepts, or modelling their thought processes regarding morphemes. The data from interviews corroborate this point. In response to the question, 'What teaching strategies do you use when teaching about morphology', Betsy responded: "We do introduce the rules, we try to explain the rule". In one interview, I asked

Fatima for a specific example of how she explains morphology to her pupils. She responded by talking through an example: *"*Misplaced. Well, 'mis' is wrongly or badly, 'place' is the word and 'ed' tells us it is a verb in the past tense. So, we do a lot of that stuff [verbal explanations]."

Cooperative learning

Cooperative learning refers to students working together to achieve common goals or complete group tasks (Gillies, 2016). Reflecting this idea, during our interview, Daveed commented: "My poorer spellers really need extra intervention. They have got a partner and they pick the words they test, or they are their go-to person for spelling. They are support for spelling." Pedagogical practices relating to cooperative learning were observed in five out of the seven lessons. These included: children being put in pairs and tasked to write sentences together; children generating lists of words containing an identified prefix; and children attempting to discern a 'spelling rule' relating to suffixes. During these times, teachers typically circulated the room, offering feedback to specific groups or pairs. During interviews, four teachers reported regular use of cooperative learning strategies. Teachers referred to cooperative learning as a means of fostering peer assessment (through peer marking) and as a means of differentiating the activity (via the placement of pupils in mixed ability pairs).

Contextualisation

A common strategy I observed in teachers' lessons involved contextualising spellings. In four of the lessons I observed, teachers tasked pupils to put target words in sentence**s.** Justifying the use of this strategy, Chester noted that "…when you talk about those things [spellings] in context, you have a reasonable chance that child will firstly understand the meaning of the word." Moreover, teachers used various other methods of incorporating spellings into more creative activities such as word searches, crosswords, or acrostic poems. Daveed explained

they he often uses "…things like pyramid words, sometimes word searches, looking at putting words in context as much as we can." Additionally, in interviews, three teachers referred to dictation exercises, whereby target words were included in the transcript. Teachers scarcely discussed the pedagogical rationale underpinning their decisions to focus on contextualising strategies. One headteacher described the value of contextualising as a means of embedding spellings more efficiently in pupils' writing. However, she did not elaborate further on this point.

Corrective feedback

Here, I refer to corrective feedback as being responses to errors that support spelling development. Daveed described his practice as follows:

> In the marking of their work they do, they always have to self-correct words that I think they should know either because they have done the rule, we have learnt the word, or it is a word that they should have learnt.

During the lessons I observed, five teachers employed corrective feedback as a part of their teaching of MI. During interviews, six teachers referred to feedback through peer or teacher marking. Some teachers elaborated on their practice, discussing that they often combined corrective feedback with rote learning activities, whereby learners were tasked to write out corrected versions of spelling errors multiple times. Betsy explained that a common practice she employs is to "… get the children to identify spelling mistakes through peer marking, through teacher marking, and the expectation there is they will go back and make those corrections."

4.2. P1 RQ 2: How do teachers and senior leadership staff perceive the role of MI in teaching spelling in the Key Stage Two context?

In table 4.2., I summarise the themes and sub-themes in relation to the research question: How do teachers and senior leadership staff perceive the role of MI in teaching spelling in the Key Stage Two context?

Table 4.2.

Summary of themes in relation to P1 RQ2

Theme	Sub-theme
Enigma	Confusion A source of untapped potential
Reframing	Promoting understanding of spelling Complementary linguistic information

Enigma

Teachers often expressed uncertainty regarding the nature of morphology and illustrated confusion regarding its nature in several instances. In response to the question, "What do you understand by the term 'morphology' as it relates to the English language?", the majority of respondents offered an unclear definition of the term. Only two of thirteen participants mentioned either suffixes or prefixes in their answers. Four participants referred to etymological concepts in their response. For example, Collin responded: "I am guessing [morphology is] more looking at where the words have come from, looking at the root words and again patterns within words." Additionally, teachers would sometimes equivocate between discussions of morphology and spelling 'rules'; Five participants referenced such rules while discussing morphology. The finding that teachers lack subject knowledge

regarding morphology was also evident during the observations; I found that teachers' highest area for development of the four ICALT sections was 'Teaches learning strategies', which was tailored to assess metalinguistic instruction. Moreover, this confusion was expressed during interviews with teachers. Daveed explained that: "As soon as you go down that route of morphology or entomology, all of that stuff, there is a bit of me that goes, 'Oh...' That obviously means I am not confident in it myself."

Morphology was also noted as a source of untapped potential, meaning that many teachers and senior leadership staff suggested that they would benefit from an improved understanding of MI. For example, Betsy commented that: "[The teachers in this school] could possibly gain a better understanding of how [morphological instruction] would benefit our spellers and use it as a strategy." Several teachers reported the desire to improve their teaching of morphology, and the belief that children would benefit in various literacy outcomes as a result of this improved teaching. Additionally, some teachers expressed the opinion that improved MI would also benefit children's sense of self-efficacy regarding spelling.

Reframing

Reframing involves the generation of new labels, perspectives, and the examination of assumptions (Ellis, 2018). In six of the interviews, participants discussed morphology as a means of reframing the nature of spelling. For example, Fatima explained the impact of her teaching morphology:

> ...and the children have a lot more pride in their understanding of seeing the spelling rules and using them, and I am seeing my children wanting to… they have that hunger to get better and want to improve, and that seems to be a really positive thing.

Some teachers reported the regularity of morphological patterns as a means of promoting the understanding of English orthography, as well as linking meaning to spelling.

For example, Betsy explained that her class are "…trying to move… to a more conceptual understanding of [spellings]."

Additionally, many teachers explained that they had used MI to promote positive attitudes towards spelling. As noted by Maurice: "I think the morphology helps. Definitely, because with that knowledge itself, you can try to install that passion towards it. And that curiosity."

Finally, teachers referred to morphological knowledge as a means of providing a complementary linguistic perspective to phonological knowledge. Collin described effectively combining morphologically based instruction with phonologically oriented instruction in a lesson, noting the combined use of phonological and morphological knowledge to teach spellings:

> Just take off an <e> and add an <-ous> and it's fine." And then it's not until they actually know, you know read it, now use your sounds. "Oh, that does not say <courageous>." "That does not say <specious>."

4.3. P1 RQ 3A: What are the facilitators identified by Key Stage Two teachers and school leadership team members regarding effective MI?

In table 4.3., I summarise the themes and sub-themes in relation to the research question: What are the facilitators identified by Key Stage Two teachers and school leadership team members regarding effective MI?

Table 4.3.

Summary of themes in relation to P1 RQ3A.

Theme	Sub-theme
Flexibility of morphology	Can be tied to other subjects
	Can be both a quick and long lesson

Flexibility of Morphology

Teachers discussed the flexibility of morphology as a critical facilitator to its effective instruction. By 'flexibility', I refer to the capacity of MI to be adapted to various contexts. For example, teachers noted that morphological concepts could be taught in different types of English lesson, such as grammar, story-writing, or reading lessons. Illustrating this, Betsy said that "…we try to drip-feed [morphology] in every lesson that we do." Moreover, some teachers explained that morphology could be taught in lessons beyond English. Betsy described how MI is delivered "…not just in writing or spelling lessons; it may be in maths if we're noticing that certain words are being spelt wrong". Additionally, teachers reported that MI can be most effectively taught during a variety of times and subjects, and can be delivered both as a discrete lesson, or integrated into other lessons.

4.4. P1 RQ 3B: What are the barriers identified by Key Stage Two teachers and school leadership team members regarding effective MI?

In table 4.4., I summarise the themes and sub-themes in relation to the research question: What are the barriers identified by Key Stage Two teachers and school leadership team members regarding effective MI?

Table 4.4.

Summary of themes in relation to P1 RQ3B.

Theme	Sub-theme
Insufficient time	Planning time Teaching time Competing curricular demands
Lacking knowledge	Lacking strategies Lacking understanding of morphology Difficulties translating spellings into writing
Problematising phonics	Children's over-reliance on phonics School's focus on phonics

Insufficient Time

Nine participants referred to inadequate time as a barrier towards implementing effective MI. The lack of time was discussed on two levels: Lack of time to deliver MI and lack of time to plan it effectively. Chester's initial response to the question around barriers to effective MI was as follows:

> One thing is time really, in terms of more time to be able to work with the children. But it's one of those things where… I think, in primary, we've got so many elements we're trying to fit in.

Teachers explained that other competing curricular demands often resulted in MI being removed from their teaching schedules. For instance, Maurice noted that: "I'd like more time to do it. Like with a lot of the curriculum, it gets squeezed out."

Lack of Knowledge

As mentioned above, several teachers reported some degree of confusion regarding morphology. Many of the teachers also described a lack of knowledge of pedagogical strategies available to them to deliver MI effectively. For instance, Fatima reported that she thinks that teachers in her school "…need to be aware of how to do it [teach morphology], and they need strategies, and they need ideas, and that will need to be delivered as part of CPD [career and professional development]". This lack of knowledge was linked to a lack of confidence in spelling instruction. Collin reported that: "I find spelling is tricky. I think spelling is really tricky to teach." Teachers generally conveyed low confidence in their capacity to deliver MI, and this low confidence was attributed to their lack of relevant subject and pedagogical knowledge.

Teachers identified difficulties in supporting their pupils to carry over their learning from discrete lessons into their everyday writing. I linked this finding to the 'lacking knowledge' theme because teachers appeared unsure of how to scaffold children in applying target words for spelling in their writing. One teacher described some strategies she would use in supporting a child spell a word, appearing to lack strategies for scaffolding morphological knowledge (referred to here as 'spelling rules'):

> "Can you remember if it is a Q it always has a U next to it," and potentially you can look at the phonics behind it, but the spelling rules are slightly more tricky to help them understand.

The lack of pedagogical knowledge was also framed as a means of breaking down spelling into manageable components. Collin reported that he finds this challenging: "I think as a grown-up, when you spell it, it is something you just do naturally. It is sometimes harder to break down those steps."

Problematising Phonics

Generally, teachers reported that they found it challenging to bridge the pedagogy between MI and the phonics instruction which pupils had previously experienced. Leah described the difficulties of some pupils in her school:

> And there are children that are highly dependent on phonetics. Everything is phonetic, and they can't see beyond the phonics side of it. And that is what I think holds them back.

Some teachers explained that their students had experienced intensive phonics instruction and struggled to apply non-phonological strategies in their spelling. This point occurred in seven of the interviews. As noted by Daveed, these pupils' "…spelling is phonetically correct, but very often they have not made the right choices. I don't know how to transfer that phonetics without going back over phonetics, which clearly doesn't work for some children."

Moreover, teachers noted that whole-school initiatives around spelling were often directed towards phonologically oriented strategies, and that these strategies were incongruent with the needs of Key Stage Two pupils.

4.5. Summary

In this chapter, I have presented the findings of Phase One of the study. I have provided an overview of the main themes I have derived from my datasets. I have found that there were substantial differences in the types of pedagogical practices employed by teachers. Teachers utilised a range of pedagogical strategies, including cooperative learning, contextualising spellings, explanation, and corrective feedback.

School staff perceived the role of MI in spelling with uncertainty and expressed a high degree of confusion regarding morphology. However, participants also viewed MI as a source of untapped potential, recognising that an improvement in their MI would likely lead to a substantial development for learners. Participants saw MI as offering a potential reframing of

their spelling teaching, using the morphological regularities of English as a means of motivating pupils. Finally, participants viewed MI as a means of providing complementary linguistic knowledge to phonological knowledge.

Teaching staff perceived the flexibility of morphology to be the key facilitator of MI. Conversely, the barriers to effective MI identified by participants included insufficient time, lack of knowledge, and phonics-related issues as the main barriers towards effective MI.

In the next chapter, I will discuss these findings in relation to the broader literature.

Chapter 5: Phase One discussion

In this chapter, I discuss the key findings from Phase One and consider these in relation to the broader literature and relevant theory. This discussion is arranged by the research questions. The purpose of this phase was to investigate how teachers provide MI and the factors that impede or support this.

5.1. What pedagogical practices are employed by teachers when delivering MI in the Key Stage Two context?

The key findings with relation to this question were as follows:

- There were substantial differences in the types of pedagogical practices employed by teachers.
- Teachers employed a range of pedagogical strategies, including cooperative learning, contextualising spellings, explanation, and corrective feedback.

While studies investigating how teachers deliver MI are sparse, studies of spelling instruction more generally offer a range of insights into how spelling is taught in primary schools (Daffern & Critten, 2019; Doyle et al., 2015; Fresch, 2007; Graham et al., 2008; Johnston, 2001). The finding that different teachers approach MI with a range of pedagogical approaches may be partially explained through the high level of disagreement in the research community regarding how literacy instruction should be delivered (e.g., Johnston, 2001; Soler, 2017; Treiman, 2018b). Researchers have noted that teachers are often given contradictory messages regarding how spelling should be taught, how spelling proficiency develops, and how to differentiate their lessons (Doyle et al., 2015). Given the lack of clarity in learning communities around such issues, it is perhaps unsurprising that teachers exhibited a high variation in their instructional practices.

The finding that teachers regularly employ verbal explanation is reflected in previous studies of spelling strategies used by teachers (Daffern & Critten, 2019; Doyle et al., 2015).

Moreover, as suggested by Johnston (2001), teachers may be more likely to revert to so-called 'traditional' methods of instruction given their perceived lack of sufficient subject or pedagogical knowledge (Hurry et al., 2005; Purvis et al., 2016; Washburn & Mulcahy, 2018). As the teachers in this study expressed confusion regarding the nature of morphology, it follows that they have become dependent on long-established teaching methods such as verbal explanations.

Similarly, my finding that teachers contextualise spellings as part of their instruction has some precedent in previous studies. For instance, Johnston (2001) found that a third of teachers in her research commonly tasked students to use spelling words in sentences. Furthermore, the finding teachers employ corrective feedback mirrors previous studies (Daffern & Critten, 2019; Doyle et al., 2015). As with my finding regarding verbal explanations, these findings arguably reflect a more orthodox stance regarding spelling instruction.

The prevalence of cooperative learning strategies within spelling instruction also has precedent in previous research (Doyle et al., 2015). Researchers generally regard cooperative learning as a powerful teaching tool (Daigle et al., 2018; Gillies, 2016; Hattie, 2012). It is especially effective when students are active participants in the learning exercise, and when students' goals are clear to them throughout the task (Daigle et al., 2018).

In their observed lessons, teachers scored relatively low in differentiated instruction; a low level of differentiation has been found in previous literature (Doyle et al., 2015; McNeill & Kirk, 2014). For example, Doyle et al. (2015) found that more than a quarter of teachers reported not making any adaptions to their spelling instruction based on developmental need. On a similar note, McNeill and Kirk (2014) found that teachers reported a high valuation on differentiated instruction, but still provided a single spelling list to all their pupils regardless

of developmental level. The relatively low scores in differentiated instruction might be explained through a lack of teacher subject knowledge. As noted by Moats (2009):

> Differentiated instruction depends on the teacher's insight into what causes variation in students' reading achievement. Further, it depends on the teacher's ability to explain concepts explicitly, to choose examples wisely, and to give targeted feedback when errors occur.

Moreover, the ICALT framework, on which the structured observation schedule was based, suggests that the learning categories are hierarchical (Tas, Houtveen, van de Grift, & Willemsen, 2018); This means that it is less likely for teachers to score highly in 'Adjusts to inter-learner differences' without also scoring highly in 'Clear and structured instructions'. Some teachers are likely to have struggled to provide differentiated instruction as a result of their confusion regarding morphology.

The result that teachers employed relatively few strategies for metalinguistic awareness is reflected in previous studies (e.g., Purvis et al., 2016). Researchers have found that teachers perceive themselves to lack sufficient linguistic knowledge themselves, a finding that has been replicated in this study. These findings may be at least partially explained via the so-called Peter effect (Binks-Cantrell et al., 2012), whereby teachers cannot provide knowledge they do not possess themselves. This constriction on teacher knowledge limits the range of effective teaching practices that can be put in place by teachers, which is likely to impact pupils negatively (Moats, 2009). Without sufficient instruction to raise metalinguistic awareness, children are less likely to develop an intrinsic enjoyment of literacy (Graves & Watts-Taffe, 2008), which in turn may stymie their academic progress in spelling.

5.2. How do teachers and senior leadership staff perceive the role of MI in teaching spelling in the Key Stage Two context?

The key findings in relation to this question were:

- Participants perceived the role of MI in spelling as an enigma and illustrated confusion regarding the topic.
- Participants also viewed MI as a source of untapped potential, recognising that an improvement in their MI would likely lead to a substantial improvement for learners.
- Participants viewed MI as offering a potential reframing of their spelling teaching, using the morphological regularities of English as a means of motivating pupils.
- Participants saw MI as a means of providing complementary linguistic knowledge to phonological knowledge.

The result that teachers are unclear around morphology might appear surprising for two reasons. Firstly, The National Curriculum (2013, p. 87) defines morphology as "a word's morphology is its internal make-up in terms of root words and suffixes or prefixes, as well as other kinds of change". Therefore, it might appear unusual that only one participant referred to root words, suffixes, or prefixes in their definition of morphology. Secondly, morphology was defined in the participant information and consent form that school staff read and signed before conducting the interview. However, the finding that teachers lack a strong understanding of morphology has been reflected in previous studies. (Hurry et al., 2005; Purvis et al., 2016; Washburn & Mulcahy, 2018).

It is also noteworthy that teachers were aware of their lack of knowledge concerning MI. This point has been explored in some previous studies (Daffern & Mackenzie, 2019; Fresch, 2007; Johnston, 2001); Teachers have been found to lack confidence in their skills in teaching spelling, and dissatisfaction with the impact of their spelling instruction across a range of studies. Moreover, in this study, some teachers expressed a belief that improved knowledge of MI would have a substantial impact on their pupils. This finding is not mirrored in previous studies. One factor that may explain these results is my use of opportunity sampling; My recruitment procedures are likely to have led to my finding school

staff who were especially interested in the potential of MI. Additionally, this finding may partially be the result of participant reactivity (Krathwohl, 2004), whereby participants were aware of my research interest in MI and were responding to this interest.

Teachers indicated that MI provides a means for reframing spelling instruction; This may reflect a partial, implicit understanding in participants of relevant theoretical concepts. For example, teachers' awareness that morphological patterns recur sufficiently to operate as a motivator for pupils may reflect some knowledge of the morphophonological nature of English orthography (Venezky, 1999). Additionally, this finding mirrors previous research in MI (Baumann, Edwards, Boland, Olejnik, & Kame'enui, 2003; Berninger et al., 2003; Bowers & Kirby, 2010). As noted by Kirby and Bowers (2018, p. 233), the "problem-solving orientation to morphological word study" can be appropriated by teachers as a tool for cultivating student motivation. Bowers and Kirby (2010) and Tomesen and Aarnoutse (1998) each used the theme of students acting as "detectives" to frame their instruction. These researchers anecdotally reported that they observed children enjoying this problem-solving process of working with morphology.

Previous studies have suggested that MI might be particularly efficacious when combined with other kinds of linguistic instruction (e.g., orthographic or phonological; Bowers et al., 2010; Carlisle, 2010; Devonshire & Fluck, 2010; Goodwin & Ahn, 2013; Henbest & Apel, 2017; Wolter et al., 2009). Therefore, the result that teachers employed MI as a means of providing complementary linguistic information to phonological knowledge represents a strength in the pedagogical practices of the teachers.

5.3. What are the facilitators identified by Key Stage Two teachers and school leadership team members regarding effective MI?

The findings in relation to this question were that teachers perceived the flexibility of morphology to be the key facilitator of MI.

Several teachers expressed the view that MI could be employed as a means of addressing both vocabulary and spelling simultaneously. This perspective is in line with the model forwarded by Kirby and Bowers (2018), which conceptualises morphology as a means of bridging understanding and spelling. Kirby and Bowers (2018) argued that, in line with Perfetti's (2007) lexical quality hypothesis, morphological knowledge could help to integrate semantic, orthographic, and phonological knowledge, thus improving the quality of spellings. Moreover, as noted by scholars in the field (Abbott et al., 2010; Perfetti & Stafura, 2014; Schaars et al., 2017), the cognitive processes underpinning spelling and comprehension are linked, implying that supporting the development of spelling also supports the development of comprehension skills. Given the time barriers discussed by teachers (see the following section for further discussion), the capacity of MI to address multiple areas of literacy simultaneously represents a sizeable advantage. Additionally, teachers noted that MI could be used during lessons outside of English. There is precedence for this in the research on MI. Studies have employed morphologically based interventions for teaching subjects such as science, which has a great deal of subject-specific words (e.g., Lauterbach et al., 2020).

5.4. What are the barriers identified by Key Stage Two teachers and school leadership team members regarding effective MI?

The key findings in relation to this question were that teachers and school leadership team members perceived insufficient time, lack of knowledge, and phonics-related issues as the main barriers towards effective MI.

The first of these findings was that teachers perceived insufficient time as a barrier to effective education. This point appears relevant to subjects beyond spelling instruction.

Teachers generally experience high stress levels as a result of time pressures, and further report a negative impact on their teaching as a result (e.g., Worth & Van den Brande, 2019). However, within spelling instruction specifically, teachers have reported that insufficient time is a challenge they regularly encounter (Daffern & Critten, 2019; Johnston, 2001). Daffern and Critten (2019) suggested that teachers do not prioritise teaching spelling. The results of this study reinforce such findings, as teachers reported competing curricular demands overriding spelling instruction. This barrier represents a significant obstacle to be overcome in supporting teachers to develop their practice.

Previous research shows that teachers perceive themselves to lack knowledge to deliver MI effectively (Hurry et al., 2005; Purvis et al., 2016; Washburn & Mulcahy, 2018). Typically, teachers report lacking confidence in teaching spelling generally (Daffern & Critten, 2019; Johnston, 2001). In training studies to support MI, teachers have been found to lack the requisite morphological knowledge to deliver effective teaching (Hurry et al., 2005; Newton, 2018). Within this study, teachers were found to lack both subject and pedagogical knowledge. Teachers linked this lack of knowledge to a lack of confidence in their professional capacity to teach spelling. This point highlights the affective components of metalinguistic knowledge; My results suggest that teachers may experience emotional challenges (e.g., insecurity or low self-efficacy) as a result of lacking metalinguistic knowledge.

I found that teachers viewed phonics as problematic to teaching morphology; This is a relatively novel result from this study. Many factors might explain this finding. Firstly, the reform of the National Curriculum in 2013 led to a higher focus on systematic, synthetic phonics. Richmond et al. (2017, p. 4) argued that the National Curriculum has an "obsession with synthetic phonics as the only way that young children should be taught to read." I have found that the teachers from my study viewed phonics as a barrier to effective MI; This can

be seen as a corroboration of Richmond et al.'s (2017) position. As noted previously (see section 2.2.), the words children encounter in Key Stage Two are incompatible with phonics-based approaches alone; This is because the language demands children face exponentially increase as they progress through the education system (Crosson & McKeown, 2016). Supporting this point, a meta-analysis of phonics-based instruction aged seven to 12 indicated that phonics is not an effective strategy for this age range (Ehri et al., 2001).

5.5. Summary

In this chapter, I have discussed the findings of my study in light of previous literature. Most of my conclusions directly mirror and reinforce those of previous studies. Previous studies indicate that teachers rely on so-called traditional approaches to teaching spelling; This is reflected in my research in that the teaching strategies I observed involved an emphasis on verbal explanation, cooperative learning, contextualisation, and corrective feedback. Additionally, my finding that teachers lacked clarity around morphology is a replication of previous research in the area. A relatively novel result of my research is the difficulties teachers found in relation to the emphasis on phonics in teaching practice; Teachers expressed dissatisfaction with the impact that this emphasis was having on their spelling instruction. In the next chapter, I provide the findings from Phase Two of my study.

Chapter 6: Phase Two findings

In this chapter, I present the findings regarding how the further training programme in MI changed teaching practices and how these changed practices affected children with low MA. This chapter is arranged according to the research questions, which are presented below.

1) What changes in MI practice in the classroom occur as a result of the implementation of the further training programme?
2) What are the (a) facilitators and (b) barriers to the implementation of an MI further training programme, as perceived by teachers in a Key Stage Two setting?
3) How does the further training programme affect low MA pupils' experiences of spelling?

As described in the third chapter, these results have been constructed using a variety of analytic methods: thematic analysis, descriptive statistics, narrative profiling, and content analysis.

6.1. P2 RQ 1: What changes in MI practice in the classroom occur as a result of the implementation of the further training programme?

In this section, I provide descriptive statistics from the structured observation schedule, which are relevant to the investigation of the changes that have occurred in MI practice as a result of the training programme. Following this, I provide descriptive statistics gathered from the coaching sessions of the training programme. Subsequently, I summarise the findings from my qualitative analysis of lesson observation and interview data for each theme (see table 6.1.). Lastly, I discuss the findings in greater detail.

Firstly, my lesson observations suggest that teachers showed high fidelity to the further training programme in MI; Teachers scored a median of 33 out of 36. Additionally, my observations of lessons indicated substantial changes in practice, as represented in figure 10.

Figure 10. Changes in teaching practice from pre-training to post-training.

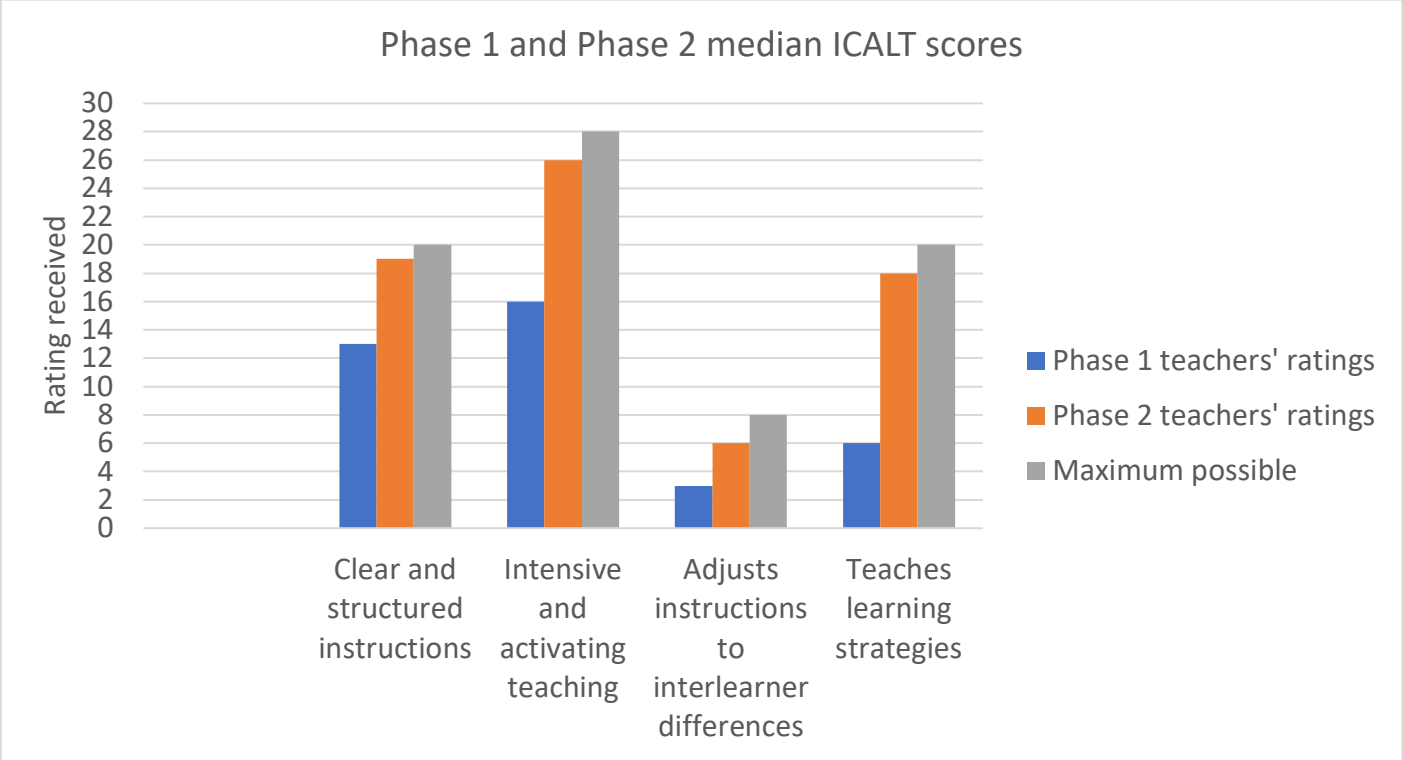


Figure 10. This graph illustrates the differences in median scores pre-training compared with post-training in the categories from the ICALT observation schedule.

Generally, the teachers showed improvements across all areas of the ICALT observation tool. These improvements indicate that the training programme had a positive impact on MI. This point is corroborated by the findings from the other data collection methods, such as the interview and focus group data, which is discussed later in this section. The teachers showed the greatest relative improvement in the category, 'Teaches learning strategies'. Conversely, the teachers showed the least relative improvement in the category, 'Clear and structured instructions'.

The questionnaire data taken from the coaching sessions (see figures 11 and 12) suggests that teachers found that the training programme had a substantial positive impact on their practice.

Figure 11. Data from questionnaires collected during the first coaching session.

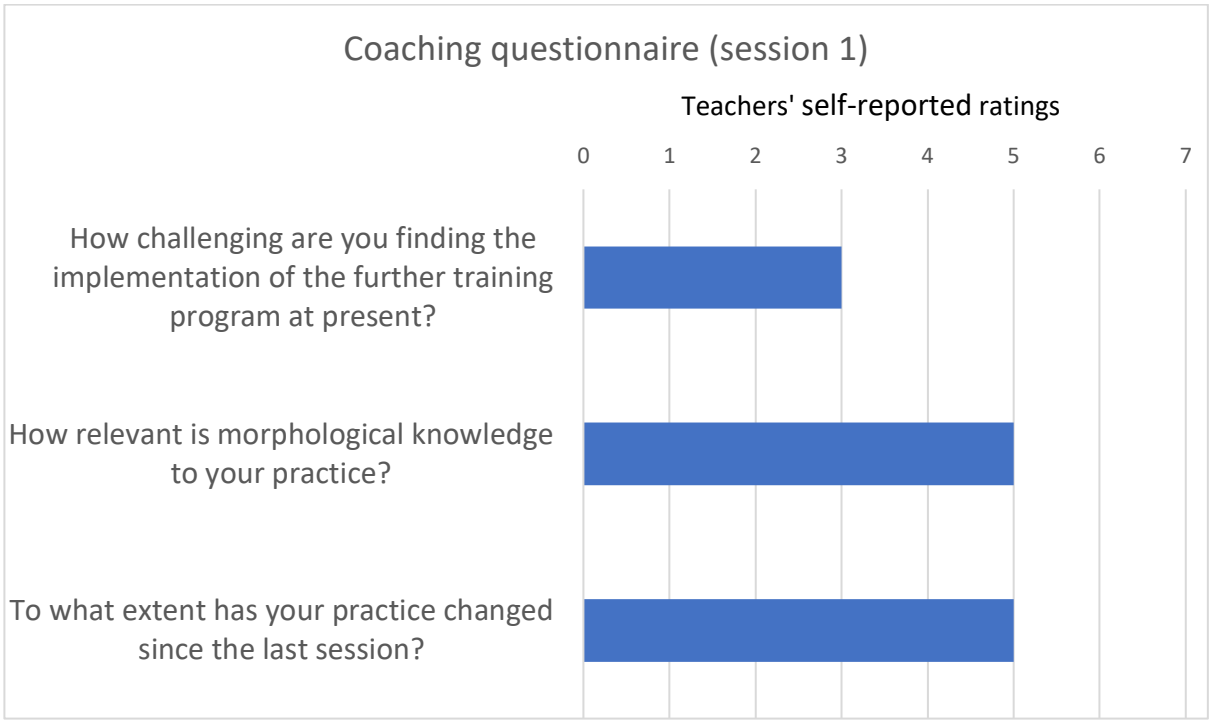


Figure 11. This graph illustrates the median self-reported changes, relevance, and challenges associated with the training programme to teaching practice. These data were collected during the first coaching session. Teachers rated their responses on a scale of one to seven.

Figure 12. Data from questionnaires collected during the second coaching session

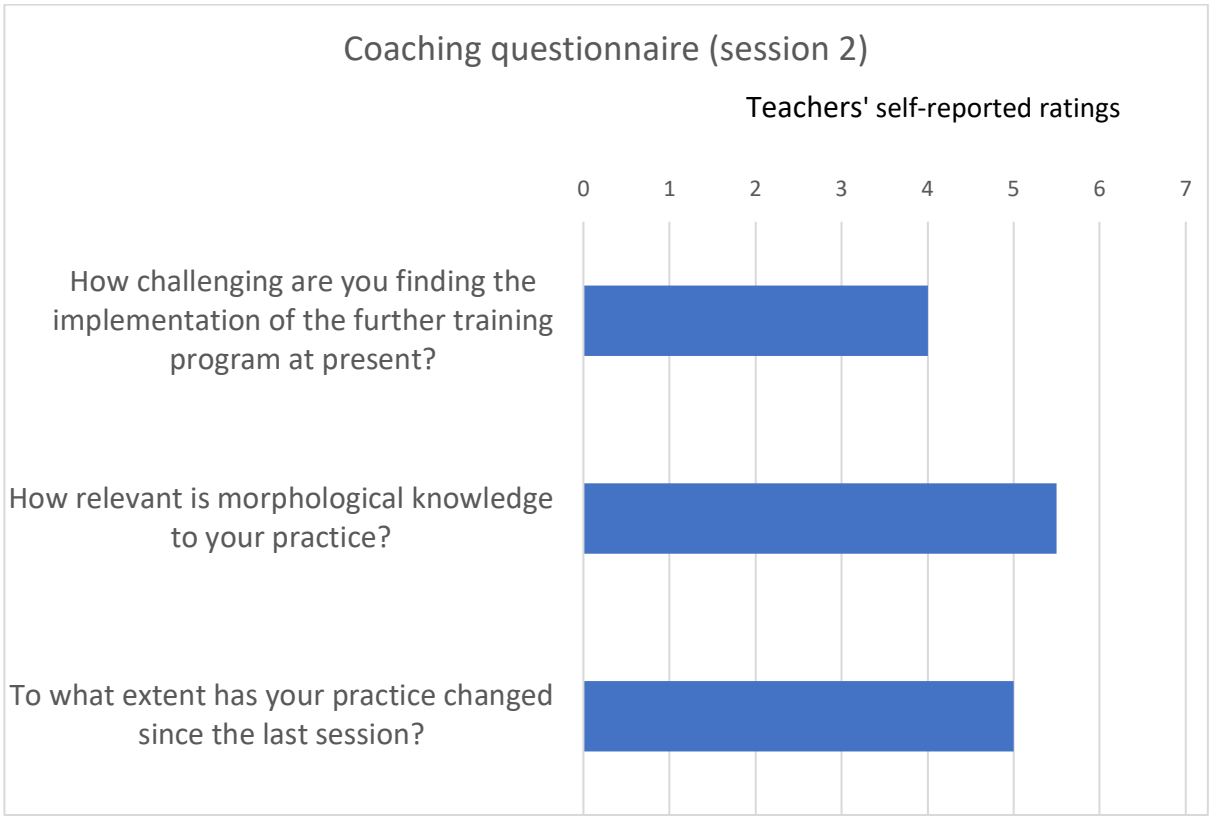


Figure 12. This graph illustrates the median self-reported changes, relevance, and challenges associated with the training programme. These data were collected during the second coaching session. Teachers rated their responses on a scale of one to seven.

The data collected during each of the two coaching sessions were similar, despite the gap of approximately one month between the sessions. During both coaching sessions, teachers expressed the belief that their practice had changed significantly since the previous training session. In both sessions, teachers reported that morphological knowledge was somewhat relevant to their teaching practice. Teachers also reported some degree of challenge implementing changes in their practice during both coaching sessions. These challenges are elaborated on later (see section 6.3.).

The narrative profiles of teachers from Phase Two of the study are illustrated below (figures 13 and 14).

Figure 13. Narrative profiles of teachers pre-training and post-training.

Figure 13. This graph illustrates the differences in narrative profiles between teachers before they engaged in the training programme compared to observations of teachers after the training programme.

Teachers' narrative profiles showed improvements across the different areas of the modified ICALT following the further training programme. All areas of each teachers' ICALT data were categorised as 'excellent', except for 'Adjusts to inter-learner differences', which was scored as 'good'. Some plausible explanations for this are discussed in later chapters (see section 9.2.).

As a result of logistical challenges, some teachers from Phase Two of the study were not observed during Phase One. The narrative profiles for these teachers are shown in figure 14.

Figure 14. Narrative profiles of teachers not observed during Phase One.

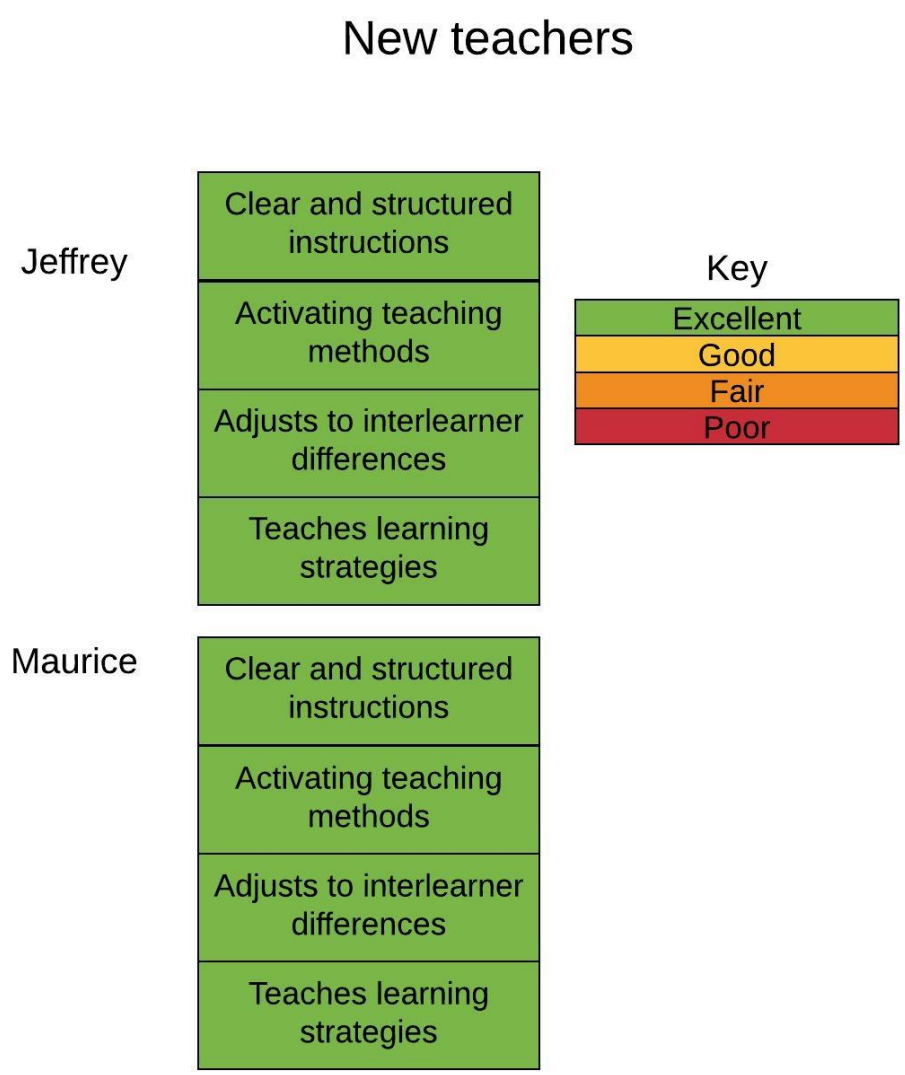


Figure 14. This graph illustrates the narrative profiles of teachers observed during Phase Two of the study who were not observed during Phase One.

Both of these teachers scored 'excellent' in all categories. In table 6.1., I summarise the themes in relation to the research question: What changes in MI practice in the classroom occur as a result of the implementation of the further training programme?

Table 6.1.

Summary of themes in relation to P2 RQ1

Theme	Sub-theme
Positive impact	Refreshing approach to spelling High fidelity to programme
Greater metalinguistic depth	Extemporaneous spelling conversations Linking spelling to meaning

Positive impact

In all five of the lessons I observed for Phase Two, programme fidelity was high, with teachers scoring a median of 33 out of 36. Moreover, my content analysis of field notes suggested that teachers were regularly employing the strategies they learned during the training. Every lesson I observed contained the use of the word matrix and word sums. Additionally, the lessons showed high fidelity regarding the explicit instruction model, with each lesson containing several instances of modelling and guided practice. Teachers reported positive evaluations of the programme, describing it as a novel and effective approach to spelling. For example, Betsy reported the following:

> …I would say that I'm very positive about the morphology programme, in particular because it was a new way of teaching spelling. The children have become very engaged, and therefore I think they got quite a lot out of the programme. I've enjoyed teaching it, and they've enjoyed learning in that way.

Moreover, Maurice particularly valued the novelty and the logic of the training program's approach:

> I hadn't really had any knowledge of morphology before, so actually seeing it and seeing the way words are split up and we look at root words instead of just spelling out words and words and words with the same suffix rule actually makes a lot more sense.

Depth of metalinguistic awareness

Here, I refer to metalinguistic awareness as "the capacity to use knowledge about language as opposed to the capacity to use language" (Bialystok, 2001, p. 124). In all interviews, teachers described a greater depth in their use of metalinguistic strategies in their classrooms following the training programme. Illustrating this, Betsy noted that "…the biggest change is probably that we are breaking it down into prefixes, roots and suffixes in more detail." Teachers described using strategies involving morphology to scaffold learners' spelling of words. For example, Chester explained:

> Or if someone asks me how to spell something, which happens all the time, instead of saying 'W-A-L-K-I-N-G' I'll say, 'What's the root?' And they'll say 'Walk', and I'll say, 'What's the suffix?' '-ing.' So 'walking'.

Corroborating this finding, my analysis of observational data between Phase One and Phase Two suggests that the greatest difference in practice following the training concerned the area, 'Teaches learning strategies.' The items in this section referred to strategies to support children's metalinguistic abilities. Within this area, median results changed from six out of 20 to 18 out of 20. Teachers referred to spelling conversations occurring regularly and often outside of spelling lessons. Chester articulated this point: " It's really part of the culture of talking about language now."

Chester went on to explain:

> We might be in the middle of an English lesson or a topic lesson, and someone might put their hand up and go 'That word has got a prefix.' 'Let's quickly break this down, what's the root word then? What's the prefix? What's the suffix?' That's happening more than it did before; it wasn't happening at all before.

Teachers discussed how conversations about spelling occurred without prompting or planning. Teachers reported this happening in casual conversation. For example, Chester explained that:

> It could happen any time. It could happen talking about lunch, any time any word appears in a conversation or I write it on the board where it seems obvious to me… I'll say 'What do you think the root is? What's the prefix? What's the suffix?'

This change was characterised as a "culture shift" by Chester, summarising the pervading impact of the training on day-to-day practice. Additionally, teachers described the effect of the programme in terms of linking meaning and spelling. Betsy reported that:

> Yes, so generally it's helped me think of teaching spelling in a new and innovative way, and I think the children are really grasping on to those ideas and understanding meanings of words in more detail.

Teachers reported that they regularly discussed new vocabulary terms via their morphological components, referring to suffixes, prefixes, and roots. For instance, Daveed explained:

> …if we are looking at new vocabulary, we would look closely at the word, what do we think it means, is there a word that looks similar, sounds similar, have we seen that word before, can we see any prefixes, suffixes, what does it mean, how does the meaning of portray link to portrait, for example, and just unpicking meanings a bit more. More vocabulary than spelling.

This finding was also corroborated through my observational data, which suggested that teachers regularly tied meaning to spelling structures. This practice was regularly done

through tasks such as having children put words in sentences or explicit discussions of morphemes.

6.2. P2 RQ2A. What are the facilitators to the implementation of an MI further training programme, as perceived by teachers in a Key Stage Two setting?

In table 6.2., I summarise the themes in relation to the research question: What are the facilitators to the implementation of an MI further training programme, as perceived by teachers in a Key Stage Two setting?

Table 6.2.

Summary of themes in relation to P2 RQ2A.

Theme	Sub-theme
Elegance of teaching model	Simple format Flexible model
Ready-built resources	Time-saving Scaffolding knowledge
Non-directive training	Reflection opportunities Peer facilitation

Elegance of teaching model

I chose the name of this theme to capture both the simplicity of the explicit instruction model and its efficacy, as described by teachers. Teachers reported finding the lesson template (see appendix 10) clear and easy to follow. Teachers also valued the highly structured nature of the sessions. Maurice noted that: “I'm better when everything is broken down and really regimented. I think it helps me a lot.” Betsy stressed the impact of the model on both herself

and her pupils: “So actually the model is quite a simple model to work on, the children seem to be engaged with it, so it’s, yes. I think it’s an easy one just to pick up and go with.” Moreover, several teachers also valued the flexibility of the model to address novel words. As explained by Betsy: “Even though the matrix and the word is going to change, you are going to come up with the same prefixes fairly often and the same suffixes fairly often.” This point was raised in four of the interviews.

Similarly, questionnaire data indicated that teachers valued the clarity of the lesson structure provided through the template. One teacher responded to the question, “At present, what factors are facilitating the delivery of your morphological instruction?” by writing: “Clear process - slides- sequence - children are engaged and enjoy building the words and finding out what the meaning of the root is.” Additionally, throughout the lessons observed, teachers consistently taught through the structure provided by the template, as illustrated by the high scores in fidelity. These high scores further suggests that teachers found the lessons easy to implement.

Ready-built resources

I chose to name the name of this theme to align with a phrase used by one of the participants, as illustrated in the following quote by Betsy:

> Well teachers are busy people and so having those matrixes ready-built, having lessons planned - this is a suggested way of doing it, having that already premade has just made it something that I can pick up and run with.

All teachers who were interviewed discussed the value of being provided with ready-to-use resources. Every teacher referenced the word matrix as a facilitator of the lessons in various ways; Teachers referred to the value of the word matrix as a means of scaffolding their knowledge, as a means of visually conveying morphological information, and as a means of saving planning time. Maurice explained as follows: “But to have it there for you, it just

makes it easier to teach, there's less time you have to spend pulling things together with everything else that you have to do."

Non-directive training

The name of the theme, 'non-directive training', was chosen to capture both the value teachers placed on peer facilitation, as well as the value they put on the opportunities for reflection. Teachers described the importance of peer facilitation in two ways: Firstly, they noted the value of others' suggestions for each other's progress. Secondly, it was described as a means of reducing the apprehension around the training, as all teachers were at a similar level of competence when the training began. Maurice reported that he thinks "…having a few other people with you, all basically starting at the same place, so you're all helping each other progress."

Teachers also explained that the opportunity to deliver MI over some weeks, and then reflect on the strengths and weaknesses of their teaching, was useful for furthering their practice. Chester reported the following: "I don't know, I guess having conversations with you would make me more reflective, force me to think about how I'm doing things."

6.3. P2 RQ2B. What are the barriers to the implementation of a MI further training programme, as perceived by teachers in a Key Stage Two setting?

In table 6.3., I summarise the themes in relation to the research question: What are the barriers to the implementation of a MI further training programme, as perceived by teachers in a Key Stage Two setting?

Table 6.3.

Summary of themes in relation to P2 RQ2B.

Theme	Sub-theme
Insufficient time	Time demands Competing curricular demands
Incongruence with broader agendas	Competing with school agendas Competing with the national curriculum
Inadequate subject knowledge	Inability to create resources Inability to further spelling knowledge

Insufficient time

Teachers reported difficulties managing the programme amidst the time constraints they face. Maurice explained that: "My only gripe is I haven't had enough time to do more of it. I've fitted in quite a bit, as much as I can do". While it was noted that the facilitators of the programme (i.e., the simple teaching model and ready-made resources) reduced time demands on teachers, time constraints were still reported as a barrier. Competing curricular demands were discussed on multiple occasions. For example, Chester expressed the challenge of time constraints:

> Well, the difficulty is timetabling. Time is a massive issue, so making sure that I can, yes, fit everything else in because we are under pressure to 'have you taught this, have you taught that?' You are being scrutinised in different places.

Incongruence with broader agendas

While teachers reported valuing the programme themselves, they identified competing agendas linked to organisational or national agendas. For example, the National Curriculum was cited by Daveed as a barrier towards implementing effective MI:

> If we looked at all the words that we have to cover in the Year 3 and 4 word list or in the National Curriculum and then those words had the roots in them and that would be really helpful, but obviously they don't and then it's the time and the running and all the rest of it.

Additionally, teachers cited barriers related to school-based agendas. Betsy noted that implementing the further training programme might contradict existing school policy:

> I guess what's difficult is that schools are already rolling out the programme that they are currently using, so it's perhaps difficult sometimes to just go: "I'm going to stop doing that and try something new."

Inadequate subject knowledge

Despite the training programme's focus on developing subject knowledge, teachers continued to report inadequate subject knowledge for supporting their students in spelling. Daveed described himself as follows: "If I was a child, I'm at that heavily scaffolded stage really. I'm not quite an independent learner." Daveed explained that he lacked the confidence to create his own word matrices. He viewed this as a barrier toward his future delivery of MI once he had delivered all the lessons provided to him.

Other teachers discussed the difficulties with furthering the morphological knowledge of students when they lacked confidence in their personal understanding of morphology. Teachers expressed the desire to have the level of expertise to address novel, unexpected questions about morphology. For example, Betsy explained that she would like "to be able to not just do those Year 4, 5 words or 5, 6 statutory spelling words but be able to apply it to exactly what we are doing."

6.4. P2 RQ 3. How does the further training programme affect low MA pupils' experiences of spelling?

In this section, I provide descriptive statistics from the children's questionnaires which are relevant to the investigation of how pupils with low MA have been affected by the training programme (see figures 15, 16, and 17). Following this, I provide a summary of the findings from my qualitative analysis of the focus groups, lesson observations, and interview data (see table 6.4.). Lastly, I discuss the findings in greater detail.

Figure 15. Children's responses to self-efficacy questions.

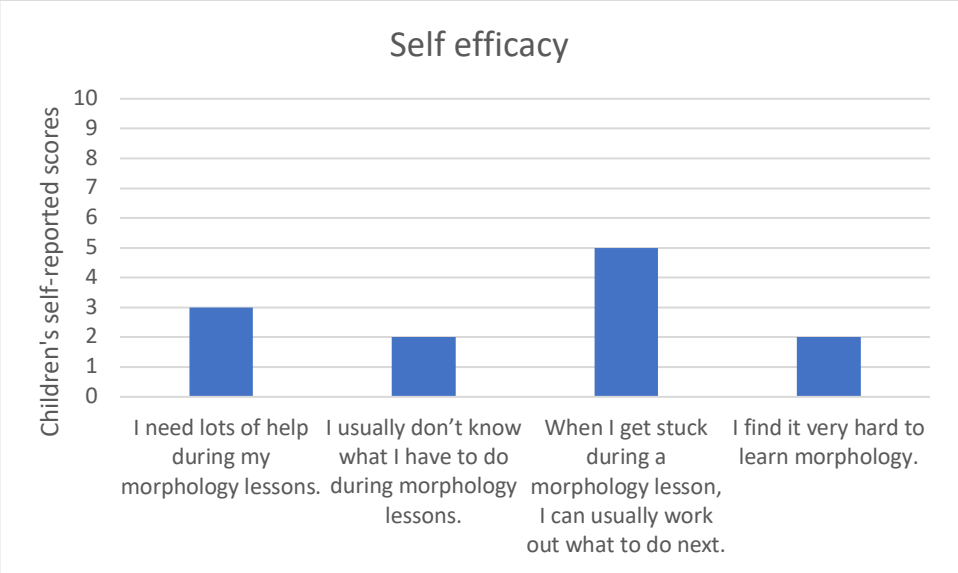


Figure 15. This graph illustrates the median responses to Likert scale items (with one being the lowest, 10 being the highest) relating to children's self-efficacy regarding morphological instruction.

Figure 16. Children's responses to engagement questions.

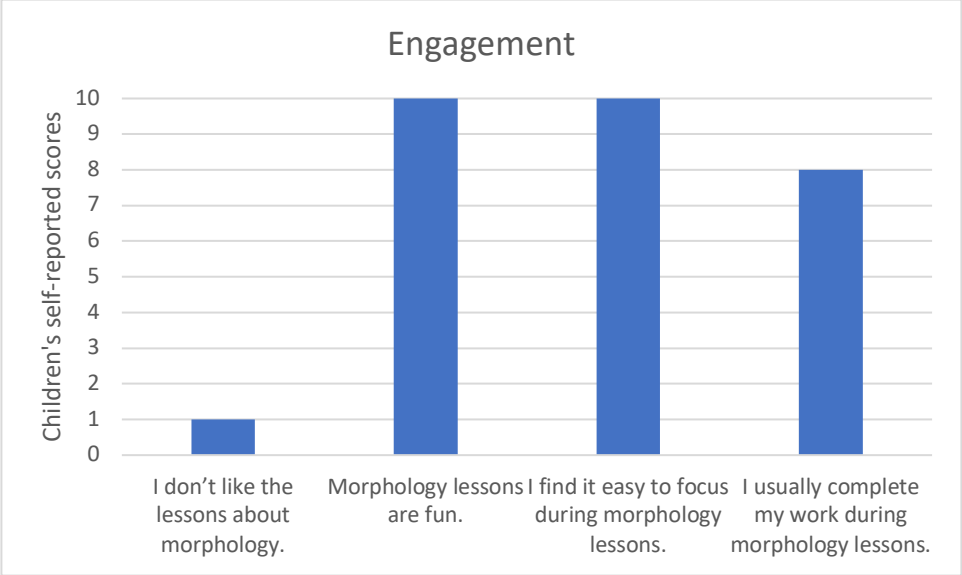


Figure 16. This graph illustrates the median responses to Likert scale items (with one being the lowest, 10 being the highest) relating to children's engagement regarding morphological instruction.

Figure 17. Children's responses to perceived utility questions.

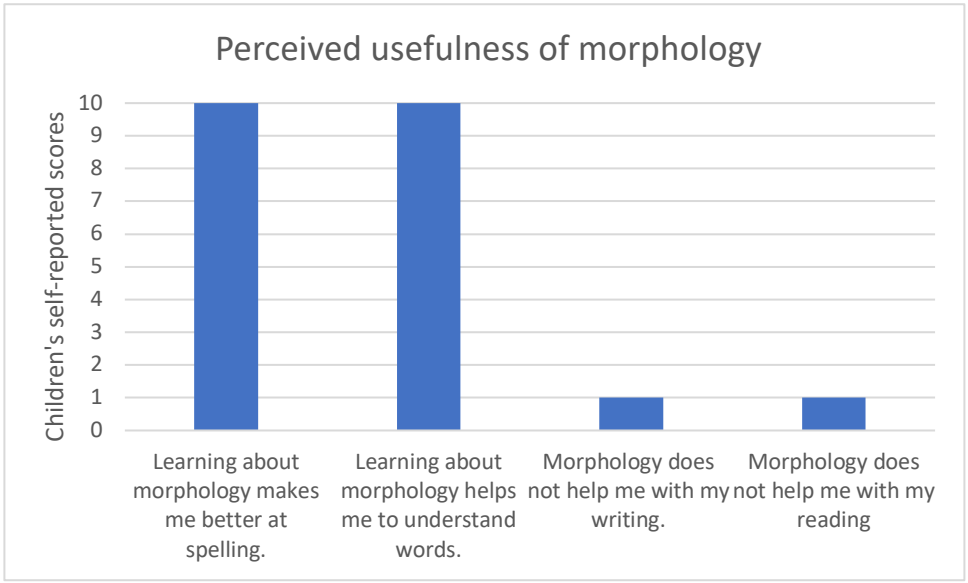


Figure 17. This graph illustrates the median responses to Likert scale items (with one being the lowest, 10 being the highest) relating to children's perceived utility of morphology.

Generally, the questionnaire data gathered from children suggest a positive experience of MI following the training programme. The children reported a high degree of engagement with MI lessons. For example, the median response to the item, 'Morphology lessons are fun' was 10, which is the highest response that could have been given. Similarly, children appeared to perceive morphology as being highly useful within other subjects besides spelling. For example, the median response to the item, 'Learning about morphology helps me to understand words' was 10, the highest possible response. Similarly, children reported that morphology was highly useful to them in learning to read. These responses indicate that the children perceived the MI as being useful for their reading comprehension. Children's scores regarding self-efficacy were more mixed. For example, children's median response to the item, 'I need lots of help during my morphology lessons', was three, implying that children believed they required some level of support during MI lessons. However, the scores in the self-efficacy section were still broadly positive, suggesting that children felt capable of being successful within MI lessons.

In table 6.4., I summarise the themes and sub-themes in relation to the research question: How does the further training programme affect low MA pupils' experiences of spelling?

Table 6.4.

Summary of themes in relation to P2 RQ3.

Theme	Sub-theme
Higher engagement	More enjoyment More focused
Improved self-confidence	Improved results in spelling Chunking for memory

Higher engagement

During focus groups, children consistently expressed a positive view of MI following the training programme. For example, Shaun (Year 5 pupil) described MI as follows: "It's a bit more fun that way than just learning it a different way." This point is corroborated by the questionnaire data from children, which indicated that children saw themselves as being engaged and focused during MI lessons, as well as finding these lessons enjoyable. Moreover, this result is supported by the qualitative data derived from the coaching questionnaire; For example, Daveed reported that "…the children enjoy using the matrixes and find it easy to understand." Betsy described improvements in children's morale, explaining: "So there's always an element of success, where before there would be children who were scoring nothing out of 10 each week. Which can be really demoralising." Additionally, the interview data suggested that teachers have perceived a higher level of student engagement in comparison to other modes of spelling instruction.

Improved self-confidence

My analysis of focus group data indicated that children have improved in their confidence as a result of the implementation of the further training programme. For instance, Piers (Year 4) explained: "I used to spell really much not right, but then when I have to do the matrix, it

made the spellings better." This implies that Piers found spelling highly challenging before the implementation of the further training programme.

Children referred to experiencing more instances of success during their lessons. For instance, Clive (Year 5) commented that: "I think [my spelling is] better because, first of all, we done easy ones but then we move on to more hard ones, we've been understanding it." A number of children reported feeling as though they can remember spellings for a greater duration of time. For example, Fiona (Year 5) stated that: "If it was a few years later and something like your actual real, real spellings and you could think about the morphology." Additionally, some children supported their feelings of confidence by citing their improved results in spelling tests. Michael (Year 5) reported:"[I] used to get one out of ten [in spelling tests]. No, one out of five and stuff like that. Now we get four out of five and stuff so [the word matrix] makes a difference." This confidence appeared to be linked to a broader sense of well-being, as illustrated by the following exchange between two Year 5 pupils:

> **Clive:** Think about if you're really sad, then when you get the hang of it you get more happier because you're getting more better at it.
>
> **Aoife:** Confidence in yourself.
>
> **Clive:** Yes.

Children attributed their improved capacity for remembering words to the 'breakdown' of words into morphemes. Clive (Year 5) noted that: "In spelling sometimes, it's kind of easier because you break down the words and then you remember the sum. And then you know." Similarly, Eoin (Year 4) reported that "…it can break things up and then you can remember that."

6.5. Summary

In this chapter, I have presented the findings from Phase Two of my study. This chapter has been arranged by the research questions that have motivated this project. The data informing these findings have been gathered from multiple sources, including interviews, observations, questionnaires, and focus groups.

Through this data analysis, I have determined how the further training programme in MI impacted upon teaching practice and the factors that impede and support this instruction. The programme resulted in substantial changes to teaching practice, with teachers showing high fidelity to the principles of explicit instruction, and improvements in all areas of the structured observation schedule. The programme led to changes in teaching practice beyond discrete spelling lessons, with discussions of linguistics becoming common features of practice in other lessons. Finally, the programme resulted in children spontaneously linking spelling to meaning more often.

I found that the facilitators to effective implementation were the useful resources provided, the elegance of the teaching model, and the non-directive training structure. The main barriers to effective implementation were insufficient time, incongruence with broader school initiatives, and inadequate subject knowledge.

I have also assessed the further training programme in MI, and how this programme has affected children with low MA. I found that children with low MA found the lessons on MI more engaging and experienced improved confidence in spelling as a result. In the next chapter, I critically discuss these findings in light of extant literature.

Chapter 7: Discussion of Phase Two findings

In this chapter, I discuss the findings from Phase Two. This discussion is arranged by the research questions. The aim of this phase was to investigate how a MI further training programme can change teaching practices and how these practices support children with low MA.

7.1. What changes in MI practice in the classroom occur as a result of the implementation of the further training programme?

The findings in relation to this question were as follows:

- The programme resulted in substantial changes to teaching practice, with teachers showing high fidelity with the training principles, and improvements in all areas of the structured observation schedule.
- The programme led to changes in teaching practice beyond discrete spelling lessons, with discussions of linguistics becoming common features of practice in other lessons.
- The programme resulted in children linking spelling to meaning more often.

Overall, teachers showed a high level of commitment to the further training programme. Several factors may explain this. Firstly, the programme was informed by relevant psychological theory and research (see section 3.4.1.); The training programme's design was informed by psychological evidence and was thus more likely to lead to significant gains for pupils.

Another reason teachers may have been more likely to commit to the programme is their recognition of their lack of pedagogical strategies, as identified in Phase One. As a result of this, teachers were likely to be more open to adapting novel practices. As my training programme was informed by insights generated through Phase One of the research, I was able to present the training in a manner that was likely to resonate with teachers.

Additionally, much of the programme was designed to capitalise on the existing strengths of teachers (see section 3.4.1.). In line with the model of distance and dependence (Zhao et al., 2002; see section 2.6. for further details), the programme was tailored so that teachers would not have to redesign their teaching strategies entirely. As a result, teachers were more likely to transfer the techniques learned in the training programme to their everyday teaching. The explicit instruction model (Archer & Hughes, 2011), on which the training was based, was aligned with much of the existing practices of teachers; This model is compatible with many of the practices observed during Phase One, such as verbal explanations, cooperative learning, and feedback. Additionally, the resources required by teachers to deliver MI effectively were minimised because I provided the relevant PowerPoints, lesson plans, and resources as part of the training (see section 7.3. for a more detailed explanation of this point). Consequently, the main resource required from teachers was their lesson time.

The result that the programme led to a greater level of metalinguistic conversations is reflected in previous research (e.g., Herrington & Macken-Horarik, 2015). This may be a particularly promising result, as the conversations described by teachers indicate that children were developing their *word consciousness,* the awareness of, and interest in, words (Graves & Watts-Taffe, 2008). As noted by Moats (2009, p. 390), the impact of effective literacy instruction on student learning "may be diffuse, indirect, and cumulative over relatively long periods of time."

7.2. What are the barriers to the implementation of an MI further training programme, as perceived by teachers in a Key Stage Two setting?

The main findings regarding barriers to effective implementation were insufficient time, incongruence with broader school initiatives, and inadequate subject knowledge.

As noted previously, teachers commonly report a high demand on their time, so it is therefore unsurprising that insufficient time was reported as a barrier to effective MI. One interesting counterpoint to this finding is that teachers were able to integrate the further training into other areas of instruction, such as reading and vocabulary teaching, as well as into other subjects, such as science. Previous research has found that MI can be an effective approach within other subjects, especially science (e.g., Lauterbach et al., 2020). Additionally, as noted in the Phase One findings, teachers perceived the time flexibility of morphology as a facilitator towards its effective delivery. These findings highlight the need for trainers to consider further methods by which time demands for teachers might be reduced.

Another barrier identified by teachers concerns the incongruence of the training with broader initiatives. As discussed in the literature review (see section 2.5.), MI is not emphasised within the National Curriculum (2013). The successfulness of this brief training programme supports arguments for curricular reform in favour of linguistic elements such as morphology or etymology (Richmond et al., 2017). Additionally, teachers perceived an incongruence with broader school agendas as a barrier to delivering effective MI. Although literacy leads and headteachers were invited to attend the training sessions, their attendance was infrequent. One literacy lead attended all training sessions, and one headteacher attended a coaching session. Furthermore, as noted earlier, the National Curriculum emphasises phonics-based approaches, especially for younger children. Teachers in Key Stage Two may be negatively responding to this curricular emphasis in light of the ineffectiveness of phonics within Key Stage Two (Ehri et al., 2001).

Previous researchers have found that spelling can be deprioritised in favour of other subjects (Daffern & Critten, 2019). This is likely to be a result of the high pressures faced by teachers to promote pupil's scores in standardised tests (Worth & van den Brande, 2019).

Indeed, this finding has been replicated in Phase One of this study. The value of high-quality spelling instruction may not be recognised by school leadership teams.

Finally, teachers expressed concerns about insufficient subject knowledge of morphology, even following the training. This finding corroborates previous studies which suggest that it can be highly difficult to cultivate a high level of subject knowledge in educators (e.g., Lauterbach et al., 2020; Newton, 2018). Previous research has indicated it can require over 14 hours of professional development to promote sustained performance in teachers (Yoon, Duncan, Lee, Scarloss, & Shapley, 2007). This finding may imply that training in MI should occur during initial teacher training, in addition to being part of a continuous professional development programme. Research into the area of training pre-service teachers appears promising (e.g., Purvis et al., 2016). This point is further explored later in this thesis (see section 9.6.).

7.3. What are the facilitators to the implementation of an MI further training programme, as perceived by teachers in a Key Stage Two setting?

The main findings regarding facilitators to effective implementation were the useful resources, the elegant teaching model, and the non-directive training structure.

One reason for the high evaluation of the lesson format is its simplicity. The explicit instruction model (Archer & Hughes, 2011) contains several practices that were commonly employed by the teachers in this study before engaging in the training. Therefore, application of the further training programme is likely to have posed a low tax on teacher's cognitive load (Zhao et al., 2002); This, in turn, makes successful implementation more likely (Feldon, 2007; Zhao et al., 2002). Indeed, findings from Phase One suggest that teachers were already engaging in practices which are aligned with the explicit instruction model. Previous studies in MI have employed similar strategies and found promising results; For example, Herrington and Macken-Horarik (2015) extended a common teaching tool for spelling, Look, Cover,

Say, Write, Check, to include a stage where the learner finds the relevant morphemes in the word (look, find, cover, say, write, check).

Teachers who engaged with the further training programme consistently referred to the word matrices as being an essential asset in delivering their MI. One reason that teachers may have found the matrices to be effective is the visual nature of the resources. As explained by Paivio (1991), two separate, specialised cognitive systems exist for processing verbal and non-verbal information. Considering the high use of orally conveyed information by teachers (a finding from Phase One), it is likely that imaginal resources would be highly effective as a form of nonverbal information.

7.4. How does the further training programme affect low MA pupils' experiences of spelling?

The key findings in relation to this research question were that children with low MA found the lessons on MI more engaging and experienced improved confidence in spelling as a result.

These findings largely align with previous literature on MI (Herrington & Macken-Horarik, 2015). In meta-analyses, MI has been shown to be particularly effective for less able learners (Bowers et al., 2010; Galuschka et al., 2020; Reed, 2008). Kirby and Bowers (2018) proposed two key reasons for this. Firstly, less able pupils are likely to include those who have not benefitted from implicit exposure to morphology in literacy education. Therefore, these children may require more explicit and structured teaching. Secondly, the less able are likely to have weaker phonological processing skills, which may not link to their MA processing skills; MA may be a cognitive route to literacy that is relatively intact (Elbro & Arnbak, 1996). Therefore, improved teaching in MI potentiates experiences of success for pupils. This greater level of success is likely to have improved their engagement and confidence. Supporting this interpretation, in small scale studies, researchers have found that

improved MI can foster high levels of student engagement (e.g., Goodwin & Perkins, 2015; Manyak et al., 2018). Moreover, research has indicated that MI can lead to improved self-confidence in learners (Chua, 2015). Multiple factors that could explain these results. As noted previously (see section 7.3), teachers perceived the word matrix resource as a means of scaffolding less able pupils. Teachers' greater use of these resources is likely to have supported less able pupils to achieve success in lessons, which, in turn, has positively impacted upon learners' confidence and engagement. Moreover, teachers' positive evaluation of the programme is likely to have improved their performance during MI lessons (Desimone, 2009). Finally, learners were likely to benefit from explicit instruction methods, which are particularly effective for less able pupils (Archer & Hughes, 2011).

7.5. Summary

In this chapter, I have discussed the findings from Phase Two of my study. Overall, the programme appears to have been successful in changing teaching practice based on the data gathered from teachers, pupils, and direct observations of lessons. The training programme was informed by both theoretical knowledge, insights from empirical evidence on teacher training, and the findings from Phase One of this study. Teachers engaged in conversations about language to a greater extent than before, and knowledge about spelling became integrated within lessons beyond English. These results are reflected in previous research. Students found the post-training lessons more engaging and experienced a greater level of confidence in their spelling; These findings can be explained through both theoretical and empirical knowledge. Teachers identified a range of barriers to the implementation of the further training programme. These barriers largely reflected the challenges to effective MI identified in the first phase of this research, and this, in turn, implies that the barriers are highly challenging to overcome. Teachers reported that the programme's less directive structure, applicable lesson model, and useful resources facilitated their implementation of

the programme. These findings are congruent with previous findings in relation to changing teacher practice. In the next chapter, I provide a discussion of both phases of the research.

Chapter 8: Overall discussion

In this chapter, I discuss the key findings drawn from both phases of the research. I begin with a discussion of the relevance of my study to theories of spelling development. Secondly, I discuss how my findings relate to the broader literature on spelling instruction. Thirdly, I consider my conclusions in relation to MI. Finally, I outline the implications of my findings for changing literacy instruction in schools.

8.1. Spelling Development

My findings are congruent with the body of research indicating that spelling development is not a staged process (Daffern, 2017; Devonshire et al., 2013; Garcia et al., 2010; Sharp et al., 2008; Treiman, 2017b). According to these stage theories, children learning to spell must first establish phonological awareness before developing knowledge of orthography or morphology (Ehri, 1985; Frith, 1980; Gentry, 2000). My findings provide some evidence to the contrary. Firstly, the results from Phase One indicated that teachers perceived drawbacks to the use of phonics-based approaches within Key Stage Two. Teachers found that struggling students had become overly reliant on phonics to make their spelling choices. This finding contradicts the claim that children's phonological awareness facilitates the development of other kinds of linguistic information, as stage theories imply. Secondly, the results from Phase Two of my study have shown that weaker spellers substantially benefitted from the introduction of improved MI. Many of these weaker spellers had not yet consolidated their phonological awareness. If children must first establish phonological awareness before developing morphological awareness, it seems unlikely that further training in MI would have led to such positive outcomes. Therefore, the results of my study can be seen as supporting non-linear theories of spelling development, such as triple word form theory (Garcia, Abbot, & Berninger, 2010), statistical learning approaches (Deacon & Sparks, 2015), or the constructivist models (Deacon & Dhooge, 2010). These theories hold that the

development of spelling is contingent on managing multiple kinds of linguistic information simultaneously. The capacity of the weaker spellers from my study to benefit from explicit MI before establishing phonological awareness suggests that children are capable of utilising multiple kinds of linguistic knowledge, at least from the Key Stage Two stage of education.

8.2. Spelling Instruction

My findings support and reinforce many of the results from the extant literature regarding spelling instruction (Daffern & Critten, 2019; Doyle et al., 2015; Fresch, 2007; Graham et al., 2008; Johnston, 2001). According to this literature, teachers rely on phonics-based approaches for spelling instruction (e.g., Daffern & Critten, 2019), and broadly focus on traditional methods of teaching, such as corrective feedback (Fresch, 2007, Johnston, 2001). Daffern and Critten (2019) suggested that teachers are likely to rely on traditional methods of spelling instruction in the absence of sufficient linguistic knowledge. In a review of the evidence, Moats (2014, p. 75) theorised that teachers "…may cling to unproductive philosophies of teaching… …because the requisite insights are elusive and the content is difficult for many to grasp, even with some exposure." In my study, I found that teachers and school leaders showed confusion regarding the concept of morphology.

School staff in my study recognised their lack of awareness regarding content knowledge and pedagogical knowledge. This lack of knowledge is reflected in the previous studies of teachers (Hurry et al., 2005; Purvis et al., 2016; Washburn & Mulcahy, 2018). My findings emphasise the extent of this difficulty for supporting professionals to understand morphology; Despite multiple training sessions regarding MI, teachers remained insecure in their knowledge of the subject. This is a particularly salient problem as teachers will be unable to provide metalinguistic knowledge if they themselves lack an understanding of morphology (Binks-Cantrell et al., 2012; Moats, 2014). Additionally, previous literature contains indications that teachers provide little differentiation in spelling instruction (Doyle et

al., 2015; McNeill & Kirk, 2014) and few practices aimed to cultivate metalinguistic awareness (e.g., Purvis et al., 2016). These difficulties have also been tied to insufficient metalinguistic knowledge in teachers (Moats, 2014; Washburn & Mulcahy, 2018). In line with more recent research (Daffern & Critten, 2019), my findings emphasise the emotional nature of the challenge to gain metalinguistic knowledge for educators; Many teachers expressed a profound lack of confidence in their metalinguistic knowledge. This lack of confidence in their understanding posed a barrier in transferring strategies from training to practice.

8.3. Morphological Instruction

The findings of my study further support an increased role of MI in Key Stage Two settings. As noted in the literature review (see section 2.5.), the research evidence supporting the use of MI is considerable (for reviews and meta-analyses, see Bowers et al., 2010; Carlisle, 2010; Galuschka et al., 2020; Goodwin & Ahn, 2013; Goodwin & Ahn, 2010; Reed, 2008). The majority of studies conducted to date have focused on quantifying the outcomes of MI. My study enriches the evidence base regarding MI by providing data from the perspectives of children who are learning to spell, as well as their teachers, in a mainstream Key Stage Two setting.

Firstly, morphological awareness facilitates efficient storage of information in the mental lexicon (Baayen & Schreuder, 2006; Fonollosa et al., 2015; Perfetti, 2007). The students in my study explicitly referred to the process of breaking down words into morphemes, and the subsequent ease with which they could remember spellings. This benefit was also reported by teachers, who felt that their weak spellers made sizeable gains through MI.

Secondly, researchers have noted that children encounter increasingly challenging spellings as they progress through Key Stage Two (e.g., Crosson & McKeown, 2016).

Moreover, it has been convincingly argued that phonics-based strategies are insufficient for decoding such complex words (e.g., Bowers & Bowers, 2017). Effective MI enables learners to construct cognitive schemata, which facilitate the categorisation of multiple elements of information as a single element (Schnotz & Kürschner, 2007). For example, a learner may recognise the <-ed> suffix as a singular element within multiple words. Mirroring this point, the children in my study cited morphology as a means of understanding and remembering the increasingly complex words they come across. This enhanced capacity for understanding words may reflect the linguistic properties of morphology as a binding agent (Bowers et al., 2010) that draws together information about the meanings of words as well as their spelling structure simultaneously.

Thirdly, MI is a promising tool for fostering student motivation. Many researchers have argued for the necessity of creating engaging experiences for cultivating spelling skills in learners (e.g., Anderson & Nagy, 1993; Graves & Watts-Taffe, 2008; Nuttall, 1996). In particular, my study emphasises the value of word consciousness, the awareness of, and interest in, words (Graves & Watts-Taffe, 2008). As noted in section 2.2., morphology is the regulating principle underpinning the English spelling system (Venezky, 1970, 1999), and thus operates as a lens through which complex spelling structures can be understood. Researchers have suggested that this understanding of morphology may lead to improved motivation to engage in processes such as spelling (Berninger et al., 2003; Bowers & Kirby, 2010; Tomesen & Aarnoutse, 1998). My study provides a more rigorous corroboration of these findings, as children provided both qualitative and quantitative data indicating a positive engagement in MI following the training programme.

Fourthly, the results of my study suggest that MI may be a relatively underutilised strategy for improving spelling skills. The findings from Phase One indicated that teachers were largely unaware of morphology, lacking knowledge as to how it could be delivered

effectively. Furthermore, the results from Phase Two indicate that teachers found MI to be a new way to teach spelling. The changes to practice occurred as a result of a moderate period of time engaged in professional development related to MI. These changes imply that MI can be improved with relatively little input from trainers.

One plausible reason why MI is not a typical part of instructional practice in the UK is the heterogeneity of instructional approaches employed (see Goodwin & Ahn, 2013). This heterogeneity makes it difficult to ascertain the specific instructional processes by which MI should be delivered (Castles et al., 2018). My study design involved MI being delivered via a theoretically informed model of teaching, explicit instruction (Archer & Hughes, 2011). According to my search of the literature, this model has not been deliberately employed by previous researchers in the field of MI within Key Stage Two. Therefore, this study is a novel contribution to the knowledge base regarding how morphology could be taught in schools. My results indicate that MI might be effectively delivered via the explicit instruction model within Key Stage Two.

8.4. Changing Literacy Practices in Schools

The results of my study largely cohere with previous research on professional development in schools. Firstly, Zhao et al. (2002) proposed that innovative teaching practices are likely to be sustained if they require fewer resources and are more similar to existing instructional practices. Supporting this, the teachers in my study cited lesson templates and resources as the critical facilitators of their changes to instructional practice. In line with the model put forward by Zhao et al. (2002), these resources lessened the demands on teachers, which supported their changes to practice. Additionally, the explicit instruction model (Archer & Hughes, 2011) was chosen because of the model's proximity to existing instructional practices the teachers delivered. Teachers found this model simple to employ as a result. Future studies might explore the development of training programmes that are more proximal

to existing pedagogical practices. Additionally, Desimone and Garet (2015) argued that efforts to change instructional practices are more propitious when they are focused on specific methods (e.g. specific prompts during reading exercises), rather than on more complex changes in instruction (e.g., student-led inquiry). My study indicated that it was relatively easy to facilitate teachers' use of specific tools, such as the word matrix and word sums, but difficult to develop a sustained change to subject knowledge. My data indicate that the utilisation of the word matrix and word sums is a promising technique by which teachers may use to provide high-quality instruction. The word matrix and word sums have been found to support student understanding in previous studies (Bowers & Kirby, 2006; Bowers & Kirby, 2010; Devonshire et al., 2013). However, through my research, I have found that these tools can also support teacher understanding, as they were viewed as a kind of scaffolding for teacher knowledge. As noted earlier, limited teacher knowledge is a substantial barrier to effective pedagogy. High-quality resources such as the word matrices and word sums may be helpful in scaffolding teachers in their morphological knowledge.

Secondly, researchers have argued that an interactionist stance is necessary for designing effective professional development programmes. Trainers need to consider both individual and organisational factors when producing effective training (Baldwin & Ford, 1988; Blume et al., 2017; Georgiades & Phillimore, 1975). My results are consistent with these arguments. For instance, my study represents a successful attempt to utilise the GROUP model of group coaching (Brown & Grant, 2010; see section 3.4.1. for further details) for MI in schools. While this model has previously been used to cultivate change at the school level (Brandmo et al., 2019; Flückiger et al., 2017), my study shows a particular role for this model within MI. This group coaching approach was successful partially because it enabled teachers to draw on peer support to develop their MI. Additionally, researchers have suggested it is necessary to consider the attitudinal stances of teachers in cultivating professional

development (e.g., Desimone, 2009; Desimone & Garet, 2015; Timerley & Alton-Lee, 2008). As discussed earlier in this section, teachers may show commitment to suboptimal spelling instruction as a result of low confidence. In my study, this barrier has been mitigated in two mains ways: the inclusion of coaching elements in the programme and resources that scaffold teachers' understanding. Additionally, my results corroborate the need for school leaders to be involved in professional development programmes for teachers (Desimone & Garet, 2015). In my study, teachers faced difficulties in navigating competing school-wide agendas regarding spelling instruction. Due to logistical challenges, it was not possible to involve school leaders in the programme in a manner that would have mitigated these difficulties.

Thirdly, studies have suggested that professional development programmes are most likely to be successful when they occur over a sustained duration of time, as opposed to in single-session training (Desimone & Garet, 2015; Garet et al., 2001; Kraft et al., 2018). The evaluation of my training programme (which ran over four months) coheres with these findings. Moreover, researchers have conceptualised that professional development occurs in cycles (Blume et al., 2017). According to these conceptualisations, teachers initially attempt to apply strategies from training to practice. Following this, teachers evaluate the outcomes of their attempt and subsequently decide whether to continue or discontinue the practice (Blume et al., 2017). In my study, teachers responded positively to opportunities to practise and reflect on new skills. This finding draws attention to the need for professional development programmes to be conducted over multiple sessions, and in a manner to encourage feedback and reflection.

8.5. Summary

In this chapter, I have discussed findings from both phases of my study in relation to the broader literature. My research contains a measure of support for non-staged theories of spelling development, suggesting that learners who have not yet consolidated phonological

awareness may still benefit from MI. Regarding spelling instruction, my results add to the body of research suggesting that teachers lack sufficient knowledge to deliver spelling instruction effectively. This lack of knowledge typically results in less differentiation provided for pupils and fewer teaching strategies for promoting metalinguistic awareness in learners. Moreover, my research highlights the affective components of teachers' metalinguistic development, as teachers expressed confusion and a lack of knowledge regarding morphology. In relation to MI, my study adds to a sizeable body of research indicating that MI should be delivered more widely, particularly within a Key Stage Two setting. My findings highlight the processes of learning about morphology from the perspectives of struggling spellers and corroborates many of the theoretical insights into MI. Finally, I have discussed the implications of my research for professional development programmes in MI. My research is consistent with many of the recommendations from previous studies regarding professional development. Teachers benefitted from the length and structure of the training programme, the recognition of the school as a complex organisation, and the provision of resources to reduce demands on the teachers' time. In the next chapter, I discuss my positionality, the implications of my research for educational psychologists, and what I consider to be the unique contribution of my study.

Chapter 9: Conclusion

I begin this chapter by with a reflexivity statement, where I discuss my personal perspective and its implications for this study. Following this, I discuss the conclusions from other studies which were not replicated in my research. Subsequently, I outline the limitations of the research and explore the unique contribution made to the knowledge base. I then consider the implications of the findings for educational psychologists. Finally, I suggest promising avenues for future research to explore.

9.1. Reflexivity statement

Reflexive accounts allow researchers to reflect upon their own personal and subjective perspective (Oliver, 2004). This reflective process promotes the transparency of a research project. As an insider researcher (see section 1.3. for a discussion of my positionality), there are both disadvantages and advantages regarding my research (Hammersley, 1993). Some of the benefits of my position were as follows (Bonner & Tolhurst, 2002):

- I was passionate about the research I was conducting, which is likely to have supported my delivery of the training programme (Rangel et al., 2015).
- I had a greater understanding of the issues the teachers in my study were experiencing. Therefore, I was able to empathise and build a strong rapport with participants, thus improving the trustworthiness of my data.
- My recruitment phase for the study was reasonably quick, partially because I was aware that teachers are put under pressure to achieve high results in literacy and are therefore motivated to improve their teaching in this area.
- My status as a former primary school teacher was more likely to encourage open and honest dialogue from teachers.

Conversely, some of the disadvantages are as follows:

- Saidin and Yaacob (2016, p. 850) argued that insider researchers "might not be as alert and as sensitive to the information or issue compared to those who are outside the organisation." My history working in schools could have precluded me from observing useful and relevant phenomena to the research questions.
- Initially, I had to negotiate my complex range of professional roles, as a former primary school teacher, a researcher, and a trainee educational psychologist. For example, at one point during a lesson observation in Phase One, a child with additional needs in the class became distressed. I had to resist an impulse to provide the teacher support in addressing the child's distress, as my role in the setting was to observe teaching practice.

9.2. Previous results not replicated in this study.

In this section, I discuss some plausible findings from previous studies which have not been replicated in my research. Newton (2018) investigated the impact of a professional development programme on the teaching of morphemes and discovered a shift in pedagogy towards a more investigative approach to learning. This kind of change may not have occurred in my study as a consequence of the use of explicit instruction model (Archer & Hughes, 2011), which is often contrasted with discovery learning approaches (Westwood, 2008). Hurry et al. (2005) found that, with a similar age range of pupils, some of the concepts relating to morphology were too complex for children to access. In their study, teachers found that morphological concepts were particularly difficult for pupils with additional needs. There are plausible explanations for why this finding was not replicated here. Firstly, this study involved the use of word matrices (Bowers & Kirby, 2006; Bowers & Kirby, 2010; Devonshire et al., 2013), which are high-threshold, low-ceiling tasks (Boaler, 2016). This kind of learning task contains an in-built mechanism for adapting to different needs. This in-built differentiation may account for why teachers in my study did not report difficulties with

differentiation but were not observed to be delivering highly differentiated lessons. Secondly, I encouraged teachers to adapt their instructional approaches to the developmental needs of pupils; This encouragement was given during both the initial training session and in the follow-up coaching sessions. Moreover, this point was explicitly reinforced via the lesson plans provided to teachers (see appendix 16).

9.3. Limitations of the research

Firstly, it is important to be aware of some of the limitations to the transferability of my findings to other settings:

- My findings relate to mainstream settings only; This may be particularly pertinent to the points raised above regarding incongruence with broader school objectives; The goals of senior leaders in specialist settings may be somewhat different to those in mainstream settings.
- My study was conducted exclusively within the southwest of England; Although some variation exists within the schools I collected data in, there may be significant differences between the schools in my study and schools in a different cultural context (e.g., a metropolitan setting).
- My sampling approach may have biased my findings. As noted previously (see section 3.3.1.), I recruited schools for my study through a generic email. The school staff who replied to my email may have been particularly interested in MI and thus may have responded more positively to my training programme than other school staff would have.

As part of the research, I both designed and evaluated the training. This dual-role may have negatively impacted on the credibility of data collected; For example, social desirability bias (Supino & Borer, 2012) may have prevented the collection of valid data. In response to this threat to credibility, I made several efforts to encourage open and honest feedback regarding

the programme. For example, before the beginning of interviews in Phase Two, I reiterated to participants that their honest feedback was necessary for the study. Despite such measures, teachers may well have presented a positively skewed evaluation of my training during my interviews.

The transferability of this study's results might also be challenged because the design does not address psychological biases in teachers and pupils. There is a range of well-established biases which could have impacted on the results of this study. For example, expectancy effects (Supino & Borer, 2012) may have created a kind of placebo effect, where the teachers communicated their expectations of the outcomes of the study to pupils. These expectations may have brought about changes in learning behaviour which would not necessarily transfer to another teacher's practice or across time. Moreover, other biases may have impacted upon the results, such as the sunk-cost fallacy (Friedman, Pommerenke, Lukose, Milam, & Huberman, 2007); Teacher and pupil viewpoints may have been distorted as a result of the volume of time they have spent engaging in an activity. This investment in the project might have led to a more positive evaluation of the programme than it otherwise would have gained. Similarly, confirmation biases (Plous, 1993) may have led teachers to offer a positively skewed assessment of the programme. Teachers may have provided rationalisations for poorer outcomes. For example, they may have attributed suboptimal results to their inadequate subject knowledge, rather than a more fundamental flaw in the training programme. However, there are also reasons to doubt that the results can be mostly explained by these effects. Firstly, there is a consistent body of evidence showing that both MI (Goodwin & Ahn, 2010, 2013) and explicit instruction (Hughes, Morris, Therrien, & Benson, 2017) are effective teaching practices, showing significant effects through standardised measures. Secondly, the focus group data suggest that children were using psychologically informed techniques for memorisation (i.e., chunking; Ellis, 2017) and that

the children were citing objective evidence to illustrate their progress, such as their spelling test outcomes.

The training programme itself was limited in several ways. While empirically validated principles underpinned the majority of the training programme, group coaching is a relatively untested approach. As noted by Brandmo et al. (2019, p. 2), "group coaching is a relatively new field of research that draws on a wide range of theories and learning approaches, scholars have not yet agreed on a common definition." I chose to include group coaching in the programme as I felt the strengths of the approach (i.e., the time-effectiveness, and the capacity to address the social and emotional components of training transfer) outweighed the disadvantages. Additionally, the programme was only implemented over four months before evaluation. Other studies have found significant differences at a one-year follow-up point (Hurry et al., 2005); I was unable to access more longitudinal data as a result of time limitations. The training programme was also limited in that it consisted of three hours of total contact time. Previous research suggests that teachers require over 14 hours of contact time with trainers for sustained changes to occur (Yoon et al., 2007). However, this property of the study might also be seen as a strength. The limited duration of the programme more accurately reflects the limited resources school staff have to engage in professional development activities (Morgan & Bates, 2018), as well as the limited resources of EPs in the UK (Lyonette, Atfield, Baldauf, & Owen, 2019). Therefore, the study might be seen to have greater transferability to other settings with similar financial and organisational constraints.

Finally, the data collection tools used in this study were either adapted from existing measures (e.g., ICALT observation schedule) or entirely novel tools (e.g., children's questionnaire). The use of previously untested data collection tools may represent a challenge to the credibility of findings.

9.4. Unique contribution of this study

Numerous studies have focused on the outcomes of morphological interventions in terms of improvements in standardised spelling measures (Goodwin & Ahn, 2010, 2013). These studies have found that MI leads to improvements in spelling outcomes. In contrast, this study contributes to the relatively sparse evidence base regarding the processes by which MI enhances learning outcomes. As discussed in section 3.2.1, one of the aims of my study was to generate an understanding of how a training programme can be designed to support teaching practice effectively. My study research indicates that teachers benefit from:

- Lesson plans which are easy to implement
- Accessible resources
- Opportunities for reflection

These may be considered as some of the methods by which teachers may be helped to transform their MI. These findings reflect and reinforce the broader literature on teacher professional development (e.g., Desimone, 2009; Joyce & Showers, 1995, 2002) within the context of MI.

Educational practitioners require a deep and nuanced understanding of the processes by which MI improves learners' outcomes to capitalise upon these processes optimally. My study contains novel findings in this regard. For example, my research strongly indicates that teachers may employ MI to foster engagement and self-confidence in children who are struggling with their spelling. This finding is a rigorous, credible corroboration of the anecdotal reports from previous researchers that MI improved student motivation (Bowers & Kirby, 2010; Tomesen & Aarnoutse, 1998).

Other studies of MI have been composed of two phases, wherein the first phase was an evaluation of the typical pedagogical practice provided by teachers, and the second phase was an evaluation of a further training programme in MI (e.g., Hurry et al., 2005; Herrington & Macken-Horarik, 2015). In contrast to these studies, the training programme of Phase Two

of my research was directly informed by the insights generated from Phase One. This approach reflects the pragmatic orientation of my research, whereby knowledge can only be arrived at through the combination of action and reflection. Moreover, this design reflects the implications of the innovation model by Zhao et al. (2002), in that my training programme was designed to be compatible with teachers' pre-existing practices in MI. On this basis, my study can be distinguished from other, similar pieces of research, and is thus a valuable, novel contribution to the field.

9.5. Implications for educational psychologists

The British Psychological Society (BPS, 2017) describes a number of key competencies that educational psychologists (EPs) should evidence during their training. These include psychological intervention and evaluation, assessment and formulation, training and development, and consultation. The following table summarises the contribution that this research has made across these levels.

Table 9.1.

Contributions of research as functions of EP remits.

Remit	Contribution
Intervention and evaluation	Knowledge relating to effective literacy interventions for Year 4 and Year 5 students with spelling difficulties.
Training and development	Knowledge relating to the design and implementation of training programmes by EPs in primary schools.
Consultation	Knowledge relating to the development of a holistic understanding of literacy needs
Assessment and formulation	

EPs are well-positioned to support school staff in applying research evidence to inform the development of psychological interventions for literacy (Regan & Woods, 2000; Woods, Stothard, Lydon, & Reason, 2013). MI can be considered an evidence-informed practice for literacy development (Goodwin & Ahn, 2013, 2010; Kirby & Bowers, 2018).

Within BPS guidance (BPS, 2017, p. 19), it is noted that psychologists should be able to "design interventions which balance applications of research evidence with concern for ecological validity, feasibility, and acceptability to service users, with a focus on positive outcomes." The present study has implications for the design of a programme to support literacy instruction in schools. I have found that teaching staff were responsive to the training programme in MI and have transformed their practice as a result of their engagement. Moreover, this transformation has had a positive impact on teacher's subject knowledge, their delivery of MI, and their pupils' confidence and engagement. This study might be taken as evidence that EPs could have a broader role in supporting literacy instruction in schools. In his seminal text, Miller (1969, p. 555) argued that "psychologists should work through non-psychologists to help alleviate social problems". As was noted in the introduction (see section 1.2.), the problem of low literacy levels in students is a significant social problem, impacting on socioeconomic success, prosocial behaviours, and health. Moreover, the EP role is undergoing a fundamental shift, whereby an increasing number of educational psychology services are adopting a traded model for their service delivery, in which EPs are increasingly required to sell their services to customers (usually schools). This shift has been associated with a change within the traditional parameters of the EP role (Lee & Woods, 2017). Therefore, this point in time can be seen as a historic opportunity to change the methods by which EPs work in favour of more effective practices. One highly effective possibility for EPs concerns longer-term systemic work with schools, such as the delivery of an iterative professional support programme, as was conducted in this study.

The present study is also suggestive of different methods by which such training might be optimised. Through this study, I have identified facilitators and barriers to the implementation of a programme of support for teachers. EPs should consider Zhao et al.'s (2002) model when designing training, attempting to minimise the burden caused by changing pedagogical approaches. Training programmes are likely to be successful through the implementation of some of the facilitators discovered during this research: a lesson format that is simple to execute, supportive resources, and less directive training. Therefore, future training programmes are likely to benefit from capitalising on these properties to optimise effectiveness. Moreover, this study functioned to explore the GROUP model of coaching (Brown & Grant, 2010), and the success of the training implies a useful role of group coaching within the EP training remit. This study is a contribution to the evidence for the value of coaching by EPs.

My research is also suggestive of potential barriers that might arise when EPs deliver such a training programme. I have identified a range of issues which might impede progress in the implementation of a MI training programme: incongruence with wider initiatives (both school and national policies), insufficient teaching time, and challenges consolidating subject knowledge. These factors should be considered when designing future training programmes. Numerous approaches that might be taken to mitigate these challenges in future. In light of the difficulty achieving congruence with broader initiatives, EPs might work closely with senior leadership team members to align MI with wider pedagogical practice. In order to address the issues that teachers face in managing time for MI, future training programmes might focus on integrating MI into other lessons, such as science or geography, where morphology might provide useful insights (e.g., Lauterbach et al., 2020; Newton, 2018). Lastly, EPs might consider the inclusion of online materials to support the development of teacher subject knowledge to consolidate pedagogical practices.

9.6. Avenues for future research

As noted in the introduction (section 1.3), this study aimed to explore the qualitative factors concerning delivering and improving MI in schools. In consideration of the findings, strengths, and limitations of this study, I would propose the following as promising avenues for future research.

- The duration of my study might be interpreted as a weakness, as the programme ran for four months before evaluation. Therefore, future researchers might explore MI in more longitudinal studies, spanning one year or greater in duration.
- One promising approach to supporting teacher professional development is e-learning approaches (Morewood, Ankrum, & Dagen, 2017). Further research might investigate the possibility of incorporating e-learning into a professional development programme for MI.
- The rationale for this research is reliant on the morphophonological nature of English orthography. Further studies might be conducted regarding delivering training in MI in languages which are also highly morphologically regular, such as French (Abbott et al., 2016).
- This study was focused on the role of a training programme for MI within spelling. However, one interesting finding was the teachers' use of MI with regard to vocabulary instruction. Future studies should investigate the impact of MI on vocabulary instruction. Similarly, researchers have found that reading outcomes can be highly influenced by MI, which might be investigated in future research.
- One of the most consequential limitations of this study is the lack of a standardised measure of spelling improvements in the learners. I did not include such a measure as my research aimed to capture the contextualised processes by which the further training programme affected learners, rather than the quantifiable outcomes of the

programme. However, future studies might incorporate such quantifiable measures to add credibility to findings. For example, Manyak et al. (2018) employed the Morphemic Analysis Assessment tool for assessing the morphological awareness of pupils pre- and post-intervention; This measure might be used in future studies.

- One of the barriers related to the implementation of the study referred to incongruence with broader school initiatives. Although efforts were taken in this study to include senior leadership team members, these efforts were only partially successful. Future studies might examine how senior leadership team members perceive evidence-informed training initiatives.
- Researchers might investigate how MI should be scaled up in a programme to be delivered across all Key Stage Two pupils. Additionally, further research might investigate the facilitators and barriers towards the delivery of MI in both younger and older children.
- Finally, I have investigated how the MI programme affected struggling spellers. However, future researchers might choose more specific target populations, such as children with dyslexia, or children with English as an additional language

9.7. Concluding comments

The goal of this study was to investigate how MI is delivered in schools and how these teaching practices can be improved through support from an educational psychologist. I found that teachers perceived themselves to lack knowledge regarding morphology, and consequently lacked confidence and effective teaching strategies on the subject. Moreover, I discovered that teaching practices could be supported through my involvement; The further training programme I delivered led to changes in practice, which in turn led to higher levels of pupil engagement and enjoyment within lessons.

The central aim of my professional development programme was to provide teachers with the knowledge and skill to make enduring transformations to their practice. The results of my study illustrate that teachers' practices in spelling instruction can be enriched through psychologically informed interventions. This project has been a valuable experience for me as a psychologist; I have developed tools and skills that will support me in my future practice. My hope is that the knowledge I have generated through this research will be of benefit to the profession of educational psychology.

References

Abbott, R. D., & Berninger, V. W. (1993). Structural equation modeling of relationships among developmental skills and writing skills in primary-and intermediate-grade writers. *Journal of Educational Psychology*, 85(3), 478. https://doi.org/10.1037/0022-0663.85.3.478

Abbott, R. D., Berninger, V. W., & Fayol, M. (2010). Longitudinal relationships of levels of language in writing and between writing and reading in grades 1 to 7. *Journal of Educational Psychology, 102*(2), 281-298. https://doi.org/10.1037/a0019318

Abbott, R. D., Fayol, M., Zorman, M., Casalis, S., Nagy, W., & Berninger, V. W. (2016). Relationships of French and English morphophonemic orthographies to word reading, spelling, and reading comprehension during early and middle childhood. *Canadian journal of school psychology*, *31*(4), 305-321. https://doi.org/10.1177/0829573516640336

Anderson, R. C., & Nagy, W. E. (1993). The vocabulary conundrum. *Center for the Study of Reading Technical Report*; no. 570. Available at: https://www.ideals.illinois.edu/bitstream/handle/2142/18019/ctrstreadtechrepv01993i00570_opt.pdf

Apel, K. (2011). What is orthographic knowledge?. *Language, Speech, and Hearing Services in Schools*. https://doi.org/10.1044/0161-1461(2011/10-0085)

Apel, K., Diehm, E., & Apel, L. (2013). Using multiple measures of morphological awareness to assess its relation to reading. *Topics in Language Disorders*, *33*(1), 42-56. https://doi.org/10.1097/TLD.0b013e318280f57b

Archer, A. L., & Hughes, C. A. (2011). Exploring the foundations of explicit instruction. *Explicit instruction: Effective and efficient teaching*, 1-22.

Arnbak, E., & Elbro, C. (2000). The effects of morphological awareness training on the reading and spelling skills of young dyslexics. *Scandinavian Journal of Educational Research, 44,* 229–251. https://doi.org/10.1080/00313830050154485

Baayen, R. H., & Schreuder, R. (2006). Morphological processing. *Encyclopedia of Cognitive Science*. https://doi.org/10.1002/0470018860.s00254

Bakker, A. (2018). Discovery learning: zombie, phoenix, or elephant?. *Instructional Science*, *46*(1), 169-183. https://doi.org/10.1007/s11251-018-9450-8

Baldwin, T. T., & Ford, J. K. (1988). Transfer of training: A review and directions for future research. *Personnel psychology*, *41*(1), 63-105. https://doi.org/10.1111/j.1744-6570.1988.tb00632.x

Baldwin, T. T., Ford, J. K., & Blume, B. D. (2009). Transfer of training 1988–2008: an updated review and agenda for future research. *International review of industrial and organizational psychology*, *24*(1), 41-70. https://doi.org/10.1002/9780470745267.ch2

Banks, J. A. (1998). The lives and values of researchers: Implications for educating citizens in a multicultural society. *Educational Researcher*, *27*, 4-17. https://doi.org/10.3102/0013189X027007004

Bates, R., Cannonier, N., & Hatala, J. P. (2014). Linking motivation to workplace learning transfer. *Handbook of Human Resource Development*, 386-401. https://doi.org/10.1002/9781118839881.ch23

Baumann, J. F., Edwards, E. C., Boland, E. M., Olejnik, S., & Kame'enui, E. J. (2003). Vocabulary tricks: Effects of instruction in morphology and context on fifth-grade students' ability to derive and infer word meanings. *American educational research journal*, *40*(2), 447-494. https://doi.org/10.3102/00028312040002447

Beck, A. J., & Harrison, P. M. (2001). *Prisoners in 2000.* Washington, DC: U.S. Department of Justice, Bureau of Justice Statistics.

Bell, C. A., Dobbelaer, M. J., Klette, K., & Visscher, A. (2019). Qualities of classroom observation systems. *School effectiveness and school improvement*, *30*(1), 3-29. https://doi.org/10.1080/09243453.2018.1539014

BERA. (2018). *British Educational Research Associations' ethical guidelines for educational research*. Retrieved 4 April 2018 from https://www.bera.ac.uk/wp-content/uploads/2018/06/BERA-Ethical-Guidelines-for-Educational-Research_4thEdn_2018.pdf?noredirect=1.

Berkman, N. D., DeWalt, D. A., Pignone, M. P., Sheridan, S. L., Lohr, K. N., Lux, L., ... & Bonito, A. J. (2004). Literacy and health outcomes: summary. In *AHRQ evidence report summaries*. Agency for Healthcare Research and Quality (US).

Berninger, V. , Nagy, W. , Carlisle, J. , Thomson, J. , Hoffer, D. , Abbott, S. , Abbott, R. Richards, T. , & Aylward, E. (2003). Effective treatment for dyslexics in grades 4 to 6. In B. Foorman (Ed.), Preventing and remediating reading difficulties: Bringing science to scale (pp.382-417). Timonium, MD: York Press.

Bialystok, E. (2001). *Bilingualism in development: Language, literacy, and cognition*. Cambridge University Press.

Binks-Cantrell, E., Washburn, E. K., Joshi, R. M., & Hougen, M. (2012). Peter effect in the preparation of reading teachers. *Scientific studies of reading*, *16*(6), 526-536. https://doi.org/10.1080/10888438.2011.601434

Blume, B. D., Ford, J. K., Baldwin, T. T., & Huang, J. L. (2010). Transfer of training: A meta-analytic. Review. https ://doi.org/10.1177/01492 06309 35288 0.

Blume, B. D., Ford, J. K., Surface, E. A., & Olenick, J. (2017). A dynamic model of training transfer. *Human Resource Management Review*, *29*(2), 270-283. https://doi.org/10.1016/j.hrmr.2017.11.004

Boaler, J. (2016). Mathematical mindsets: Unleashing students' potential through creative math, inspiring messages and innovative teaching. John Wiley & Sons.

Bonner, A., & Tolhurst, G. (2002). Insider-outsider perspectives of participant observation. *Nurse Researcher (through 2013)*, *9*(4), 7. https://doi.org/10.7748/nr2002.07.9.4.7.c6194

Borko, H. (2004). Professional development and teacher learning: Mapping the terrain. *Educational researcher*, *33*(8), 3-15. https://doi.org/10.3102/0013189X033008003

Bowers, J. S. (2020). Reconsidering the evidence that systematic phonics is more effective than alternative methods of reading instruction. *Educational Psychology Review*, 1-25. https://doi.org/10.1007/s10648-019-09515-y

Bowers, J. S., & Bowers, P. N. (2017). Beyond phonics: The case for teaching children the logic of the English spelling system. *Educational Psychologist*, *52*(2), 124-141. https://doi.org/10.1080/00461520.2017.1288571

Bowers, J. S., & Bowers, P. N. (2018). Progress in reading instruction requires a better understanding of the English spelling system. *Current Directions in Psychological Science*, *27*(6), 407-412. https://doi.org/10.1177/0963721418773749

Bowers, P. N., & Kirby, J. R. (2006). *Adding transparency to morphologically opaque words through instruction*. Kingston, Ontario, Canada: Queen's University.

Bowers, P. N., & Kirby, J. R. (2010). Effects of morphological instruction on vocabulary acquisition. Reading and Writing: An Interdisciplinary Journal.

Bowers, P. N., Kirby, J. R., & Deacon, S. H. (2010). The effects of morphological instruction on literacy skills: A systematic review of the literature. *Review of educational research*, *80*(2), 144-179. https://doi.org/10.3102/0034654309359353

Bradley, H., Conner, C., & Southworth, G. (1994). Developing teachers developing schools: Making inset effective for the school.

Brandmo, C., Aas, M., Colbjørnsen, T., & Olsen, R. (2019). Group coaching that promotes self-Efficacy and role clarity among school leaders. *Scandinavian Journal of Educational Research*, 1-17. https://doi.org/10.1080/00313831.2019.1659406

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, *3*(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, *11*(4), 589-597. https://doi.org/10.1080/2159676X.2019.1628806

British Psychological Society (2014). *Code of human research ethics.* Leicester: BPS Publications.

British Psychological Society (2017). *Standards for the accreditation of Doctoral programmes in educational psychology in England, Northern Ireland & Wales.* Leicester: BPS Publications

Brooks, G. (2016). *What works for children and young people with literacy difficulties.* Retrieved June 12, 2016, from http://www.dyslexiaaction.org.uk/files/dyslexiaaction/what-works-5th-edition.pdf

Brown, S. W., & Grant, A. M. (2010). From GROW to GROUP: theoretical issues and a practical model for group coaching in organisations. *Coaching: An International Journal of Theory, Research and Practice*, *3*(1), 30-45. https://doi.org/10.1080/17521880903559697

Bryant, P., & Nunes, T. (2004). Morphology and spelling. In *Handbook of children's literacy* (pp. 91-118). Springer, Dordrecht. https://doi.org/10.1007/978-94-017-1731-1_6

Burke, L. A., & Hutchins, H. M. (2007). Training transfer: An integrative literature review. *Human resource development review*, *6*(3), 263-296. https://doi.org/10.1177/1534484307303035

Cameron, R. (2006). Educational psychology: The distinctive contribution. Educational Psychology in Practice, 22(4), 289-304. https://doi.org/10.1080/02667360600999393

Camilli, G. M., Wolfe, P., & Smith, M. L. (2006). Meta-analysis and reading policy: Perspectives on teaching children to read. *The Elementary School Journal*, *107*(1), 27-36. https://doi.org/10.1086/509525

Caravolas, M., Lervåg, A., Mousikou, P., Efrim, C., Litavsky, M., Onochie-Quintanilla, E., ... Hulme, C. (2012). Common patterns of prediction of literacy development in different alphabetic orthographies. Psychological Science, 23(6), 678–686. https://doi.org/10.1177/0956797611434536

Carlisle, J. F. (1995). Morphological awareness and early reading achievement. In L. B. Feldman (Ed), *Morphological aspects of language processing* (pp. 189–209). Hillsdale, NJ: Erlbaum.

Carlisle, J. F. (2003). Morphology matters in learning to read: A commentary. *Reading Psychology, 24*(3-4), 291-322. http://dx.doi.org/10.1080/02702710390227369

Carlisle, J. F. (2010). Effects of instruction in morphological awareness on literacy achievement: An integrative review. *Reading research quarterly*, *45*(4), 464-487. https://doi.org/10.1598/RRQ.45.4.5

Carstairs-McCarthy, A. (2017). *Introduction to English Morphology: Words and Their Structure*. Edinburgh University Press.

Castles, A., Rastle, K., & Nation, K. (2018). Ending the reading wars: Reading acquisition from novice to expert. *Psychological Science in the Public Interest, 19*, 5–51. https://doi:10.1177/1529100618772271

Chamberlin, M. T. (2019). Enhancing prospective teachers' views of doing mathematics: Documenting and reflecting on mathematical investigations. *Investigations in Mathematics Learning*, *11*(2), 103-119. https://doi.org/10.1080/19477503.2017.1400937

Cheng, E. W., & Hampson, I. (2008). Transfer of training: A review and new insights. *International Journal of Management Reviews*, *10*(4), 327-341. https://doi.org/10.1111/j.1468-2370.2007.00230.x

Cheng, E. W., & Ho, D. C. (2001). A review of transfer of training studies in the past decade. *Personnel review*. https://doi.org/10.1108/00483480110380163

Chua, N. M. L. (2015). The Impact of Morphological Intervention on Spelling and Self Esteem in Adolescents with Dyslexia. *Asia Pacific Journal of Developmental Differences*, *2*(1), 79-88.

Clay, M.M. (1993). Reading recovery: A guidebook for teachers in training. Portsmouth, NH: Heinemann

Cordingley, P. (2015). Why is evidence about teachers' professional learning and continuing professional development observed more in the breach than in reality? Why has it not stuck?. *Turning teacher learning inside-out*, 53.

Cox, E., Bachkirova, T., & Clutterbuck, D. A. (Eds.). (2014). *The complete handbook of coaching*. Sage.

Crosson, A., & McKeown, M. (2016). Middle school learners' use of Latin roots to infer the meaning of unfamiliar words. Cognition and Instruction, 34, 148–171. https://doi:10 .1080/07370008.2016.1145121

Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. Sage.

Crystal, D. (2003). The Cambridge encyclopedia of the english language (2nd Edition). Cambridge, UK: Cambridge University Press.

Daffern, T. (2017). Linguistic skills involved in learning to spell: An Australian study. *Language and Education*, *31*(4), 307-329. https://doi.org/10.1080/09500782.2017.1296855

Daffern, T., & Critten, S. (2019). Student and teacher perspectives on spelling. *Australian Journal of Language and Literacy, The*, *42*(1), 40.

Daffern, T., & Mackenzie, N. M. (2019). A case study on the challenges of learning and teaching English spelling: Insights from eight Australian students and their teachers. *Literacy*. https://doi.org/10.1111/lit.12215

Daigle, D., Berthiaume, R., Ruberto, N. & Wolter, J. (2018). Classroom practices in morphological instruction. Dans R. Berthiaume, D. Daigle et A. Desrochers (ed.), Morphological processing and literacy development: Current issues and research (p. 244-268). New York, NY : Routledge. https://doi.org/10.4324/9781315229140-11

Deacon, S. H., & Dhooge, S. (2010). Developmental stability and changes in the impact of root consistency on children's spelling. Reading and Writing: An Interdisciplinary Journal, 23(9), 1055–1069. https://doi:10.1007/s11145-009-9195-5

Deacon, S.H., Kirby, J.R., & Casselman-Bell, M. (2009). How robust is the contribution of morphological awareness to general spelling outcomes? Reading Psychology, 30, 301-318. https://doi.org/10.1080/02702710802412057

Deacon, S. H., & Sparks, E. (2015). Children's spelling development: Theories and evidence. *The Oxford handbook of reading*, 311.

Denzin, N. (1970). Strategies of multiple triangulation. *The research act in sociology: A theoretical introduction to sociological method*, *297*(1970), 313. https://doi.org/10.4324/9781315134543-12

Department for Education (2012) Research evidence on reading for pleasure. London: DFE

Department for Education (2013) *The National Curriculum in England: Key Stages 1 and 2 framework document.* London: DFE.
Available at: https://www.gov.uk/government/publications/national-curriculum-in-england-primary-curriculum (Accessed: 29 November 2018).

Department for Education (2019) 2016 Key Stage Two reporting and assessment arrangements. Available online at: https://www.gov.uk/guidance/2019-key-stage-2-assessment-andreporting-arrangements-ara/section-7-phonics-screening-check [accessed on 5.12.19]

Desimone, L. M. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational researcher*, *38*(3), 181-199. https://doi.org/10.3102/0013189X08331140

Desimone, L. M., & Garet, M. S. (2015). Best practices in teacher's professional development in the United States. https://doi.org/10.25115/psye.v7i3.515

Devonshire, V., & Fluck, M. (2010). Spelling development: Fine-tuning strategy-use and capitalising on the connections between words. *Learning and Instruction*, *20*(5), 361-371. https://doi.org/10.1016/j.learninstruc.2009.02.025

Devonshire, V., Morris, P., & Fluck, M. (2013). Spelling and reading development: The effect of teaching children multiple levels of representation in their orthography. *Learning and Instruction*, *25*, 85-94. https://doi.org/10.1016/j.learninstruc.2012.11.007

Dewey, J. (1907). The control of ideas by facts. In J. A.Boydston (Ed.), *The middle works (1899–1924)*(Vol. 4, pp. 78–90). Carbondale and Edwardsville: Southern Illinois University Press.

Doyle, A., Zhang, J., & Mattatall, C. (2015). Spelling instruction in the primary grades: Teachers' beliefs, practices, and concerns. *Reading Horizons: A Journal of Literacy and Language Arts*, *54*(2), 2.

Drever, E. (1995). *Using Semi-Structured Interviews in Small-Scale Research. A Teacher's Guide*.

Ehri, L. C. (1985). Learning to read and spell. Paper presented at the Annual Meeting of the American Educational Research Association, Chicago. Retrieved from http://files.eric.ed.gov/fulltext/ ED259302.pdf

Ehri, L. C., Nunes, S. R., Stahl, S. A., & Willows, D. M. (2001). Systematic phonics instruction helps students learn to read: Evidence from the National Reading Panel's meta-analysis. *Review of educational research*, *71*(3), 393-447. https://doi.org/10.3102/00346543071003393

Elbro, C., & Arnbak, E. (1996). The role of morpheme recognition and morphological awareness in dyslexia. *Annals of dyslexia*, *46*(1), 209-240. https://doi.org/10.1007/BF02648177

Ellis, D. E. (2018). Changing the Lens: The Role of Reframing in Educational Development. *To Improve the Academy*, *37*(1), 142-150. https://doi.org/10.1002/tia2.20067

Ellis, N. (2017). Chunking in Language Usage, Learning and Change: I don't know. *The Changing English Language: Psycholinguistic Perspectives*, 113. https://doi.org/10.1017/9781316091746.006

European Union High Level Group of Experts on Literacy. (2012). *Final report*. Retrieved from http://ec.europa.eu/education/literacy/sources/index.html

Feldon, D. F. (2007). Cognitive load and classroom teaching: The double-edged sword of automaticity. *Educational Psychologist*, *42*(3), 123-137. https://doi.org/10.1080/00461520701416173

Ferrari, R. (2015). Writing narrative style literature reviews. *Medical Writing*, *24*(4), 230-235. https://doi.org/10.1179/2047480615Z.000000000329

Fielding-Barnsley, R., & Purdie, N. (2003). Early intervention in the home for children at risk of reading failure. *Support for Learning*, *18*(2), 77-82. https://doi.org/10.1111/1467-9604.00284

Floyd, A., & Arthur, L. (2012) 'Researching from within: external and internal ethical engagement', International Journal of Research and Method in Education, vol. 35, no. 2. pp. 171 – 180. https://doi.org/10.1080/1743727X.2012.670481

Flückiger, B., Aas, M., Nicolaidou, M., Johnson, G., & Lovett, S. (2017). The potential of group coaching for leadership learning. *Professional development in education*, *43*(4), 612-629. https://doi.org/10.1080/19415257.2016.1223736

Fonollosa, J., Neftci, E., & Rabinovich, M. (2015). Learning of chunking sequences in cognition and behavior. *PLoS Computational Biology, 2015, vol. 11, num. 11, p. e1004592*. https://doi.org/10.1371/journal.pcbi.1004592

Fowler, A. E., & Liberman, I. Y. (1995). The role of phonology and orthography in morphological awareness. In Morphological aspects of language processing (pp. 157–188). Hillsdale, NJ: Lawrence Erlbaum Associates.

Fresch, M. J. (2007). Teachers' concerns about spelling instruction: A national survey. *Reading psychology*, *28*(4), 301-330. https://doi.org/10.1080/02702710701545510

Friedman, D., Pommerenke, K., Lukose, R., Milam, G., & Huberman, B. A. (2007). Searching for the sunk cost fallacy. *Experimental Economics*, *10*(1), 79-104. https://doi.org/10.1007/s10683-006-9134-0

Frith, U. (1980). Unexpected spelling problems. In U. Frith (Ed.). Cognitive processes in spelling (pp. 495–516). London, England: Academic Press.

Frost, R. (2012). Towards a universal model of reading. Behavioral and Brain Sciences. https://doi.org/10.1017/S0140525X11001841

Fullan, M. (2009). Large-scale reform comes of age. *Journal of educational change*, *10*(2-3), 101-113. https://doi.org/10.1007/s10833-009-9108-z

Galuschka, K., Görgen, R., Kalmar, J., Haberstroh, S., Schmalz, X., & Schulte-Körne, G. (2020). Effectiveness of spelling treatment approaches for learners with dyslexia–A meta-analysis and systematic review. 35(5), 263–279. https://doi:10.1017/S0140525X11001841

Garcia, N. P., Abbott, R. D., & Berninger, V. W. (2010). Predicting poor, average, and superior spellers in grades 1 to 6 from phonological, orthographic, and morphological, spelling, or reading composites. *Written Language & Literacy*, *13*(1), 61-98. https://doi.org/10.1075/wll.13.1.03gar

Garet, M. S., Porter, A. C., Desimone, L., Birman, B. F., & Yoon, K. S. (2001). What makes professional development effective? Results from a national sample of

teachers. *American educational research journal*, *38*(4), 915-945. https://doi.org/10.3102/00028312038004915

Gentry, J. R. (2000). A retrospective on invented spelling and a look forward. The Reading Teacher, 54, 318–332.

Georgiades, N., & Phillimore, L. (1975). The myth of the hero-innovator and alternative strategies for organisational change. *Behaviour modification with the severely retarded.* Amsterdam: Associated Scientific Publishers.

Gernsbacher, M. A. (1991). Cognitive processes and mechanisms in language comprehension: The structure building framework. In *Psychology of Learning and Motivation* (Vol. 27, pp. 217-263). Academic Press. https://doi.org/10.1016/S0079-7421(08)60125-5

Gillies, R. M. (2016). Cooperative learning: Review of research and practice. *Australian journal of teacher education*, *41*(3), 3. https://doi.org/10.14221/ajte.2016v41n3.3

Given, L. M. (2008). *The SAGE encyclopedia of qualitative research methods* (Vols. 1-0). Thousand Oaks, CA: SAGE Publications, Inc. https://doi.org/10.4135/9781412963909

Goodwin, A. P., & Ahn, S. (2010). A meta-analysis of morphological interventions: Effects on literacy achievement of children with literacy difficulties. *Annals of dyslexia*, *60*(2), 183-208. https://doi.org/10.1007/s11881-010-0041-x

Goodwin, A. P., & Ahn, S. (2013). A meta-analysis of morphological interventions in English: Effects on literacy outcomes for school-age children. *Scientific Studies of reading*, *17*(4), 257-285. https://doi.org/10.1080/10888438.2012.689791

Goodwin, A. P., & Perkins, J. (2015). Word detectives: Morphological instruction that supports academic language. *The Reading Teacher*, *68*(7), 510-523. https://doi.org/10.1002/trtr.1342

Graham, S., & Hebert, M. (2011). Writing to read: A meta-analysis of the impact of writing and writing instruction on reading. *Harvard Educational Review*, *81*(4), 710-744. https://doi.org/10.17763/haer.81.4.t2k0m13756113566

Graham, S., Morphy, P., Harris, K. R., Fink-Chorzempa, B., Saddler, B., Moran, S., & Mason, L. (2008). Teaching spelling in the primary grades: A national survey of instructional practices and adaptations. *American Educational Research Journal*, *45*(3), 796-825. https://doi.org/10.3102/0002831208319722

Graves, M. F., & Watts-Taffe, S. (2008). For the love of words: Fostering word consciousness in young readers. In M. F. Graves (Ed.), Essential readings on vocabulary instruction (pp. 114-123). Newark, DE: International Reading Association. (Reprinted from The Reading Teacher, 62(3), 2008, 185-193). https://doi.org/10.1598/RT.62.3.1

Grossman, P. L., Wilson, S., & Shulman, L. S. (1989) Teachers of substance: subject matter knowledge for teaching, in: M. Reynolds (Ed.) *Knowledge base for the beginning teacher* (Elmsford, NY, Pergamon), 23–36.

Grossman, R., & Salas, E. (2011). The transfer of training: what really matters. *International Journal of Training and Development*, *15*(2), 103-120. https://doi.org/10.1111/j.1468-2419.2011.00373.x

Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. *Handbook of qualitative research*, *2*(163-194), 105.

Guba, E. G., & Lincoln, Y. S. (2005). Paradigmatic controversies, contradictions and emerging confluences. In N. K. Denzin & Y. S. Lincoln (Eds.), *The SAGE handbook of qualitative research. 3rd Edition, pp191-216.* Thousand Oaks, CA: Sage.

Hammersley, M. (1993) On the teacher as researcher, in: M. Hammersley (Ed.) Educational research: current issues (London, Paul Chapman Publishing). https://doi.org/10.1080/0965079930010308

Hattie, J. (2012). *Visible learning for teachers: Maximizing impact on learning*. Routledge. https://doi.org/10.4324/9780203181522

Hattie, J. A.C. (2003, October). Teachers make a difference: What is the research evidence? Paper presented at the Building Teacher Quality: What does the research tell us ACER Research Conference, Melbourne, Australia. Retrieved from http://research.acer.edu.au/research_conference_2003/4/

Henbest, V. S., & Apel, K. (2017). Effective word reading instruction: What does the evidence tell us?. *Communication Disorders Quarterly*, *39*(1), 303-311. https://doi.org/10.1177/1525740116685183

Heron, J., & Reason, P. (1997). A participatory inquiry paradigm. *Qualitative inquiry*, *3*(3), 274-294. https://doi.org/10.1177/107780049700300302

Herrington, M. H., & Macken-Horarik, M. (2015). Linguistically informed teaching of spelling: Toward a relational approach. *Australian Journal of Language and Literacy, The*, *38*(2), 61.

Holsti, O. R. (1968). Content Analysis. In G. Lindzey & E. Aronson, (Eds.), The Handbook of Social Psychology (2nd ed.). (pp. 596 – 692). Reading, MA: Addison Wesley.

Houchens, G. W., & Keaster, R. D. (2015). Enhancing teacher leadership through instructional rounds: A district case study. In Warrick, D., & Mueller, J. (Eds.), Lessons in changing cultures: Learning from real world cases (pages 345-357). Oxford, UK: Rossi Smith.

Hughes, C. A., Morris, J. R., Therrien, W. J., & Benson, S. K. (2017). Explicit instruction: Historical and contemporary contexts. *Learning Disabilities Research & Practice*, *32*(3), 140-148. https://doi.org/10.1111/ldrp.12142

Hurry, J., Nunes, T., Bryant, P., Pretzlik, U., Parker, M., Curno, T., & Midgley, L. (2005). Transforming research on morphology into teacher practice. *Research Papers in Education*, *20*(2), 187-206. https://doi.org/10.1080/02671520500078291

Joffe, H., & Yardley, L. (2004). Content and thematic analysis. In D. F. Marks & L. Yardley (Eds.), *Research methods for clinical and health psychology* (pp. 56–68). London, UK: Sage.

Johnston, F. R. (2001). Exploring classroom teachers' spelling practices and beliefs. *Literacy Research and Instruction*, *40*(2), 143-155. https://doi.org/10.1080/19388070109558339

Joyce, B., & Showers, B. (1995). Student achievement through staff development: Fundamentals of school renewal. New York: Longman

Joyce, B., & Showers, B. (2002). Student achievement through staff development (3rd ed.). Alexandria, VA: Association for Supervision and Curriculum Development.

Kennedy, M. (2016). Parsing the practice of teaching. *Journal of Teacher Education*, *67*(1), 6-17. https://doi.org/10.1177/0022487115614617

Kirby, J. R., & Bowers, P. N. (2018). The effects of morphological instruction on vocabulary learning, reading, and spelling. In *Morphological Processing and Literacy Development* (pp. 217-243). Routledge. https://doi.org/10.4324/9781315229140-10

Kirk, C., & Gillon, G. T. (2009). Integrated morphological awareness intervention as a tool for improving literacy. *Language, speech, and hearing services in schools*, *40*(3), 341-351. https://doi.org/10.1044/0161-1461(2008/08-0009)

Kitzinger, J. (1994). The methodology of focus groups: the importance of interaction between research participants. *Sociology of health & illness*, *16*(1), 103-121. https://doi.org/10.1111/1467-9566.ep11347023

Knight, J. (2007). Instructional coaching: A partnership approach to improving instruction. Thousand Oaks, CA: Corwin Press.

Kraft, M. A., Blazar, D., & Hogan, D. (2018). The effect of teacher coaching on instruction and achievement: A meta-analysis of the causal evidence. *Review of educational research*, *88*(4), 547-588. https://doi.org/10.3102/0034654318759268

Krathwohl, D. R. (2004). *Methods of Educational and Social Science Research: An Integrated Approach* (2nd ed.). Long Grove, IL: Waveland Press, Inc.

Kroll, T., & Neri, M. (2009). Designs for mixed methods research. *Mixed methods research for nursing and the health sciences*, *31*. https://doi.org/10.1002/9781444316490.ch3

Lauterbach, A. A., Benedict, A. E., Yakut, A. D., & Garcias, A. A. (2020). Improving vocabulary outcomes in inclusive secondary science classrooms through professional development. *Journal of Science Teacher Education*, *31*(1), 56-74. https://doi.org/10.1080/1046560X.2019.1661738

Lavrakas, P. J. (2008). *Encyclopedia of survey research methods*. Sage Publications. https://doi.org/10.4135/9781412963947

Lee, K., & Woods, K. (2017). Exploration of the developing role of the educational psychologist within the context of "traded" psychological services. *Educational Psychology in Practice*, *33*(2), 111-125. https://doi.org/10.1080/02667363.2016.1258545

Lincoln, Y.S. & Guba, E.G. (1985). Naturalistic Inquiry. Newbury Park, CA: Sage Publications. https://doi.org/10.1016/0147-1767(85)90062-8

Lyonette, C., Atfield, G., Baldauf, B., & Owen, D. (2019). Research on the educational psychologist workforce: research report, March 2019.

Malterud, K. (2001). Qualitative research: standards, challenges, and guidelines. *The lancet*, *358*(9280), 483-488. https://doi.org/10.1016/S0140-6736(01)05627-6

Malterud, K., Siersma, V., & Guassora, A. (2015). Sample size in qualitative interview studies: Guided by information power. *Qualitative Health Research*. Advance online publication. https://doi.org/10.1177/1049732315617444

Manyak, P. C., Baumann, J. F., & Manyak, A. M. (2018). Morphological analysis instruction in the elementary grades: Which morphemes to teach and how to teach them. *The Reading Teacher*, *72*(3), 289-300. https://doi.org/10.1002/trtr.1713

Marton, F., & Säljö, R. (1976). On qualitative differences in learning: I—Outcome and process. *British journal of educational psychology*, *46*(1), 4-11. https://doi.org/10.1111/j.2044-8279.1976.tb02980.x

Maxwell, J. A., & Mittapalli, K. (2010). Realism as a stance for mixed methods research. *Handbook of mixed methods in social & behavioral research*, 145-168. https://doi.org/10.4135/9781506335193.n6

McCarthy, C. L. (2005). Knowing Truth: Peirce's epistemology in an educational context. Educational Philosophy and Theory, 37(2), 157-176. https://doi.org/10.1111/j.1469-5812.2005.00107.x

McGrane, J., Stiff, J., Baird, J., Lenkeit, J., & Hopfenbeck, T. (2017). Progress in international reading literacy study (PIRLS): National report for England. *OUCEA, Department of Education, University of Oxford*.

McNeill, B. (2018). Improving Preservice Teachers' Phonemic Awareness, Morphological Awareness and Orthographic Knowledge. Australian Journal of Teacher Education, 43(1). https://doi.org/10.14221/ajte.2018v43n1.2

McNeill, B., & Kirk, C. (2014). Theoretical beliefs and instructional practices used for teaching spelling in elementary classrooms. *Reading and Writing*, *27*(3), 535-554. https://doi.org/10.1007/s11145-013-9457-0

Miles J.N.V. & Banyard P. (2007) Understanding and using Statistics in Psychology. Sage, London.

Miller, G. (1969) Psychology as a means of promoting human welfare. *American Psychologist. 24*. 1063-75. https://doi.org/10.1037/h0028988

Moats, L. (2009). Knowledge foundations for teaching reading and spelling. *Reading and Writing*, *22*(4), 379-399. https://doi.org/10.1007/s11145-009-9162-1

Moats, L. (2014). What teachers don't know and why they aren't learning it: addressing the need for content and pedagogy in teacher education. *Australian Journal of learning difficulties*, *19*(2), 75-91. https://doi.org/10.1080/19404158.2014.941093

Mohr, L. B. (1982). Explaining organizational behavior. San Francisco: Jossey-Bass.

Morewood, A. L., Ankrum, J., & Dagen, A. S. (2017). Aligning effective professional development and online learning: A conceptual stance. In *Handbook of research on teacher education and professional development* (pp. 428-440). IGI Global. https://doi.org/10.4018/978-1-5225-1067-3.ch024

Morgan, D. L. (2007). Paradigms lost and pragmatism regained. Journal of Mixed Methods Research, 1, 48-76. https://doi.org/10.1177/2345678906292462

Morgan, D. N., & Bates, C. C. (2018). Addressing the Barriers of Time. *The Reading Teacher*, *72*(1), 131-134. https://doi.org/10.1002/trtr.1716

Nagy, W., Berninger, V. W., & Abbott, R. D. (2006). Contributions of morphology beyond phonology to literacy outcomes of upper elementary and middle-school students. *Journal of educational psychology*, *98*(1), 134. https://doi.org/10.1037/0022-0663.98.1.134

Nagy, W., Carlisle, J. F., & Goodwin, A. P. (2014). Morphological knowledge and literacy acquisition. *Journal of learning disabilities*, *47*(1), 3-12. https://doi.org/10.1177/0022219413509967

Newton, J. (2018). Teachers as Learners: The Impact of Teachers' Morphological Awareness on Vocabulary Instruction. *Education Sciences*, *8*(4), 161. https://doi.org/10.3390/educsci8040161

Nugent, M. (2010). Teaching our traveller children to read: an action research project. British Journal of Learning Support, 25, 55-62. https://doi.org/10.1111/j.1467-9604.2010.01441.x

Nunes, T., Bryant, P., & Bindman, M. (1997). Morphological spelling strategies: developmental stages and processes. *Developmental psychology*, *33*(4), 637. https://doi.org/10.1037/0012-1649.33.4.637

Nunes, T., Bryant, P., & Olsson, J. (2003). Learning morphological and phonological spelling rules: An intervention study. *Scientific studies of reading*, *7*(3), 289-307. https://doi.org/10.1207/S1532799XSSR0703_6

Nuttall, C. (1996). Teaching reading skills in a foreign language. Oxford: Macmillan Heinemann.

Oliver, C. (2004). Reflexive inquiry and the strange loop tool. *Human Systems: The Journal of Systemic Consultation and Management*, *15*(2), 127-140.

Onwuegbuzie, A. J., & Leech, N. L. (2005). On becoming a pragmatic researcher: The importance of combining quantitative and qualitative research methodologies. *International journal of social research methodology*, *8*(5), 375-387. https://doi.org/10.1080/13645570500402447

Onwuegbuzie, A. J., & Teddlie, C. (2003). A framework for analyzing data in mixed methods research. In A. Tashakkori & C. Teddlie (Eds.), Handbook of mixed methods in social and behavioral research (pp. 351-383). Thousand Oaks, CA: Sage.

Opfer, V. D., & Pedder, D. (2011). Conceptualizing teacher professional learning. *Review of educational research*, *81*(3), 376-407. https://doi.org/10.3102/0034654311413609

Organisation for Economic Cooperation and Development. (2009) PISA 2009 results: overcoming social background – equity in learning opportunities and outcomes (Volume 11) New York: OECD

Oz, H. (2014). Morphological awareness and some implications for English language teaching. *Procedia-Social and Behavioral Sciences*, *136*, 98-103. https://doi.org/10.1016/j.sbspro.2014.05.296

Pacton, S., & Deacon, S. H. (2008). The timing and mechanisms of children's use of morphological information in spelling: A review of evidence from English and French. *Cognitive Development*, *23*(3), 339-359. https://doi.org/10.1016/j.cogdev.2007.09.004

Paivio, A. (1991). Dual coding theory: Retrospect and current status. *Canadian Journal of Psychology/Revue canadienne de psychologie*, *45*(3), 255. https://doi.org/10.1037/h0084295

Pawson, R. (2006). Evidence-based policy: A realist perspective. London, England: SAGE. https://doi.org/10.4135/9781849209120

Perfetti, C. (2007). Reading ability: Lexical quality to comprehension. *Scientific studies of reading*, *11*(4), 357-383. https://doi.org/10.1080/10888430701530730

Perfetti, C. A., & Adlof, S. M. (2012). Reading comprehension: A conceptual framework from word meaning to text meaning. In J. Sabatini, E. R. Albro, & T. O'Reilly (Eds.), *Measuring up: Advances in how we assess reading ability* (pp. 3–20). Lanham, MD: Rowman & Littlefield Education.

Perfetti, C. A., & Stafura, J. (2014). Word knowledge in a theory of reading comprehension. *Scientific Studies of Reading*, *18*, 22–37. HTTPS://doi.org/10.1080/10888438.2013.827687

Phillips, D. C. (1987). Philosophy, science, and social inquiry: Contemporary methodological controversies in social science and related applied fields of research. Oxford, UK: Pergamon Press.

Piasta, S. B., Dynia, J. M., Justice, L. M., Pentimonti, J. M., Kaderavek, J. N., & Schatschneider, C. (2010). Impact of professional development on preschool teachers' print references during shared read alouds: A latent growth curve analysis. Journal of Research on Educational Effectiveness, 3(4), 343–380. https://doi.org/10.1080/19345747.2010.482177

Pillow, W. S. (2010). Dangerous reflexivity: Rigour, responsibility and reflexivity in qualitative research. *The Routledge doctoral student's companion*, 270-82.

Plous, S. (1993). *The psychology of judgment and decision making*. Mcgraw-Hill Book Company. https://doi.org/10.1037/e412982005-012

Polit, D. F., & Beck, C.T. (2012). Nursing research: Generating and assessing evidence for nursing practice. Philadelphia, PA: Lippincott Williams and Wilkins.

Purvis, C. J., McNeill, B. C., & Everatt, J. (2016). Enhancing the metalinguistic abilities of pre-service teachers via coursework targeting language structure knowledge. *Annals of dyslexia*, *66*(1), 55-70. https://doi.org/10.1007/s11881-015-0108-9

Rangel, B., Chung, W., Harris, B. T., Carpenter, N.C., Chiaburu, D.S. and Moore, J.L. (2015), "Rules of engagement: the joint influence of trainer expressiveness and trainee experiential learning style on engagement and training transfer", International Journal of Training and Development, Vol. 19 No. 1, pp. 18-31. https://doi.org/10.1111/ijtd.12045

Rastle, K. (2018). The place of morphology in learning to read in English. *Cortex*. https://doi.org/10.1016/j.cortex.2018.02.008

Reed, D. K. (2008). A synthesis of morphology interventions and effects on reading outcomes for students in Grades K–12. Learning Disabilities Research and Practice, 23, 36–49. https://doi.org/10.1111/j.1540- 5826.2007.00261.

Regan, T., & Woods, K. (2000). Teachers' understandings of dyslexia: Implications for educational psychology practice. *Educational Psychology in Practice*, *16*(3), 333-347. https://doi.org/10.1080/713666081

Richmond, J., Burn, A., Dougill, P., Raleigh, M., & Traves, P. (2017). *Curriculum and assessment in English 3 to 11: A better plan*. Taylor & Francis. https://doi.org/10.4324/9781315228464

Robson, C. (2002). Real World Research. Second Edition. Blackwell Publishing .

Rose, J. (2006) The independent review of the teaching of early reading. London: DCSF

Saidin, K., & Yaacob, A. (2016). Insider researchers: Challenges & opportunities. *Proceedings of the ICECRS*, *1*(1), 849-854. https://doi.org/10.21070/picecrs.v1i1.563

Sailors, M., & Price, L. R. (2010). Professional development that supports the teaching of cognitive reading strategy instruction. The Elementary School Journal, 110(3), 301–322. https://doi.org/10.1086/648980

Sandelowski, M., Voils, C. I., & Knafl, G. (2009). On quantitizing. Journal of Mixed Method Research, 3, 208-222. https://doi.org/10.1177/1558689809334210

Sansom, D. W. (2017). Reinvention of classroom practice innovations. *Elt Journal*, *71*(4), 423-432. https://doi.org/10.1093/elt/ccw116

Schaars, M. M., Segers, E., & Verhoeven, L. (2017). Predicting the integrated development of word reading and spelling in the early primary grades. *Learning and Individual Differences*, *59*, 127-140. https://doi.org/10.1016/j.lindif.2017.09.006

Schnotz, W., & Kürschner, C. (2007). A reconsideration of cognitive load theory. *Educational psychology review*, *19*(4), 469-508. https://doi.org/10.1007/s10648-007-9053-4

Schulze, J., Winter, L. A., Woods, K., & Tyldesley, K. (2017). Investigating the significance of social justice in educational psychology practice–A systematic literature review. *Educational and Child Psychology*, *34*(3), 57-73.

Schulze, J., Winter, L. A., Woods, K., & Tyldsley, K. (2019). An international social justice agenda in school psychology? Exploring educational psychologists' social justice interest and practice in England. *Journal of Educational and Psychological Consultation*, *29*(4), 377-400. https://doi.org/10.1080/10474412.2018.1531765

Scott, S., Sylva, K., Doolan, M., Price, J., Jacobs, B., Crook, C., & Landau, S. (2010). Randomised controlled trial of parent groups for child antisocial behaviour targeting multiple risk factors: the SPOKES project. *Journal of child psychology and psychiatry*, *51*(1), 48-57. https://doi.org/10.1111/j.1469-7610.2009.02127.x

Shah, M. A., & Yousaf, M. (2018). Effect of In-Service Education and Training (INSET) on Secondary School Science Teachers. *Pakistan Journal of Social Sciences (PJSS)*, *38*(1).

Shanahan, T. (1984). Nature of the reading-writing relation: An exploratory multivariate analysis. Journal of Educational Psychology, 76(3), 466–477. http://dx.doi.org/10.1037//0022-0663.76.3.466.

Shanahan, T. (2006). Relations among oral language, reading, and writing development. In C. A. MacArthur, S. Graham, & J. Fitzgerald (Eds.). Handbook of writing research (pp. 171–183). New York, NY: Guilford Press.

Shanahan, T., & Shanahan, C. (2008). Teaching disciplinary literacy to adolescents: Rethinking content-area literacy. *Harvard educational review*, *78*(1), 40-59. https://doi.org/10.17763/haer.78.1.v62444321p602101

Sharp, A. C., Sinatra, G. M., & Reynolds, R. E. (2008). The development of children's orthographic knowledge: A microgenetic perspective. *Reading Research Quarterly*, *43*(3), 206-226. https://doi.org/10.1598/RRQ.43.3.1

Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for information*, *22*(2), 63-75. https://doi.org/10.3233/EFI-2004-22201

Shulman, L. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard educational review*, *57*(1), 1-23. https://doi.org/10.17763/haer.57.1.j463w79r56455411

Snow, C. E., Griffin, P., & Burns, M. S. (Eds.) (2005). *Knowledge to Support the Teaching of Reading: Preparing Teachers for a Changing World.* San Francisco: Jossey-Bass.

Soler, J. (2017). The politics of the teaching of reading. *Prospects*, *46*(3-4), 423-433. https://doi.org/10.1007/s11125-017-9415-8

Stanovich, K. E. (1986). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly, 21*, 360-407. https://doi.org/10.1598/RRQ.21.4.1

St-Pierre, M. (2018). The Role of Morphology in Spelling Development. In *Morphological Processing and Literacy Development* (pp. 190-209). Routledge. https://doi.org/10.4324/9781315229140-9

Supino, P. G., & Borer, J. S. (Eds.). (2012). *Principles of research methodology: A guide for clinical investigators*. Springer Science & Business Media. https://doi.org/10.1007/978-1-4614-3360-6

Tas, T., Houtveen, T., van de Grift, W., & Willemsen, M. (2018). Learning to teach: Effects of classroom observation, assignment of appropriate lesson preparation templates and stage focused feedback. Studies in Educational Evaluation, 58, 8-16. https://doi.org/10.1016/j.stueduc.2018.05.005

Tashakkori, A., Teddlie, C., & Teddlie, C. B. (1998). *Mixed methodology: Combining qualitative and quantitative approaches* (Vol. 46). Sage.

Tashakkori, A., & Teddlie, C. (Eds.). (2010). *Sage handbook of mixed methods in social & behavioral research*. Sage. https://doi.org/10.4135/9781506335193

Timperley, H., & Alton-Lee, A. (2008). Reframing teacher professional learning: An alternative policy approach to strengthening valued outcomes for diverse learners. *Review of research in education*, *32*(1), 328-369. https://doi.org/10.3102/0091732X07308968

Tomesen, M. , & Aarnoutse, C. (1998). Effects of an instructional programme for deriving word meanings. Educational Studies, 24, 107-128. https://doi.org/10.1080/0305569980240108

Tomlinson, P. (1989). Having it both ways: hierarchical focusing as research interview method. *British Educational Research Journal*, *15*(2), 155-176. https://doi.org/10.1080/0141192890150205

Treiman, R. (1993). *Beginning to spell: A study of first-grade children*. Oxford University Press on Demand.

Treiman, R. (2017a). Learning to spell words: Findings, theories, and issues. *Scientific Studies of Reading*, *21*(4), 265-276. https://doi.org/10.1080/10888438.2017.1296449

Treiman, R. (2017b). Learning to spell: Phonology and beyond. *Cognitive Neuropsychology*, *34*(3-4), 83-93. https://doi.org/10.1080/02643294.2017.1337630

Treiman, R. (2018a). Teaching and learning spelling. *Child Development Perspectives*, *12*(4), 235-239. https://doi.org/10.1111/cdep.12292

Treiman, R. (2018b). What research tells us about reading instruction. *Psychological Science in the Public Interest*, *19*(1), 1-4. https://doi.org/10.1177/1529100618772272

Tulving, E. (1962). The effect of alphabetical subjective organization on memorizing unrelated words. *Canadian Journal of Psychology/Revue canadienne de psychologie*, *16*(3), 185. https://doi.org/10.1037/h0083245

Van de Grift, W. (2007). Quality of teaching in four European countries: A review of the literature and application of an assessment instrument. *Educational research*, *49*(2), 127-152. https://doi.org/10.1080/00131880701369651

Venezky, R. (1970). *The structure of English orthography.* The Hague: Mouton. https://doi.org/10.1515/9783110804478

Venezky, R. (1999). *The American way of spelling.* New York: Guilford Press.

Washburn, E. K., & Mulcahy, C. A. (2018). Morphology Matters, but What Do Teacher Candidates Know About It?. *Teacher Education and Special Education*, *42*(3), 246-262. https://doi.org/10.1177/0888406418806649

Weiser B. & Mathes P. Using encoding instruction to improve the reading and spelling performance of elementary students at risk for literacy difficulties: A best-evidence

synthesis. Review of Educational Research. 2011; 81:170–200. https://doi.org/10.3102/0034654310396719

Westwood, P. S. (2008). *What teachers need to know about teaching methods*. Aust Council for Ed Research.

Whitmore, J. (2002). Coaching for performance: Growing people, performance and purpose. London: Nicholas Brealey.

Wilding, L., & Griffey, S. (2015). The strength-based approach to educational psychology practice: a critique from social constructionist and systemic perspectives. *Educational Psychology in Practice*, *31*(1), 43-55. https://doi.org/10.1080/02667363.2014.981631

Wilkinson, S. (1998). Focus groups in health research: Exploring the meanings of health and illness. *Journal of Health Psychology*, *3*(3), 329-348. https://doi.org/10.1177/135910539800300304

Willig, C. (2008). *Introducing Qualitative Research Methods in Psychology (2nd Ed.)*. Maidenhead: McGraw-Hill, Open University Press.

Wolter, J. A., Wood, A., & D'Zatko, K. (2009). The influence of morphological awareness on first-grade children's literacy development. *Language, Speech, and Hearing Services in the Schools*, 40(3), 1-13. https://doi.org/10.1044/0161-1461(2009/08-0001)

Woods, K., Stothard, J., Lydon, J., & Reason, R. (2013). Developing policy and practice for dyslexia across a local authority: A case study of educational psychology practice at organisational level. *Educational Psychology in Practice*, *29*(2), 180-196. https://doi.org/10.1080/02667363.2013.808174

World literacy foundation. (2019). The economic and social cost of illiteracy: A white paper by the world literacy foundation. *World Literacy foundation.*

Worth, J., & Van den Brande, J. (2019). Teacher Labour Market in England: Annual Report 2019. *National Foundation for Educational Research*.

Yoon, K. S., Duncan, T., Lee, S. W. Y., Scarloss, B., & Shapley, K. L. (2007). Reviewing the Evidence on How Teacher Professional Development Affects Student Achievement. Issues & Answers. REL 2007-No. 033. *Regional Educational Laboratory Southwest (NJ1)*.

Zhao, Y., Pugh, K., Sheldon, S., & Byers, J. L. (2002). Conditions for classroom technology innovations. *Teachers college record*, *104*(3), 482-515. https://doi.org/10.1111/1467-9620.00170

Ziegler, J. C., & Goswami, U. (2005). Reading acquisition, developmental dyslexia, and skilled reading across languages: a psycholinguistic grain size theory. *Psychological bulletin*, *131*(1), 3. https://doi.org/10.1037/0033-2909.1

Appendices

Appendix 1: Research timeline

	Phase One				Phase Two	
Research aims	To investigate how school staff provide MI, and the factors that impede or support this.				To investigate how a MI further training programme can change teaching practices, and how these practices support children with low MA.	
	Collecting data	Analysing data	Developing training programme	Delivering training programme	Collecting data	Analysing data
Time	February – July 2019	July – August 2019	August – September 2019	September – December 2019	December 2020 – February 2020	February 2020 – March 2020

Appendix 2: Semi structured interview schedules and rationale

Teachers

Research question/Rationale	**Interview question**	**Follow up prompts**
Rapport building	1. Can you tell me about your role?	• What do you do from day to day?
How do teachers perceive the role of morphological instruction in teaching spelling in the Key Stage Two context?	2. How do you teach spelling?	• Tell me about a typical spelling lesson: What would I see?
	3. What do you understand by the term 'morphology' as it relates to English?	• Have you heard the term before? If yes, where have you heard it, and what did you hear about it? • Refer teacher to definition provided in consent form, "the smallest units of meaning in words such as root words and affixes".
	4. How do you think your understanding of morphology affects your teaching, if at all?	• Would your teaching be different if you didn't know anything about morphology?
What pedagogical practices are employed by teachers when delivering MI in the Key Stage Two context?	5. What teaching strategies do you use when teaching about morphology? AND/OR During the observation, I noticed you did X. Can you talk me through why you did X?	• If I were to walk in and you were teaching a lesson about morphology, what would I see you doing? • When I observed you, was there anything unusual about the lesson I saw? • What would you have done if the children didn't understand a key word?

		• How would you have used morphology to support your teaching?
What are the barriers and facilitators identified by Key Stage Two teachers and school leadership team members in relation to effective MI?	6. What works well when you teach about morphology?	• What do think are the most powerful practices you use at the moment?
	7. What, if anything, would you like to change about your teaching of morphology?	• How could your lessons be improved? If you could wave a magic wand and change something about the way you teach about morphology, what would it be?
	8. Thinking about question 7, if you really wanted to achieve this change, what do you think would support you?	• What do you think are the things that make a positive, sustained improvement more likely to happen?
	9. Still thinking about question 7, what do you think would be a barrier in achieving this change?	• What do you think are the things that make a positive, sustained improvement less likely?

Literacy coordinators/Headteachers

Research question/Rationale	**Interview question**	**Follow up prompts**
Rapport building	1. Why did you decide to specialise in literacy (Literacy coordinator)? OR Why did you decide to take on this research project in your school? (Headteacher)	• What appealed to you about the role? • Is it as you expected it to be? • What appealed to you about the project?
How do teachers and senior leadership staff perceive the role of morphological	2. How is spelling taught in the school?	• Tell me about a typical spelling lesson in Key Stage Two: What would I see?

instruction in teaching spelling in the Key Stage Two context?	3. What do you understand by the term 'morphology' as it relates to English?	• Have you heard the term before? If yes, where have you heard it?
	4. How does morphology affect teaching in the school, if at all?	• What role would morphology play in lessons?
What pedagogical practices are employed by teachers when delivering MI in the Key Stage Two context?	5. What teaching strategies do your staff use when teaching about morphology?	• If I were to walk in and a teacher was delivering a lesson about morphology, what would I see you doing?
What are the barriers and facilitators identified by Key Stage Two teachers and school leadership team members regarding effective MI?	6. What works well in morphology instruction in the school?	• What do you think is essential to your school's continued good practice around teaching morphology?
	7. What, if anything, would you like to change about the teaching of morphology here?	• How could lessons in the school be improved? If you could wave a magic wand and change something about the way spelling is taught, what would it be?
	8. Thinking about question 7, if you really wanted to achieve this change, what do you think would support you in doing this?	• What do you think are the things that make a positive, sustained improvement more likely to happen?
	9. Still thinking about question 7, what do you think would be a barrier in achieving this change?	• What do you think are the things that make a positive, sustained improvement less likely?

Appendix 3: Observation schedule

Domain	No.	Indicator: The teacher	Scores				Total	Examples of good practice: *The teacher …*
			Never	Very little	To some extent	To a great extent		
Clear and structured instructions	1	presents and explains morphological concepts in a clear manner	1	2	3	4		*… activates prior knowledge of learners* *… gives staged instructions*
	2	gives feedback to learners	1	2	3	4		*… makes it clear whether a spelling is right or wrong* *… makes clear why a spelling is right or wrong* *… gives feedback on the way in which learners have arrived at their answer*/spelling
	3	engages all learners in the lesson	1	2	3	4		*… creates learner assignments that stimulate active participation* *… asks questions that stimulate learners to reflect* *… makes sure that learners listen and/or continue working* *… allows for "thinking time" after asking a question* *… invites learners to participate who do not volunteer to do so*
	4	teaches in a well-structured manner	1	2	3	4		*The lesson is built up in terms of clear stages and transitions between stages* *The lesson builds up logically, going from the simple to the complex* *Activities and assignments are connected to the materials presented during the presentation stage* *The lesson offers a good variety of presentation, instruction, controlled practice, free practice, and so forth.*
	5	gives a clear explanation of how to use resources to further morphological awareness	1	2	3	4		*… makes sure that all learners know what to do* *… explains how lesson aims and assignments relate to each other*
						Subtotal 0		*… explains clearly which materials and sources can be used*
Intensive and activating teaching [in short referred to as "activating teaching methods"]	6	offers activities and work forms that stimulate learners to take an active approach	1	2	3	4		*… uses diverse forms of conversation and discussion* *… offers controlled (pre-)practice* *… lets learners work in groups* *… uses Information and Communication Technology (ICT, e.g., digiboard, beamer)* *… employs a variety of instruction strategies* *… varies assignments* *… varies lesson materials* *… uses materials and examples from daily life* *… asks a range of questions*
	7	stimulates the building of self-confidence in spelling in weaker learners	1	2	3	4		*… gives positive feedback on questions from weaker learners* *… displays positive expectations about what weaker learners have to achieve* *… compliments weaker learners on their work* *… acknowledges the contributions made by weaker learners*
	8	stimulates learners to think about morphological structures	1	2	3	4		… models thinking about morphological structures *… teaches strategies for breaking down words into morphemes* *… teaches learners how to consult sources and reference works* to understand word structure *… offers learners checklists/strategies for analysing words morphologically*
	9	asks questions that stimulate learners to reflect on the morphological structure of words	1	2	3	4		*… waits long enough to give all learners the chance to answer a question* *… encourages learners to ask each other questions and explain things to each other* *… asks learners to explain the different steps of their strategy* *… checks regularly whether instructions have been understood* *… asks questions that stimulate reflection and learner feedback* *… checks regularly whether learners understand what the lesson is about*
	10	lets learners think aloud about word structure	1	2	3	4		*… provides the opportunity for learners to think aloud about word spellings* *… asks learners to verbalize solutions*
	11	gives interactive instructions	1	2	3	4		*… promotes interaction between learners* *… promotes interaction between teacher and learners*
	12	Relates the activities to the lesson aims	1	2	3	4		*… informs learners at the start of the lesson about the lesson aims*
						Subtotal 0		*… clarifies the aims of assignments and their learning purpose*

ain	No.	Indicator: The teacher	Scores				Total	Examples of good practice: *The teacher* ...
			Never	Very little	To some extent	To a great extent		
sts instructions learner processing ter-learner differences	13	adjusts instructions to relevant interlearner differences	1	2	3	4		*... puts learners who need little instructions (already) to work* *... gives additional instructions to small groups or individual learners* *... does not simply focus on the average learner*
short referred to as ferentiation"]	14	adjusts the processing of morphology for relevant interlearner differences	1	2	3	4		*... distinguishes between learners in terms of the length or size of tasks* *... allows for flexibility in the time learners get to complete assignments*
						Subtotal 0		*... lets some learners use additional aids and means*
ches learning tegies	15	teaches learners how to analyse and synthesise morphological structures	1	2	3	4		*... teaches learners how to simplify morphologically complex words* *... teaches learners how to synthesise morphemes to form more complex words*
	16	teaches learners to check spellings with morphology	1	2	3	4		*... teaches learners how to assess their solutions* with morphological knowledge ... encourages *learners to predict spellings* *... teaches learners how to relate outcomes to the practical context*
	17	stimulates the application of morphological concepts in different contexts	1	2	3	4		*... describes the conscious application of what has been learned in other (different) learning contexts* *... explains to learners how morphological principles can be applied in different situations* *... relates morphological concepts to previously encountered words*
	18	encourages learners to think critically about spellings	1	2	3	4		*... asks learners to provide explanations for spellings* *... asks learners to justify their opinion using morphology* *... asks learners to provide examples of affixes/base elements*
	19	asks learners to reflect on morphological strategies to spell words	1	2	3	4		*... asks learners to explain the different steps of the strategy they have applied* *... gives an explicit explanation of possible spelling strategies* *... asks learners to expand on the pros and cons of different strategies*
						Subtotal 0		
						Total		

Appendix 4: Recruitment email script

Dear XXXX,

I am a trainee educational psychologist at the University of Exeter. I am writing to offer you a space on a research project that may be of interest to you. I'm looking at how I can improve literacy practices in schools through a focus on the teaching of morphology(i.e., the smallest units of meaning in words, such as <-ed> or <act>). At the moment, there is a substantial body of research arguing that teaching morphology can be effective; this is because morphology is a key organising principle underpinning the English spelling system, and therefore offers unique insights into how the language works. I'm interested in how to improve the teaching of morphology through the delivery of training to teachers.
If you think this project is something you want to take part in, please read the attached letter. You can then contact me to arrange for a meeting/call to discuss how we might proceed. I'm also happy to liaise with another member of staff if you think they would be more appropriate to discuss the project with. If you have any questions or comments, please don't hesitate to contact me.

Yours sincerely,
Liam Parsons,
Trainee Educational Psychologist,
University of Exeter

Appendix 5: Consent forms for teachers and headteachers

Information and Consent Form for teachers

Improving morphological instruction in schools
A research project for implementing changes in pedagogy.

It is a statutory requirement of the national curriculum that primary schools should provide instruction around morphology (i.e., the smallest units of meaning in words such as root words and affixes). The present study aims to explore how morphological instruction (MI) is delivered by teachers, and how it might be improved through the training and coaching of an educational psychologist. The research will subsequently be used to highlight the facilitators and barriers towards effective MI in schools.

To meet these research aims, I wish to:

1. Observe classroom sessions in which you deliver MI. I appreciate that such sessions may not occur discretely, and instead might be interwoven with other curricular content. The observations would be negotiated to occur during a time that is convenient for you. The observations will take 30-45 minutes.
2. Interview you for 45-60 minutes at a time that is convenient to you regarding your perceptions of MI and how it fits into your teaching practice more broadly.

Your involvement in this research is entirely voluntary. Please read the following points before continuing:

Confidentiality
Throughout the study and afterward your participation in this study will remain anonymous, as you will be provided a pseudonym during the data collection.

Right to Withdraw
You have the right to withdraw your involvement at any stage. Should you wish to withdraw your data following completion of the interview, please contact me using the details below, and I will destroy any records/data collected.

Data Protection:
All data will be treated as anonymous and confidential. It will be accessible only to the research team and stored on a password protected computer kept in a locked room. Once the analysis is completed the data will be deleted.

For more information
If you wish to find out more information or ask any further questions about the research, please contact me, Liam Parsons, on lp448@exeter.ac.uk or my supervisors, Caroline Gallagher (c.gallagher@exeter.ac.uk) or Shirley Larkin (s.larkin@exeter.ac.uk). Results from the study may be written up for publication with an aim to better inform the academic literature on how morphological instruction may be improved.

Informed Consent and Next Steps
By signing this form, you will be confirming your understanding and consenting to the following:

1. That you have read and understand the information sheet for the study. You have had the opportunity to consider the information, ask questions, and have these answered satisfactorily.
2. You understand that your participation is voluntary and that you are free to withdraw up until the end of the survey, without giving any reason.
3. You agree to take part in the study.

For teachers to consent:
I have read about the 'Improving morphological instruction in schools: A research project for implementing changes in pedagogy.' research study and understand the basis for our involvement. I consent to take part in this research and understand that I can withdraw from this study at any time:

Name:……

Role:……

Signature:……

Date:……

Information and Consent Form for Headteachers

Improving morphological instruction in schools
A research project for implementing changes in pedagogy.

It is a statutory requirement of the national curriculum that primary schools should provide instruction around morphology (i.e., the smallest units of meaning in words such as root words and affixes). The present study aims to explore how morphological instruction (MI) is delivered by teachers, and how it might be improved through the training and coaching of an educational psychologist. The research will subsequently be used to highlight the facilitators and barriers towards effective MI in schools. If you are interested in taking part in this study, the following steps will occur:

1. I will ask you to identify one Y4 and one Y5 teacher for me to interview and observe.
2. I will come into the school at a mutually agreed convenient date/time agreed with the teachers in question to conduct semi-structured interviews. These interviews will focus on how staff see MI, and what they see as the barriers and facilitators to this kind of instruction. The observations will focus on how MI is taught.
3. Each interview will last between 45-60 minutes. Each observation will last 30-45 minutes.
4. Following this, I will use the data gathered to design a further training program regarding MI in order to improve pedagogical practice. This program will be delivered over multiple sessions which will be agreed with you at a later date.
5. In order to evaluate the effectiveness of the training program, a target group of pupils will be selected from each class. I will conduct focus groups with these children in order to gather their views on MI lessons.

Outcomes

Participation in the study is likely to hold the following benefits for your school:

1. An analysis of your school's current provision for morphological instruction will be provided.
2. A free, bespoke training package to support teachers improving their literacy practices, specifically relating to morphology.
3. Development of staff content knowledge relating to statutory elements of the national curriculum.
4. An opportunity for teachers to reflect on their own practice and work collaboratively with a psychologist.

Participation will likely involve the following costs:

1. Time demands from staff, as interviews and training time will need to be negotiated.

Next Steps

If you wish to continue with the study, please sign below. I will supply a template informed consent sheet to be distributed to EPs. This will contain information about the study and teachers will either need to sign and return the consent form to me prior to the commencement of the interviews and observations.

For more information

If you wish to find out more information or ask any further questions about the research, please contact me, Liam Parsons, on lp448@exeter.ac.uk or my supervisors, Caroline Gallagher (c.gallagher@exeter.ac.uk) or Shirley Larkin (s.larkin@exeter.ac.uk). Results from the study may be written up for publication with an aim to better inform the academic literature on how morphological instruction may be improved.

For headteacher to consent

I have read about the 'Improving morphological instruction in schools: A research project for implementing changes in pedagogy.' research study and understand the basis for our involvement. I consent for my school to take part in this research and understand that I can withdraw from this study at any time:

Name:……

Role:……

Signature:……

Date:……

Appendix 6: Interview excerpt with coding

Interviewer: Okay, so the first question I have, Leah, is why did you decide to take on the project in your school?¶

¶

Leah: Okay, so we have a problem with language for our children, where they don't know very much vocabulary. They have this sort of like a deprivation of vocabulary entering school. Their communication skills aren't very good. Their language skills aren't very good. You notice as you're going through that they don't get read with very frequently at home, if at all, with their parents, and therefore they're not exposed to good vocabulary and language, and it's reflected in their writing and their spelling, it's quite poor.¶

¶

Interviewer: Okay, so that's why you decided to take on the project. Okay, so tell me about spelling, how is it taught in the school?¶

¶

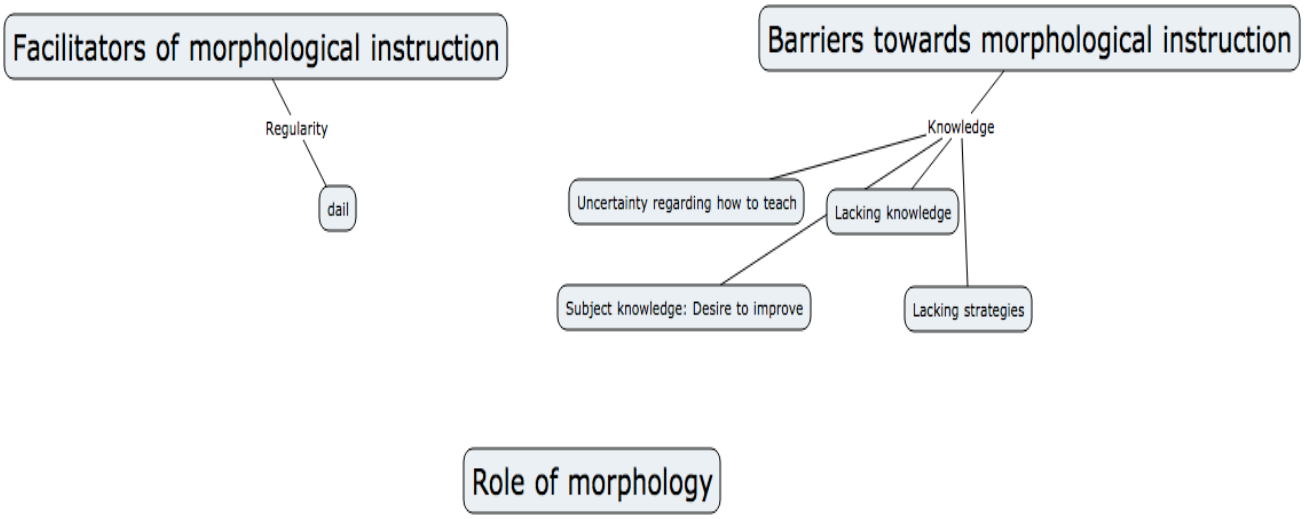
Leah: Okay, so it's taught through the Babcock "No Nonsense Spelling" where they practise on things. But they'll also focus on… If they've done a lesson the day before, and they've marked it, they will look at every book, like overnight, and if there is like some commonality between the spelling that they've got, then they will focus on that in the feedback in the

Parsons, Liam
4-5¶
Low Socioeconomic status and vocabulary deficit¶

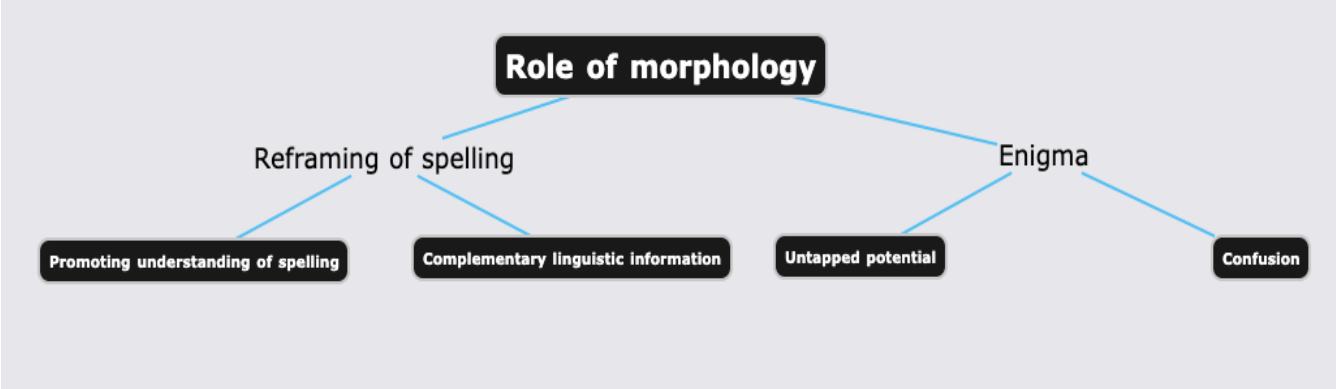
Parsons, Liam
15-16¶
Iterative feedback¶

Parsons, Liam
16-17¶
Commonality between spelling and feedback¶

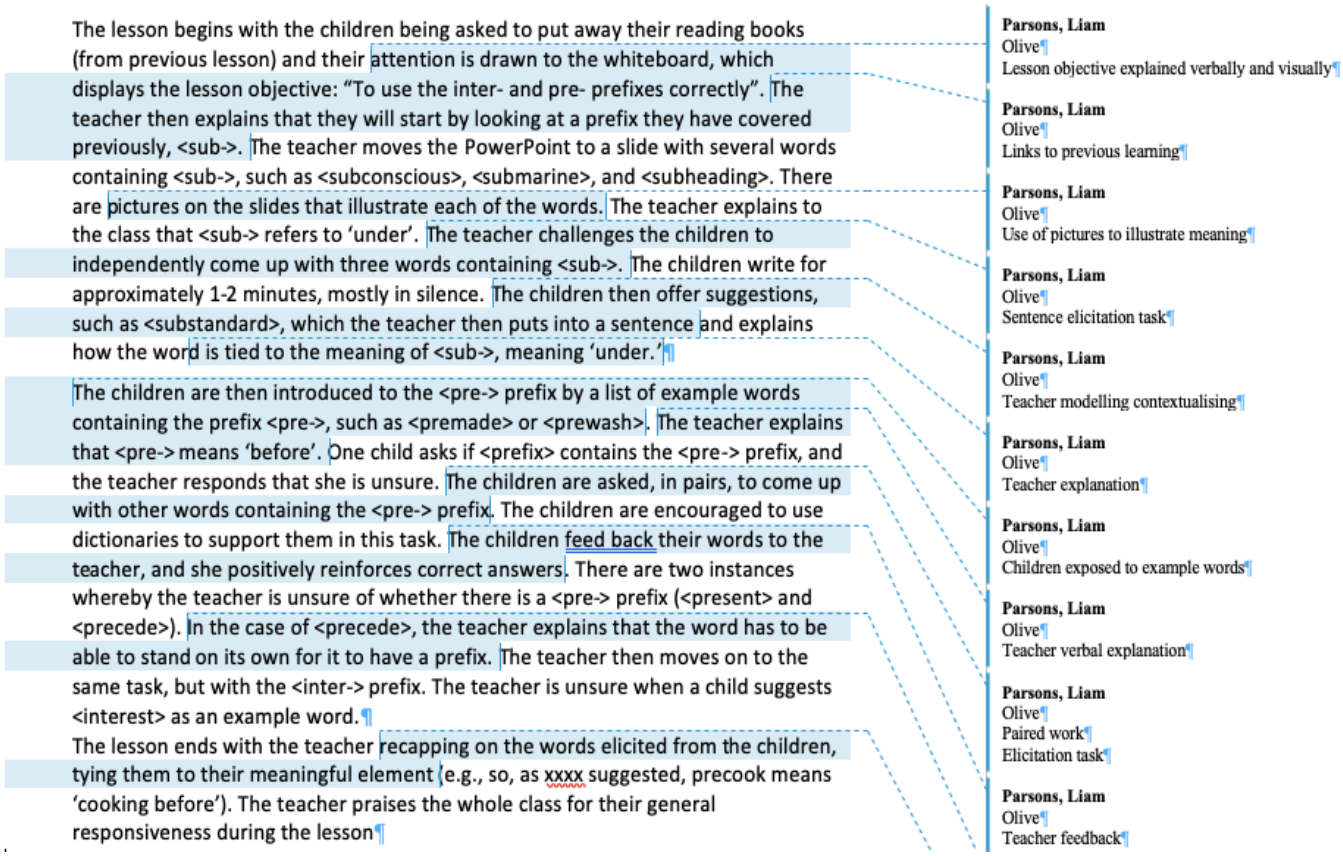
Appendix 7: Early initial thematic map



Appendix 8: Thematic map relating to RQ1



Appendix 9: Excerpt of coding (Olive's lesson)



The lesson begins with the children being asked to put away their reading books (from previous lesson) and their attention is drawn to the whiteboard, which displays the lesson objective: "To use the inter- and pre- prefixes correctly". The teacher then explains that they will start by looking at a prefix they have covered previously, <sub->. The teacher moves the PowerPoint to a slide with several words containing <sub->, such as <subconscious>, <submarine>, and <subheading>. There are pictures on the slides that illustrate each of the words. The teacher explains to the class that <sub-> refers to 'under'. The teacher challenges the children to independently come up with three words containing <sub->. The children write for approximately 1-2 minutes, mostly in silence. The children then offer suggestions, such as <substandard>, which the teacher then puts into a sentence and explains how the word is tied to the meaning of <sub->, meaning 'under.'¶

The children are then introduced to the <pre-> prefix by a list of example words containing the prefix <pre->, such as <premade> or <prewash>. The teacher explains that <pre-> means 'before'. One child asks if <prefix> contains the <pre-> prefix, and the teacher responds that she is unsure. The children are asked, in pairs, to come up with other words containing the <pre-> prefix. The children are encouraged to use dictionaries to support them in this task. The children feed back their words to the teacher, and she positively reinforces correct answers. There are two instances whereby the teacher is unsure of whether there is a <pre-> prefix (<present> and <precede>). In the case of <precede>, the teacher explains that the word has to be able to stand on its own for it to have a prefix. The teacher then moves on to the same task, but with the <inter-> prefix. The teacher is unsure when a child suggests <interest> as an example word.¶

The lesson ends with the teacher recapping on the words elicited from the children, tying them to their meaningful element (e.g., so, as xxxx suggested, precook means 'cooking before'). The teacher praises the whole class for their general responsiveness during the lesson¶

Parsons, Liam
Olive¶
Lesson objective explained verbally and visually¶

Parsons, Liam
Olive¶
Links to previous learning¶

Parsons, Liam
Olive¶
Use of pictures to illustrate meaning¶

Parsons, Liam
Olive¶
Sentence elicitation task¶

Parsons, Liam
Olive¶
Teacher modelling contextualising¶

Parsons, Liam
Olive¶
Teacher explanation¶

Parsons, Liam
Olive¶
Children exposed to example words¶

Parsons, Liam
Olive¶
Teacher verbal explanation¶

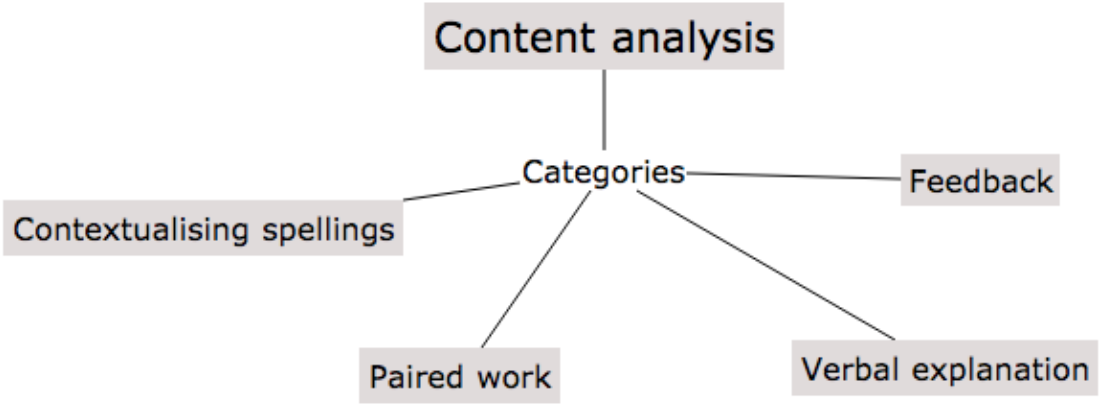
Parsons, Liam
Olive¶
Paired work¶
Elicitation task¶

Parsons, Liam
Olive¶
Teacher feedback¶

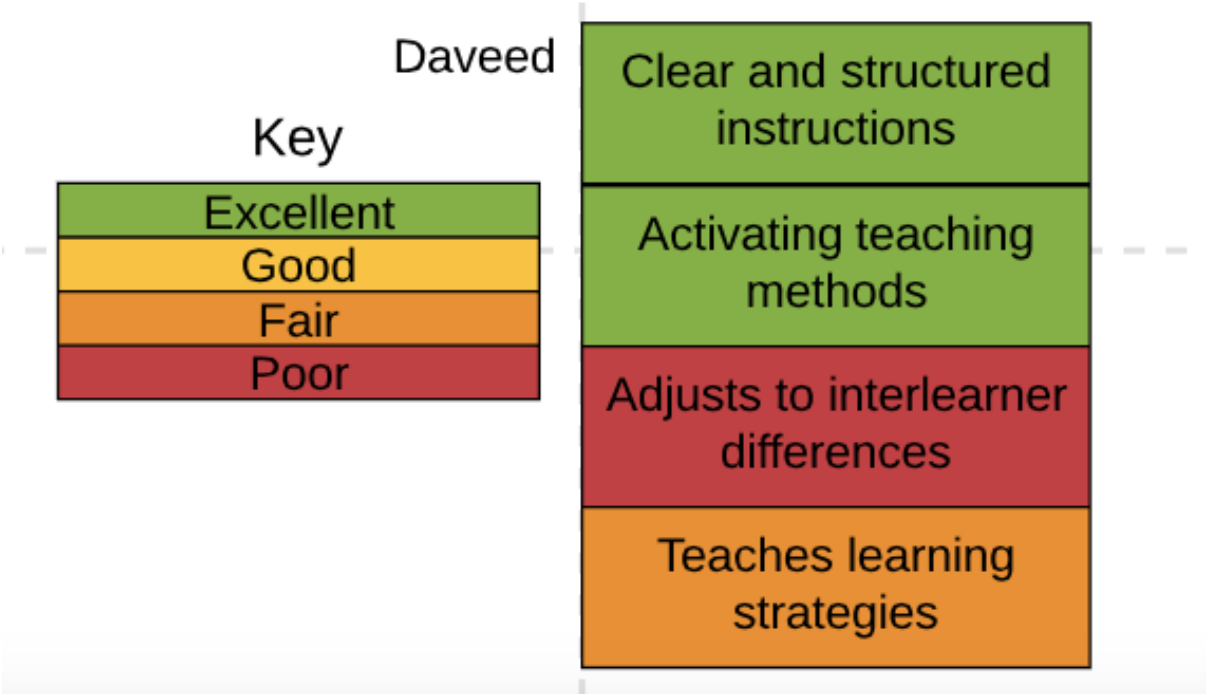
Appendix 10: Table of categories from observational data

Contextualising spellings	***Paired work***	***Verbal explanation***	***Feedback***
Olive Putting words in sentences	Charlemagne Paired work	Charlemagne Explanation	Olive Sharing sentences and feedback
Gilbert Paired work and sentences	Gilbert Social learning	Charlemagne Suffixing linked to phonology - Explanation	Olive Teacher feedback
Daveed Sentence elicitation task	Gilbert Paired work and sentences	Charlemagne Teacher explanation	Gilbert Feedback offered
Daveed Elicitation task	Daveed Paired work	Gilbert Teacher explanation	Gilbert Whole class feedback of spelling words sentences
		Daveed Children exposed to example words	Daveed Teacher feedback
		Daveed Teacher explanation	
		Daveed Teacher explanation	
		Daveed Teacher explanation	
		Olive Rationale of lesson explained	
		Daveed Lesson objective explained	
		Olive Modelling	
		Daveed Teacher modelling	

Appendix 11: Visual representation of categories from content analysis



Appendix 12: Narrative profile example (Daveed)



Appendix 13: Initial session training slides

Improving literacy through teaching morphology

Liam Parsons
Trainee Educational Psychologist
University of Exeter

	a pro	gn to know	ise				
re	co		ite	ion			
mis	dia		ose	is			
			ost	ic	al	ly	

If you could characterise the English spelling system in one word, what would that word be?

- Ridiculous
- Irregular
- Chaotic
- Crazy

What is morphology?

- "A word's morphology is its internal make-up in terms of root words and suffixes or prefixes…"
  - National Curriculum.

e.g., the word <profession> might be represented as:

prefix	root	suffix
pro	fess	ion

Where we are now?

Phase 1	Analyse current morphological instruction
Phase 2	Design training programme
	Deliver training programme. (1) ✓ (2) (3)
	Analyse differences in morphological instruction as a result of training

Objectives of this session

- Develop ***subject knowledge*** around morphological instruction and signpost to further resources.
- Provide ***pedagogical knowledge*** around morphological instruction.

Objectives of this session (SMART)

- By the end of this session, you should be able to:
- Explain how three suffixing rules work.
- Read out word sums.
- Describe three teaching strategies you will employ as a result of this session.

Structure of this session

- Underpinning philosophy (Language, development, cognition)
- Subject knowledge
- Pedagogical knowledge

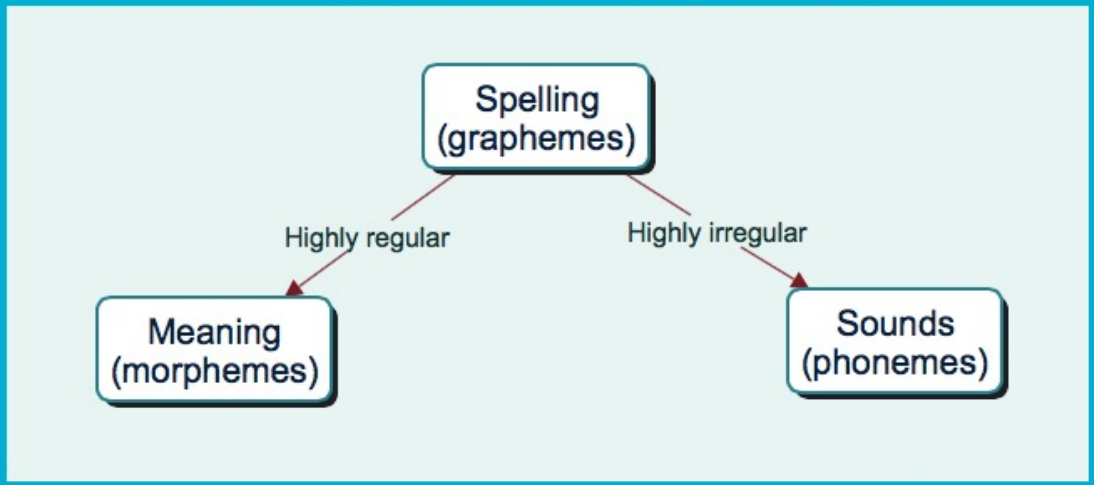
Underpinning philosophy

1. Linguistic insights
2. Developmental insights
3. Cognitive insights

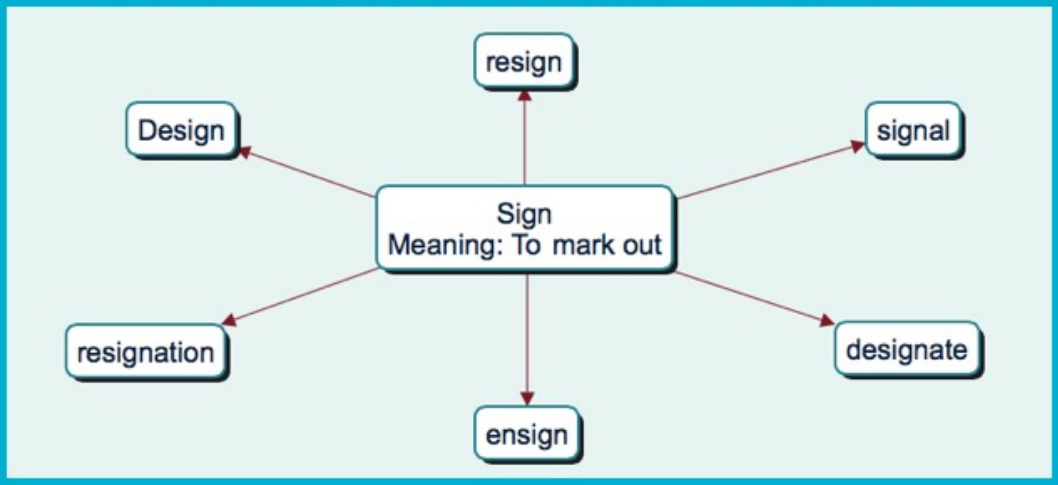
Underpinning philosophy: Language

1. The English language is ***morphophonemic*** (Venezky, 1967; 1999).
2. Morpheme-grapheme correspondences (i.e., letters to meaning) are highly regular level.

Underpinning philosophy: Language



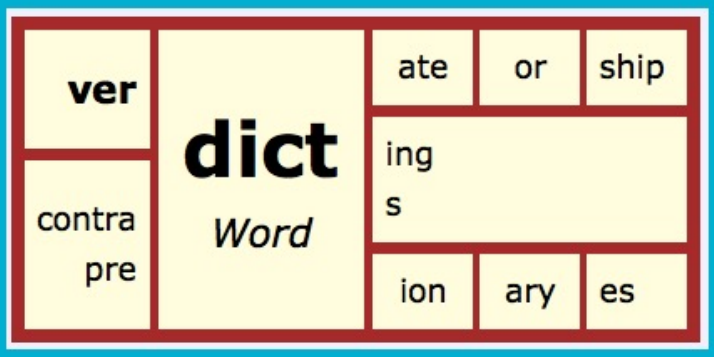
Underpinning philosophy: Language



Underpinning philosophy: Language

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30

Underpinning philosophy: Language



Underpinning philosophy: Language

Morphology ***governs*** phonology.

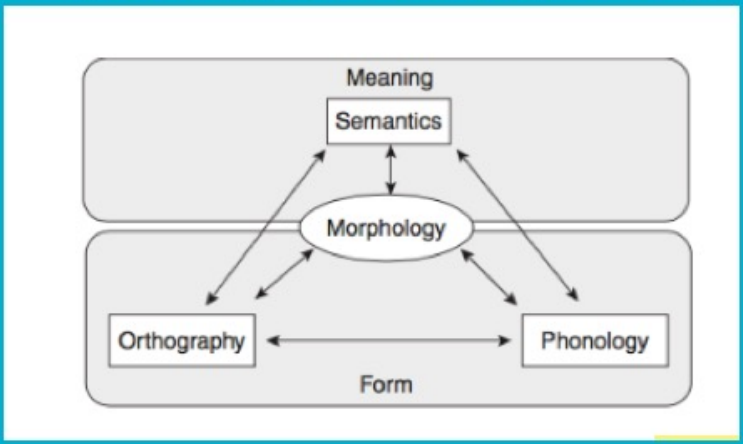
Think of how to pronounce <react> (not 'reekt')

Re + act → react

What about…

- Grasshopper? → Grass + hopper
- Heroic? → hero + ic
- Idea → ide + a
- Preempt → pre + empt
- Sweetheart → sweet + heart

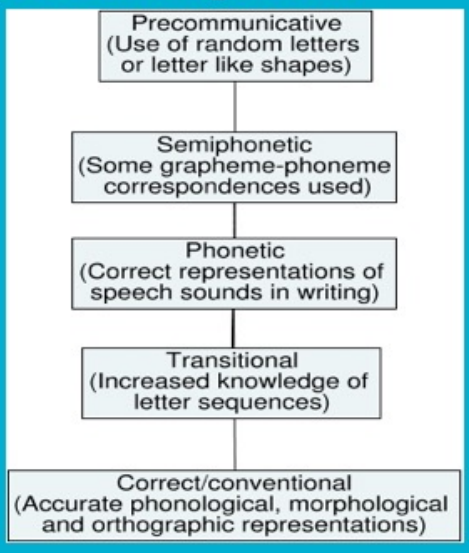
Underpinning philosophy: Language



(Kirby & Bowers, 2018)

Underpinning philosophy: Development

Traditional models: Hierarchical & staged, with phonological awareness being primal (e.g., Gentry, 2000)



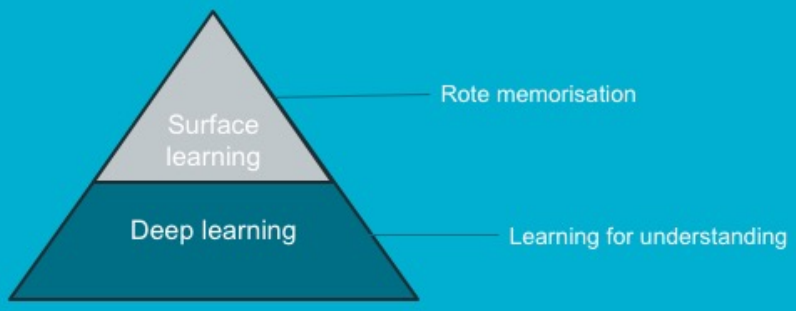
Underpinning philosophy: Development

Alternative theories with empirical support:

1. Triple Word Form Theory (Garcia, Abbot, & Berninger, 2010)
2. Statistical Learning (Deacon & Sparks, 2015)
3. Constructivism (Deacon & Dhooge, 2010)

Underpinning philosophy: Cognitive

1. Structure building framework (Gernsbacher, 1991).
2. 'Deep' learning (Marton & Säljö, 1976): More durable when understood.



Subject knowledge

- Spelling structures
- Suffixing rules
- Bound vs free roots

Four different spelling structures

1. Prefixes
2. Suffixes
3. Connecting Vowels
4. Roots

	Prefix	Suffix	Connecting vowel	Root
Example:	<pre->	<-es>	<-i->	<fix>
In a word:	**pre**fix	suffix**es**	partial	suf**fix**

Connecting vowels

The vowel letters <e>, <i>, <o> and <u> can all function as connecting vowels. Connecting vowels often replace a final, silent <e> in the preceding root or stem.

Some examples:

astr*o*logy part*i*al us*u*al tempest*u*ous vitr*e*ous

And also... A stem

A root with at least one affix attached.

Happy/i + ness → happiness

Hap(p) + y/i + ness → happiness

Suffixing rules

Three important rules:

1. Drop the <e>
2. Change <y> to <i>
3. Double the consonant

Dropping the single, silent <e>

- When you add a vowel suffix to a word ending in a single, silent <e>, drop the <e> from the resulting word.

Example: face/ + ed → faced

He faced the wall.

Changing <y> to <i>

- When adding a suffix to a word root or stem ending in the letter <y>, change the <y> to <i> ***unless*** you have a good reason to keep the <y> inside the new word.

- *Examples: cry/i + ed → cried*
- *dry/i + er →drier*

Changing <y> to <i>

1) If changing a <y> to <i> would make an <i+i> letter string, keep the <y> and add the suffix.

- *Example: fly/i + ing → (*fliing) flying*

2) If the letter before the <y> is a vowel letter, keep the <y> and add the suffix.

- *Example: play+s → plays*

Doubling the final consonant

When adding a vowel suffix to a root or stem under the following circumstances, double the final consonant:

(1) The root or stem ends in a single consonant letter.
(2) There is a single vowel letter before that final single consonant
(3) In a polysyllabic base or stem, the stress in the spoken word falls on the final syllable where the suffix is added.

Example: hop(p) + ed → hopped

Suffixing practice

With the worksheets in front of you, practise the suffixing conventions.

Bound roots and free roots.

Disrupt	Reacting
Revolved	Unfailing
Distantly	Craftily
Receive	Playfully
Confession	Recall
Capturing	Sailor

Bound roots and free roots.

Dis + **rupt**	Re + **act** + ing
Re + **volve/** + ed	Un + **fail** + ing
Dist + ant + ly	**Craft** + i/y + ly
Re + **ceive**	**Play** + ful + ly
Con + **fess** + ion	Re + **call**
Capt + ure	**Sail** + or

Teaching strategies.

-Reading word sums
-Practise using a matrix to lead a lesson.

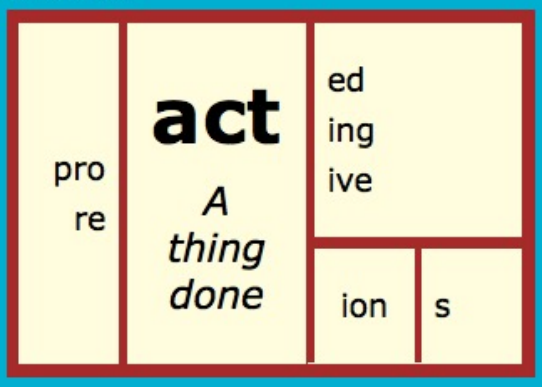
Reading out word sums

in + spect → inspect
Please/ + ure → pleasure
Busy/i + ness → business
Hop(p) + ing → hopping

Why do it like this?

Pedagogical knowledge

-Practising using a matrix.



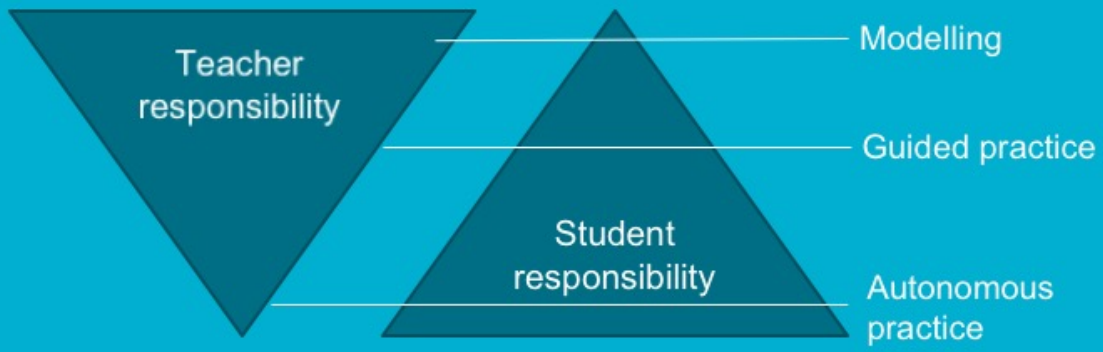
What are the rules for a word matrix?

1. Read from left to right.
2. Make only single, complete words.
3. Only build words you can use in a sentence.
4. Don't 'leapfrog' over a column
5. Watch the joins – sometimes, changes happen during suffixing.

Lesson template (approximately 15 minutes)

1. Present and discuss word matrix
2. Whole class generate word sums
3. Pairs generate word sums
4. Regroup and discuss

Lesson template (approximately 15 minutes)



Explicit instruction model: Fisher & Frey, 2008; Archer & Hughes, 2011

Resources provided

1. 30 word matrices based on Y3+Y4 / Y5 + Y6 National Curriculum statutory words (15 each).
2. Lesson template for matrix-led lessons.
3. 3 suffixing practice worksheets and powerpoints.

Resources

1. Mini Matrix maker: http://www.neilramsden.co.uk/spelling/matrix/temp/index.html
2. Word searcher: http://www.neilramsden.co.uk/spelling/searcher/
3. Etymonline: https://www.etymonline.com

Resources provided

1. How to make your own word matrix.
http://www.neilramsden.co.uk/spelling/matrix/current/guide.html
2. Use Etymonline to triangulate the root.

Questions or comments?

References

- Archer, A. L., & Hughes, C. A. (2011). ***Explicit instruction: Effective and efficient teaching***. New York, NY: The Guilford Press.
- Deacon, S. H., & Dhooge, S. (2010). Developmental stability and changes in the impact of root consistency on children's spelling. ***Reading and Writing***, ***23***(9), 1055–1069. doi:10.1007/s11145-009-9195-5
- Deacon, S. H., & Sparks, E. (2015). Children's spelling development: Theories and evidence. In A. Pollatsek & R. Treiman (Eds.), ***The Oxford handbook of reading*** (pp. 311–325). New York, NY: Oxford University Press.
- Garcia, N., R. Abbott, and V. Berninger. 2010. "Predicting Poor, Average, and Superior Spellers in Grades 1 to 6 from Phonological, Orthographic, and Morphological, Spelling, or Reading Composites." Written Language & Literacy 13(1): 61–98.
- Gentry, J. R. (2000). A retrospective on invented spelling and a look forward. ***The Reading Teacher***, ***54***(2), 318–332.

References

- Gernsbacher, M. A. (1991). Cognitive processes and mechanisms in language comprehension: The structure building framework. In ***Psychology of Learning and Motivation*** (Vol. 27, pp. 217-263). Academic Press.
- Kirby, J., & Bowers, P. (2018). The effect of morphological instruction on vocabulary learning, reading and spelling. In R. Berthiaume, D. Daigle, & A. Desrochers (Eds.), Morphological processing and literacy development: Current issues and research (pp. 217-244). New York and London: Routledge.
- Marton, F., & Säljö, R. (1976). On qualitative differences in learning: I—Outcome and process. ***British journal of educational psychology***, ***46***(1), 4-11.
- Venezky, R. (1967). English orthography: Its graphical structure and its relation to sound. ***Reading Research Quarterly***, ***2***, 75–105.
- Venezky, R. (1999). ***The American way of spelling***. New York: Guilford Press.

Appendix 14: Coaching session PowerPoint slides

Improving literacy through teaching morphology

Liam Parsons
Trainee Educational Psychologist
University of Exeter

	a pro	gn to know	ise				
re	co		ite	ion			
mis	dia		ose	is			
			ost	ic	al	ly	

Where we are now?

Phase 1	Analyse current morphological instruction
Phase 2	Design training programme
	Deliver training programme. (1) (2) ✓ (3)
	Analyse differences in morphological instruction as a result of training

How have things changed?

- 10 minutes to complete questionnaire.

Objectives of this session

- To facilitate goal attainment of teachers
- To provide an opportunity to reflect on practice as a group

Structure of this session: GROUP model

(Brown & Grant, 2010)

Goal	*What do you want to achieve?*
Reality	*What is happening now?*
Options	*What might you do?*
Understand others	*What do others think?*
Perform	*What will you do?*

Goal

- What do you want to achieve this session?
- How would you like to feel afterwards?
- What would be the best use of this time?

Goal

-

Reality

- How have things gone in the past week?
- How have you handled any problems?
- What worked?
- What didn't work?

Reality
-

Options

- What possible options do you have?
- What has worked for you in the past?
- What haven't you tried yet that might
- work?

Options
-

Understanding others

- What is your view on the best options?
- What did you understand by his/her/their view?

Understanding others
-

Perform

- What is the most important thing to do next?
- What can be learnt from this prototype?
- What might get in the way?
- Who will be able to support you?
- How will you feel when this is done?

Perform
-

Goal

- What do you want to achieve this session?
- How would you like to feel afterwards?
- What would be the best use of this time?

Goal
-

Reality

- How have things gone in the past week?
- How have you handled any problems?
- What worked?
- What didn't work?

Reality
-

Options

- What possible options do you have?
- What has worked for you in the past?
- What haven't you tried yet that might
- work?

Options
-

Understanding others

- What is your view on the best options?
- What did you understand by his/her/their view?

Understanding others
-

Perform

- What is the most important thing to do next?
- What can be learnt from this prototype?
- What might get in the way?
- Who will be able to support you?
- How will you feel when this is done?

Perform

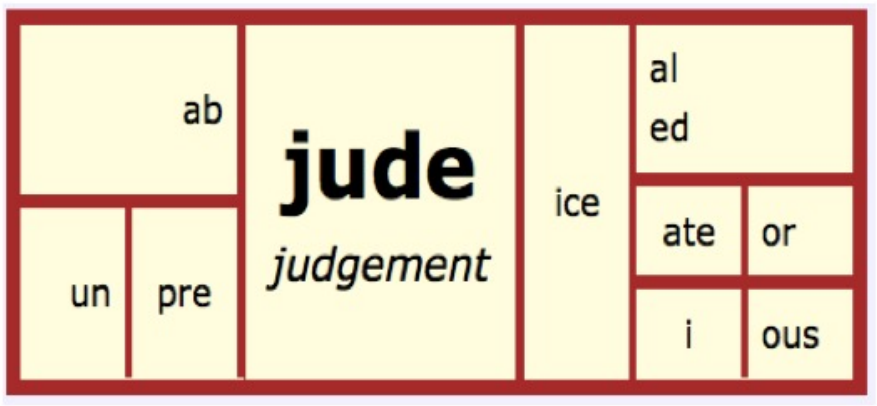
-

Questions or comments?

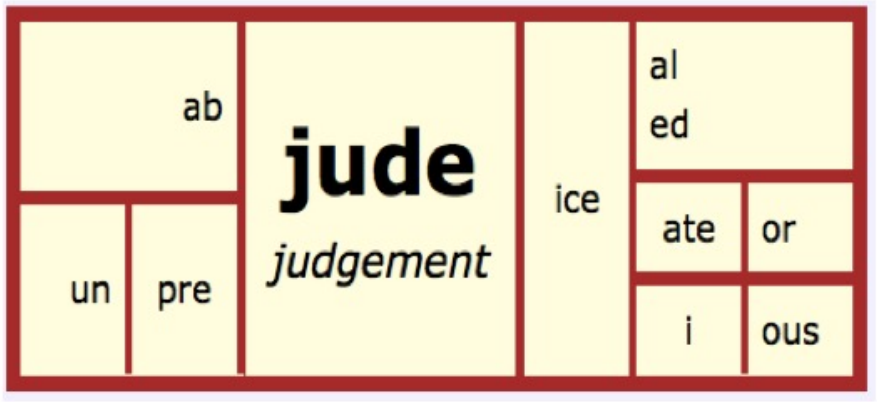
Appendix 15: Lesson PowerPoint example

What word matrix did we look at last time?

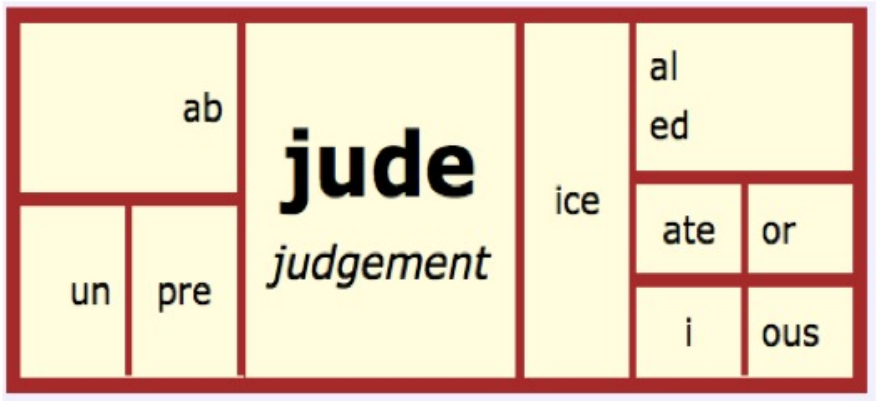
What was the root?
What word sums could you make from the root?
Did you use your ***target word*** in your writing?



Today's matrix



What *words* can you see in this matrix?
Can you use the word in a sentence?



What *word sums* can you see in this matrix?

---

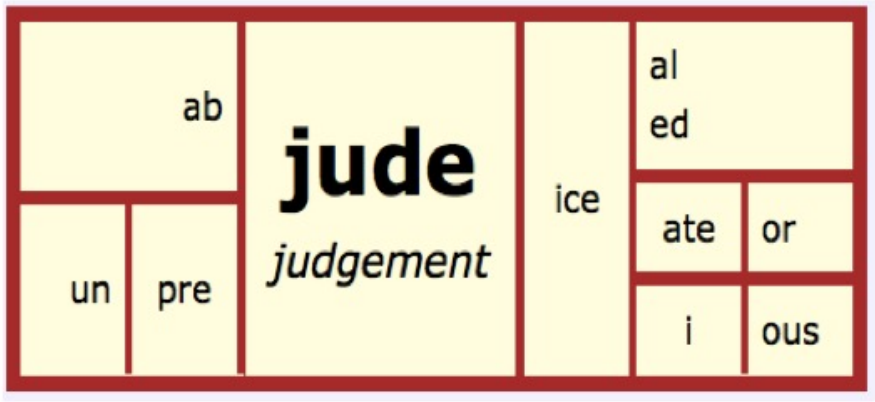
ab		**jude** *judgement*	ice	al ed
un	pre			ate / i or / ous

What *suffixing rules* will you need?

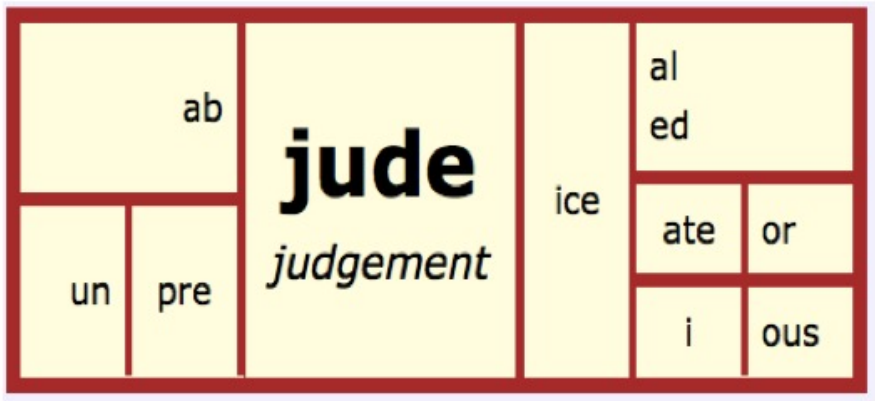
---

ab		**jude** *judgement*	ice	al ed
un	pre			ate / i or / ous

In pairs, generate three more word sums from this matrix.



Test your words with a dictionary.



Let's share the words you have come up with.
What *target word* will you use in your writing this week?

Word sums

With suffixing rules

pre + jude/ + ice/ + i + al --> prejudicial

un + pre + jude/ + ice/ + ed --> unprejudiced

jude/ + ice/ + i + ous --> judicious

ab + jude/ + ice/ + ate/ + or --> adjudicator

From matrix maker

pre + jude + ice + al --> prejudicial

un + pre + jude + ice + ed --> unprejudiced

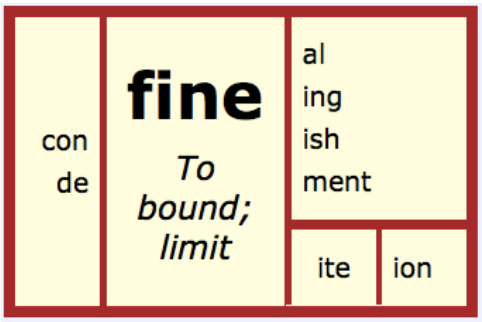
jude + ice + i + ous --> judicious

ab + jude + ice + ate + or --> adjudicator

Appendix 16: Lesson template

Matrix-led lesson

Resources



- PowerPoint with word matrix
- Dictionaries OR access to online resources:

E.g., Word Searcher:

http://www.neilramsden.co.uk/spelling/searcher/

Recap

- Discuss the word matrix from the last session.
  - What was the root?
  - What word sums could you make from the root?
  - Did you use your target word in your writing?

Introduction

- Present the word matrix. Discuss the root element in the matrix display.
  - What words can you see represented in the matrix? (e.g., finite)
  - What word sums can you see? (e.g., fine/ + ite → finite)
  - Can you recall any words you have seen any of these affixes in? (e.g., the <-ion> suffix in <action>).

Word sums (whole class)

- Using the ideas generated from the introduction, record a selection of word sums on the board.
  - Model 'spelling out' the morphemes, encouraging learners to do the same.
  - Discuss any relevant suffixing rules (e.g., drop the <e>; fine/ + al → final)

Word sums (paired work)

- Assign the learners into pairs. Have each pair generate at least three new word sums from the matrix.
  - Learners can test their words through the use of a dictionary or a digital resource (e.g., *<definish> is not a word, which can be verified with a dictionary).
  - Learners should be encouraged to discuss relevant suffixing rules.
  - NOTE: Some pairs may require additional time or resources to complete their word sums

Conclusion

- Pairs to share new word sums with the whole class and feedback provided. Record the word sums on the board.
- Discuss any new suffixing rules that may have emerged.
- Discuss statutory word taken from the National Curriculum (e.g., <definite>). What is the word sum for this word?
  - Ask pupils which words they will be using in their writing during the following week (e.g., <confining>).

Appendix 17: Online resources shared with teachers

- Word searcher: http://www.neilramsden.co.uk/spelling/searcher/
- Etymonline: https://www.etymonline.com
- Mini-matrix maker: http://www.neilramsden.co.uk/spelling/matrix/temp/index.html

Appendix 18: Phase Two interview schedule

Research question/Rationale	**Interview question**	**Follow up prompts**
Rapport building	How have you felt about the programme, generally speaking?	• Have you learned anything particularly interesting?
What changes in MI practice in the classroom occur as a result of the implementation of the further training programme?	How has your teaching changed since engaging with the further training programme?	• Tell me about a typical spelling lesson now: What would I see?
How is the further training in MI enacted, in terms of programme fidelity, use of morphological knowledge, and staff engagement?	How useful did you find the further training programme?	• Did the programme support your teaching?
	How do you now use morphological knowledge in the classroom?	• When and how do you refer to morphemes (e.g., the <-ed> suffix or the <pre-> root element?) in your classroom?
	What parts of the programme did you find most useful?	• Was there any strategy, resource, or idea from the training that has been particularly useful for you?
	What parts of the programme did you find least useful?	• Was there any strategy, resource, or idea from the training that has been less useful for you?
What are the facilitators and barriers to the implementation of a MI further training programme, as perceived by teachers and senior leaders in a KS2 setting?	What has worked well in the training programme?	• What has made it easy for you to make a sustained change to your teaching?
	What has not worked well in the training programme?	• What has made it difficult for you to make a sustained change to your teaching?
	How could the training programme have been improved, in your view?	• Knowing what you know now, how would you improve the training?

Appendix 19: Fidelity checklist

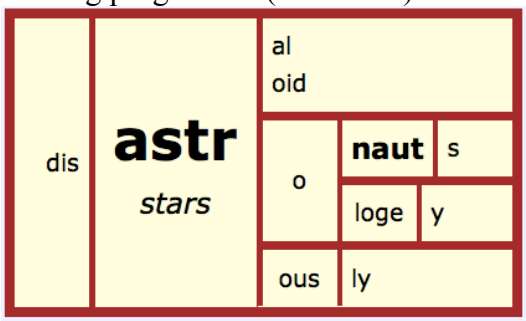
Principle	No.	Indicator	Scores			
			Never	Very little	To some extent	To a great extent
Pedagogical strategies	1	Previously gained knowledge activated	1	2	3	4
	2	Modelling of key processes	1	2	3	4
	3	Active retrieval opportunities offered	1	2	3	4
	4	gives feedback to learners	1	2	3	4
	5	Differentiation	1	2	3	4
	6	Helps students organise knowledge	1	2	3	4
					Subtotal	0
Accurate subject knowledge	7	Accurate use of terms relating to morphology	1	2	3	4
	8	Coherent morphological analysis of words.	1	2	3	4
	9	Coherent morphological synthesis of words.	1	2	3	4
					Subtotal	0

Total	Examples of good practice:
	Teacher refers to previously learned concepts, such as a suffixing rule Teacher discusses recurring morphemes (e.g., "Have we seen the -ing suffix in any other words before?") Teacher models composing word sums Teacher models 'spelling out' morphemes Children compose word sums Children 'spell out' word sums aloud. Teacher positively reinforces correct answers, explaining why they are correct (e.g., great, you doubled the final consonant Teacher explains why wrong answers are incorrect (e.g., You forgot to drop the <e> here) Some children are given additional processing time to give answers Some children are provided with additional supportive resources Uses word sums, matrices, or other resources during the lesson
	Teacher uses terms such as suffix, morpheme, or root accurately Teacher breaks down words into plausible word sums Teacher puts morphemes together while taking account of suffixing rules

Appendix 20: Coaching session questionnaire and rationale

	RQ 1: What changes in morphological instruction practice in the classroom occur as a result of the implementation of the further training programme?	RQ 2: How is the further training in morphological instruction enacted, in terms of programme fidelity, use of morphological knowledge, and staff engagement?	RQ3: What do teachers and senior leaders perceive to be the facilitators and barriers to the implementation of a MI further training programme?
To what extent has your practice changed since the last session?	X		
How has your practice changed?	X		
At the moment, how relevant is morphological knowledge to your teaching practice?		X	
How do you use your morphological knowledge in the classroom, if at all?		X	
How challenging are you finding the implementation of the training in your classroom?		X	
What are you finding challenging about implementing morphological instruction?			X
What are you finding straightforward about implementing morphological instruction?			X
What are the factors that have helped you put the training into practice?			X
What are the factors that have prevented you from putting the training into practice?			X

Appendix 21: Focus Group schedule

Activity/question	Rationale
The sessions will begin with the group of children being invited to rearrange the tables in the room to facilitate discussion. Following this, a game of snap will be conducted with the group.	This will be done to build rapport within the group
Subsequently, the purposes of the research will be explained to the children. Children will be given the opportunity to withdraw from participation and asked to sign Consent forms.	This will be done to meet ethical standards, as well as to clarify the nature of the research for pupils, and thereby facilitate more clear answers.
If children choose to remain in the group, they will be presented with a word matrix and some accompanying word sums, which are recognizable resources from the further training programme (see below).  astr + o + naut + s → astronauts dis + astr + ous + ly → disastrously astr + al → astral	This will be done to familiarize the pupils with the content from the training programme, and thus frame further discussion.
Following this, these questions will be asked:	
What is this (referring to the word matrix)? Have you seen something like this before? When have you seen these kinds of things (word matrices) before?	These questions will facilitate generalised discussion regarding pupils' experiences with morphological instruction
What kinds of things has your teacher done with the word matrices? What kinds of things have you done with the word matrices?	These questions will elicit data regarding the manner in which morphological instruction is enacted in the classroom.
What do you think about the word matrices and word sums?	This question will elicit general discussion regarding how pupils perceive morphological instruction.

How has your spelling changed since you started using the word sums and word matrices? Has it gotten better or has it gotten worse? Why do you think that?	These questions will elicit data regarding the impact pupils perceive morphological instruction to have had on their spelling.
What do you think 'morphology' means? How would you explain it to another child?	This question will elicit data regarding how pupils understand the role of morphology in language.

Appendix 22: Child questionnaire and rationale

What do you think about learning morphology at school?

Please read each statement carefully. Circle a number from 1 (Not true at all) to 10 (totally true). Take your time and answer each question honestly. There are no wrong answers.

My school is: ……..

My year group is: ……..

Example: I know what year group I am in.									
1	2	3	4	5	6	7	8	9	10
Not true at all				Kind of true					Totally true

Example: I can lift an elephant.									
1	2	3	4	5	6	7	8	9	10
Not true at all				Kind of true					Totally true

I need lots of help during my morphology lessons.									
1	2	3	4	5	6	7	8	9	10
Not true at all				Kind of true					Totally true

I don't like the lessons about morphology.									
1	2	3	4	5	6	7	8	9	10
Not true at all				Kind of true					Totally true

When I get stuck during a morphology lesson, I can usually work out what to do next.									
1	2	3	4	5	6	7	8	9	10
Not true at all				Kind of true					Totally true

Learning about morphology makes me better at spelling.									
1	2	3	4	5	6	7	8	9	10
Not true at all				Kind of true					Totally true

I find it very hard to learn morphology.									
1	2	3	4	5	6	7	8	9	10
Not true at all				Kind of true					Totally true

Learning about morphology helps me to understand words.									
1	2	3	4	5	6	7	8	9	10
Not true at all				Kind of true					Totally true

I usually don't know what I have to do during morphology lessons.									
1	2	3	4	5	6	7	8	9	10
Not true at all				Kind of true					Totally true

Morphology does not help me with my reading									
1	2	3	4	5	6	7	8	9	10
Not true at all				Kind of true					Totally true

Morphology lessons are fun.									
1	2	3	4	5	6	7	8	9	10
Not true at all				Kind of true					Totally true

I find it easy to focus during morphology lessons.									
1	2	3	4	5	6	7	8	9	10
Not true at all				Kind of true					Totally true

I usually complete my work during morphology lessons.									
1	2	3	4	5	6	7	8	9	10
Not true at all				Kind of true					Totally true

Morphology does not help me with my writing.									
1	2	3	4	5	6	7	8	9	10
Not true at all				Kind of true					Totally true

Appendix 23: Multi-morphemic spelling words task

Directions*: Now we're going to write some words. I want you to listen to me as I say each word, say it in a sentence, and then say it again. Then, I want you to write the word on your paper. Do your best to spell the word. It's ok if you're not sure how to spell the word; just write it the best you can. If you need me to repeat the word, I will repeat it 1 time. Ok, put your pencil at #1 on your paper, right below the star. Now, listen! (second time: Put your pencil on the line under the happy face)*

When presenting each spelling words, please use the following format:

Say the target word alone; say the sentence containing the target word; say the target word alone again.

1. Dresses The *dresses* in that store are pretty.
2. Softness The *softness* of my sweater made me happy.
3. Sweeter The red apple tastes *sweeter* than the green apple.
4. Teller The *teller* at the bank gave me money.
5. Sadly The mom *sadly* turned around to say goodbye.
6. Uneasy Singing in front of my class makes me feel *uneasy*.
7. Thinker Eating breakfast helps me be a good *thinker*.
8. Boats There were lots of *boats* in the water.
9. Discontent He feels *discontent* when he doesn't finish his homework.
10. Brightly The star shined *brightly* in the sky.
11. Reopen Please *reopen* my bottle.
12. Fastest That tall boy was the *fastest* runner.
13. Bussed The kids were *bussed* to school.
14. Liked I *liked* the boy until he was mean to me.
15. Unfit She went to the gym because she was *unfit*.
16. Plainest Vanilla is the *plainest* ice cream flavor.
17. Sleepy I am very *sleepy* when I stay up late.
18. Driving He is *driving* us to school.
19. Moldy/Mouldy The bathtub is *moldy/mouldy*.
20. Darker My new curtains make my room *darker*.
21. Stopping She is *stopping* the boy from crossing the street.
22. Washes Mary *washes* her car once a month.
23. Illness His *illness* caused him to miss school.
24. Refill Please *refill* the cookie jar.

25. Reads My mom *reads* to me every night.

26. Distaste I have a *distaste* for broccoli.

Appendix 24: Ethical approval certificate

UNIVERSITY OF EXETER

GRADUATE SCHOOL OF EDUCATION

St Luke's Campus
Heavitree Road
Exeter UK EX1 2LU

http://socialsciences.exeter.ac.uk/education/

CERTIFICATE OF ETHICAL APPROVAL

Title of Project: Morphological instruction in primary school: Implementing changes in pedagogical practice

Researcher(s) name: Liam Parsons

Supervisor(s): Dr Shirley Larkin & Dr Caroline Gallagher

This project has been approved for the period

From: 23/03/2019
To: 30/09/2020

Ethics Committee approval reference: D1819-037

Signature: Date: 22/02/2019
(Professor Dongbo Zhang, Graduate School of Education Ethics Officer)

Appendix 25: Information and consent form for carers

Information and Consent Form

Please return to your class teacher by XXXXX

Why is this research taking place?

The aim of this research is to improve the teaching of morphology (e.g., teaching the suffix <-ed> in words like <looked> or <called>) for primary school pupils. The teaching of morphology is likely to improve spelling and reading skills.

What does the research involve?

I am conducting training and coaching sessions with your child's class teacher in order to improve the teaching of morphology. With your consent, I will also be carrying out an assessment of your child's morphological awareness, their ability to use morphology to spell correctly. Additionally, I would like to interview a small group of children so that I might get a better understanding of how they have experienced the morphological instruction, and how this has improved their learning.

Will my child's education be affected?

Should you choose to take part, your child will complete a short spelling assessment called the "Spelling Multimorphemic Words task". Spelling assessments are common in classrooms, and dictated tasks are recommended in the national curriculum. On request, the results of your child's assessment can be emailed to you or given to you as a hard copy. If you would like a copy of these results, please contact me using the email address provided below, or speak with your child's teacher. Additionally, should your child be selected to participate in the small interview group, they will be asked to discuss their experiences in morphology lessons. I will support them to express their views on this. The children will play a warm up game, and take part in an open discussion about morphology. Altogether, this will last up to 45 minutes, and your child will be reminded that they may cease the interview at any point.

How many children will be taking part?

All children in the class will be assessed, providing their parents consent to this. Five children will take part in the small interview groups.

What if I don't want my child to be involved in the assessment?

If you do not wish your child to participate in the study, or if they choose to opt out of the assessment, they will be asked to read a book for ten minutes while the spelling test is delivered to the other children. No child will be made to participate in the small interview group.

Confidentiality

Throughout the study, your child's participation will remain anonymous, as well as any person they mention, unless they disclose any information which represents a safeguarding concern. If any information is disclosed that suggests your child may be at risk of harm, this information will be relayed to the designated safeguarding lead in the school. With the exception of comments that imply safeguarding concerns, all statements recorded will be held in strict confidence and only accessible to myself and my supervisors. Your data will be stored on a password protected computer kept in a locked room. Once the analysis is completed, the data will be deleted.

For more information

If you wish to find out more information, ask any further questions about the research, or wish for a copy of your child's assessment results, please contact me, Liam Parsons, on lp448@exeter.ac.uk or my supervisors, Dr Caroline Gallagher (c.gallagher@exeter.ac.uk) or Dr Shirley Larkin (s.larkin@exeter.ac.uk). Results from the study may be written up for publication with an aim to better inform the academic literature on how morphological instruction may be improved.

Right to Withdraw

You have the right to withdraw your child's involvement at any stage. Should you wish to withdraw their data following completion of the assessment, please contact me using the details below, and I will destroy any records/data collected.

Informed Consent and Next Steps

Once I have received your confirmation of understanding what is asked of you and your informed consent to participate, I will arrange for the assessment of morphological awareness to occur.

1. That you have read and understand the information sheet for the study. You have had the opportunity to consider the information and make an informed decision.
2. You understand that your child's participation is voluntary and that you are free to withdraw up until the end of the survey, without giving any reason.
3. You agree for your child to take part in the study.

Parent's name:……

Child's name:……

Signature:……

Date:……

Appendix 26: Consent form for children

CONSENT FORM

My name is Liam, and I am running a study about learning morphology (suffixes such as <-ed> or prefixes such as <re->, etc). I would like to talk to you so that I can learn what you think about it.

I have spoken to your parents about this, and they have agreed to let you talk to me. But it is important that you agree too. If you do agree to help me, you will be asked to talk to me about learning morphology. There will be some other children helping me too, and I would like us all to talk about it together. You do not have to join this study. It is up to you. You can say 'okay' now. And you can also say 'no.' If you say 'okay,' you can change your mind later. If you want to stop, then all you have to do is tell me you want to stop. No one will be mad at you if you don't want to be in the study. No one will be mad if you want to leave the study part of the way through.

If you want to be part of the study, please write your name and the date below.

Name:……
……

Date:……