Using corpus methods to investigate classroom interaction and teacher discourse in special educational needs (SEN) classrooms: an investigation of methodological possibilities

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Abstract

This thesis uses corpus methods to investigate classroom interaction in SEN classrooms. Typically research in the field of teacher talk takes a pedagogic or psychological perspective and has therefore utilised experimental or observational data on a much smaller scale than this corpus-based analysis. The advantages of such a corpus analysis is considered, including the benefits of a larger and empirical data set and automated analyses. The SEN Classrooms Corpus created for purpose of this study amounts to 52,813 words of spoken teacher-pupil interaction. Data comes from 16 lessons from two classes with two different teachers in a single SEN school over a two-year period. All interactions involve at least one teacher and groups of between three and nine pupils engaging in literacy classes with a focus upon shared reading.

As features of teacher discourse were often only vaguely defined by function in the relevant literature, a methodological process was adapted to translate these into automatic corpus queries. First, definitions were combined with definitions from contemporary English grammars in order to provide a linguistic form for each teacher discourse feature. These forms were then translated into CQP advanced syntax queries, allowing us to retrieval examples of each feature from the SEN Classrooms Corpus. Analyses in this thesis focuses upon the four most common features of teacher discourse as identified in the literature and based upon the pilot study (Smith, 2015): questions, directives, augmentative and alternative communication and feedback. Following the creation of queries, corpus methods including frequency, distribution and concordancing were used in order to assess both how often and in what contexts individual features were used within the SEN Classrooms Corpus. This, in turn, allows us to investigate exactly how teacher discourse occurs within these classrooms.

This thesis provides three major conclusions regarding the use of corpus methods to assess teacher scaffolding in SEN classrooms. First, it demonstrates how a corpus of such interactive data might be created, including important methodological considerations. Second, it provides a framework by which we might move from ill-defined features in literature to complete corpus queries that aid automated corpus analyses. Finally, the use of this unique corpus and this set of methods and queries allows us to investigate how different features of teacher discourse are used by teachers within the SEN Classrooms Corpus, including whether these uses confirm or challenge the findings of previous empirical research.

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Acknowledgements

If I have seen further it is by standing on the shoulders of giants (Sir Isaac Newton)

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Chapter 1: Introduction

1.1. An overview of the thesis

This thesis uses corpus methods to investigate classroom in special educational needs (SEN) classrooms with a focus on teacher discourse. Special educational needs (SEN) – sometimes labelled special educational needs and disability (SEND) – is, according to the government's SEN code of practice (2014), applied to a child or young person "if they have a learning difficulty or disability which calls for special educational provision to be made". According to these guidelines, a child is considered to have a learning disability if they have either a greater difficulty in learning than the majority of others of the same age or a disability which prevents or hinders them from making use of facilities of a kind generally provided for others of the same age in mainstream schools. Government statistics from the Department of Education Special Education Needs in England 2018 report show that, in January 2018, 14.6% of pupils in England were considered to have SEN. This figure is increasingly annually. Of these children, 44.2% attended state-funded special schools in 2018, with an additional 1.4% of these children attending non-maintained special schools. Despite the fact that approximately 46% of children with SEN attend special schools, the research on children with SEN does not typically consider the classroom context and interactions. Instead, it is designed to examine individual children's performance on tasks outside of the classroom, in experimental settings. This study aims to rectify this, by examining children with SEN and their teachers in classroom interactions.

This thesis takes a socio-interactionist approach, considering the important of interaction in SEN classrooms. Research described in more detail in Chapter 2 has

shown that certain interactive elements of teacher discourse promote the improvement of a number of skills which children with special educational needs are lacking, including content knowledge, comprehension and engagement. Typically research in the field of teacher discourse takes a pedagogic or psychological perspective and has therefore utilised experimental or observational data on a much smaller scale than this corpus-based analysis. A key element of this thesis is to explore the application of corpus techniques to the study of small-group teacher-led interactions in the SEN classroom. The advantages of such a corpus analysis is considered in this thesis, including the benefits of a larger and empirical data set and automated analyses.

1.2. Research aims

Having justified the need for a corpus study of teacher discourse and classroom interaction in SEN classrooms, this thesis addresses three key research aims:

(1) To collect a bespoke corpus of SEN classroom interactions
(2) To create a methodology to investigate features of teacher discourse in the corpus created in (1)
(3) To use data from (2) to explore the use of different teacher discourse features in the SEN Classrooms Corpus

The first research aim is to create an SEN Classrooms Corpus of teacher-pupil interactions during shared reading activities. This will include outlining the design, data collection and corpus construction processes used. The second research aim is to create a methodology by which we could move from definitions of features in the teacher discourse literature, often found to be too vague, to precise and automated corpus search queries definitions that allow full corpus searches. The third research

aim is to use the methods created to explore teacher discourse in the corpus created for this thesis. This will allow the analysis of how certain elements of teacher discourse work in practice in the SEN classroom.

1.3. Structure of the thesis

The structure of this thesis is as follows. Chapter 2 presents a review of existing literature on teacher discourse, with a focus on scaffolding and initiation-response-feedback sequences, and also on its application in SEN classrooms. Chapters 3 and 4 outline the methodological background of this thesis. Chapter 3 explains the data collection and corpus creation methods used to construct the SEN Classrooms Corpus. Chapter 4 provides methodological background to the analysis, including the selection of features of teacher discourse for analysis and the methods by which these will be analysed. The following four chapters (Chapters 5, 6, 7, and 8) present analyses of specific features of teacher discourse, very similar to a case study format. Each chapter provides a review of the teacher discourse literature on the particular feature under examination, with definition as available, and focussing, where possible, upon the function of this feature in classroom interaction. The methodological process of feature and query definition is then outlined. In each chapter, I first provide a linguistic definition of the feature based upon contemporary grammars, before this is translated into an advanced CQP syntax query, which is then error tested and if necessary altered accordingly. Each chapter then presents a full analysis of the results of these queries and a discussion of their implications. The one exception to this structure is Chapter 8 on teacher feedback. Linguistic definitions of feedback were scarce, which meant that it was difficult to create a query to search for instances of teacher feedback. Thus, within Chapter 8, manual analysis of a sample of the corpus informs a sample corpus analysis of key words. This was then scaled up to the corpus

as a whole. Chapter 9 provides the conclusion to this thesis, including a discussion of the findings and their methodological and pedagogic implications. Here the successes of the study will be summarised, and I shall consider whether the research aims were met. A summary of the limitations of this study then follows, alongside a discussion of areas of future work this study might inspire.

Chapter 2: Review of Literature on Teacher Discourse and Classroom Interaction

2.1. Introduction

Teacher discourse and classrooms interaction have been widely researched since the 1970s, with a growing interest in teacher-pupil interaction and the affect this has upon children's development. Mercer and Dawes (2014) traced the history of research of talk between teachers and students, noting that this field of research developed in the early 1970s when an interest in the social and cognitive functions of language in social interaction was rising in many fields, including psychology and linguistics. Mercer and Dawes (2014:431) explained that this led to the emergence of a new kind of study called ethnomethodology, which focused on social interaction at a micro-level and brought a new approach to analysing talk through conversation analysis. During this time Mercer and Dawes (2014) noted that the work of Soviet psychologist Lev Vygotsky became widely available through translation and interpretation at this time, which led to his socio-cultural perspective having a significant influence on educational research. In particular, Vygotsky's consideration of the relationship between language and cognition and the importance of interaction in development became widely recognised. This new interest in interaction in the classroom led researchers to begin exploring the structures and functions of classroom talk, examples of which include the Vygotskian notion of scaffolding and the initiation-response-feedback unit of interactional exchange introduced by Sinclair and Coulthard (Mercer and Dawes, 2014:432). This early work, Mercer and Dawes (2014:434) explained, gained international and interdisciplinary interest, which inspired the interest of policy makers in the study of classroom talk. Of particular

interest to this thesis are more recent methodological developments outlined by Mercer and Dawes (2014) whereby software have been created to assist the qualitative and quantitative analysis of talk. Most notably, this includes the creation of large electronic databased and concordancers. Mercer and Dawes (2014) however failed to identify the true potential of corpus-based methodologies, which will to be addressed in this thesis. Mercer and Dawes (2014) closed their review by stressing the consensus amongst researchers that teachers using repeated strategies could lead to improvements in student participation and outcomes and hence explained that scholars agree there are key educational implications for this kind of research.

The remainder of this chapter shall be used to introduce two of the most prominent theories of classroom interaction and teacher discourse; scaffolding and initiation-response-feedback sequences. Both concepts stem from a socio-interactionist approach to learning, where interaction is stressed as a key factor in children's development and where learning is done through participation (Waring, 2008:577). These ideas are based largely upon Vygotsky's socio-cultural theory, which explores the role of social interaction in learning processes and in turn in development. Research on scaffolding and initiation-response-feedback shall be reviewed in term in order to give insights into teacher discourse more generally and hence giving some background for the analyses that will follow. At the end of this chapter, research into teacher discourse in SEN environments will also be reviewed in order to consider classroom interaction in these specific settings.

2.2. Scaffolding

Scaffolding is a process involved in learning, in which supports from a more knowledgeable source allow a less knowledgeable individual to develop more

complex cognitive skills and achieve a higher level of performance than they would be able to attain independently. Hammond (2001) gave a good initial definition of the scaffolding metaphor:

> Scaffolding, as most will be aware, is placed around the outside of new buildings to allow builders access to the emerging structure as it rises from the ground. Once the building is able to support itself, the builder removes the scaffolding. The metaphor of scaffolding has been widely used in recent years to argue that, in the same way that builders provide essential but temporary support, teachers need to provide temporary supporting structures that will assist learners to develop new understandings, new concepts, and new abilities. As the learner develops control of these, so teachers need to withdraw that support, only to provide further support for extended or new tasks, understandings and concepts. (pp.13-14)

Early work on scaffolding took a theoretical standpoint, considering processes of learning as opposed to direct and implicit teaching methods. The notion of scaffolding was first introduced – albeit not labelled explicitly as such – by Vygotsky in the early 1930s, who explored some of the central and foundational themes of scaffolding.. Vygotsky's work on the *zone of proximal development* (ZPD) in *Mind in Society* became the basis for much later research, both into theories of learning and subsequently on scaffolding as used in classroom settings (Langer and Applebee, 1986; Reid, 1998; Stone, 1998). Vygotsky (1978:89) suggested that learning should be oriented towards the zone of proximal development (ZPD), which he defined as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers".

Thus, the ZPD is a continuum between two levels of development. Vygotsky (1978) argued, then, that learning should promote the functions that are in the course of maturing in the child, rather than those that the child already has within their repertoire. Learning, Vygotsky argued, is most effective when placed within the ZPD and, when this happens, Vygotsky (1978:89) claimed this "enables us to propound a new formula, namely that the only 'good learning"' is that which is in advance of development."

Vygotsky argued that it is particularly important that adults working with children should work within the ZPD, because this strikes a balance between independence and assistance. That is, scaffolding within this zone allows children to experience models of adult support, and the interaction with these adult models allows them to practice the functions they do not yet possess. Development, therefore, involves supportive interaction between expert and learner, working within the ZPD and building on what the child currently knows, and aiming for what they could potentially achieve. Thus, Vygotsky (1978) highlighted the importance of the *interaction* with the more knowledgeable individual. This expert provides the learner with experience of the functions that they cannot achieve or conceive independently. The expert supports the child's understanding of these functions until they become able to complete these without assistance, at which point the adult's support is gradually removed. It is the interaction with the expert, therefore, that is key to development, as the functions do not exist in the child's cognitive repertoire until the expert demonstrates and facilitates their learning of them.

The notion of the ZPD introduced by Vygotsky suggested two key ideas in theory of learning. First, Vygotsky established that learning is most effective when involving the space between the child's current developmental level and their

potential level of achievement (the ZPD). Second, Vygotsky suggested that work in this ZPD needs a more knowledgeable other to provide the supports and model required for the child to experience and eventually develop successively more advanced cognitive developmental functions. The notion of the ZPD can be used to understand how, within later conceptions of scaffolded instruction, children's knowledge is built upon by expert supports which involve a balance between the learner's current developmental level and their potential level (Quintana et al., 2004; Reid, 1998; Reiser, 2004; Rosenshine and Meister, 2002; Sherin et al., 2004; Stone, 1998; Winn, 1992).

It must be noted that more recently there have some critiques of the links between Vygotsky's concept of the ZPD and scaffolding. For example, Smagorinsky (2018b:254) argued that Vygotsky's description of "learning with guidance today and doing independently tomorrow" has been understood and translated literally, not metaphorically. This misunderstanding, Smagorinsky (2018b:253) argued, leads educators to "focus on short-term literacy-learning gains" whereas based on close reading of Vygotsky's wider scholarship they argue that "if an idea does not involve long-term human development in cultural contexts, then Vygotsky need not be recruited to make the point". This led to Smagorinsky (2018a:74) reconceiving the zone of proximal development in the form of a "more accurate" translation as the "zone of next development", which in turn stressed that the goal is to "engage in a long term process of acculturation to communication practices that serve… to mediate development toward socially-valued, culturally-mediated conceptual ends". This moves from consider the zone of proximal development as short-term space for interaction, to considering it a long-term developmental process.

After Vygotsky's work was translated into English in 1978, his central ideas were taken up by scholars such as Bruner (1979) who first coined the term *scaffolding*. Bruner (1975; 1979) focussed upon how parents' interactions with children are often structured in a way that promotes the acquisition and development of social skills and language. Bruner built upon Vygotsky's notion of the ZPD to look at how parents and later tutors guide children through interactions – both literal interactions in the communicative sense and metaphorical interactions in the sense of supporting the interaction and the child's subsequent development. Bruner (1979) argued that these interactions where an adult provides support were key for learning to take place. This idea clearly reflected Vygotsky's (1978) ideas, with adults working between what a child can achieve independently and what the child can achieve with adult supports.

The first experimental study of scaffolding was conducted by Bruner, Wood and colleagues, who examined 3-5 year olds' performance on a task where a tutor was available to provide assistance only when the child got into difficulty. Wood et al. (1976) found that the older children required less help and worked unassisted more. They also noted that the type of help children required was different, with the youngest requiring most stimulation and support from adults and the oldest only tending to need help when having trouble. The authors concluded that these different types of support needed show how scaffolding is tailored to an individual's current ability level, with supports being removed as children become more independent and capable. As a result, Wood et al. (1976) used the term *scaffolding* to describe the support provided by an expert in interaction with a less knowledgeable pupil, allowing the pupil to conceptualise and achieve goals beyond their unassisted ability and efforts (Wood et al., 1976). Further, Wood et al. (1976:90) noted that scaffolding

was particularly important as it allows a child to "achieve a goal which would be beyond his unassisted efforts…". Thus, through a tutor working within a child's ZPD, scaffolding allowed a child to progress their skills, rather than remaining static as per the methods that simply utilise the current developmental levels that Vygotsky (1978) criticised.

Importantly, Wood et al. (1976:98) also provided the first descriptions of specifically *how* scaffolding occurred between tutors and learners, through listing "several functions of tutoring" within the scaffolding process, based upon observations from their study. This marked a first move from scaffolding seen as a theory of learning to scaffolding being seen as a set of features which may be applied in form of a teaching method to promote learning. These functions included the recruitment of the child's attention and joint attention, reduction of degrees of freedom, and demonstration (Wood et al., 1976). In sum, Bruner (1975; 1979) and Wood et al. (1976) built upon Vygotsky's notion of the ZPD to look at how adults interact with children. They coined the term *scaffolding* to explain how more expert participants assist and support learners in their development. Bruner's work introduced scaffolding as a notion of learning processes, but also moved to give scaffolding a set of definable features, suggesting it might be applied in a systematic way as a teaching method to classroom interactions.

Following the work of Bruner, a number of researchers adopted the term *scaffolding* and have looked at its practical application in classrooms and the began to look at it as a teaching intervention. Arguably, the pioneers in this research were Applebee and Langer (1983) and Palinscar and Brown (1984) and Mercer (1994). Applebee and Langer (1983) first frame scaffolding as a tool for researchers to assess exactly what it is that teachers do in classroom interactions, before moving on to

suggest that scaffolding may provide a model for ideal instruction, proposing exactly what 'good' scaffolding comprises of. Palinscar and Brown (1984) take this notion one step further, viewing scaffolding as a method which may be effectively implemented as a classroom intervention. Mercer (1994) and colleagues recognised that we can use scaffolding to gain greater insight into teaching and learning, provided we consider much wider aspects of classroom interaction surrounding scaffolding. In this section, their work and their contribution to the ever-expanding field will be reviewed.

Applebee and Langer's (1983) seminal work on scaffolding as a theory of teaching proposed that scaffolding should be a central aspect of formal instruction, as learning is a process of gradually internalising skills. This comes back to Vygotsky's notion that knowledge is first learned in a social context through interaction with an expert, and then is internalised by the child over the course of interaction. In Applebee and Langer's (1983) view, the expert teacher directly models language tasks to the learner, as well as probing and questioning learners to advance the skills they already possess. In their work, they stressed the importance of the communicative relationship between participants for children's development. This communicative relationship is interactive, both literally (it involves adults and children talking to adults) and metaphorically (in that it involves responsibility for the dialogue being negotiated between participants).

Applebee and Langer take the work of Bruner and Vygotsky further, however, by applying scaffolding in a very direct way to learning and specifically teaching (often referred to as *instruction*) looking directly how they may be applied to instruction. This is most clear in Applebee and Langer's (1983) article in which they stressed the importance of scaffolding for teaching. In this they labelled scaffolding as

a powerful tool for analysing what it is teachers do to help children develop reading and writing skills. In addition to using scaffolding as a way to analyse classroom practice, they also devised a set of criteria by which the "appropriateness" of scaffolding may be assessed. These criteria allowed researchers to assess exactly what teachers do in scaffolded instruction and subsequently allowed them to evaluate the success of this instruction. Within the criteria, Applebee and Langer (1983:170) included intentionality, appropriateness, structure, collaboration and internalisation. They claimed that any effective classroom activities would meet the five criteria laid out for good scaffolding. This marked a move in the study of scaffolding, away from an assessment of what teachers do, to an evaluation of what they *should* do to teach effectively. Thus, we see a move from scaffolding as a theory of learning to a prescription of teaching practice. Langer and Applebee (1983) applied these criteria to a number of real-life classroom environments in order to demonstrate how scaffolding occurred successfully or where it was lacking, and how it may be used to improve instruction. Again, this marked a step away from considering scaffolding as a way to conceptualise learning, towards a prescription of good teaching practice and hinting towards the application of scaffolding as a successful teaching method.

Other prominent researchers in the field are Palinscar and Brown (1984; Brown and Palinscar, 1985), who examined scaffolding when applied as an interventional teaching programme. Palinscar and Brown (1984) aimed to promote *comprehension fostering* and *comprehension monitoring* skills in learners, in that they aimed to both inspire learning and also the skills to moderate this learning. Specifically, Palinscar and Brown (1984) attempted to promote four skills in pupils: summarising, questioning, clarifying and predicting. Palinscar and Brown (1984:119) choose to focus upon these strategies specifically, as they were "knowledge-

extending". In particular, mature learners, they claimed, are good at moderating their own understanding, by questioning and elaborating their knowledge and testing their understanding. To train these skills in children, Palinscar and Brown (1984) used a method called *reciprocal teaching*. In this, pupils and teachers took turns leading a dialogue which focused on prominent features of a given text, and teachers provided scaffolding. This style of teaching fits closely with Vygotsky's notion of the ZPD and later definitions of scaffolding. Specifically, the reciprocal teaching training method involves pupils and teachers engaging in a dialogue and altering responsibility for the four comprehension-fostering and monitoring skills, thus allowing the child to practice and demonstrate all four skills.

Palinscar and Brown (1984) hypothesised a number of explanations for the success of the reciprocal teaching in promoting these four skills. First, Palinscar and Brown (1984:168) suggested that these successes could be due to the fact that the child in these activities not only experiences adult skills, but also that these are made overt and the child is encouraged to practice them. Not only does this prove reciprocal teaching is a form of scaffolding, as is centres around adult supports and child participation, it also explained why it is successful. Palinscar and Brown (1984:169) also stressed that the interactive basis of the method is advantageous, because it forces children to respond. This underlines the idea, mentioned earlier, that learning relies on a communicative relationship. In addition, Brown and Palinscar (1985) emphasised the importance of this transfer of responsibility within the ZPD, as it is this process that allows the child to progress. Thus, Brown and Palinscar (1985) highlighted the importance of scaffolding (and reciprocal teaching in particular) in classrooms in order to promote development. In sum, we can see that Palinscar and Brown (1984) approached scaffolding in a similar way to Vygotsky and Bruner, situating learning

processes in the ZPD and stressing the importance of an interactive relationship between expert and learner. Like Applebee and Langer, they applied this more directly to teaching methods, through suggesting that scaffolding has a set of features or skills that may be applied to classroom interaction.

Neil Mercer and colleagues play a significant role in contemporary scaffolding research in the UK. Mercer (1994:92) identified that his approach is "Neo-Vygotskian", taking the previous research on communication in the classroom into account, whilst attempting to merge this into a "robust theory of teaching and learning practice". In this model, Mercer (1994:96) described learning as "a process which is social rather than individual; and as a communicative process, whereby knowledge is shared". Scaffolding under this model is considered a Neo-Vygotskian concept, which "represents the kind and quality of cognitive support which a adult can provide for a child's learning, which anticipates the child's own internalisation of mental functions" (Mercer, 1994:95). Mercer (1994:100) explored three criteria for distinguishing scaffolding: a) that the student could not succeed without the teacher's intervention, b) that the teacher aims for some new level of independent competence on the students' part, and c) that the teacher has the learning of some specific skill in mind. Mercer used this to distinguish scaffolding from other kinds of help provided by teachers, an area previously explored by Maybin et al. (1992:188) who applied more stringent criteria to the distinguish scaffolding, including that there must be evidence of learner accomplishing a task independently and there must be "some evidence of a learner having achieved some greater level of independent competence as a result of the scaffolding experience". This work recognised that we can use scaffolding to gain greater insight into teaching and learner, but acknowledged that in order to fully understand this we must consider much wider aspects of the classroom interaction,

including the talk, the learning task, the teacher's intentions, the learner's intentions, the context and the outcome (Maybin et al., 1992:192).

Previous research on scaffolding is nicely summed up by van de Pol et al.'s (2010) review of research, which carefully brought together all strands explored in the aforementioned studies and identified key themes in scaffolding research. van de Pol et al. (2010:275-275) highlighted common characteristics, intentions and means of scaffolding. In all definitions of scaffolding van de Pol et al. (2010) acknowledged three common characteristics: a) contingency (often referred to as responsiveness, tailored, adjusted, differentiated, titrated, or calibrated support), b) the gradual withdrawal of the scaffolding and c) transfer of responsibility. van de Pol et al. (2010) also categorised six intentions of scaffolding (direction maintenance, cognitive structuring, reduction of degrees of freedom, recruitment and contingency/frustration control) which outlined the functions of scaffolding in the classroom. Finally van de Pol (2010) identified the six key means or features of scaffolding: feeding back, giving hints, instructing, explaining, modelling and questioning. Thus, van de Pol's work concisely summed up all the previous research on scaffolding, covering how it works, what it is used for and what it looks like in practice.

In conclusion, the scaffolding metaphor has transitioned from a way to conceptualise learning processes, to a direct teaching method. Scaffolding as a concept is Vygotskian at its core, based around the importance of a more knowledgeable expert in both supporting and challenging a less knowledgeable learner. This more knowledgeable participant models skills in the ZPD, above the learner's current reach. This allows the learner to both experience and practice these skills, so they may eventually develop them and use them independently as the more knowledgeable source gradually removes supports. Over time, the status of

scaffolding as a theory of learning became more applied, with researchers like Bruner (1975) and Wood et al. (1976) applying it to tutoring and parent-child interaction, before the likes of Applebee and Langer (1983) and Palinscar and Brown (1984) began to frame scaffolding as a model for classroom interaction and Mercer et al. (1994) began to focus upon scaffolding in the interactional classroom context. van de Pol et al. (2010) provided a review of all research on scaffolding. The two general criticisms of scaffoldings according to Stone (1998) are that first it is a very loose term very loose term, often poorly applied to the study of learning procedures and second that research fails to emphasise the importance of the interactive base of scaffolding. Future work needs to apply scaffolding as a concept more rigorously, giving more in depth explanations of exactly *how* it occurs. Definitions must be refined and focus must be placed more specifically on the interaction involved. If these are dealt with the scaffolding metaphor has the potential to provide a fruitful model for how to conceive and understand classroom interactions and teacher discourse.

2.3. Initiation-response-feedback (IRF) sequences

Initiation-response-feedback (IRF) sequences are widely agreed to be one of the most pervasive elements of classroom discourse (Wells, 1993; van Lier, 1996; Waring, 2009). Like the concept of scaffolding, this concept focuses upon the socio-interactional nature of classroom discourse, through using conversational analysis to reveal interesting insights into instructional practices and how they promote of inhibit participation – and hence learning- to take place (Waring, 2008:577). Again, this concept links to the sociocultural theory of learning proposed by the likes of Vygotsky, where learning is understood through participation and interaction (Waring, 2008:577). The concept of the IRF sequence was first introduced by Sinclair

and Coulthard (1975), who explained that a typical classroom exchange usually consists of: an *initiation* by the teacher, followed by a *response* by the pupil, followed by *feedback* to the pupil's response from the teacher. Mehan (1979) built upon Sinclair and Coulthard's initial IRF model, relabelling the sequence *initiation-reply-evaluation*, where the final evaluation act matched Sinclair and Coulthard's (1975) feedback level. Although in research the two terms are often used interchangeably, they place different focus on the last element of the instructional sequence, with IRF placing focus upon *feedback* which places attention on the identification of correct understanding, whilst IRE places attention upon *evaluation* which in turn focuses upon assessment of understanding. In addition, there are other terms used in the literature to refer to this structure, including Q-A-C triads (McHoul, 1978) and recitation scripts (Lemke, 1985). The most widely accepted and most commonly used term, however, is IRF, which will henceforth be the term used in this thesis. In addition, research on IRF stems from a wide range of pedagogical backgrounds, including ESL (Waring, 2008;2009) and other language classrooms (Hall, 1997), as well as including those studies that take a more holistic approach, reviewing research on classroom teaching and the contribution of IRF more generally.

The IRF discourse sequence is very simply, a pattern of interaction consisting only of three elements: "an initiation, usually in the form of a teacher question, a response, in which a student attempts to answer the question, and a follow-up move, in which the teacher provides some form of feedback to the student's response" (Wells, 1993:1). Within this structure, turns one and three are occupied by the teacher. In this sense, the sequence is controlled by the teacher, who both initiates and closes the sequence (van Lier, 2001:95). The first turn, the initiation, seeks to prompt the student in some way to provide a verbal response. The final teacher turn, the

feedback, allows the teacher to follow-up on the response given from the student. The students turn, turn three in the sequence, is a response, in turn suggesting the role of the student in this exchange is exclusively responsive (van Lier, 2001:95). Despite this imbalance, research has shown that initiation-response-feedback sequences can be accountable for at least half of and as much as 70% of all classroom discourse (Wells, 1993; van Lier, 1996; Hall, 1997; van Lier, 2001). Due to its pervasiveness, much research has considered the applications of IRF sequences and its advantages and disadvantages in classroom interactions.

There are a number of benefits of IRF sequences in classroom discourse discussed in the literature. First, Sinclair and Coulthard (1975) explained that IRF is the natural, unmarked mode of classroom interaction. Teachers will naturally fall into an IRF sequence of interaction with students in a classroom setting. This suggests two things; first IRF is the default in classrooms and hence is easy to implement and second that it is representative of some kind of natural interaction between teacher and student. Furthermore, research has shown that in many cases IRF is an effective mode of classroom interaction at varying levels. van Lier (2001) proposed a continuum of IRF application, from mechanical rote-learning, to encouraging the development of more demanding critical thinking skills. At the lower, less cognitively challenging end of the continuum students mostly recited things previously learner, whilst at the higher, more challenging end students could be pushed through successive probing questions to clarify and precisely articulate points they have previously made. van Lier (1996:150) claimed that, at its most challenging IRF could even push students to articulate reasoning behind their answers. In addition, research has also shown that IRF sequences can achieve a number of productive goals in the classroom, including the co-construction of knowledge (Wells, 1993:35). This suggests that IRF is more

dynamic than initially proposed, allowing students and teachers to share experiences and construct knowledge in a joint manner, rather than simply being instruction on the teacher's part alone.

In addition to these more abstract benefits, there are a number of practical advantages to the use of IRF sequences in classroom interactions discussed in the literature. First, as they are heavily structured, van Lier (1996:15) explained that these sequences allow teachers "to lead the students in a certain planned direction, in carefully measured steps, following a logical progression". Thus, IRF sequences allow teachers to guide students to some predetermined goal in a very deliberate and consistent manner, which in turn allows teachers to plan organised and structured learning outcomes. Another benefit of the structure and orderly nature of IRF sequences is that they place control in the hands of the teacher to minimise the potential for any noise, confusion or disruption, which has natural benefits on the learning environment (van Lier, 1996:250). A final benefit of the IRF sequence lies in the immediacy of teacher feedback. As the teacher provides feedback directly after the student's response, this allows the student to know straightaway whether they were correct (van Lier, 1996:150).

Despite these benefits, there have been some disadvantages reported in the literature concerning IRF sequences in classroom interaction. The first concern reported is that the teacher is "unequivocally in charge" of IRF sequences, with the teacher doing both the initiating and the closing of the sequence (van Lier, 2001:95). This is problematic, as it is a "closed" discourse structure according to van Lier (2001:95). This has a number of potential implications for the learning environments fostered in discourses that heavily use IRF sequences. The first consequence is that the teachers' control discourages student initiations, meaning students can only

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possibly learn and demonstrate responsive skills, not opening ones. Furthermore, van Lier (2001) explained that, within IRF sequences, it was hard for students to ask questions, which limited their ability both to speak up with any issues or to clarify their understanding. van Lier (2001) also suggested that this closed structure meant it was difficult for students to disagree with or challenge the teacher in these IRF sequences, which restricted their ability to develop and demonstrate critical and independent thinking skills. In a similar strand IRF sequences limit interruptions, which, whilst beneficial for classroom coherence, can potentially limit student's ability to challenge or to ask for clarity. Thus, whilst the structure and organisation of IRF sequences has been argued to have many benefits, this is also one of the discourse pattern's weaknesses, as van Lier (2001:95) described the IRF sequence as a "discursive guided tour bus", with no room for diversions and hence does not foster motivation or autonomy (van Lier, 1996:151).

There are other potential disadvantages of IRF sequences listed in the literature that were also considered advantages earlier. For example, van Lier (1996:151) claimed that IRF exchanges do not represent a "true joint construction of discourse". Typical conversation does not follow a strict triadic structure. This could be problematic, then, as IRF sequences do not give students experience of real-life interaction, instead giving them the simple role of responder. Another potential problem with IRF sequences lies in their immediacy. Whilst providing immediate teacher feedback on correctness is good for learning, it might discourage some students as they know their response will be evaluated publicly (van Lier, 1996:151). Thus, whilst good for monitoring immediate progress, IRF sequences might discourage less confident pupils from participating. Likewise, whilst providing feedback, Waring (2008:590) indicated that the last element in the IRF exchange is

often heard as terminal by students, which in turn shut down any interaction and potential future participation.

It is clear, based on this review, that IRF sequences are argued to be beneficial by some and in some contexts and problematic by others. Thus, it is important to consider the potential applications of IRF sequences in various contexts in order to fully assess their worth. van Lier (2001) considered IRF sequences from the perspective of three widely accepted pedagogic schools of thought, in order to evaluate the application of IRF sequences in classroom discourse. First, when contemplating a Vygotskian approach to scaffolding, van Lier (2001) noted that IRF sequences might act as scaffolds to support interaction, but also highlighted that a central part of scaffolding was that these supports were temporary. Thus, in order to fit this model, the IRF sequences as scaffolds must be gradually removed in place of more open discourse structures to allow the students to demonstrate their own development. Second, van Lier (2001) considered the concept of intrinsic motivation, which centres upon students' (and indeed human beings') innate need for autonomy. As they are teacher-controlled, IRF sequences limit autonomy on the student's part, which might then have a negative effect upon intrinsic motivation, leading to decreases in attention and involvement from students (van Lier, 2001:97). However, van Lier (2001:97) pointed out that IRF sequences might act as "discoursal training wheels", providing students with initial insights and opportunities, which are then removed as the student becomes more autonomous. Third, van Lier (2001:97) took into account the perspective of critical pedagogy and the ways in which students were encouraged to become critical and autonomous learners through what is referred to as "true" dialogue (van Lier, 2001:97). It has already been identified that IRF is not reflective of true conversation, in that it is characterised by one sided control and

therefore is not truly dialogic. This means that IRF sequences, from this view point, cannot be seen as contributing to educational reality. However, again van Lier (2001:97) underlined that the structures permitted in IRF sequences might act as preparatory steps towards more equal and autonomous discourse.

van Lier's (2001:97) central argument then was that although IRF structure might be flawed in its creation of autonomy or initiation, "it may be valuable not for what it is, but rather for what it potentially leads to". These structured, teacher-controlled sequences can be the initial step (or indeed scaffold) towards independence, through providing students with a chance of participation in a guided manner and with immediate feedback. If these sequences are used initially to move towards a more open or symmetrical interaction between teacher and student, this can have clear benefits for learning. This is concept van Lier (2001:103) labelled contingency and he explained that "the dynamic connections between more didactic (asymmetrical, less contingent) and more conversational (symmetrical, more contingent) forms of interactions are of central importance in the language learning enterprise". Thus, IRF sequences might be seen as an integral means by which to enter these more advanced interaction and discourse patterns in the classroom.

Another important consideration is that the success of IRF sequences might be contextual or circumstantial; there are places IRF sequences will allow better learning to take place than others. For example, Hall (1997) studied a teacher's exchanges with four pupils in a Spanish as a foreign language classroom and found that the teacher interacted with the learners in different ways within the IRF exchange. With two of the students the teacher was less attentive, restricting their input to the response turn in the conversational exchange, whilst the teacher allows the other two students more interactional attention and allowed them to move outside the IRF structure. The latter

two students progressed and achieved more academically in the long term than the former two. As a result, Hall (1997:307) argued that the differential attention of student turns in the IRF sequence facilitated some students' participation and limited other students' interaction, which in turn lead to differing outcomes. Hall (1997:308) therefore stressed that we need to look beyond the instructional tools themselves (in this case the IRF sequence) to get a better understanding of the many ways learner's development is shaped by the teacher. This suggests that we need to pay closer attention to exactly how these structures are applied in the classroom, rather than simply dismissing them as bad practice.

To conclude, having reviewed the literature on IRF sequences, it is clear that they play a very prevalent role in classroom discourse, making up a large portion of classroom interaction and hence being a key focus of research in teacher-pupil interaction. The triadic structure has arguable strengths and weaknesses but, on balance, there are clear uses of this model, provided we are aware of the limitations associated with the model itself. This can best be described by van Lier (1996:152), who wrote that IRF sequences were not "an invariant, monolithic questioning procedure that has only one form and one function. Instead it has many uses with a lot of potential diversity, the value of which much be judged on classroom by classroom basis". IRF sequences are not wholly inflexible and can have a range of functions and might act as a springboard towards more open discourse in the classroom.

2.4. Teacher discourse and classroom interaction in SEN environments

In this final section, the applications of research on teacher talk and classroom interaction to SEN environments shall be briefly reviewed. This will focus predominantly on studies with a background in scaffolding, given these were most

prominent and given that IRF itself might act as a scaffold. The departure is Stone's (1998:344) review article, in which he evaluates the utility of scaffolding for children with learning disabilities. Due to the vast nature of this field, Stone (1998) divides studies on scaffolding in SEN environments into two categories, making a distinction between studies that involved parent-child interactions and studies of teacher-pupil interactions. This distinction will be maintained hereafter in this review, where first the studies on parent-child interactions reviewed by Stone (1998) will be discussed, before moving on to the studies Stone highlights on the teacher-pupil group. In both cases, after discussing the early research mentioned by Stone (1998), the review will be expanded to encompass subsequent and contemporary studies. This review will be used to paint a picture of the state of research on interaction in SEN environments, before providing a conclusion on the strengths and weaknesses of research in this field.

2.4.1.   Parent-child interaction in SEN environments. Stone's (1998) first group of studies involved parents scaffolding the completion of certain tasks with their children who have learning disabilities, typically in home settings. Stone (1998) highlighted three early works here: the research of Irving Sigel and colleagues (Sigel et al., 1983; Pellegrini et al., 1986), Werstch and Sammarco (1985) and Levine (1993). Three more recent studies on parent-child interactions also need to be discussed: Pierucci's (2016) study of an intervention for children with ASD; Freeman and Kasari's (2013) study of play; and Barachetti and Lavelli's (2011) study of maternal repairs.

All of these studies look at how parents adapt their instruction according to their child's ability (or perceived ability). For example, Sigel et al. (1983) sought to identify whether there was a match between adult preference regarding teaching

strategies, their perception of their child's competence, and what strategies they used. Sigel et al. found a correlation between parent perception of child ability and teaching style, as parents adapted their instruction style (and specifically its complexity) to their child's perceived skills and abilities. They did this by using less complex teaching styles with children perceived to be of a lower cognitive ability. Likewise, the later study by Pellegrini et al. (1986:240) indicated that parents varied their teaching strategies according both to the task at hand and also to the child's communicative status. Pellegrini et al. (1986) found that parents were less demanding of lower ability learning disabled children. For example, in this study parents of children with communication issues used simpler, more supportive teaching strategies, such as conversational and nonverbal management, whereas parents of typically developing children used more complex and less supportive strategies. Thus, all three studies found that there was a correlation between adult perception of ability and instruction style.

Research on parents teaching SEN children also looks at differences in styles between SEN parents and parents of typically developing children. Freeman and Kasari (2013:154-5) found that parents of children with autism initiated more interactions and that these lasted longer those of parents of typically developing children. Specifically, Freeman and Kasari (2013:155) labelled three acts (play, commands and imitation) and found that parents of autistic children engaged in more of these. This suggested that parents of children with autism spoke considerably more, and therefore scaffolded interaction to a greater extent, than parents of typically developing children. Further, Freeman and Kasari (2013:156) also classified parents' responses to children's utterances as lower, matching/expansive and higher, in relation to the child's preceding act and found that while all parents used matched and

expansive responses more than any other type, those with autistic children were most likely to reply to their children's acts with a higher level response. This suggests that these parents are placing their interactions within the ZPD, at a higher level of competence than the child's existing level, which in turn leads their development.

Other research on parent-child interactions focuses upon the language used within parent-child interactions, finding that parents typically use less complex language when engaging with SEN children. For example, Levine (1993) found that the mothers of children with delayed language development used less complex linguistic skills, including limited use of context markers to situate a child's experiences and failure to define tasks at an abstract level. Instead, these mothers focused on individual events like pair matching and placement, rather than the larger more abstract task (in this study, of shoe sorting). Thus, there again is evidence of parent discourse being adapted according to child ability. Similarly, Barachetti and Lavelli (2011:579) found that mothers of children with SLI "produced significantly more high-supportive repairs than mothers of age-matched children, but not more than mothers of mean length of utterance-matched younger children". This suggests that parent utterances are based on their child's ability and not their age, which suggests that scaffolding is influenced by both the adults' and the children's behaviours. As already explained, this adaptability to individual difference is one of the central benefits of applying scaffolding to SEN environments, where children have variable profiles.

A similar strand of research into parents' interaction with their SEN children addresses how the directness of support varies in comparison with typically developing children. Wertsch and Sammarco (1985) reported significant differences in direct responsibility in parent-child interactions with SEN and typically developing

children. First, they found that that typically developing children demonstrated more self-regulated behaviour, whereas language disordered children very rarely used self-regulating behaviours. Second, Wertsch and Sammarco (1985) found that mothers of learning disabled children use more direct scaffolds to guide their children in task-oriented goals and therefore assume more responsibility for interaction.

One final relevant study on parent-child interaction in SEN environments is Pierucci (2016), who conducted a study that examined mothers' scaffolding during a social communication intervention called Project ImPACT for toddlers with Autism Spectrum Disorder (ASD). This intervention centred on the scaffolding of play activities. Project ImPACT was designed to increase parental scaffolding through teaching scaffolded techniques targeted on social engagement, language, social imitation, and play, focusing upon three scaffolding techniques: comments, requests and prompts. Pierucci (2016) found that mothers' use of the three techniques increased over the course of the intervention, suggesting that the intervention is successful in its goal. One of Pierucci's (2016:230) findings was that when mothers increase their use enhancing scaffolds, their use of maintaining scaffolds decreased. This suggests that the scaffolding intervention increased mothers' tendency to enhance rather than to maintain. To put this into Vygotskian terms, it suggests that when they are encouraged to scaffold interactions, mothers are more likely to work within the child's ZPD, above their current level, through enhancing behaviours.

Research on parents' interactions with SEN children, therefore, has addressed a number of things. First, scaffolding has proven a useful model and intervention for children with SEN. Second, there is substantial evidence parents adapt their supports, both in frequency, complexity and directness according to their child's ability. This is a strength of scaffolding as a technique in general, but is particularly useful when

applied to SEN children, whose profiles are extremely variable, as it means parents can adapt their language and instruction to the individual child's strengths and weaknesses.

   2.4.2.   Teacher-pupil interactions in SEN classrooms. The second type of SEN environment reviewed by Stone (1998) involved teacher-pupil interactions in instructional (classroom) settings. For the purposes of this definition, an SEN classroom setting is any classroom environment where a teacher interacts with an SEN pupil. This could be in an inclusive mainstream classroom or in a specialised school. Likewise, these classroom interactions may involve teachers, teaching assistants or researchers trained in a scaffolded intervention who, for the purpose of the interaction at hand, take the educator role. Stone (1998) noted there is much variation in studies of such interactions. Some studies use scaffolding as a framework to create instructional paradigms, whilst others use the metaphor more loosely to conceptualise what happens in classroom interactions. The type of teacher-pupil scaffolding discussed hereafter is that in which instructional methods are "explicitly designed in light of the scaffolding metaphor" (Stone, 1998:356). Stone (1998) discussed three such studies: Palinscar and Brown (1984), Bos and Anders (1990) and the work of Englert and colleagues in the 1990s. More recent research in this area will also be included in the following discussion.

   Much early work on teacher scaffolding considers how the method is useful in instilling comprehension skills in children with SEN. As discussed earlier, Palinscar and Brown's (1984) study demonstrated the benefits of a scaffolded instruction method called reciprocal teaching in improving four comprehension skills in children: summarising, questioning, clarifying and predicting. Stone (1998:357) explained that although the remedial reading students included in Brown and Palinscar's studies of

reciprocal teaching had not been officially categorized as learning disabled, the characteristics of children suggested that some of them may have had specific reading disabilities. Thus, as Palinscar and Brown's (1984) intervention led to an improvement of these children's comprehension skills, it can be inferred that scaffolding as an instructional method may be utilised to improve the skills of children with learning disabilities.

Englert et al. (1994) also focused on the benefit of scaffolding in increasing comprehension skills, as they compare the effectiveness of two interventions when teaching children with communication problems. One of these interventions involved scaffolded instruction, in which pupils learn to summarize, evaluate and monitor comprehension. Englert et al. (1994:181) found that the quality and quantity of children's comprehension improved following this intervention suggested that it had powerful effects on student's comprehension, even in a short intervention period. Englert et al. (1994:182) went further by directly attributing this improvement to a number of features of the scaffolded instruction. First, they explained that it made visible the language that students needed to direct their learning. Second, they noted that this intervention was very important in not only allowing children access to the discourses, but also in allowing them growing control over their interactions. In sum, Englert et al. (1994:183) concluded that this type of intervention was highly effective in comprehension instruction, through allowing children to participate in school discourses and through providing an adult model. These are outlined as strengths of the method generally, but Englert et al. (1994) also find them to be particularly useful in SEN classroom environments.

Similarly, Bos and Anders (1990) considered how teacher discourse in SEN classrooms is used to increase comprehension. They also, however, considered how

scaffolding may promote and increase content knowledge in children. Bos and Anders created and evaluated a teaching model called interactive teaching, which was designed to help students with learning disabilities use their background knowledge to improve comprehension and content knowledge. Bos and Anders (1990:179) found that students in the intervention gained content knowledge and they maintained this long term. This suggests that this interactive teaching intervention, which included scaffolding, proved successful in improving and later maintaining learning disabled students' content knowledge awareness.

Another benefit of scaffolding considered in the SEN classroom literature is the promotion of spontaneous speech, which is a key skill that many SEN children lack. Bellon et al. (2000) looked at how scaffolded procedures in shared storybook reading may be used to improve children's spontaneous responses. Specifically, they examined scaffolded storybook reading as a language intervention for a single, three-year-old boy with high-functioning autism. Four procedures were examined: cloze procedures, binary choices, wh-questions and expansions. Through the course of the intervention, Bellon et al. (2000:55) found that the child's echolalic responses declined and their use of spontaneous speech increased. These results suggest that scaffolded instruction as a part of repeated storybook reading can be used as a successful intervention to improve children's spontaneous speech and decrease echolalic responses. Thus, when applied as a language intervention in the early years SEN classroom, scaffolded teacher-pupil interaction may improve the communication skills of children with language disorders.

Other research has examined which features of teacher discourse which make for an effective intervention. Mahoney and Wheeden (1999) looked at teacher style and pupil engagement in SEN classroom interactions. Their focus was teacher-child

dyads, in both instructional and play settings. They examined teachers' directiveness, the extent to which teachers directed and controlled the interactions, and their responsiveness, that is, how they reacted to the child's input and supported the interaction. They found that when teachers were more directive and took more control of the direction of the interaction, children participated and initiated conversation less. They concluded that the optimal style of teacher interaction with children with special educational needs is one where teachers are highly responsive, so that children initiate their own behaviours and work independently, although directiveness is useful at times to maintain a child's attention.

Further, a recent study by Radford et al. (2015) considers a number of ways in which supportive teacher discourse can help teaching assistants in SEN environments in inclusive mainstream schools. They studied teaching assistants (TAs), rather than teachers, as they explained that it is an increasing pattern, worldwide, for non-teaching trained staff to take on more teaching. Specifically, they stressed the importance of instruction as being individualized to meet the needs of individual pupils. In terms of supports, Radford et al. (2015:5) noted that SEN children in inclusive classrooms present the teacher with a number of decisions about how to manage their support, as these children face very complex, idiosyncratic problems. Radford et al. identified three key roles of scaffolds in classrooms: repair, support and heuristic. Following these analyses, Radford et al. (2015:7) presented a framework by which TAs may support learners with SEN in interactions, through the three roles of scaffolding. Radford et al. (2015) therefore favoured the use of scaffolds in interaction with children with SEN in order to support their growth and development. Specifically, Radford et al. (2015:8) noted that the three key dimensions of scaffolding they discussed are controlled by the moment-by-moment needs of SEN

children and these dimensions extend our current understanding of classrooms. Thus, Radford et al. (2015) highlighted the importance of teacher support in SEN interactions, to meet the moment-by-moment needs of children with very individualised problems.

These studies demonstrate certain things about classroom interaction and teacher discourse in SEN environments. First, we can see that modes of instruction are effective when they focus on interaction and can be tailored to meet individual needs of children with very idiosyncratic problems (Radford et al., 2015). In these settings, best instruction allows teachers to work in the moment, adapting to problems as they occur (Radford et al., 2015). Scaffolding in particular has been shown to improve children's content knowledge (Bos and Anders, 1990), comprehension (Palinscar and Brown, 1984; Englert et al., 1994) and spontaneous speech (Bellon et al., 2000), all of which are elements SEN children have considerable difficulties with.

Overall, this review of interaction in part-child SEN environments and teacher discourse and classroom interaction in SEN settings has demonstrated that adaptive instruction is key in these settings and one such mode of adaptive instruction is scaffolding. The benefits of this have been demonstrated in practice by the likes of Sigel et al. (1983), Pellegrini et al. (1986), Levine (1993), Mahoney and Wheeden (1999), Barachetti and Lavelli (2011) and Radford et al. (2015). As children with learning disabilities and SEN have very idiosyncratic difficulties, interactive instruction suits them well, as it allows the teacher to tailor instruction to the individual child's strengths and weaknesses. In addition, this research highlights the interactive relationship between adult and child, stressing that development is bidirectional, dependent both on adult support and child independence. This is advantageous, because it allows teachers to model their interactions according to

children's individual strengths and weaknesses. Finally, interactive modes of classroom interaction have been shown to be helpful improving skills in which children with SEN are often weak, such as: content knowledge (Bos and Anders, 1990), comprehension (Palinscar and Brown, 1984; Englert et al., 1994), spontaneous speech (Bellon et al., 2000), participation and engagement (Pellegrini et al., 1986; Mahoney and Wheeden, 1999; Barachetti and Lavelli, 2011; Pierucci, 2016).

2.5. Conclusion

In conclusion, this review has demonstrated an awareness of the wealth of research on teacher discourse and classroom interaction, drawing heavily upon the social interactionist approach by which interaction is considered a key element in children's development. This review has outlined two key elements of teacher discourse and classroom interaction according to social interactionist theory: scaffolding and IRF sequences. The scaffolding metaphor focuses on the importance of a more knowledgeable expert in supporting and challenging a less knowledgeable learner within the ZPD. This in turn allows the learner to experience and develop more advanced skills than they would be able to learn alone. Initiation-response-feedback sequences are triadic structures prominent in classroom interaction which, when used diversely, can act as a springboard to more open and complex interaction and discourse in the classroom. Finally, this chapter reviewed research on teacher discourse and classroom interaction in SEN environments, giving important background to the analyses that follow.

Chapter 3: Methodology I: Data collection and corpus construction

3.1. Introduction

In this chapter the data collection and corpus construction processes involved in this thesis will be outlined. First, the research questions and use of corpus methods will be justified. In Section 3.3, the data collection will be explained and in Section 3.4 data recording and transcription will be described. In Section 3.5, the corpus construction process will be explained and in-depth aspects of corpus markup, annotation and processing will be discussed, which will inform the later explanation of corpus searches (see Chapter 4 for an explanation of corpus queries and Chapters 5, 6, 7 and 8 for the creation of corpus searches).

3.2. Rationale and corpus design

This thesis investigates how teachers interact with atypically developing populations of children in secondary education, specifically those with communicative difficulties, through application of a large-scale corpus methodology. This necessitated the collection of a corpus designed to support the analysis of teacher discourse and classroom interaction. The analysis of this corpus will look at how the language of teachers can operate to support the development of children with communicative disorders.

This project will take a different approach from previous research in the field of teacher talk, which tends to stem from a pedagogic or psychological perspective and has therefore utilised experimental or observational data on a much smaller scale than this corpus-based analysis. In contrast, to achieve the aims of this thesis, a considerably larger set of data had to be collected to create a bespoke corpus of SEN

classroom interaction, to allow the necessary more extensive body of natural language use to be analysed. This means that using corpus data it is possible to look directly at how teacher talk occurs in practice in SEN classrooms. Using corpora brings a number of benefits. First, corpora are large samples of representative data, which aim to "stand proxy for the study of some entire language or variety of language" (Leech, 2007: 135). Second, the use of a corpus allows the analyst the support of computational tools to perform analyses that would be prohibitively costly in terms speed and reliability of analysis with manual analysis of large bodies of data. This lessens problems of observer and researcher bias involved in the manual researcher coding of data. It also means that labels for types of teacher talk can be applied rigorously and systematically.

The first methodological step was corpus design and construction. First, this corpus was called the SEN Classrooms Corpus. One critical consideration when collecting a corpus is the required size of the body of data. The target word count for the corpus was 50,000 to 80,000 words, as this was constrained both by the limited time frame, single researcher and also the difficulties obtaining data. Despite this being a relatively small set of data in comparison to other spoken corpora and not being representative of all SEN classroom environments, as SEN classroom environments are particularly rare, this data is sufficient to provide a picture of teacher discourse and its use in a specific set of SEN classrooms, as will be demonstrated in the analyses of this thesis.

With this in mind, a sample transcription of spoken conversation from the Trinity Lancaster Corpus (Gablasova et al., 2015, 2019) was analysed in order to establish how duration of speech translated to transcribed word counts. An average hour of recorded conversation produced around 8,000 typed words. Thus, to obtain

the minimum 50,000 words at least 6.25 hours of classroom activity would be required. The Trinity sample, however, involved one-on-one dialogue between communicatively adept participants. As children within this study faced communication difficulties, it seemed likely that they would be less active participants, meaning they would utter fewer words within a given time. For this reason, the required classroom recording time was scaled up to eight hours.

3.3. Data collection

3.3.1. School selection. First, schools were recruited to partake in the study. Initially, the aim was to collect eight hours of data from two schools. However, this was not possible due to time constraints on the data collection process, meaning that instead eight hours from a single school was collected. Data was collected in two waves, observing the same two classes at similar time periods in two consecutive years. The first round of data was collected from classes 1 and 2 between April and May 2015. These classes were then returned to between April and May 2016 to collect a second wave of data. In total, this amounted to eight hours of classroom observation across four classes, engaging in 16 separate classroom activities. One concern with the use of a single SEN school is that the findings might not be generalizable to other SEN classrooms. However, as will be explained in Section 3.3.2, the classes included a range of ages and abilities and had teachers with varied experience. So, whilst the corpus does not provide representative evidence of SEN teaching across different schools, it does give evidence for a range of SEN pupils and lessons.

3.3.2. Classroom composition. A number of decisions were made regarding the classrooms recorded. First, as noted in the literature review in Chapter 2, much work on teacher discourse and SEN children focuses on one-on-one interactions.

However, this thesis focusses on group interactions. This was in part due to this study's focus on classroom interaction rather than dialogues, as was explained earlier in this chapter. In addition, teachers in this school suggested that, in one-on-one interactions, pupils with language delays would be less responsive. Naturally, in a study aiming to collect as much SEN classroom data as possible, this would be undesirable.

The size of the groups was largely dependent upon two factors: class size, and the number of pupils whose parents provided consent to their participation within each class. The same two classes were recorded each year. The classes in 2015 were labelled class 1 and 2, then the following year these were labelled class 3 and 4 respectively. Overall, the groups observed involved between three and nine children interacting with a single teacher and one or two teaching assistants.

All pupils were in secondary education within the school. Importantly, the school in question grouped pupils according to ability, rather than age, with one higher ability group (class 1 in 2015 and class 3 in 2016) and one lower ability group (class 2 in 2015 and class 4 in 2016) per year. As pupils were grouped by ability, members in the class had the same learning trajectories. However, due to ethical limitations we could not receive information on individual student's trajectories.

The classes included students with a range of SEN diagnoses. Due to ethical limitations, diagnostic information had to be provided by parents rather than the school, meaning for some students this information was not available. Nonetheless, a range of diagnoses were recorded in each class. In addition, for each pupil, it was recorded whether they used communication aids such as iPads in the classroom and also each child's first language was noted. All of this information regarding the

composition of classrooms can be found in Table 3.1. Initially, it was planned that Bishop's (1998) Children's Communication Checklist would be used to measure the children's verbal and pragmatic ability. This is a 70-item questionnaire aimed to identify pragmatic impairment in children with communication problems. Bishop (1998:879) reports that this checklist was developed to assess aspects of communicative impairment not evaluated by contemporary standardised tests. Particularly, Bishop (1998:879) notes that the features assessed in the questionnaire "are predominantly pragmatic abnormalities seen in social communication, although other qualitative aspects of speech and language were also included". The checklist scores areas such as syntax and semantics and appropriate interaction and context, as well as non-verbal communication, social relations and interests. Using this would provide information about the verbal and social abilities of pupils, allowing the measurement of children's linguistic and pragmatic abilities. However, this checklist provided 70 questions for pupils to answer about each pupil, and hence was burdensome in terms of paperwork. Unfortunately, this meant that in the closing stages of this study the school declined to complete these.

Table 3.1.

Classroom information from the SEN Classrooms Corpus.

Classroom information	Class 1	Class 2	Class 3	Class 4
Number of students	8-9 students	7-9 students	7-8 students	3-4 students
Age range	11-15 years	11-16 years	10-15 years	11-16 years
Year group	7-10	7-11	7-10	7-11
Ability	Higher	Lower	Higher	Lower
Diagnoses	ASD (3 students)	ASD (1 student), ataxic cerebral palsy (1 student). Worcester-Drought syndrome (1 student)	ASD (3 students)	Down Syndrome (3 students), ASD (1 student)

In terms of the classroom activities, all observations took place in shared reading lessons. Shared reading allows teachers to scaffold pupils' interactions and development. As the literature review demonstrated, this was anticipated to be an ideal atmosphere for expert scaffolding of knowledge. Many studies demonstrate that shared reading can prove a very successful language intervention, allowing natural interaction, but also encouraging participation from children, which in turn fosters greater competence (Barachetti and Lavelli, 2001; Crain-Thorenson and Dale, 1999). In each of the sessions observed, the teacher and the group of pupils interacted with a single text for 25-30 minutes. This could be a play, a story or a poem. The specific activities varied on a day-by-day basis. Details about the specific lesson plans were recorded within the metadata for each session and are included in Appendix A and a sample can be seen in Table 3.2. Typically, teachers in class 1/3 would go through a

text, ask questions and complete related tasks, while in class 2/4 the teacher and

pupils tended to act out the story for the first 20 minutes before moving on to text-

specific activities.

Table 3.2.

A sample of classroom activity information from the SEN classroom corpus metadata.

File	Date	Class	Teachers	Tas	Pupils	Present	Active	Exercise
1_280415	28/04/ 2015	1	1	2	9	T, TA1, TA2, P1, P2, P3, P4, P5, P6, P7, P8, P9	T, TA1, TA2, P1, P2, P3, P4, P5, P6, P7, P8, P9	Shared reading/discussion exercise on the Highwayman. 20 minutes discussing what they remembered from the text, themes, etc. 10 minutes working independently
1_050515	05/05/ 2015	1	1	2	9	T, TA1, TA2, P1, P2, P3, P4, P5, P6, P7, P8, P9	T, TA1, TA2, P1, P2, P3, P4, P5, P6, P7, P8, P9	Discussion at start about what narrative poems are. This followed by a shared reading exercise looking at the structure of the Highwayman poem.

3.3.3. Ethical considerations. As with any research project involving human

participants, and particularly the observation of minors, there were a number of

ethical considerations to be addressed. First, Lancaster's University Research Ethics

Committee (UREC) approved the plan for this project. Following this, school-level

consent was sought for both teachers and pupils to participate in the study. Written

consent was also obtained from the school's headteacher. Next, consent for

observation was gained from all participating teachers and teaching assistants. Parents

of pupils in the chosen classes were given an information sheet, outlining the nature

of the study and were asked to return a written consent form, should they agree to

their child's participation in the study. These ethics forms are included in Appendix

B. When a pupil's parents did not consent to their child being be a part of this study

they were given a sticker, placed on their backs, so it was possible to identify which

pupils were to be removed from the recorded data. Whilst the marking of some students and not others posed some ethical issues, this categorisation was necessary, as the recorded needed some physical cue as to which students should and should not be within the frame of the recording. Hence, stickers on the students' backs was deemed the least intrusive and most viable option. In addition to not being in frame, these children's utterances and activities were not transcribed.

3.3.4. Practical concerns. Following the organisation of classes, the next step was to record observations. Both audio and video recording were used. In particular, video recording was used as it eases distinction between speakers during transcription. This is particularly useful in multi-speaker setting and those where speakers (such as young children) have similar voice qualities, both of which make distinguishing individuals through audio recording alone very difficult. In addition, video recording allows non-verbal teaching strategies to be monitored and transcribed, such as the use of sign language or visual cues.

The recordings were made from the back corner of all classrooms to minimise the attention the recorder attracted (which, for the purpose of this research, was myself). For the same reason, the recorder took no part in classroom interaction. On a few occasions, the teacher would call children's attention to the researcher's presence as a means of influencing student behaviour. However, the researcher played no role in any classroom interaction or activity beyond this. As it happens, the school in question welcomes researchers and has frequent external assessments and inspections. The teachers informed us that because of this the pupils would pay little attention either to the researcher's presence or to the use of recording equipment. It is hoped, therefore, that the observer effect here was minimal. Indeed, within the data there is no evidence of observer effect (e.g. children commenting on recording equipment).

The entire classroom activity was recorded in a single block, unless teachers requested the recording be stopped due to behavioural episodes. All instances of this are noted in the metadata.

Throughout the data collection, metadata was recorded, including the information about the pupils and classes. Initially, this was stored in a spreadsheet. The metadata is split into three sections: classroom information, pupil information, and activity information.

Information was collected at the start of observation about each of the classes. This includes information about the teacher, their number of years of teaching experience, and the ability level of the pupils. For each class, information about the pupils was collected. This included the pupil's age, first language, and any diagnoses of particular disorders they had received. Finally, information was recorded about the individual classroom activities. All metadata can be found in Appendix A.

3.4. Data transcription

The next stage in the corpus construction was transcription. This was done manually and single-handedly. This was effective, as, having observed the classes myself, it was easier to identify individuals, making the transcription process considerably quicker than it would be using an external transcriber. This also allowed the mark up of certain salient features at the time of transcription, such as sign language; this point will be returned to later. Each text within the corpus was labelled according to class and observation date. So, for example, class 1's observed class on 28th April 2015 was labelled 1_280415 and so on, as shown in Table 3.3.

Table 3.3.

The labelling of transcription files in the SEN Classrooms Corpus.

File	Date	Class
1_280415	28/04/2015	1
1_290415	29/04/2015	1
1_050515	05/05/2015	1
1_060515	06/05/2015	1
2_280415	28/04/2015	2
2_050515	05/05/2015	2
2_060515	06/05/2015	2
2_070515	07/05/2015	2
3_290316	29/03/2016	3
3_300316	30/03/2016	3
3_060416	06/04/2016	3
3_270416	27/04/2016	3
4_290316	29/03/2016	4
4_060416	06/04/2016	4
4_260416	26/04/2016	4
4_270416	27/04/2016	4

Within each class pupils were labelled consecutively and consistently as P1, P2, P3 and so on. Teachers were labelled T, and teaching assistants TA1, TA2 etc.

3.4.1. Transcription for conversation and discourse analysis. With all the data collected and labelled, transcription conventions then had to be arranged. The most prominent model of transcription in conversation analysis stems from the work of Gail Jefferson, with most scholars accepting the conventions she outlines and sometimes adapting them for their individual purposes. A full description of the

notation Jefferson proposes can be found in the preface to Schenkein (1978). Rather

than give a full explanation of these conventions, these are outlined in Table 3.4.

Table 3.4.

Explanation of transcription notation proposed by Jefferson condensed from Schenkein (1978:xi-xvi).

Feature	Explanation	Example
Simultaneous utterances	Utterances starting up simultaneously are linked together with double left-hand brackets	TOM: [[I used to smoke a lot when I was young BOB: [[I used to smoke Camels
Overlapping utterances	When overlapping utterances do not start up simultaneously, the point at which the ongoing utterance is joined by another is marked by a single left-hand bracket	TOM: I used to smoke [a lot BOB: [He thinks he's real tough
Contiguous utterances	When there is no interval between adjacent utterances, the second being attached to the first, the utterances are linked together using equals signs	TOM: I used to smoke a lot= BOB: =he thinks he's real tough

Intervals within and between utterances	When intervals in the stream of talk occur they are timed in tenths of a second and inserted within parenthesis, either within an utterance or between an utterance
	A short untimed interval within an utterance is marked by a dash
		HAL: Step right up
		        (1.3)
		HAL: I said step right up
		        (0.8)
		JOE: Are you talking to me
		
		DEE: Umm – my mother will be right in

Characteristics of speech delivery	Punctuation attempts to capture characteristics of speech delivery A colon indicated an extension of the sound. A period indicates a stopping fall in tone A comma indicates continuing intonation A question mark indicates rising intonation An exclamation point indicated animated intonation Emphasis is indicated by varieties of italics, Double parenthesis are used to enclose a description on something the transcriptionist does not want to wrestle with.	MAE: I ju::ss can't come TIM: I'm so::: sorry re:::ally I am ANN: It happens to *mine* BEN: It's not either yours it's ***mine*** ANN: *I DON'T KNOW WHY YOU'RE SO HARD ON THIS* TOM: I used to ((cough)) smoke a lot JAN: This is just delicious ((telephone rings)) KIM: I'll get it RON: ((in falsetto)) I can do it now

As shown in the table, these conversation analysis transcription conventions

typically involve the use of punctuation characters in text to mark certain aspects of

speech or contextual information. This system is widely held to be a standard of transcription in conversation analysis (also see Du Bois, 1991; Edwards and Lampert, 1993 for explanations of similar transcription schemes in discourse/conversation analysis).

Ochs' (1979) discussion of transcription conventions in conversation analysis is relevant in this context. Whilst Ochs outlines the need for conventions like those of Jefferson, she specifically focuses upon transcription schemes for developmental pragmatic analysis. That is, she considers transcription aimed to describe adult-child conversations in order to assess child development of pragmatic skill and awareness. Thus, the data whose transcription she addresses are not dissimilar from the data involved in this research. A key point Ochs (1979) makes relates to the transcription of nonverbal information. Ochs (1979:51) explains that in typical conversation analysis there is an "overwhelming preference for foregrounding verbal over nonverbal behaviour". As a result, in her review of the literature, she found no consistent way in which nonverbal information was presented. This was a flaw of typical conversation analysis transcription methods that had to be considered, having acknowledged that nonverbal behaviour would be extremely meaningful in the context of SEN classrooms. This leads to the question of precisely what nonverbal information should be included at the point of transcription. Ochs (1979:65-66) classified nonverbal information into motor activity, eye gaze, gesture and body direction. However, including every instance of all these nonverbal elements would be extremely time consuming for the type of data involved in this study, where there are multiple participants. Thus, instead nonverbal information was only included either where it involved some nonverbal vocalisation (coughs, laughter, etc.) or where the nonverbal element was meaningful or could affect the understanding of the verbal

utterances. For example, if a child moved their chair, but this was not mentioned in speech by any participants, this was not transcribed. However, if a teacher asked a pupil 'what is this?' whilst pointing to an object, this information was coded in the transcription so as to avoid ambiguity.

Other than the limitation to adequately code nonverbal information, there are a number of other limitations with conversation analysis transcription for spoken corpora. The key one is that not only is the use of multiple special characters very complicated for the transcriber, it also creates problems in computer processing, as the existing corpus software would read these symbols differently than a human transcriber/researcher. Also, this type of transcription involves a lot of typographic and layout formatting, which leads to difficulties with corpus processing, as corpus encoding is typically based upon explicit markup where whitespace is irrelevant. It is for these two reasons a typical conversation analysis transcription model was not used for this data. Instead, a simpler (both in terms of markup and layout) system based upon eXtensible Markup language was used, which is better suited to the transcription of spoken corpora.

3.4.2. eXtensible Markup Language and spoken corpus transcription.

Typically transcription schemes for spoken corpora utilise the eXtensible Markup Language (XML), rather than conversation analysis-style transcription schemes. As Hardie (2014) explains, it is common practice for spoken corpora to include XML markup, as it allows the data to be marked for multiple features in a way that is easily read by software, while still being comprehensible to human readers. Hardie (2014:82) explains that "pretty much any kind of information can be added to a document using XML… In corpus linguistics, however, we most often use XML to

indicate features of the text other than its actual words". Thus, XML allows us to mark non-verbal elements in a transcription, to include contextual information.

XML allows extra detail to be added to transcriptions in a way which can be automatically processed. Whilst there are extensive standards for corpus encoding using XML, such as the Text Coding Initiative (TEI) and the Corpus Encoding Standard (CES), Hardie (2014:73) argues that these are "heavyweight", both in terms of complexity and quantity. Thus, Hardie (2014:73) outlines a set of recommendations which he calls "modest XML", which "outlines general best practices in the use of XML in corpora without going into any of the more technical aspects of XML or the full weight of TEI encoding". It is these recommendations upon which the transcription scheme is based.

XML is a system of markup where any information added to the text is represented in tags surrounded by angle brackets. An example of this within corpus markup is the use of <u> tags to mark speakers as seen in the example below.

<u who="1_050515_P1">negative poem**</u>**

<u who="1_050515_T">not a negative poem**</u>**

Here, the opening <u who="xxxx"> tag marks the start of an utterance and also provides a speaker label. The closing </u> tag marks the end of the utterance. This is an example of XML tags being used to mark a region, with a section of text being surrounded by tags. XML can also be used to mark points in a file with a single closed XML tag. An example of this can be seen in the use of vocalisation tags for interruptions, as shown below.

<u who="1_050515_P6"> **<voc desc="interruption"/>** she had long </u>

Rather than enclosing a region of text, this system of marking instead anchors a point within it, attaching some relevant contextual information. In addition to simply

marking the position of a tag, we sometimes want to apply a value to this tag. This is done using a markup system called attribute-value pairs, where the type of information is coded in an attribute label and the value then contains the actual information. For example, pause tags contain the pause length as the attribute and the number of seconds as the value. An example is given below.

<u who="1_050515_T"> yeah **<pause length="<3s"/>** it tells us something **<pause length="<3s"/>** what does it tell us? </u>

In some cases, shorthand typing codes were used instead of XML for ease of transcription; these were later converted to full XML. In the next section, where the full transcription scheme is explained, the shorthands and their XML targets are outlined.

The full transcription scheme is available in Appendix C. The conventions chosen are heavily based on those used in the Trinity Lancaster Corpus of learner language as constructed by Gablasova et al. (2015, 2019), based in turn on Hardie (2014). This was chosen for three reasons. First, this was readily available from researchers at CASS. Second, this fully established set of conventions had proven successful in the Trinity Lancaster Corpus, so seemed a suitable choice. Third, this transcription scheme used the system noted above of shorthand codes that are easily converted to XML, as will be demonstrated in the remainder of this section. Many of the fundamental conventions outlined by Gablasova et al. (2015, 2019) were applied to the data transcription. These can be found in Tables 3.5 and 3.6 below. Table 3.5 outlines the recommendations of Gablasova et al. (2015, 2019) concerning orthographic rules for transcribers. Table 3.6 then explains those elements of the Trinity transcription scheme which were based upon XML, highlighting the shorthands used and their XML targets. The main two XML transcription features

here are the use of the unclear tag and also pauses, which are two of the "de facto" standard features Hardie (2014) highlighted for XML corpus transcription. These features are important in spoken corpus transcription, as they are basic and prevalent features of spoken language.

Table 3.5.

Orthographic rules for transcribers.

Transcribed element	Explanation of transcription convention	Example from transcription (source: 1_050515)
Capitalisation	Capital letters within transcription are restricted only to proper nouns and the pronoun 'I'	T: the sun is as hot as a boiler <stress> fantastic </stress> now <.> we've got metaphors the difference between a metaphor and a simile can you give me a metaphor? it can be from The Highwayman if you can remember it
Fillers	Only the following fillers are used: ah, er, erm, huh, mm, oh and uhu	P2: it was erm <.> number three
False starts	False starts are marked with a hyphen separating elements of the false start	P8: my mum told me a story th- what my granddad told her
Spelling conventions	For clear words normal British spellings are used The following non-standard forms are transcribed orthographically using dictionary-accepted forms: cos, dunno, gonna, gotta, kinda, sorta, wanna and yeah Other non-standard forms (such as nonsense words) are transcribed orthographically Numbers are spelt out in full 'Okay' is spelt out in full	n/a
Truncated speech	Where a word is not finished this is marked by =	T: a nar= P1: a nar-narrative poem

Table 3.6.

XML-based transcription conventions adopted from the Trinity Lancaster Corpus.

Transcribed element	Explanation of transcription convention	Example from transcription (source: 1_050515)	Example from XML conversion (source: 1_050515)
Unclear speech	Where speech is indecipherable it is marked \<unclear\>	P1: \<unclear\> something what's \<.\>	\<u who="1_050515_P1"\>\<unclear/\> something what's \<pause length="\<3s"/\>
Pauses	\<.\> for a pause of three seconds or less, \<pause=*s\> for a measured pause of longer than three seconds	T: is there a story you can remember? \<pause=4s\> P2: yeah \<.\> the \<.\> three \<.\> pigs	\<u who="1_050515_T"\>is there a story you can remember? \<pause length="4s"/\>\</u\> \<u who="1_050515_P2"\>yeah \<pause length="\<3s"/\> the \<pause length="\<3s"/\> three \<pause length="\<3s"/\> pigs \</u\>

3.4.3.   Additional conventions in the SEN Classrooms Corpus

transcription scheme. The Trinity Lancaster Corpus transcription scheme covers all

the basic elements of general speech. However, this scheme was expanded to include

conventions to mark a number of additional features of speech that were deemed

meaningful in this data. First, some of these involved XML conventions. These were:

names, emphasis, conversation features, non-verbal language use and contextual

elements. At the end of this section, a transcription convention created to code

different types of question using non-XML markup is explained. First, participant

names within the utterances had to be anonymised. It would have been easiest to do

this using a shorthand such as \<name\>. However, for this dataset, it is important to

record what type of participant was named, in order to see who is being addressed and

by whom. Anonymised names were coded as shown in Table 3.7. It is thus possible to

distinguish teachers and pupils. The shorthand was converted in a later script to a

standard XML <anon/> tag, with values attached to mark the name type, as can be seen in the table. This is another feature that Hardie (2014:101) highlighted as a standard feature of modest XML.

Table 3.7.

XML-based transcription conventions adopted from the Trinity Lancaster Corpus.

Participant	Speaker tag	Examples from transcription (sources: 1_050515, 3_060416 and 4_270416)	XML conversion
Pupil	<name>	T: the sun is as hot as fire <.> thank you <name> <.>	the sun is as hot as fire <pause length="<3s"/> thank you <anon type="name"/><pause length="<3s"/>
Teacher	<T name>	P1: stop repeating yourself <T name>	stop repeating yourself <anon type="teacher name"/>
Teaching assistant	<TA name>	T: I must not repeat myself <TA name>	I must not repeat myself <anon type="teaching assistant name"/>
Researcher	<R name>	T: it was loud and clear for everyone to hear and I have to say <.> I'm going to do a test here <.> could you hear it <R name>? R: yes I could	it was loud and clear for everyone to hear and I have to say <pause length="<3s"/> I'm going to do a test here <pause length="<3s"/> could you hear it <anon type="researcher name"/>?
School	<School name>	T: right <.> let's get started <.> <TA name> will be in shortly <.> <TA name> and <name> will be back shortly they've been at <School name> they will be back very very soon	<u who="4_270416_T">right <pause length="<3s"/> let's get started <pause length="<3s"/><anon type="teaching assistant name"/> will be in shortly <pause length="<3s"/><anon type="teaching assistant name"/> and <anon type="name"/> will be back shortly they've been at <voc desc="School name"/> they will be back very very soon</u>

A second element of speech deemed interesting for part of this study was emphasis, including stressed speech, gasps, laughter, shouting and whispering. These were all deemed meaningful in storybook reading, as they mark teachers (or pupils)

highlighting parts of text for effect. These elements, therefore, were included in transcription, as shown in Table 3.8. Most of these tags were converted, using a script, into <voc desc/> XML tags, which Hardie (2014:97) notes "indicates the occurrence of a non-linguistic vocalisation in a spoken text".

Table 3.8.

Transcription conventions for emphasis and vocalisation.

Feature	Transcription convention	Examples from transcription (sources: 1_050515, 2_280415 and 2_051515)	XML conversion
Emphasis	<stress> is used to mark a shift in intonation and </stress> to mark shift back to normal intonation	T: <stress> brilliant </stress>	n/a
Gasps	<gasps>	T: <stress> well done </stress> don't talk to people <.> <gasps> how do you feel now <name>?	<u who="2_050515_T"> <stress> well done </stress> don't talk to people <pause length="<3s"/> <voc desc="gasps"/> how do you feel now <anon type="name"/> ? </u>
Laughter	<laughs>	T: <laughs> the moon is a ghostly <.> it's not ghost gravy I like it though	<u who="1_050515_T"><voc desc="laughs"/> the moon is a ghostly <pause length="<3s"/> it's not ghost gravy I like it though</u>
Whispering	<whispers>	T: <whispers> the surface <.> good try <.>	<voc desc="whispers"/> the surface <pause length="<3s"/> good try
Shouting	<shouts>	P6: <shouts> oh right right I get it	<u who="1_050515_P6"><voc desc="shouts"/>oh right right I get it</u>

The third group of features deemed relevant within this dataset were overlaps and interruptions. As the data involved group interactions, these features are particularly prevalent. Further, in many cases they could be meaningful. For example, sometimes a teacher would ask a question and a number of children would overlap in providing answers. If these overlaps were not coded, a lot of detail about the dynamics of classroom interactions would be lost. Thus, within the transcription, overlaps and interruptions were labelled as in Table 3.9. Interruptions were converted into <voc desc="interruption"/> tags, using the style of XML that marks a single point in the text. Overlaps, however, were more problematic. Naturally, as overlaps involve two or more concurrent sections of speech, they would have to span a region of text. However, overlaps involve multiple speakers (and hence multiple separate utterances). This would create a problem, as the introduction of an overlap tag would intersect with the regions defined by the utterance tags and ruin the nesting structure of the XML, which would prevent it from being parsed and understood by XML-aware software. Thus, rather than using region marking XML tags, point markers were used for the beginning and end of overlaps, with <beginOverlap/> marking the start of the region of overlap and <endOverlap/> marking its end. Thus, whilst to the human reader these identify a region through marking the start and end points, to the computer these are two separate point markers. An example of overlap tags is also shown in Table 3.9.

Table 3.9.

Transcription conventions for overlaps and interruptions.

Feature	Transcription convention	Examples from transcription (source: 1_051515)	XML conversion
Overlaps	\<overlap\> marks the start of a section of concurrent speech and \</overlap\> marks its end	T: when the red soldiers y'know the king's guars come what do they say? they say%? P8: \<overlap\> marching P6: marching \</overlap\> march march march	\<u who="1_050515_T"\> when the red soldiers y'know the king's guars come what do they say? they say%?\</u\>\<u who="1_050515_P8"\> \<beginOverlap/\> marching\</u\>\<u who="1_050515_P6"\>marching \<endOverlap/\> march march march
Interruptions	\<interruption\> marks the start of an intervening utterance	T: tells you \<.\> gives you \<.\> it tells you what it is but tells you what it's like \<.\> and it gives another object to help you tell you what it's like \<.\> so the sun is as hot as P6: \<interruption\> a ice lolly	\<u who="1_050515_T"\>tells you \<pause length="\<3s"/\> gives you \<pause length="\<3s"/\> it tells you what it is but tells you what it's like \<pause length="\<3s"/\> and it gives another object to help you tell you what it's like \<pause length="\<3s"/\> so the sun is as hot as\</u\>\<u who="1_050515_P6"\>\<voc desc="interruption"/\> a ice lolly\</u\>

The fourth additional meaningful aspect of interaction was non-verbal

communication. In the context of this special educational needs school, there were

two ways pupils could communicate non-verbally: through Makaton sign language

and through a communication aid. Makaton is a sign language programme designed to be used to support spoken language and hence is mostly used alongside or to encourage speech (see Chapter 7 for a more detailed description of Makaton). Likewise, some minimally-verbal and non-verbal pupils within these classes used automated speaking programmes on iPads to communicate. Whilst these non-verbal forms of communication could be missed in a conventional scheme, they prove very interesting in this data. Therefore, non-verbal utterances through these mediums were coded as shown in Table 3.10 and were translated into XML with region tags. This allows us not only to see there was non-verbal interaction, but also to see what was "said".

Table 3.10.

Transcription of non-verbal utterances.

Feature	Transcription convention	Examples from 2_051515	XML conversion
Sign language	<Makaton=word(s) signed>	T:yes%? <.> <name> did she go to the surface? yes or no%? <Makaton=yes no>	<u who="2_050515_T"> yes%? <pause length="<3s"/> <anon type="name"/> did she go to the surface? yes or no%? <Makaton>yes no</Makaton></u>
Communication aids	<Communication aid=word(s) pressed>	T: <stress> fabulous </stress> <.> <name> who's in our story? P7: <communication aid=Ariel>	<u who="2_050515_T"><stress> fabulous </stress><pause length="<3s"/><anon type="name"/>who's in our story?</u><u who="2_050515_P7"><Aided>Ariel</Aided></u>

The final XML elements transcribed in addition to the Trinity Learner conventions were contextual information. Often, some contextual information was needed to interpret the conversation. This occurred in one of two ways. First, sometimes pupils or teachers would perform actions which were then indirectly mentioned in later utterances; hence coding was needed to fully understand the interaction. Second, sometimes there are long gaps in recordings for a number of reasons, such as pupil behavioural issues. Here, markup was needed to identify this pause in recording. The latter is typically done with a 'gap desc' tag. Hardie (2014:96) explains that this tag "is used to make a note of something that has been omitted when the text was transcribed into a corpus file", with a desc attribute usually used to contain a description of what has been left out. This tag was expanded and used for explanation of contextual points, as well as gaps in transcription. Examples of this coding of contextual information can be seen in Table 3.11. These were transcribed directly as XML.

Table 3.11.

Transcription convention for contextual information.

Feature	Transcription convention	Examples from transcription (source: 1_050515)
Contextual information	<gap desc="contextual information here"/>	P1: <gap desc="pupil raises their hand"/> <overlap> oh P6: oh </overlap> T: <gap desc="points"/> go on T: I will get pencils <gap desc="Pause in recording whilst pupils moved on to individual work for 7mins before coming back to a group discussion"/>

In addition to the XML and shorthands included in the transcription scheme, there was another type of markup included. Coding was included for different types of questions. Following the recommendations of the Trinity Lancaster Corpus, interrogative sentences were marked with the use of a question mark. This was problematic, however, as the data involved a number of instances where non-interrogative sentence forms were used to question through use of rising intonation. Whilst most transcription schemes - including the Trinity scheme - ignore this in coding, they were deemed meaningful for the study of interaction. Therefore, the mark '%?' was applied to show instances where, whilst not interrogative in form, an utterance was used with a question function as evident in rising intonation. Further, whilst tag questions are marked with a question mark like typical interrogatives in the Trinity scheme, these differ in form and function to simple interrogatives (see Section 5.2 in Chapter 5). Thus, within the transcription, tag questions were labelled using '#?' so they could be differentiated. Examples of these question markings can be found in the Table 3.12. It is also worth noting that in conversion to XML, whilst not marked in XML tags, the question codes were separated using spaces in order to make sure they appeared separately in the corpus (for example a # ? instead of #?), allowing us to search for them independently.

Table 3.12.

Transcription conventions for different question types.

Feature (question type)	Transcription convention	Examples from transcription (source: 1_050515)
Interrogative form questions	?	T: two lines and what happens at the end?
Question tags	#?	T: it tells a story and you can imagine them telling the story around a fire because clearly <.> many many years ago they didn't have televisions did they#? no%?
Non-interrogative form questions	%?	T: so a simile tells you something that is like another object yes%?

Having finalised the transcription conventions, all the classroom recordings were transcribed. The fully transcribed data consisted of 59,643 running words, based on word counts from Microsoft Word and including XML tags, which when converted to XML and uploaded to CQPweb would be removed from the corpus word count. These were manually error checked the entire corpus, finding only 34 errors and thus a 0.00057% word-error rate. All of these errors were either typographical mistakes or absent XML angle brackets. As the overall error rate was minimal and these errors were easily corrected either using Microsoft Word's autocorrect or in XML conversion (during which any angle brackets would be flagged by the conversion script), the data was deemed ready for processing and use.

3.5. Data processing

After transcription, all the plain text transcription files were converted into full XML using a PHP script. These XML files were then part-of-speech and semantically tagged.

The corpus was part-of-speech tagged using CLAWS4. Garside (1987:30) explains that CLAWS (Constituent-Likelihood Automatic Word-Tagging System) is a system for "assigning to each word in a text an unambiguous indication of the grammatical class to which this word belongs in this context". Specifically, the tagset used was CLAWS6, which is composed of 160 morphosyntactic distinctions represented by mnemonic tags. This tagset is included in Appendix D. This allows the corpus to be searched according word class, which proves very useful for the kind of searches this research requires.

The corpus was also semantically tagged using the UCREL Semantic Analysis System (USAS). Rayson et al. (2004:7) explain that USAS uses a "hierarchical semantic tag set containing 21 major discourse fields and 232 fine-grained semantic field tags". This tagset can be found in Appendix E. Semantic tagging allows us to identify fields of meaning, which again will prove useful in the creation of search terms (see Chapter 4).

The full corpus was then indexed into CQPweb. CQPweb is a graphical web-based interface for the CWB corpus analysis system. Hardie (2012:396-7) reports that the main processes available in CQPweb are: concordance thinning, collocation, distribution, categorising, sorting and frequency breakdown. Many of these processes will be used to search the corpus for features of teacher talk. CQPweb as an interface is also useful for two more reasons: the restriction of queries using metadata and the use of CQP advanced syntax.

First, CQPweb can utilise metadata to create restricted queries within certain parts of the corpus that can be defined as subcorpora. Hardie (2012:392) explains that CQPweb uses a text-level metadata database (or metadatabase). For each corpus, the metadatabase has a row for each text in the corpus; as many fields of data as required

can be added. These fields can be either free text or classifications. This allows the interface to place text-level restrictions on a query, using whatever classifications the corpus possesses. The text-level restrictions in the database include: class, number of pupils/teachers/teaching assistants, number of total speakers and collection period. Additionally, we can apply restrictions on the corpus based on similar speaker metadata classifications using an extra speaker metadatabase, which is a new feature added after Hardie described CQPweb in 2012. In this corpus these include: real speaker, L1, use of communication aids, speaker status and diagnosis. Using these restrictions allows us to look at specific classes and (types of) individuals independently, allowing the analysis of specific interactions rather than the entire corpus.

Second, the two varieties of query syntax supported by CQPweb greatly expand the searches we can perform on the data, as opposed to simple orthographic queries. CQPweb supports two search languages: simplified CEQL language and CQP query language. CEQL, Hardie (2012:396) notes, "makes a subset of regular-expression syntax available in the form of simplified wildcards such as <?> for any one character or <*> for any string of characters without using full regular expressions". However, for purpose of this research, the more advanced CQP query language is more useful. This language makes use of regular expressions. In particular, CQP uses PCRE regular expressions. Regular expressions are defined by Evert (2005:43) as "a concise description of a set of character strings (which are called words in formal language theory). Regular expressions are said to match the words they describe". Regular expressions operate at either the word level (matching characters) or phrase level (matching words/tokens). For example, the . regular expression is used to match a single character, ? matches the preceding character zero

or one times, * matches the preceding character zero or more times, and + matches the preceding character one or more times. These regular expressions can also be used within POS/semantic tag searches. This syntax is extremely complex and allows numerous, more advanced searches, such as those required for the analysis. Regular expressions are explained in more depth in Chapter 4.

In sum, the CQP interface provides a usable interface to search the data, allowing the employment of a number of interesting corpus methods. The part-of-speech and semantic tagging allows us to search the data from grammatical and meaning based features. CQP's syntax language allows the creation of very complex search queries, which will inform our searches of teacher talk features within the corpus.

3.6. Conclusion: SEN Classrooms Corpus information

As demonstrated, these processes led to the creation of a sizeable corpus of SEN classroom interactions, which can be searched automatically using a number of corpus methods and searches. Once uploaded, the corpus stood at 52,813 tokens. Here it is important to explain that a token, in corpus terms, is 'a single linguistic unit' (Baker, 2006). Exact token counts per file can be seen in Table 3.13.

Table 3.13.

Word count composition of the SEN Classrooms Corpus texts.

File	Token count
1_280415	2453
1_290415	3692
1_050515	3891
1_060515	2580
TOTAL	*12606*
2_280415	2717
2_050515	4070
2_060515	3452
2_070515	2746
TOTAL	*12985*
3_290316	4135
3_300316	3332
3_060416	3849
3_270416	3986
TOTAL	*15,302*
4_290316	3094
4_060416	2758
4_260416	3044
4_270416	3014
TOTAL	*11910*
OVERALL TOTAL	52,813

This corpus is somewhat above the minimum target word count outlined in the corpus design. As can be seen from Table 3.13, there is some variation in word counts across classes and texts. The shortest text has only 2,453 words, whilst the longest has

4,135. Likewise, class 3 has 15,302 total words, whilst class 4 has only 11,910. Rather than being a problem, however, this provides some interesting insight into the rate at which speech is produced both for individual classroom activities and also for whole class group, since all texts were based on equivalent length recordings.

Having now detailed the creation and processing of the corpus, Chapter 4 will first provide an expansive list and literature review of the features of teacher discourse that will be assessed in this thesis. This chapter will also explain the methodological processes by which vague literature definitions of teacher discourse will be given linguistic explanations, which in turn are translated to full corpus searches, which will be applied to this corpus to form an analysis of teacher discourse in the SEN Classrooms Corpus.

Chapter 4: Methodology II: features of teacher talk and query processes

4.1. Introduction

The purpose of this chapter is to give background information to the following analysis chapters, outlining key concepts that each chapter will draw on. First, the identification of features of teacher discourse (based upon a literature review) and the decisions made regarding which of these features would be focused upon in the analyses chapters will be outlined. Second, in Section 4.3, some background information about methods used to search for these features within a corpus are explained and these explanations will be referred to in later chapters. Individual search methods will be explained in the methodology section of each analysis chapter.

4.2. Grouping features of teacher discourse

Having considered the backgrounds of teacher discourse in the literature review in chapter 2, I conducted a further review of research on SEN classroom interaction, with a close focus upon scaffolding and initiation-response-feedback sequences. From this literature, I collected a list of any feature of teacher discourse mentioned in the literature and provided a definition (see Table 4.1). It must be noted that the literature does not cover a single type of learning environment. Within this sample there were some SEN classrooms (e.g. Mahoney and Wheeden, 1998), some inclusive classrooms (e.g. Irvin et al., 2013, 2015) and some home-settings (e.g. Barachetti and Lavelli, 2011). The role of teacher in these contexts varied from professional teachers (e.g. Wilcox-Herzog and Kontos, 1998), to caregivers (e.g. De Rivera et al., 2005), to parents (e.g. Barachetti and Lavelli, 2011) and the age of students varied greatly across studies. In addition, a wide range of classroom activities

were considered, from reciprocal teaching (e.g. Seymour and Helena, 2003), to shared storybook reading (e.g. Whitehurst et al., 1988), to play-based activities (e.g. Pierucci, 2016). This diversity of pedagogic environment is not problematic in this instance for two reasons. First, the aim is to create a comprehensive list of the features of teacher discourse, hence a wider background is beneficial. Second, as the end goal here is the development of a methodological framework and not further pedagogical exploration, the applications of individual features in different classroom environments is not so important. This comprehensive review process allowed the identification of 24 teacher talk features. There are, however, some severe limitations found with these definitions. First, there are considerable overlaps between labels (see Chapter 5's literature review of questions for an example), which makes categorisation very difficult. Second, the definitions found in the literature, shown in Table 4.1, are extremely vague from a linguistic perspective, making corpus analyses based on linguistic structure very difficult.

Table 4.1.

Features of teacher talk based upon a review of the literature.

Feature	Definition	References
Behaviour management talk	Utterances which explicitly state rules, redirecting a child without explanation, or telling a child what to do when misbehaving	Irvin et al. (2013), Irvin et al. (2014), Girolametto et al. (2000)
Orientation/attention gaining and maintenance	Utterances or vocalisations aimed at focusing and maintaining the child's attention or at controlling the child's behaviour	DeLoache & DeMendoza (1985), Girolametto et al. (2000)
Labelling statements	Utterances naming depicted objects, persons, and so on	Ninio (1983), DeLoache & DeMendoza (1985)
Comments	Utterances adding in direct commands and statements	Pierucci (2016)
Imitation-eliciting requests/directions	Directives labelling with request to imitate	Ninio (1983), Whitehurst et al. (1988)
Directives	Utterances requesting nonverbal action	Whitehurst et al (1988), Mahoney & Wheeden (1999), Girolametto et al. (2003)
Elaboratives	Utterances providing more task information than is needed	Wilcox-Herzog & Kontos (1998)
Prompts	Behaviours or verbal/visual cues that increase the likelihood that the child would participate in the desired behaviour	Pierucci (2016)
Summaries/clarifications	Utterances giving overviews on content	Brown & Palinscar (1984)
Think-alouds/predictions	Utterances where teachers vocalise their cognitive processes or make predictions about the future	Rosenshine & Meister (1992), Benson (1997), Williams (2010), Seymour & Helena (2003), Palinscar & Brown (1984, 1985), De Rivera et al. (2005), Puntambekar & Kolodner (2005), Wilcox-Herzog & Kontos (1998), Winn (1994)
Wh-questions	Questions eliciting specific information	Bellon et al. (2000), Ninio (1983), Crain-Thoreson & Dale (1999)
Binary choices	Utterances offering the child alternate options	Bellon et al. (2000)
Open ended questions	Utterances containing non-specific request for description ("tell me more")	Crain-Thoreson & Dale (1999), Wilcox-Herzog & Kontos (1998)
Topic continuing questions	Questions which seek to promote continued interaction on the given topic	Crain-Thoreson & Dale (1999)
Yes/no questions	Questions which promote a yes or no answer	Whitehurst et al. (1988)
Function/attribute questions	Questions where the expected answer is a function, attribute or actions	Whitehurst et al. (1988)
Repetition	Copy or reduced copy of child's utterance	Whitehurst et al. (1988), Stone (1998), Langer & Applebee (1986)
Expansion	Elaboration of a child's child utterance	Bellon et al. (2000), Crain-Thoreson & Dale (1999), Whitehurst et al. (1988)
Recasting (repetition)	Repetition of an utterance with added elements	Bellon et al. (2000), Crain-Thoreson & Dale (1999), Whitehurst et al. (1988)
Cloze procedures	Adult pause to indicate that the child fill in information	Bellon et al. (2000)
(Maternal) repairs	Utterances involving a correction of answers or linguistic errors	Barachetti & Lavelli (2011), Radford et al. (2015)
Hints/problematizing	Utterances involving strategies for solving problems	Radford et al. (2015)
Feedback	Verbal reaction to the child's behaviour or verbalization (spontaneous or elicited) to indicate that they were right or wrong	DeLoache & DeMendoza (1985), Mahoney & Wheeden (1999), Whitehurst et al. (1988)

As will be outlined in subsequent chapters, in order to form a solid corpus-based methodology, a sound linguistic definition of individual features is needed. In order to address these two issues, these initial features are grouped into broader categories, in order to avoid overlaps and also to provide larger, more general linguistic categories for analysis. Groupings were formed based upon similarities in definitions of individual features. Individual features with similar qualities were grouped under an umbrella category, which was labelled according to the universal feature linking them. For example, labelling statements, comments, hints, prompt and summaries were all defined as involving some kind of statement and hence were grouped under the umbrella of statements. These broader groupings are outlined in Table 4.2.

Table 4.2.

Broader grouping of features of teacher talk.

Category	Label
Statements	Labelling statements
	Comments
	Hints/problematizing
	Prompts
	Summaries/clarifications
Directives	Imitation-eliciting directives
	Elaboratives
	Behavioural management
	Physical action directives
Cloze procedures	Cloze procedures
Feedback	Feedback
Think-alouds and predictions	Think-alouds
	Predictions
Questions	Wh-questions
	Binary choices
	Open ended questions
	Requests
	Topic continuing questions
	Yes/no questions
	Function/attribute questions
	Binary choices
Repetition	Repetition
	Recasting
	Expansion

The next stage in this process was to decide which of these features to focus upon for analysis, given the limited space in this thesis, and which to leave as potential areas of future research. The four groupings that are discarded are think-alouds and predictions, statements, cloze procedures and repetition. The first discarded grouping, think-alouds and predictions, includes the verbalisation by teachers of their cognitive processes. Rosenshine and Meister (1992:28) explain that teachers often use think-alouds to illustrate their cognitive strategies in order to clarify, summarise or predict ahead, thereby in turn vocalising adult ways of thinking. I studied think-alouds and predictions briefly in a previous study (Smith, 2015) and discovered that these were relatively easy to identify using corpus-based methods. However, an analysis of the results these searches yielded was basic. Whilst the form of these structures could be identified, as they involve a verb or noun signifying cognition, it was extremely difficult, without information about the teacher's intention in each individual utterance, to identify when a think-aloud/prediction was indeed used to scaffold, or whether, in fact, the teachers were just using or reading cognitive verbs.

The second discarded grouping, repetition, was also studied in Smith (2015). The literature indicates that repetition is used in teacher discourse as a means through which teachers can build upon interactions. However, we see little explanation in the literature of what exactly is meant by repetition, which is the first reason this feature was discarded. Second, in Smith (2015) I concluded that the only methodology to identify repetition within the corpus would utilise progressive search algorithms. Repetition involves not only retrieving certain utterances, but also checking whether preceding/following utterances match this initial utterance. This cannot be expressed

in typical query languages. Instead, the only methodology would be to use an algorithm (see Smith (2015) for more) which would load utterances and then mark repeated tokens in the following utterances. As this process would be very time consuming and would require technical expertise and specialised software, it did not seem optimal to expend this effort for such a vaguely defined feature.

The next discarded feature grouping was statements. This was a very general grouping, involving any feature which did not appear to fit elsewhere. This included labelling statements (where the teacher labels objects, people, etc.), comments, hints, prompts and summaries. These would be difficult to identify in a consistent way within the corpus, they are very general in form, and could be realised by a very wide variety of declarative clauses. Moreover, these features were very poorly defined within the literature, and to study them from a linguistic perspective would thus require a significant amount of effort to differentiate and define each type of sentence.

The final discarded grouping was cloze procedures, where teachers pause in order to allow children space to supply input within the classroom interaction. These are not studied in this thesis for two main reasons. First, as it is defined in terms of a pause – or a lack of speech – it is impossible to attribute a linguistic form or function to this. Although pauses were marked in transcription and hence were searchable, we could not specifically assess the form of the pause, instead only looking at surrounding context. Further, whilst we could easily identify pauses and their position in utterances, which may indeed be interesting to consider in future research, this would not provide as great an insight into the mechanism of teacher discourse as analysis of other features might, given their lack of linguistic form. Second, studying pauses would be problematic, as we cannot be sure the pauses were teachers actively

leaving space for pupil responses or whether pauses had other functions (e.g. pausing for people to stop talking or simply pausing to think).

Those four groups of features which were not discarded will now be explained. In depth definitions will not be provided here; these will be given in the appropriate analysis chapters. The four groups of features that will be investigated in teacher discourse for the remainder of this thesis are: questions, directives, Augmentative and Alternative Communication (AAC) and feedback.

Questions are studied, expanding upon the brief analysis of these in Smith (2015). Questions are the most prominent feature studied within the literature, and a number of different question types were identified. Second, they are easy to provide linguistic definitions for, and to retrieve using CQP syntax (as established in Smith, 2015). Third, analysing questions provides an interesting insight into how teachers construct interactions, test comprehension and provoke discussion. Finally, in Smith (2015), I found not only that questions were extremely prominent in the corpus (and therefore in SEN classrooms), but also that there were lots of interesting avenues for analysis (such as looking at different question types or at pupil responses). Hence, questions are considered further in Chapter 5.

With directives, the teacher requests some form of action (either verbal or physical) from the child, which plays a significant role in classroom interaction. This includes imitation-eliciting directives, elaboratives, behavioural management and physical action directives. Directives were studied for a number of reasons. First, due to their controlling function, it was speculated that they would be prominent within teacher discourse in SEN classrooms. Second, they were easy to define linguistically and to search for using corpus methods. Third, within this category, interesting

comparisons could be made between verbal and action directives. A full definition and analysis of directives in teacher discourse in SEN classrooms can therefore be found in Chapter 6.

The next feature considered is Augmentative and Alternative Communication (AAC). This was not a feature that has been not been considered as extensively in the literature. However, having performed some preliminary analyses using the data, it became clear that not only were AAC systems extremely prominent in the data, they also played a very pivotal role in interaction within these classrooms. Looking at the literature on the use of AAC in SEN classrooms (an in-depth review of which can be found in Chapter 7), it became clear that sign languages like Makaton which are used alongside speech act as a vital support in many SEN interactions, as are speech-generating devices (SGDs). AAC systems also provide an interesting insight into non-verbal supports used by teachers, given they demonstrate information which would typically presented in a verbal manner in a non-verbal way. In addition, as AAC systems (and particularly Makaton sign language) were often used with speech simultaneously, this showed a novel form of mixed-mode communication. Hence, in Chapter 7 an analysis of the use of both sign language and speech-generating devices as AAC systems the SEN Classrooms Corpus is provided.

The next feature investigated is teacher feedback. Feedback is a feature of teacher discourse used by teachers to react to children's behaviours or verbalisations. Preliminary analyses showed that certain feedback types (particularly more positive types) were more common and that feedback was mostly exclamatory in nature. As will become clear in Chapter 8, teacher feedback plays a central role in classroom interaction, allowing the teacher to monitor the interaction and the children's

development. As these are vital functions of teacher discourse, a full analysis of

teacher feedback in the SEN corpus can be found in Chapter 8.

Studying these four features (questions, directives, AAC and teacher feedback)

allows the key areas of teacher discourse and classroom interaction to be explored.

Questions focus upon facilitating interaction. Directives aim to control and guide

comprehension. AAC systems act as an interesting non-verbal support in this setting.

Teacher feedback provides verbal support. Each of these features was broken down

into sub-features, which can be seen in Table 4.2, some of which came from the

literature definitions established earlier in this chapter and some of which have a basis

in linguistic descriptions (all of which will be explained in the appropriate analyses

chapters).

Table 4.3.

The features of teacher discourse under analysis in this thesis.

Feature	Sub-features
Directives	Verbal directives (elaboratives, imitatives)
	Action directives (behaviour management directives: prohibitives and negatives, physical action directives)
Questions	Wh-questions
	Yes/no/alternative questions
	Question tags
	Non-interrogative clause questions
Feedback	Evaluative feedback
	Descriptive feedback
Augmentative and Alternative Communication (AAC)	Total communication
	Speech-generating devices

4.3. Methods used within the analysis chapters

In this section, the central methodology underpinning the remaining chapters of this thesis will be explained. As already noted, the literature provided definitions of features, but, as will become clear, these were often very vague. Scholars often focus on the function of features of teacher discourse, rather than their form. In order to transform these into corpus queries, a linguistic definition for each feature had to be provided. This was done using three contemporary English grammars: Huddleston and Pullum (2002), Biber et al. (1999) and Quirk et al. (1985). As the most widely respected English grammars, these provide sound definitions of both the forms and functions of different phenomena. Of the three, the most importance is placed on Biber et al. (1999:41), due to this grammar being firmly based on spoken and written corpus evidence and focussing its grammatical description of English mainly on "functional interpretation of the quantitative findings". Not only does this mean that Biber et al.'s (1999) claims provide insights into general spoken English usage, it also means that, in some cases, Biber et al.'s (1999) corpus results can be used as a comparison point to identify similarities and differences between general spoken English and the SEN Classrooms Corpus data.

Once a linguistic definition was established, it was translated into a corpus query, as the corpus was uploaded to CQPweb. This is a web-based corpus analysis system which allows access to the many corpus tools offered in the Corpus Workbench (CWB) system. In particular, the search language CQP advanced syntax permitted using this software allowed us to perform extremely complex searches on the corpus, which allowed identification of all of the features. This query language is explained fully in Evert's (2018) "CQP Query Language Tutorial", but the key points are introduced here. CQP syntax allows us to perform more complex searches on our

data beyond a word level. As the corpus is tagged, we can access token-level annotation for parts of speech and semantic tags, as well as word forms and lemmas. We can search for token-level annotation using square brackets in CQP syntax.

Within CQPweb, the token level annotation is stored as p-attributes, which we may access using token-level annotation using attribute-value pairs called *expressions*. These expressions involve an attribute and value stored in square brackets as follows: [attribute="value"]. Within this syntax, attributes specify the level of annotation (e.g. pos, lemma, semtag) we wish to apply to the tokens matched. The value within an expression is a string of characters, interpreted as a regular expression, which are annotation label itself as specified in the given tagset, be that a CLAWS tag or a USAS tag. Thus, to access token-level annotation within CQP syntax we simply need to specify the p-attributes and values, using square brackets to represent tokens. For example, [pos="JJ"] would retrieve any token with the part of speech annotation label 'JJ' (adjectives). Within a single search, we may combine multiple tokens. For example [pos="JJ"][pos="NN1"] would retrieve this same adjective followed by any token with the part of speech annotation label 'NN1' (singular common noun).

A *regular expression* is a sequence of symbols and characters that expresses a string or pattern to be searched for. Characters within a regular expression are either understood as a regular character (letters or digits that are matched with their literal meaning) or as a metacharacter (a symbol with a special meaning). Together, literal characters and metacharacters can be used to identify textual patterns. Table 4.4 shows the most basic regular expression syntax metacharacters outlined by Evert (2018).

Table 4.4.

Evert's (2018:46) basic regular expression.

Metacharacter	Explanation of use	Example
.	Matches any single character ("matchall")	r.ng → ring, rung, rang, rkng, r3ng, . . .
[...]	Matches any of the characters listed ("character set")	moderni[sz]e → modernise, modernize
? * {n} {n,m}	Repetition of the preceding element (character or group): ? (0 or 1), * (0 or more), + (1 or more), {n} (exactly n), {n,m} (n . . . m)	colou?r → color, colour go{2,4}d → good, goood, good
|	Separates alternatives (use parentheses to limit scope)	mouse|mice → mouse mice; corp(us|ora) → corpus, corpora
\	"Escapes" special characters, i.e. forces them to match literally	\? → ?

Regular expressions work at the character level in searches. However, they may also be used at the annotation level, within the values of attribute-value pairs. This means that as well as searching for variation in words matched, we can search for variations in annotation labels. For example [pos="J."] would retrieve any token within the corpus which has a part of speech annotation attribute, with a value beginning with a 'J', followed by any other character.

We can also use *Boolean operators* within CQP syntax to combine attribute constraints on a simple single token in different ways. Evert (2005:12) explains the three most basic Boolean operators are: & (and), | (or), ! (not). Boolean operators are

used to connect search conditions. For example, [lemma="under.+" & pos="V.*"] retrieves matches of tokens whose lemma begins with 'under' followed by any characters *AND ALSO* has a part-of-speech tag beginning with a V (for example returning words like 'understand', 'undermined' and 'underlies').

This combination of regular expression, token-level annotation queries and Boolean operators allow us to perform considerably more complex searches from the corpus than would be allowed through direct character only searches. We are able to specify not only complex variations within expressions, but also complicated relationships between them. As will become clear in the following chapters, this allow considerable insight into different elements of teacher discourse within the SEN classrooms.

CQPweb also allows two additional features that proved useful throughout the analysis chapters of this thesis. First, the *categorise query* function allows us to run through results of a query and separate these. This, as will be demonstrated, was very useful, both to categorise types within features, but also to manually remove errors retrieved. Second, we can perform restricted queries, where we can limit matches to specific speakers. This means we can retrieve matches of features in only teacher utterances.

Throughout the analyses chapters, different aspects of classroom language are examined, including teacher questions, teacher feedback, and children's responses. The data will be reported as frequencies of occurrence (by teacher, class) using descriptive rather than inferential statistics. Inferential statistics are used to infer properties of a population, assuming the observed data is sampled from a larger population. There are several reasons why inferential statistics are not appropriate for

this dataset. First, although a large number of observations have been recorded, the actual sample size is small: two teachers, across two groups of children, and a total of 22 children. The two teachers in this study worked with different ability groups and it would be interesting to determine if language differed by ability group. However, with just two teachers we cannot generalise the results to a wider population of teachers. For that reason, differences between the language used by the two teachers are explored with descriptive statistics. Second, each participant (teachers and children) contributed multiple observations, for example there are (as expected) several instances of wh-questions from the same teacher and responses from the same child. Because each participant is contributing multiple datapoints to each category we cannot conduct non-parametric frequency analysis. For an exploratory study such as this, that aims to examine the range of language used in special educational needs classrooms and to develop and test the suitability of automated corpus analysis methods to interrogate the dataset, descriptive statistics are most suitable. Thus, I report basic frequencies and proportion of use to better understand the use of different features within the corpus as a sample of SEN classrooms use.

4.4. Conclusion

This chapter has provided an explanation of the main methodological processes involved in the following analysis chapters. First, the selection and grouping of features of teacher discourse were explained, before those chosen for analyses were justified. The methodological processes by which these are translated into corpus search queries was then outlined. These descriptions will be referred back to in later analyses chapters.

Chapter 5: Questions

5.1. Introduction

This chapter has six sections. First, the initial steps in the process of question definition will be summarised, including a review of both the educational literature and the contemporary grammars. In this section research by Blything, Hardie and Cain (2019) will be introduced, which uses these methodologies and applies them to address the complexity and function of teacher questions, which will inform later analyses. An overview of the methodological framework created to search for teacher questions will also be given. In Section 5.4, the analyses using these frameworks will be reported examining the use of teacher questions in the SEN Classrooms Corpus, in terms of their frequency and distribution, their linguistic structure, their function and complexity and the pupil responses which they elicit. This chapter draws upon earlier work (Smith, 2015), which develops methodologies to search for features of teacher scaffolding (including questions) in large scale corpora.

5.2. Definitions of question types

Smith (2015) considers the discussion of questions within the teacher discourse literature, on the basis that questions are the most prevalent feature of teacher scaffolding (De Rivera et al., 2005; Palinscar and Brown, 1984; Puntambekar and Kolodner, 2005; Seymour and Helena, 2003; Wilcox-Herzog and Kontos, 1998; Winn, 1994). The general consensus is that the effective use of questions as a form of teacher discourse requires active involvement on the part of the student; this involvement leads to greater comprehension, whilst also fostering production on the part of the child (De Rivera et al. 2005:14; Stricklin, 2011:621; Winn, 1994:91). Wilcox-Herzog and Kontos (1998:31) and Putambekar and Kolodner (2005:186)

argue that use of questions reflects a central tenet of scaffolding, in that they require a child to use what they already know in order to progress to a higher level of competence. This moreover provides them with an opportunity to reflect upon and understand the processes involved in their own learning.

It is clear then that there is a consensus in the field regarding the function of teacher questions within teacher discourse; however, the definition of exactly what constitutes a question is less clear within this literature. Some authors write in terms of open and closed questions (Wilcox-Herzog, 1998) or high and low constraint questions (De Rivera et al., 2005), but these definitions take little heed of the explicit linguistic forms of these question types, instead focussing upon the types of responses they elicit.

The somewhat paradoxical result is that, whilst the literature is clear that questions are extremely prevalent within classroom interaction, functioning to promote involvement and comprehension, the literature lacks any systematic definition of what this feature actually consists of. Thus, it is necessary to turn from the educational literature to the major reference grammars of English for clarity on this point. Contemporary grammars (Quirk et al., 1985; Biber et al., 1999; Huddleston and Pullum, 2002) were used to identify the linguistic form of questions (for more on this methodology see Chapter 4). Linguistically, there is an important distinction between interrogative form and question function, which often become confused or are used interchangeably in the literature on teacher discourse. Sentence function concerns the speaker's presumed purpose in uttering it. Huddleston and Pullum (2000:865-866) explain that the term *question* refers to the illocutionary force of the utterance, namely that at the semantic level it defines a set of logically possible answers, and at the pragmatic level it is an enquiry (see also Quirk et al., 1985).

Sentence form refers to the grammatical level, that is the clause structure of the sentence. *Interrogatives* are a type of clause with a particular grammatical structure. Whilst the interrogative form and question function prototypically match, there are exceptions, as will become clear in later analyses of non-interrogative questions (Quirk et al., 1985:804). This term is used to refer to a type of clause with one of a small number of grammatical forms. The four fundamental question types identified by Biber et al. (1999:204) are: *wh*-questions, *yes/no* questions, *alternative* questions and *tag questions*. Non-interrogative clauses with a question function will also be considered later.

The first question type, the *wh-question*, asks the addressee to provide some specific new information by filling in some missing clause element. The missing information is represented by an interrogative clause marker (hereafter labelled a *wh-word)*, which may be a pronoun, an adverb, or a determiner, as exemplified in Table 5.1. This is the first element of the wh-question. Answering a wh-question requires the respondent to fill in the pronoun, determiner or adverb slot in their declarative response counterpart. For example, the question 'where did they go?' prompts the reply to fill the missing information represented by the 'where' adverb.

Table 5.1.

The syntactic roles of interrogative clause markers identified in Biber et al. (1999:87).

Syntactic role	wh-word
Pronoun	*who, whom, what, which*
Determiner	*what, which, whose*
Adverbs	*how, when, where, why*

Following the wh-word, wh-questions exhibit "subject-auxiliary inversion" (Huddleston and Pullum, 2002:856; Biber et al., 1999:204; Quirk et al., 1985:818),

meaning that the clause's subject and operator (the first auxiliary in the verb phrase, the dummy auxiliary 'do' or copular 'be') are inverted following the wh-word. An exception to this rule occurs when the wh-word itself is the subject of the clause. In these instances, the subject-verb order is retained. Thus, the structure of the wh-questions is represented as either:

wh-word + aux. V + S + V   OR   *wh-word (S) + V*

Biber et al (1999:204) identify a few exceptions to this structure, including that wh-words may be followed by an expletive in informal language, that there may be more than one wh-word in a clause if the speaker requires the specification of more than one piece of missing information, and finally that wh-questions are often elliptic and may consist of only the wh-word with the remainder of the question implicit in the context.

Biber et al (1999:205) note that wh-questions are similar to the *echo question*, where the wh-word stays in its regular position, echoing a previous utterance, such as 'she said what?'. The echo question thus seeks to repeat the preceding utterance as closely as possible to express doubt. Hence, it may be hypothesised that echoes may be used by teachers as a means of repeating and questioning children's incorrect utterances.

As noted previously, the primary function of the wh-question is to request some missing information (Biber et al., 1999:205). Therefore, the wh-question may be used to ask children to provide information and hence expand upon or confirm their own knowledge. Other less frequent functions of wh-questions reported by Biber et al. (1999:205) are as "rhetorical questions" or to "express a strong rebuke".

The next question type, the *yes/no question*, prompts an affirmation or negation of a given proposition. Yes/no questions open with an operator (the first auxiliary in the verb phrase, the dummy auxiliary 'do' or copular 'be'), followed by a subject (Biber et al.,1999:206; Quirk et al., 1985:807). The structure of the yes/no question is, in its most basic form: *operator (V) + S + V*. As with wh-questions, Biber et al. (1999:206) report that yes/no questions are "frequently elliptic". Biber et al. (1999:206) explain that the addressee is expected to supply a truth value to the content of the question, by answering yes or no. Thus, it is hypothesised that within teacher discourse, yes/no questions are used to assess and confirm children's knowledge or comprehension.

The third type of question is the *alternative question*, which provides a set of optional answers within the question itself (Biber et al., 1999:207; Huddleston and Pullum, 2002:868; Quirk et al., 1985:823). Structurally, the alternative question is similar to the yes/no question, beginning with the operator, followed by the subject of the clause (Biber et al., 1999:207). The difference, however, is that the alternative question provides a list of alternatives for the addressee to choose between, linked by the co-ordinator 'or', such as 'was it green or blue?' or 'are you happy or sad?' (Huddleston and Pullum, 2002:868).

Alternative questions are similar in function to wh-questions, in that both types of interrogative prompt the respondent to fill in an unknown element. The difference is that the alternative question requests a less open response than the wh-question, by offering a closed set of acceptable options for the addressee. Alternative questions, it is hypothesised, may be useful because they require a child to produce an answer in response, which in turn they must comprehend. However, this comprehension process is made easier by limiting the potential answers, as selecting

from a set of supplied options involves less cognitive exertion than generating an answer and working out how to express it.

The fourth type of question, the *tag question*, does not strictly follow independent interrogative clause structure (Biber et al., 1999:208; Quirk et al., 1985:810; Huddleston and Pullum, 2002;892). Tag questions simply consist of an operator and a subject personal pronoun attached to an anchor clause which is usually declarative (Biber et al.,1999:208; Huddleston and Pullum, 2002:891; Quirk et al., 1985:810). The operator of the tag is typically identical to the operator of the anchor. If the anchor has no operator, the tag question adopts the dummy auxiliary 'do'. The pronoun in the tag is typically co-referent with the subject of the anchor clause. Tags are most often of *reversed polarity* to their anchor, although *constant polarity* tags are possible (Huddleston and Pullum, 2002:892).

The function of the tag question is to elicit confirmation or agreement, with the content of the declarative that they follow. This stands in contrast to the function of previous question types as requests for information. Formally, the tag question asks whether the proposition in the main clause is correct, but pragmatically this is not actually a request for information, but merely a prompt to express agreement or disagreement. It is therefore hypothesised that tag questions may be useful by serving to promote interaction, as they function to prompt confirmation. However, as they require the respondent to make a judgement of affirmation, they may also be used to check comprehension.

In later analyses, consideration will also be given to non-interrogative clauses which carry a questioning function. As discussed earlier, interrogative function and question function, whilst usually matched, are occasionally misaligned. The grammars

mention that often a declarative clause may be used with a question function (Quirk et al., 1985:804). These declarative clauses are typically uttered with rising intonation at their end, and hence were marked within transcriptions using the special characters *#?*. The exact function of these clauses will be explored in the analysis in Section 5.4.3.3.

In addition to the question types and functions listed, the analyses in Section 5.4.2 will also consider the complexity of questions. In a current project running parallel to this thesis within same research group (the ESRC centre for Corpus Approaches to Social Science (CASS)), Blything et al. (2019) considered teacher-pupil interaction in mainstream classrooms, using the methods outlined in this thesis and in Smith (2015) to create a corpus of literacy lessons in mainstream primary schools. Blything et al. (2019) used the corpus queries outlined in Section 5.3, to identify and analyse teacher questions in their corpus. Furthering the categorisations of Smith (2015), Blything et al. sought to categorise not only the linguistic forms of questions, but also the constraints and complexity of the different forms and responses they entailed. Blything et al. explained that low challenge questions are associated with short answering constraints and typically require the respondent to confirm, disconfirm, or choose from information presented in the question. High challenge questions on the other hand pose few answering constraints; they may require a response including explanation, evaluation, or extension of the text.

Blything et al. labelled these low challenge questions *confirmative questions*; in terms of question types, these are yes/no and alternative questions. Blything et al. explained that the confirmative questions are useful for checking children's basic understanding and easing them into interaction; however, because they constrain the response, they may be too simple to engage children in meaningful interaction. Thus,

it was hypothesised that confirmative questions may function to encourage interaction, but may fail to promote more advanced comprehension or production skills.

Blything et al. labelled high challenge questions *wh-questions*, which matches the wh-question type. Due to a confusion of terminology here, however, the initial high and low challenge labels will be retained. Blything et al. explained that these high challenge questions involve greater inferential responses. Requiring such responses promotes better language and literacy skills and a better level of comprehension. Thus these questions can be used to advance comprehension, by testing the child's knowledge. Hence Blything et al. (2019) expected that these questions would be used more frequently in teacher discourse. However, not all wh-questions are equal in terms of complexity of function. Complexity is instead a function of the grammatical category of the wh-word. In particular, wh-pronoun and wh-determiner questions typically require lower challenge literal responses (e.g. 'who's she talking about?' requires a single noun phrase, i.e. a name, in response), whereas wh-adverb questions require more abstract and inferential responses, as they may involve explanation of causation and evaluation (e.g. 'why is she angry?', 'how did she tell her?'), which are more challenging.

Later in this chapter, the framework Blything et al. (2019) developed will be used to analyse the complexity of teacher question use in the SEN Classrooms Corpus. However, later this framework will be challenged on the grounds of linguistic analyses, which suggests that linguistic form and complexity are often not as linear as Blything et al. (2019) outlined.

5.3. Corpus queries for questions

Smith (2015) used CQP syntax queries to retrieve instances of questions from the SEN Classrooms Corpus. This method and these queries are used here. This section presents and explains the structure of queries for questions. For more information on the process involved in defining the queries based on the literature (Biber et. al, 1999; Huddleston and Pullum, 2002; Quirk et al., 1985) see Smith (2015).

5.3.1. Wh-questions. As identified in Section 5,2, the structure of the wh-question is:

wh-word (pronouns: *who, whom, what, which*, determiners: *what, which, whose*, adverbs: *where, why, how, when*) + V (operator) + S + rest of clause + ?

OR

wh-word (pronouns: *who, whom, what, which*, determiners: *what, which, whose*, adverbs: *where, why, how, when*) + V + rest of clause + ?

These formulae allow the identification of the component parts of wh-questions, which can be translated into corpus queries using CQP syntax. The complete wh-question query is:

[pos=".*Q.*" & pos!="YQUE"] []{0,15} [word!="#" & word!="%"][word="?" %l] within u

The first component of the wh-question is the wh-word, which is relatively easy to identify using part-of-speech (POS) tags, which can be found in Table 5.2 (see Chapter 4 for more detail on corpus annotation and CQP syntax). Rather than searching for all these tags separately, they can be reduced to a single query

component: *[pos=".*Q.*" & pos!="YQUE"]*. The Boolean and operator (&) is used

to place two constraints on this element. The first specifies that the element must have

a POS tag with any number of arbitrary characters before and after a *Q*. The second

part specifies that the tag *YQUE* must not be matched, using the Boolean *not* operator

!, as this is the tag for the question mark character.

Table 5.2.

CLAWS6 POS tags for wh-words.

CLAWS6 part-of-speech tag	Descriptor	Examples
DDQ	wh-determiner	*which, what*
DDQGE	wh-determiner, genitive	*whose*
DDQV	wh-ever determiner	*whichever, whatever*
RGQ	wh- degree adverb	*how*
RGQV	wh-ever degree adverb	*however*
RRQ	wh- general adverb	*where, when, why, how*
RRQV	wh-ever general adverb	*wherever, whenever*
PNQO	objective wh-pronoun	*whom*
PNQS	subjective wh-pronoun	*who*
PNQV	wh-ever pronoun	*whoever*

The second component, the subject, is more difficult to express as a query in

words or tags, because it occurs in a variety of grammatical forms. This is because a

noun phrase subject may involve pronouns, nouns, determiners, adjectives, relative

clauses and a number of other elements. Rather than attempting to match a noun

phrase subject using CQP syntax, an arbitrary token search is used instead to mark a

number of optional tokens which may occur between the initial component (the wh-

word) and the closing component (the question mark). Through a testing process (see

Smith, 2015), it was decided that the minimum number of arbitrary characters

between wh-word and question mark should be zero, in light of the need to match

elliptical wh-questions and echo questions. Similarly, with regard to the upper limit,

testing suggested that searches allowing more than 15 arbitrary tokens are counter-productive, as they yielded no additional matches and in fact retrieved more incorrect matches. Thus, this component is queried using square brackets for an arbitrary token, followed by the regular expression range operator, as: *[]{0,15}.*

The final element to be retrieved is the question mark. The token expression for this component includes a Boolean *not* operator, specifying that the question mark should not be preceded by *#* or *%*. In the transcription these are used alongside the question mark to mark the ends of tag questions and non-interrogative questions respectively (see Chapter 3 for an explanation of question transcription conventions). Thus, the component to match the closing question mark is *[word!="#" & word!="%"][word="?" %l]*. The first token expression here specifies that tokens literally matching the characters *#* and *%* should not be returned. The following token expression retrieves tokens matching *?*. The *%l* in this expression expresses that this value should not be interpreted as a regular expression. *within u* is added to the end of the query in order to specify that everything preceding this must be found within a single utterance.

Thus, the full query for wh-questions is:

*[pos=".*Q.*" & pos!="YQUE"] []{0,15} [word!="#" & word!="%"][word="?" %l] within u*

Smith (2015) demonstrates this to be an accurate search for returning wh-questions; it is therefore used in analysis. Results were also manually analysed using the *categorise query* function to remove any non-questions returned by the query, which resulted in the omission of 66 non-questions and 1041 correct wh-question matches. This query can also be tailored to consider only certain types of wh-question, by

altering the first component to match only on wh-word POS tag. Such queries are utilised in the analysis in Section 5.4.

5.3.2. Yes/no/alternative (YNA) questions.
Yes/no and alternative questions are treated together, due to their extremely similar linguistic structure; and hereafter they will be referred to as *YNA questions*. The identification of these questions using corpus methods is almost impossible. Biber (1988:2227) opts to exclude them from his categorisation of the features of formal spoken English, claiming that it was impossible to accurately identify them automatically, because many other structures also begin with an operator and hence are identical in form. When searching for the initial operator, followed by arbitrary tokens and a closing question mark (as in the following query) was found to produce many false positives (Smith, 2015):

([pos="VBDR"]|[pos="VBDZ"]|[pos="VBM"]|[pos="VBR"]|[pos="VBZ"]|[pos="VD0"]|[pos="VDD"]|[pos="VH0"]|[pos="VM"]) [pos!="V.*0"]{0,15} [word!="#" & word!="%"][word="?" %l]

This query had a 68.4% error rate (828 errors in 1210 matches). As specified by Biber et al. (1988), these errors arise due to the fact that operators may occur in a number of other clauses, not simply to mark the start on a YNA question. For example, operators within wh-questions ('what *was* the genie inside') were matched with this query. In light of these earlier findings, it is proposed that a fully formed and accurate query for YNA questions is too difficult to clarify in CQP syntax, should it be possible at all, and hence hereafter these question types will not be identified through this route. Yet while the YNA questions will not be analysed via an independent corpus query, this does not eliminate all potential analyses. Very basic frequency analyses can be conducted. It can be assumed that, when all other types of questions are discounted,

all remaining matches for the question mark must be YNA questions. Thus, if the totals for wh-questions, tag questions and non-interrogative questions are subtracted from the total number of question marks, this gives a speculative total for the number of YNA questions. Hence, a basic analysis of the frequency of YNA questions is presented in Section 5.4.1.

5.3.3. Tag questions. The structure of tag questions is:

Operator + (optional negator) + pronoun + ?

Operators can be retrieved using the following query:

([pos="VBDR"]|[pos="VBDZ"]|[pos="VBM"]|[pos="VBR"]|[pos="VBZ"]|[pos="VD0"]|[pos="VDD"]|[pos="VH0"]|[pos="VHZ"]|[pos="VM"]).

The part of speech tags associated with operators are listed as alternatives using the disjunction operator /. At the regular expression level, this query might be reduced, however, for both ease and transparency of the query this expanded form was retained. The tag question query also requires an optional negator following this slot: *[pos="XX"]?*. The POS tag *XX* matches negators and the unit is made optional by using the repetition operator *?,* which specifies that the preceding token must occur zero or one times. The final component is the tag question mark. These were marked in transcription as *#?* (see Chapter 3), hence both tokens are searched for: *[word="#"][word="?" %l].*

The complete tag question query, therefore, is:

([pos="VBDR"]|[pos="VBDZ"]|[pos="VBM"]|[pos="VBR"]|[pos="VBZ"]|[pos="VD0"]|[pos="VDD"]|[pos="VH0"]|[pos="VHZ"]|[pos="VM"])[pos=" XX"]? [pos="PP."] [word="#"][word="?" %l] within u*

Again, *within u* prevents matches across utterance boundaries. The *categorise query* function was not used here, as due to the transcription practices all those marked *#?* were correct tag questions.

5.3.4. Non-interrogative questions. Non-interrogative questions were marked with a closing *%?* in the transcription process in order to distinguish them from declarative statements (see Chapter 3). This means they are easily identified in the corpus, by searching for these two elements as: *[word="%"][word="?" %l]*. One problem with non-interrogative questions is that they do not have any specified structure and occur in a variety of forms, including elliptic wh-words or as fillers. Smith (2015) observes that all examples of non-interrogative questions are less than three words in length. It was desirable to capture these within the query, in order to perform more complex analyses on the language involved (rather than just matching question markers and looking for the question in the left context). Thus, in order to capture the question in the context section of concordance lines, an arbitrary token search is included: *[word!= "? " %l]{0,3} [word="%"][word="?" %l] within u*.

This search, therefore, returns non-interrogative question markers, with the three words preceding them. The search also specifies that none of these preceding words may be a question mark, because single word non-interrogative questions are often stacked upon other interrogatives, such as 'Yes? Okay?'. The query also specifies the arbitrary words must be contained within a single utterance using *within u.* Should a non-interrogative question exceed the three word limit, it is still possible to identify the full question from the left concordance line when analysing the data. As with the tag questions, due to transcription practices all utterances labelled *%?* were accurate non-interrogative questions, hence the *categorise query* function was not necessary here.

5.4. Analysis

The analysis of teacher questions in SEN classrooms is split into four parts. First, the frequency and distribution of teacher questions will be considered. Following this, the functions and complexity of questions are considered, in line with Blything et al. This is followed by a linguistic analysis of different question types, where I will provide challenges to Blything et al.'s complexity framework. Finally, pupil responses to different question types are analysed. It is important to note that in this analysis and the subsequent discussion the results can only be used to tell us about teacher questions and responses in this data from the SEN Classrooms Corpus, not about teacher discourse or classroom interaction in SEN classrooms more widely.

5.4.1. Frequency and distribution of questions. The frequency and distribution of different questions types can be analysed across both classes and speakers. As the restricted query retrieves only teacher questions, each class (text) has only one speaker. This means distribution by text also shows distribution by speaker. Hereafter, the teacher of classes 1 and 3 is referred to as teacher 1, and the teacher of classes 2 and 4 as teacher 2. First, the overall frequency of different question types in the SEN Classrooms Corpus will be assessed, then this will be compared to Biber et al.'s (1999) findings concerning the frequency of questions in general spoken English, then the distribution of questions will be discussed.

Wh-questions make up the largest portion of teacher questions, making up almost half (43%) of all teacher questions. YNA questions are second most frequent, making up 29% of all teacher questions, followed by non-interrogative questions (23.63%). Tag questions are less common, making up only 4.32% of teacher questions. When compared to Biber et al. (1999), wh-questions are used more than

expected in the SEN classrooms. On the other hand, tag questions are used considerably less. This suggests that, within the SEN Classrooms Corpus, teacher questions function more with the supply of information than with confirmation or agreement that question use in general spoken English. In turn, we could infer that teachers in this data are concerned with inspiring comprehension and production, rather than using questions simply as a function of conversation.

Table 5.3.

Frequency of the different teacher question types in the corpus as a whole.

Type	Raw frequency	Percentage of all teacher questions	Biber et al.'s question percentages in general spoken English (1999)
Wh-question	1041	43%	25%
YNA questions	709	29%	25% (YN), <2.5% (A)
Tag questions	105	4%	25%
Non-interrogative questions	574	24%	20%
TOTAL	2429	100%	100%
Note: YNA counted by total from [word="?" %l] search minus frequencies of all other types (after error checks).			

The results on distribution of teacher questions across classes can be found in Appendix G. The focus is upon the frequency of questions as a percentage of all teacher utterances (both in each lesson, in each class and in the corpus as a whole). This accounts for differences in total word frequencies across classes, which could in turn affect the question frequency. It is important to note the frequencies and percentages here discount YNA questions, unlike the previous analysis.

When comparing overall question frequency by class (and therefore by speaker), there was no clear pattern of question usage. This suggests that questions are a universal feature of teacher discourse which are not affected either by teacher style or by pupil ability. Furthermore, in all classes bar one questions were used more than

100 times per 100 teacher utterances. This is because questions were often stacked within utterances (e.g. 'What's the difference cos they are quite similar? What's the difference between a metaphor and a simile?'). This shows that within the classrooms in this data questions are an extremely important and prevalent aspect of teacher talk.

Next, it is interesting to consider the distribution of the question subtypes by text (lesson) and by speaker (teacher). Again, analysis is based upon the proportion of total questions each subtype accounts for in each lesson, each class and in the corpus overall. The focus on proportions removes any disparity that arises from differing class lengths. The proportions of use across classes and teachers is very similar. Although there were differences in the raw frequencies of question use, with teacher 1 using 403 wh-questions and teacher 2 using 667, when we considered the proportion of wh-question use of each teacher, we saw that wh-questions make up very similar portions of question use overall. Wh-questions made up 44.48% of the teacher 1's questions and 43.79% of teacher 2's questions.

Table 5.4.

The proportional distribution of wh-questions by class/lesson in the SEN Classrooms

Corpus.

Text	Total questions	Total wh-questions	Wh-questions as a percentage of all questions
1_280415	109	66	60.6%
1_290415	120	67	55.8%
1_050515	137	63	46%
1_060515	80	39	48.8%
CLASS 1 TOTAL	446	235	52.7%
2_280415	176	80	45.5%
2_050515	330	141	42.7%
2_060515	224	89	39.7%
2_070515	173	72	41.6%
CLASS 2 TOTAL	903	382	42.3%
3_290316	119	45	37.8%
3_300316	85	30	35.3%
3_060416	113	36	31.9%
3_270416	143	57	39.9%
CLASS 3 TOTAL	460	168	36.5%
4_290316	155	73	47.1%
4_060416	131	45	34.4%
4_260416	181	79	43.6%
4_270416	153	59	38.6%
CLASS 4 TOTAL	620	256	41.3%
OVERALL TOTALS	2429	1041	42.9%

For non-interrogative questions, the distribution across classes and teachers is also relatively even. Again, although there were differences in raw frequencies of use, non-interrogative questions made up 22.4% % of all teacher 1's questions and 23.97% of all teacher 2's questions.

Table 5.5.

The proportional distribution of non-interrogative questions by class/lesson in the

SEN Classrooms Corpus.

Text	Total questions	Total non-interrogative questions	Non-interrogative questions as a percentage of all questions
1_280415	109	13	11.9%
1_290415	120	16	13.3%
1_050515	137	24	17.5%
1_060515	80	18	22.5%
CLASS 1 TOTAL	446	71	15.9%
2_280415	176	25	14.2%
2_050515	330	80	24.2%
2_060515	224	56	25%
2_070515	173	44	25.4%
CLASS 2 TOTAL	903	205	22.7%
3_290316	119	30	25.2%
3_300316	85	35	41.2%
3_060416	113	24	21.2%
3_270416	143	49	34.3%
CLASS 3 TOTAL	460	138	30%
4_290316	155	26	16.8%
4_060416	131	41	31.3%
4_260416	181	48	26.5%
4_270416	153	45	29.4%
CLASS 4 TOTAL	620	160	25.8%
OVERALL TOTAL	2429	574	23.6%

For tag questions, the distribution across classes and speakers is again relatively even. Tag questions made up 5.3% of the teacher 1's questions and 3.74% of teacher 2's questions.

Table 5.6.

The proportional distribution of tag questions by class/lesson in the SEN Classrooms

Corpus.

Text	Total questions	Total tag questions	Tag questions as a percentage of all questions
1_280415	109	5	4.6%
1_290415	120	4	3.3%
1_050515	137	4	2.9%
1_060515	80	7	8.8%
CLASS 1 TOTAL	446	20	4.5%
2_280415	176	8	4.5%
2_050515	330	13	3.9%
2_060515	224	13	5.8%
2_070515	173	4	2.3%
CLASS 2 TOTAL	903	38	4.2%
3_290316	119	6	5%
3_300316	85	2	2.4%
3_060416	113	15	13.3%
3_270416	143	5	3.5%
CLASS 3 TOTAL	460	28	6.1%
4_290316	155	10	6.5%
4_060416	131	6	4.6%
4_260416	181	1	0.6%
4_270416	153	2	1.3%
CLASS 4 TOTAL	620	19	3.1%
OVERALL TOTAL	2429	105	4.3%

Overall, therefore, there is no obvious proportional difference in question use across classes or across teachers. First, this suggests that in this data questions are a universal feature of teacher discourse. Second, it suggests that questions are important within classroom interaction in the SEN Classrooms Corpus data, as questions are frequent and well distributed across classes, even if there are not huge differences between classes or teachers.

5.4.2. **Function and complexity of questions**. Using the results of the above frequency analysis, the complexity of question use in the SEN Classrooms Corpus can be assessed, using the framework outlined by Blything et al. (2019). This framework establishes the level of complexity in terms of the cognitive challenge of questions, which is outlined again in Table 5.7. Question types are classed either as high or low challenge, depending upon the responses they prompt.

Table 5.7.

The complexity of different types of wh-questions and their frequencies.

Question complexity	Question type		Examples	Percentage of all questions	
Low challenge	YNA		Was it good?	27.9	54.6%
	Q tag		Wasn't it?	4.1%	
	Non-interrogative		Okay?	22.6%	
High Constraint	Wh-question	Wh-determiner	Which, what, whose	28.7%	45.4%
		Wh-pronoun	Who, whom	5.7%	
		Wh-adverb	How, where, why, when,	11%	

Combined, the low constraint question types (YNA questions, tag questions and non-interrogative questions) make up the larger portion (56.4%) of question types used within the SEN classrooms. As Blything et al. clarified, these questions are confirmatory, in that they seek confirmation or negation in their responses. The frequent use of these confirmatory questions suggests that questions within this data set are most commonly used to monitor the interactions, confirming pupil knowledge. That these were more common contrasts Blything et al.'s (2019) theory that these would be used less frequently in teacher discourse. High constraint wh-questions

make up a smaller portion of the questions (45.6%). This suggests that teachers are less likely to use higher-challenge questions which require more advanced inferential skills. However, of the different wh-question types, the lower challenge types (pronoun and determiner wh-questions) outlined by Blything et al. are used more often (34.4% of all wh-questions). Again, this challenges the expectations established by Blything et al. (2019) that teachers will typically use higher constraint questions. Furthermore, the following linguistic analysis in section 5.4.3. reveals that the initial framework outlined by Blything et al. is problematic, as linguistic form and complexity are not always so easily paired.

5.4.3. Linguistic analysis of questions. In this section, the linguistic structure of different question types will be considered. For ease of discussion, the linguistic analysis is separated by question type. This involves the consideration of specific wh-words, the polarity and pronouns of tag questions, and the structure of non-interrogative questions.

5.4.3.1. *Wh-questions.* Within wh-questions, the main element of linguistic interest is the wh-word, which specifies the unknown item or information to be filled in by the respondent. To extract the frequencies of each type of wh-word, it was necessary to replace the wh-word element of the wh-question CQP query with a single wh-word type POS tag, as shown in Table 5.8. Of the teacher wh-question types, determiner-based wh-questions are the most frequent, making up 63.22% of all wh-questions. Further, all of these questions begin with the determiner 'what'. According to the literature, determiner wh-questions are the lowest challenge of all wh-question types, typically requiring concrete responses (e.g. 'what is that word?'). However, of the most common teacher wh-questions within the corpus, of the top ten questions only six have concrete referents ('what's the name of our story?', 'what is

it?', 'what else?', 'what's it say?', 'what's that word?', 'what can you hear?'), whilst

the others all have abstract referents including thought ('what do you think

ANONnameStudent?', 'what do you think?'), predictions ('what happens next?') and

actions ('what am I doing?'). This would suggest that these question types are more

challenging than initially suspected and suggested by Blything et al., involving

abstract as well as concrete referents. This suggests that wh-determiner questions are

not purely low-constraint, in fact encouraging the listener to response in more

complex ways with more abstract thought required. Hence, it seems that Blything et

al.'s complexity framework, whilst focusing on linguistic form as a classifier, does

not fully line up with discoursal reality.

Table 5.8.

The frequency of different types of wh-question.

Wh-word class	Query	Percentage of all wh-questions
Determiner (which, what, whose, whichever, whatever)	[pos="DDQ.*" & pos!="YQUE"] []{0,15} [word!="#" & word!="%"][word="?" %l] within u	63.2%
Adverb (how, however, where, when, why, how, wherever, whenever)	[pos="R.*Q.*" & pos!="YQUE"] []{0,15} [word!="#" & word!="%"][word="?" %l] within u	24.2%
Pronoun (whom, who, whoever)	[pos="PNQ.*" & pos!="YQUE"] []{0,15} [word!="#" & word!="%"][word="?" %l] within u	12.6%

Table 5.9.

The most frequent determiner-based wh-questions.

Rank	Query result	No. of occurrences	Percent
1	what do you think ANONnameStudent ?	29	3.98%
2	what do you think ?	12	1.65%
3	what 's the name of our story ?	10	1.37%
4	what happens next ?	10	1.37%
5	what can you hear ?	9	1.23%
6	What is it ?	6	0.82%
7	what 's it say ?	4	0.55%
8	what 's that word ?	4	0.55%
9	what am I doing ?	4	0.55%
10	what else ?	4	0.55%

Adverb-based wh-questions make up 24.2% of all wh-questions. These are the most complex wh-question type, requiring more complex cognitive skills, given they involve more difficult inferencing skills through asking how, where, when and why. That these are more common than the simpler pronoun-based wh-questions. When looking at specific wh-words involved in the adverb wh-questions, *how* and *why* are considerably more frequent than the cognitively simpler *where* and *when*. The nature of most three frequent adverb wh-questions supports this point, in that they require complex inferences, including discussion of feelings ('why are you happy?', 'how do you feel?') and also explanation ('why not?').

Table 5.10.

Frequency of initial adverbs in adverb wh-questions.

Initial wh-adverb	Percentage of all adverb wh-questions
How	49.1%
Why	31.3%
Where	14.2%
When	5.5%

Finally, the least frequent wh-question type is the pronoun question, which makes up only 12.58% of all teacher wh-questions. All of these pronoun wh-questions begin with the pronoun *who*. Of the most frequent pronoun wh-questions (those with more than three occurrences), most ask about the author ('who wrote the story?') or the characters ('who does he help?', 'who is in our story?', 'who's in the story?', 'who else?', 'who is in the story?'). There are also three variations of 'who would like to be [character name]?' which makes up 12 pronoun wh-questions. This is a result of the roleplay nature of classes 2 and 4.

   5.4.3.2.   *Tag questions.* Linguistically interesting features of tag questions are the polarity of the tag, and the verbs and pronouns involved. The most common polarity of the tag questions is negative, which make up 83 (79%) of the 105 tag questions, whilst positive tags only account for 23 of the tag questions. This matches the results of Biber et al. (1999:211), who report that tag questions make up every fourth question in conversation, and the majority of these are negative. These negative tag questions are used to seek (or prompt) affirmation (e.g. 'printing is a lot smaller isn't it?', 'Tim was the ostler wasn't he?'), showing that teacher tag questions within the SEN Classrooms Corpus data are more likely to be confirmatory. Further, Biber et al. (1999:211) suggest that negative tags might be most common because positive declarative anchors are more common. As specified in the literature, verbs in tag questions either match auxiliary in their anchor clause or dummy 'do' (Biber et al.,1999:208; Huddleston and Pullum, 2002:891; Quirk et al., 1985:810).

Table 5.11.

Frequency of the verbs and polarity of tag questions.

Negative	Frequency	Positive	Frequency
isn't	23	is	3
wasn't	11	Was	0
don't	10	do	6
didn't	15	did	4
haven't	7	have	4
aren't	8	are	1
can't	1	Can	3
couldn't	1	Could	0
hasn't	2	Has	0
weren't	1	Were	0
won't	2	Will	0
wouldn't	2	Would	0
shall not	0	shall	1
Total	*83*	*Total*	*22*

The pronouns involved in the tag question show who/what the tag is referring to. The most common tag is the third person singular neutral pronoun *it*, which excludes both speaker and addressee, referring to a third party (Quirk et al., 1985:340). The third person pronoun is the most generalized pronoun (Biber, 1988:225), as it can refer to a very wide range of entities, which hence could explain its frequency. The first and second person pronouns *we* and *you* are next most common, occurring 21 and 22 times respectively. The first person pronoun *we* in all examples in the corpus is collective, including both the speaker and the listener, indicating an interpersonal focus (Biber, 1998:225; Quirk et al., 1985:339), which suggests that teachers here might be building relationships with their students through inclusivity. The second person pronoun *you* includes the addressee (either as an individual or as a group) but excludes the speaker and suggests a high degree of involvement with that addressee (Biber, 1999:225; Quirk et al., 1985:339; Huddleston and Pullum, 2002:1463), suggesting teachers in the SEN Classrooms Corpus also

identify individual children and draw their attention in the use of tag questions, in order to prompt responses. In addition, Biber et al. (1999:333) suggest that the frequency of first and second pronouns in conversation is due to the fact both participants are in immediate contact and the interaction typically focusses upon matters of immediate contact. Hence, the use of these pronouns may be due to the conversational mode.

Table 5.12.

Frequency of pronouns in tag questions.

Pronoun	Frequency	Percentage of all pronouns in tag questions
It	30	28.6%
You	21	20.4%
We	22	21%
She	13	12.4%
They	9	8.6%
He	8	7.6%
I	2	1.9%

5.4.3.3. **Non-interrogative questions.** The main point of interest with regard to non-interrogative questions is clause structure. First, the top five non-interrogative questions are assessed. As seen in Table 5.13, three of the five most frequent non-interrogative questions involve interjections ('yes or no?', 'no?', 'yes [name]?'). This suggests that a great deal of teacher interaction in the SEN Classrooms Corpus in the form on non-interrogative questions involves seeking affirmation or refutation. However, it might also suggest that the shortest, most general questions will be more frequent in this data. Two of these top five involve direct address in the form of nominals ('[name]?', 'yes [name]?'), which, when looking at then in context, suggests that teachers in the SEN Classrooms Corpus

regularly use non-interrogative structures to pick out individuals within the classroom, perhaps in order to encourage them to participate. The remaining top-five question takes the form of a verb ('pardon?'). Looking at these examples in context, this prompts a repetition, which could be used as a prompt to confirm knowledge, as well as repetition of a misheard prompt.

Table 5.13.

The top five non-interrogative questions.

Non-interrogative question	Frequency
yes or no % ?	45
no % ?	15
yes ANONnameStudent % ?	9
pardon % ?	8
ANONnameStudent % ?	5

The next analysis was to categorise all the non-interrogative questions according to their linguistic structure. The groupings of non-interrogative structures were as follows:

- Sentence fragments: incomplete sentences ending with rising intonation

- Yes or no: any instance of yes or no with rising intonation

- Name: any name used with rising intonation

- Okay: any instance of okay used with rising intonation

- Other: does not fit the above structures

The most common structures were sentence fragments (e.g. 'his daughter is?', 'Ariel is a?', 'chocolate cake and?'), which made up 38.33% of all non-interrogative questions. These account for a much greater percentage (38.33%) of the non-

interrogative questions as a whole than did the top five non-interrogative questions (total of 14.29%). This pattern suggests that this analysis is more informative. These sentence fragment questions are similar to wh-questions, in that they leave space for a missing clause element, to be specified by the respondent; however, they retain regular declarative clause structure and lack a wh-word, the gap instead being indicated by the point where the partial declarative ends and the rising intonation.

The next most frequent structure involves interjections (*yes* and/or *no*) used with interrogative function, which make up 20% of all non-interrogative questions. This supports the finding that teachers use non-interrogative questions within teacher discourse to seek confirmation or negation. The use of *okay* as a non-interrogative question has a similar function, seeking agreement from the respondent; this makes up 16.4% of all non-interrogative questions. Thus, combined, these confirmatory functions account for 36.4% of all non-interrogative questions, and in turn this result suggests that affirmation plays a large part in teacher discourse through questions in the SEN Classrooms Corpus.

The final identifiable structure of non-interrogative questions involves teachers using names with rising intonation to mark an intended respondent (e.g. 'okay [name]?', 'alright [name]?'), as discussed previously, which make up 9.76% of all non-interrogative questions. These draw attention and mark an intended respondent, hence encouraging participation and production on the part of the pupil.

Table 5.14.

Structural types of non-interrogative question.

Type of question	Frequency	Percentage of all non-interrogative questions
Sentence fragments	220	38.3%
Yes or no	115	20%
Okay	94	16.4%
Name	56	9.8%
Other	99	17.3%

5.4.4. Pupil responses to teacher questions. The final analysis examines pupil responses to teacher questions. This was done manually, because it is not possible to search automatically for the utterance after a question which contains the response. Thus, full concordances for all question types were downloaded. These were then manually analysed and labelled. First, the context following a question was labelled as either a *response* (where the teacher question was immediately followed by at least one pupil utterance) or *no response* (where there was no following pupil utterance). Utterances labelled as responses were than labelled as *correct* (if they answered the teacher question appropriately, e.g. T: what do you do on your birthday? P: you get presents and go out for tea) or *incorrect* (if they did not answer the teacher's question appropriately, e.g. T: why is he angry? P: erm hairy). This process allows the identification of the rate of pupil responses to teacher questions, as well as the relative frequency of correct and incorrect responses.

Overall, only 42.6% of teacher questions are responded to by pupils, and 57.4% are not. Of course, this only accounts for verbal responses. However, non-verbal responses (e.g. a pupil passing a book to the teacher after being asked 'Can I have that book?') were impossible to identify, as the transcription of non-verbal

gestures was limited (see further discussion on the transcription of physical action in Chapter 6). These results on verbal responses to questions suggest that questions used by teachers in the SEN Classrooms Corpus are considerably less successful at promoting responses than suggested in the literature, which depicts questions being primarily used to promote production on the child's part (De Rivera et al. 2005:14; Stricklin, 2011:621; Winn, 1994:91). However, among questions that are responded to, more were answered correctly (82.4%) than incorrectly (17.6%). This suggests that, whilst teacher questions in the SEN Classrooms Corpus may not promote production as much as perhaps is intended, they do seem to promote comprehension, as evidenced by the correct responses. Formulating these responses requires the children to make appropriate inferences and to demonstrate their own knowledge and understanding. This phenomenon is also evident in the SEN Classrooms Corpus in the analysis of pupil responses to verbal directives that will be presented in Chapter 6.

Table 5.15.

The frequency of pupil responses to teacher questions across classes in the SEN Classrooms Corpus.

| Class | Total questions | Responses | | No response |
		Total responses	Correct / incorrect	
Class 1	326	122 (37.4%)	90(73.8%) / 32 (26.2%)	204 (62.8%)
Class 2	625	270 (43.2%)	229 (84.8%) / 41 (15.2%)	355 (56.8%)
Class 3	334	139 (41.6%)	118 (84.9%) / 21 (15.1%)	195 (58.4%)
Class 4	435	202(46.4%)	167 (82.7%) / 35 (17.3%)	233 (53.6%)
Overall	1720	733 (43.6%)	604 (82.4%) / 129 (17.6%)	987 (57.4%)

Differences in pupil responses between classes might arise from differences of teacher style or of pupil ability. In terms of response rate, as can be seen in Table 5.15, there are only slight differences between classes. There are proportionally more responses in classes 1 and 3, the higher ability classes. However, this is not a substantial difference, with 39.55% of questions in classes 1 and 3 being answered and 44.53% in classes 2 and 4. Likewise, although there are slight differences between classes in terms of the proportions of correct and incorrect responses, again these are not substantial, with 79.69% correct responses in classes 1 and 3 and 83.9% in classes 2 and 4. The fact that these differences in response rate and response correctness across classes in the SEN Classrooms Corpus are not substantial across classes (and therefore not across teachers either) suggests that the rate at which teacher questions elicit a correct response from SEN pupils may not depend upon pupil ability. Likewise, the fact that the patterns of responses across classes is relatively consistent suggests that questions and responses are a universal feature of teacher discourse in the SEN Classrooms Corpus data, rather than being a feature of independent teacher or pupil style – at least in terms of their frequency (of course the structure and sophistication of the responses cannot be discerned from this quantitative analysis).

Finally, response rates to different question types were compared in order to see which (if any) are more productive. Of the three question types, wh-questions yield the most responses proportionally (47.7%). This could be due to the nature of the other question types, which are confirmatory and hence do not strictly necessitate a response, whilst the nature of wh-questions is to elicit information, which, in at least some cases, must be supplied if the discourse is to move forwards. Moreover, as the most complex type of question, wh-questions permit a greater range of potential

answers from pupil; this may make them more likely to be responded to than other types. However, this pattern of responses is similar to the pattern for question responses overall – as is, in fact, the pattern for non-interrogative questions. Tag questions, on the other hand, are very different, with only 9.5% of all tag questions being responded to at all. These, therefore, seem to be the least successful question type at eliciting a response (and hence promoting production). This could be due to their complex nature, which requires understanding of the main clause's proposition, interpretation of the tag itself and inferences about the truth value of this proposition. This could also be a result of tag questions being the least frequent teacher question type overall, which might mean that pupils are less exposed to these and hence may be less likely to respond.

In terms of correctness of responses to different question types, generally the proportions vary little from the equivalent proportions for responses to questions of all types. Between 79.2% and 88.1% of responses are correct across all types of question. This again supports the idea that, whilst questions are not as effective as might have been hoped or expected as prompts for pupil responses in the SEN Classrooms Corpus, they are successful in terms of establishing understanding, and hence correct answers, in those cases when a response is given.

Table 5.16.

The frequency of pupil responses to pupil questions across classes in the SEN

Classrooms Corpus.

Question type	Total questions	Response		No response
		Total responses	Correct / incorrect	
Wh-questions	1041	497 (47.7%)	397 (79.9%) / 100 (20.1%)	544 (52.3%)
Tag questions	105	10 (9.5%)	8 (80%) / 2 (20%)	95 (90.5%)
Non-interrogative questions	574	226 (39.4%)	199 (88.1%) / 27 (11.9%)	348 (60.6%)

5.5. Discussion

These results demonstrate the benefits corpus methods can bring to the study of teacher questions, through giving us information about the frequency, distribution, form and function of questions. We can use this information to explore the use of teacher questions in the SEN Classrooms Corpus, which we can then compare with the expectations laid out by previous research. Whilst we cannot apply these findings to the exploration of teacher discourse in wider settings, they might prove a starting point for discussion.

The major implication of these analyses is methodological. These analyses allow us to explore what can and cannot be done using corpus methods to explore teacher questions. The corpus queries prove relatively robust, allowing us to identify different questions types. This provides an important contribution to the field, allowing future researchers the means to search for questions automatically in corpus data. The main limitation here was in the complexity of YNA questions, which made searching for them impossible. However, we could still retrieve information about these types based on a process of elimination. Corpus methods allow us insights into

quantitative information about question use in the SEN Classrooms Corpus. However, as the corpus queries only return examples of questions and not their context of use, in some ways subsequent analyses were limited. Thus, whilst we can consider the prevalence of questions, in order to make any pedagogical interpretations we need to consider the context the questions are used in through manual analysis. This exposes the main methodological limitation of this work; we can use corpus methods to give frequency information, but this decontextualized data is not interpretable without manual analysis.

Nonetheless, the analyses in this chapter allow us to explore question use in the SEN Classrooms Corpus in different ways, including considerations of the distribution of teacher questions, the relationships between question form and complexity and an evaluation of pupil responsiveness. It is important to note, however, that we must be cautious in the application and discussion of these findings. Due to the small sample included in this corpus, we cannot and must not make generalisations to SEN environments more widely. The analyses presented here can only inform us about the use of questions in these specific classes in this specific school with these specific teachers and pupils. We can, however, consider whether the findings in this chapter align with existing research and these findings might act as an insight for future research into more representative data on wider SEN environments.

One of the main findings is that in the SEN Classrooms Corpus there are no significant differences in the quantitative patterns of question use according to text (distribution across class/lesson) and to speaker (distribution by teacher). It was hypothesised that higher challenge questions might be restricted to use with higher ability pupils, as also suggested by Blything et al. (2019), but the distribution analysis did not find this to be the case in this data. This could suggest two things. First, it

suggests that the use of questions may not be affected by individual teacher style or by pupil ability in these classes, given that the distribution of questions in the classroom was relatively stable across different teachers and different ability classrooms. Second, if question usage is in fact stable, these results can be taken as suggesting that questions are a universal feature of teacher discourse in these SEN classrooms, unaffected by external characteristics of the class or the teacher.

However, when looking at the specific numeric data, there are some differences in teacher use of different question types. For example, whilst there was no difference in use of wh-questions between teacher 1 and teacher 2 (42.3% and 41.3%), there was a difference in how these teachers used wh-questions in individual lessons. For teacher 1, this overall percentage is a result of a greater use of wh-question in class 1 (52.5%, range 46-61%), plus a lower use in class 3 (36.5%, range 32-40%). For teacher 2, the overall result is a combination of two very similar percentages for classes 2 and 4 (42.3% and 41.3%, ranges 40-45% and 34-47%). Further analysis of this element would require a more in-depth analysis than is allowed by the constraints of this thesis but is something that should be considered in future work. These findings, in addition, can only tell us about questions use in the SEN Classrooms Corpus data set, which is not representative of SEN classroom settings more widely. What these result do demonstrate, however, are they using corpus methods we can gain interesting insights into the frequency and distribution of questions in classroom corpus data. Given a more representative sample, we might be able to make subsequent pedagogical inferences about question use in SEN classrooms more generally.

The findings on pupil responses shed light on the success of questions in teacher discourse in the SEN Classrooms Corpus, both in terms of the teacher's

productive (hence response rates) and comprehension aims (hence the correctness of responses). This is an issue not considered previously in the literature. Overall, non-responses were more common than responses to questions within the SEN Classrooms Corpus, both overall and separately for each distinct question type, with less than half of all questions prompting responses. In terms of pupil production, then, questions in this SEN Classrooms Corpus data did not have a very high success rate. However, when responded to, questions were more likely to be answered correctly than incorrectly, averaging 82.4% positive responses. Thus, whilst in this data the questions do not always achieve the teacher's productive aims, when the questions do promote a response from pupils, these responses are more likely to be successful (and hence promote a correct answer). Interestingly, this finding aligns with results to be presented in Chapter 6 concerning pupil responses to verbal directives from teachers in the SEN Classrooms Corpus. Again, whilst these results cannot be generalised to SEN classrooms more generally, they do demonstrate that we can use corpus methods to explore the frequency and correctness of pupil responses to questions. Future applied research with a more representative data set could appropriately investigate how teachers might improve the productive success of questions, whilst maintaining their comprehension success rates.

Finally, the linguistic analysis of the structure and frequency of different question types produced certain points of interest, specifically concerning wh-questions and tag questions. Analysis of the wh-words in wh-questions showed the importance of going beyond simple quantification in the analysis of questions. Determiner wh-questions are the most common type of wh-question in the SEN Classrooms Corpus. This was the least challenging type of wh-question outlined in Blything et al. (2019). However, when assessed in discourse context, these what

questions often had abstract referents (e.g. 'what do you think?') rather than the concrete ones that might have been expected (e.g. 'what shape is it?'). In light of this, it is interesting that the adverb wh-questions were the next most common, despite being the most complex type. This finding constitutes a novel contribution to knowledge and a challenge to Blything et al.'s work, suggesting that the challenges and constraints of the wh-question types are not as straightforward as initially outlined. The relationship between linguistic questions form and question complexity is not linear. This suggests that in order to fully consider the complexity of questions, we need to move beyond this simplistic model of complexity based upon overarching linguistic category and focus both upon individual questions and their context of use in order to assess the constraints imposed. Further, these results demonstrate the need for manual, qualitative concordance analysis alongside more automated and quantitative methods, which is a central theme throughout this thesis. Contextual analysis has shed more light on the initial linguistic frequency analysis of the question types.

The linguistic analysis also provides insight into the form and function of non-interrogative questions in the SEN Classrooms Corpus. Non-interrogative questions in fact make up almost a quarter of all questions in the SEN Classrooms Corpus data, showing that non-interrogative forms that are questions in function arguably play a large role in teacher discourse in this data. The most common form of these questions was as sentence fragments, which, like wh-questions, offer a space for missing information. Thus, this type of non-interrogative question might be used to ask children to provide information. While non-interrogative questions were assumed to be a low challenge, confirmation seeking question type, the closer analysis of the functions of the sentence fragments contradicted this assumption. This provides

another challenge to Blything et al. (2019). However, the next most frequent form was interjections, in which form the non-interrogative questions operate to seek confirmation. Non-interrogative questions consisting of interjections function like YNA questions, seeking confirmation, checking knowledge and prompting participation. This indicates that the function of these non-interrogative questions might be more complex than initially expected, as they involve production and confirmation, as well as sometimes promoting comprehension. These findings stress the importance of more research on this question type (and other forms), assessing their forms and functions and the complex ways in which they might work in SEN classrooms.

5.6. Conclusion

This analysis sheds light on the use of teacher questions in the SEN Classrooms Corpus. Questions were prevalent in the data, universally used by all teachers regardless of pupil ability or teacher style. The findings regarding the complexity of questions in the SEN Classrooms Corpus were variable. For example, lower challenge questions were found to be more frequent, but there were no identifiable patterns by teacher or by class, which suggests that, rather than being affected by participants involved, questions seems to be a universal feature of teacher discourse across different ability groups in this data. Findings regarding pupil responses to teacher questions suggests that questions are not always successful in eliciting production from the child, despite being prominently used in all SEN classrooms in the corpus. However, when they were answered, questions were more likely to prompt correct answers, which suggests that they do succeed in promoting comprehension skills in this data.

As previously mentioned though, these results only tell use about the nature of questions in teacher discourse in the SEN Classrooms Corpus. We cannot use results from this data to generalise to wider SEN environments. Nevertheless, this chapter demonstrates that we can use corpus methods to successfully provide frequency and distribution information on question use in our data, which allows us to make certain inferences, but which also needs more contextual analysis in order to provide pedagogic interpretations.

Chapter 6: Directives

6.1. Introduction

This chapter comprises five sections. The first examines teachers' use of directives to structure classroom interactions, the second focuses on their linguistic form, and the third on the search queries developed to identify these in the SEN Classrooms Corpus. The fourth section presents an analysis of these search queries, comparing and contrasting subtypes of verbal and action directives within and between classrooms and the pupil responses to these directives. In the final section, these findings are integrated and the implications are discussed.

6.2. Definitions of directives

The review in Chapter 4 explained that researchers often label features of teacher discourse by their pragmatic function, rather than by their linguistic form. The focus of this chapter is the use of directives in teacher-pupil interactions. Directives are utterances which function to elicit some kind of action or response on behalf of the listener. The use of directives in classroom interaction has been discussed by a number of researchers (DeLoache and DeMendoza, 1985; Irvin et al., 2014; Irvin et al., 2015; Ninio, 1983; Whitehurst et al., 1988; Wilcox-Herzog and Kontos, 1998;). The four main types of directive discussed in the literature are reviewed next. These are distinguished by the response they promote, which is either a verbal response (verbal directives) or an action (action directives).

6.2.1. Verbal directives. There are two types of directives that direct or request a verbal response: *imitatives* and *elaboratives*.

6.2.1.1. Imitatives. Imitatives are verbal directives that request the listener (in this case the child) to imitate. Whitehurst et al. (1988:555) explored the

use of a number features of teacher discourse, one of which they label *imitative directives*, defined as "labelling with request to imitate", giving 'Giraffe. You say that' as an example. Ninio (1983:447) similarly discussed a number of features of teacher discourse, one of which she labelled "imitation-eliciting requests" which are "requests for the child to imitate a modelled word", for example 'say 'doll''. These imitatives involve an adult asking a child to repeat something from the adult's utterance. Whilst both Whitehurst et al. and Ninio provide the examples above, they do not provide a more advanced or linguistic discussion of these examples. Neither do they provide information of frequency of use.

6.2.1.2.   Elaboratives. A second sub-type of verbal directive is *elaboratives*. These involve a request for more information than a simple imitative. In the literature reviewed below, researchers discuss elaboratives as a function of speech, much as with directives. However, there is some disagreement within the literature as to whether the elaborative is the utterance that inspires a subsequent elaboration, or whether the elaborative is the elaboration itself. As the focus of this thesis is primarily on teacher talk, the elaborative will be considered the adult input, which in turn provokes an expansion or elaboration from the listener.

Wilcox-Herzog and Kontos (1998:34) explain that an elaborative "provides more task information than is needed", implying that they view the elaborative as an expansion. However, they also explain that elaboratives can take the form of "open questions, elaborative statements, and suggestion", which instead suggests that the elaborative is the input. Unfortunately, they do not provide examples to clarify further. However, elaborative statements and suggestions involve directives, such as 'tell me more'. Similarly, DeLoache and DeMendoza (1985:13) talk about how teachers should aim to encourage children to provide "elaborations". Again, they do

not provide examples, but it is reasonable to suppose that these would involve a directive. Thus, whilst elaboratives are not particularly well-defined in the literature, adults may use elaborative directives, such as 'tell me more', which function to ask a child to expand upon a previous utterance.

6.2.2.   Action directives. These request a listener to do, rather than say, something. There are two types to consider: *physical action directives* and *behavioural management directives*.

6.2.2.1.   Physical action directives. Physical action directives have been simply labelled 'directives' in the literature, but they should be distinguished from other types because they seem to request some physical action from the listener. For example, Whitehurst et al. (1988:555) described a directive as a request for nonverbal action, with the example 'turn the page'. Thus, a directive is a statement that attempts to promote some physical action in the listener. Similarly, Wilcox-Herzog and Kontos (1998:34) described a directive as the teacher "telling the child what to do", with the example 'use your walking feet'.

6.2.2.2.   Behavioural management directives. Behavioural management directives are similar to simple directives but, rather than directing an action, they attempt to limit some kind of behaviour. Irvin et al. (2014:234; 2015:140) described these as statements where a child displays an undesirable behaviour and an adult requests a different behaviour. Thus, behaviour management directives function to control a child's behaviour. The example given by Irvin et al. (2014:234; 2015:140) is a teacher saying 'stop looking at the computer area, we are building a tower with blocks right now'. It seems likely that directives using *do not* could fulfil a similar behaviour management function, such as 'do not look at the computer'. Thus,

behaviour management directives attempt to restrain some behaviour on the part of the listener, by requesting them to stop or limit one of their actions.

6.3. Linguistic definitions of directives

The literature defines directives in terms of a pragmatic function of speech, whereby a speaker attempts to direct the actions of the listener in some way. However, in order to create a corpus query, we need to begin with a definition of the linguistic form of a given feature, as explained in Chapter 4. Quirk et al. (1985:827), whose work is built upon to establish linguistic definitions of teacher talk features, make a very explicit link between directives (pragmatic function) and imperatives (linguistic form), explaining that directives are typically imperative in form. Biber et al. (1999:219) also make a link between imperatives and directives, stating "Imperatives typically ask the addressee to do something (or not to do something) after the moment of speaking" (see also Huddleston and Pullum (2002:929). Thus, according to contemporary grammars, there are very clear links between directives (as a pragmatic function) and imperatives (as a linguistic form).

In relation to the literature and directive types outlined in Section 6.2, the linguistic form most closely matched to the directives is imperatives. First, the (albeit brief) descriptions and examples given of imitative directives by Nino (1983) and Whitehurst (1988) indicate that they are talking about imperatives, but with varied structures. Whilst Ninio's (1983) definition involves a simple imperative, Whitehurst et al.'s (1988) definition is slightly more complex, with an imperative that has a *that* anaphor, preceded by a labelling statement to which the anaphor refers. Of note, both involve an imperative structure and include the same speech verb *say*. This suggests

that imitatives, which require a verbal response, rely upon a central speech verb. This point will become important for the creation of a CQP query (see Section 6.4).

The literature does not provide explicit linguistic examples of elaboratives, but the "elaborative statements and suggestion" that Wilcox-Herzog and Kontos (1998:34) propose may well involve an imperative sentence structure, with a speech-based imperative similar to imitatives, but involving a more specific speech verb that asks for expansion rather than imitation, such as *tell* or *expand*. Moreover, although the descriptions found in the literature are extremely brief, we can see that directives are imperative in linguistic form, with verbs entailing a physical action. Finally, with behaviour management directives, we see that the verb *stop* is used in an imperative structure in order to limit a behaviour and, as already noted, it is also possible that negative imperatives could have a similar function.

The review of contemporary grammars and of the teacher discourse literature indicates that directives are strongly linked to imperative sentences. Hence, to define and create queries, imperative linguistic structures were searched for. That said, despite links between imperative form and directive function, they are not exclusive. Huddleston and Pullum (2002:929) acknowledged this, noting that "we extend the sense of 'directive' so that it covers not just orders, requests, instructions and the like but also advice or merely giving permission". They also note that we do get examples of non-imperative directives such as interrogatives or declaratives as directives. Similarly, Wilcox-Herzog and Kontos (1998) observe that elaborative directives may take a number of forms. It is important to remember that not all imperatives are directive in function. Biber et al. (1999:211) explained that "Imperative clauses are, however, not only used to monitor actions, but also to regulate conversational

interchange" and that "Other examples are *look* used as an attention getter, *hear hear* to express agreement, *say* introducing an idea, and *mind you* expressing a comment".

Thus, whilst imperatives are most prototypically used with a directive function, they may have alternative meanings, which is considered in the analysis of the corpus. For the current purpose, directives are considered as primarily imperative in realisation, given their mention in the literature as being so and also due to the fact that alternative types, such as interrogatives, will be captured by other queries in later chapters. Hence the focus of the remainder of this section is the linguistic structure of imperatives to provide a framework for constructing the corpus queries.

6.3.1. Linguistic definitions. Biber et al. (1999:219) provide a simple and concise linguistic explanation of imperatives, explaining that "imperative clauses are characterised by a lack of a subject, use of the base form of the verb, and the absence of modals as well as tense and aspect markers". Quirk et al. (1985) give a slightly more extensive definition, as follows:

> Directives typically take the form of an imperative sentence, which differs from a declarative sentence in that: (a) it generally has no subject (b) it has either a main verb in the base form or (less commonly) an auxiliary in the base form followed by the appropriate form of the main verb. (p. 827)

As observed earlier, Quirk et al. (1985) makes a very explicit link between directives (function) and imperatives (form). Quirk et al. (1985) also provides a useful tabulation of structures of the imperative, which is shown in Table 6.1.

Table 6.1.

Quirk's (1985:830) table of imperative structure.

Subject		1st person	2nd person	3rd person
Without subject		-	Open the door.	-
With subject	Without let	-	You open the door.	Someone open the door.
	With let	Let me open the door. Let's open the door.		Let someone open the door.

It is worth noting here that although Quirk considers the *let* imperative here, Huddleston and Pullum (2002:924) make a distinction, explaining that "The main syntactic division within the class is between ordinary imperatives (the default subclass) and let-imperatives" and CLAWS tags *let's* as a modal verb. Due to the nature of this category and, as it is not what would be considered the simple imperative type most commonly used in directives, the *let* imperative will be discounted hereafter.

6.3.2. Linguistic form. Biber et al. (1999:219) explain that the imperative is typically used in contexts where the addressee is apparent, given that it intends to produce an immediate response from the listener, and therefore "the subject is usually omitted but understood to refer to the addressee". Quirk et al. (1985:828) explain that, in these cases, "It is intuitively clear that the meaning of a directive implies that the omitted subject is the 2nd person pronoun *you*". This is the case with most imperatives. Sometimes, however, the subject *you* is retained (Biber et al., 1999:219, Quirk, 1985:829; Huddleston and Pullum, 2002:925). Biber et al. (1999:22) argue that the addition of the subject *you* could be used to single out the addressee or to soften/sharpen the command, depending upon the context.

Where a subject is present, elements other than the second person pronoun may occur in subject position. Biber et al. (1999:219) note that sometimes the subject may be expressed in the form of a vocative. Biber et al. (2002:1108-109) explain that vocatives may be any of the following: endearments, family terms, familiarizers, familiarized first names, first names in full, title and surname, honorifics and others (including nicknames). Second, Quirk et al. (1985:829) note that third person subjects are also possible, with examples, like 'somebody close the door' or 'parents with children go to the front'. In sum, typically an imperative involves an omitted subject. If the subject is present, more often than not this will be the second person pronoun *you*, but in some cases vocatives or third person subjects may appear.

The subject (whether omitted or present) in an imperative is followed by a verb. Quirk et al. (1985:827) explain concisely that "The imperative verb lacks tense distinction and does not allow modal auxiliaries". Thus, the verb within the imperative is in the base form. The imperative cannot be marked for tense, nor can modal auxiliary verbs (such as 'will', 'may', etc.) be used in the imperative. As the imperative refers to an immediate situation, Quirk et al. (1985:828) explains that it is therefore "incompatible with time adverbials that refer to a time period in the past or that have habitual reference". For example, the sentence 'jump over the hedge yesterday' is hard to interpret as meaningful.

6.3.3. Negative imperatives. The imperative can be made negative. Quirk et al. (1985:830) explain that to negate the first three types of imperative (see Table 6.1) we simply add *don't* or *do not*. Huddleston and Pullum (2002:929) explain that typically "Analytic *do not* occurs as a somewhat formal variant of the inflection *don't*". It is worth noting that, structurally speaking, here the *do* is finite and the verb

following the *do* verb then counts as an infinitive, meaning that negative imperatives start with a finite base form just like the affirmative imperatives.

6.3.4. Preceding imperatives. There are a number of elements that may precede imperatives to modify them in some way, a non-exhaustive list of which is provided by Biber et al. (1999:222). First, the tags *will you* and *would you* may be added to soften commands, but these alter the structure from imperative to interrogative. Second, the politeness marker *please* may be added to again soften the command. Third, the auxiliary *do* may be used to make a positive imperative more urgent. Fourth, adding the adverb *just* minimizes the imposition. There are also a number of adverbs not mentioned by Biber et al. which may be used to premodify imperatives such as *always* and *never*.

6.3.5. Conclusions on the linguistic form of imperatives. This review shows that the imperative has two linguistic forms. The first, the standard imperative, is structured as follows:

OPTIONAL PRE-MODIFIER + OPTIONAL SUBJECT (2nd person pronoun *you*/vocative/3rd person pronoun) + BASE FORM OF VERB

The negative imperative is structured as:

OPTIONAL PRE-MODIFIER + OPTIONAL SUBJECT (2nd person pronoun *you*/vocative/3rd person pronoun) + *do not/don't* + INFINITIVE VERB

6.4. Methodology: creation of queries

6.4.1. Ideal imperative query and issues with this query. First, a direct mapping of the syntax into CQP syntax is outlined; hereafter, this is labelled as the *mapped query*. As with all such queries, this will be constructed on a component-by-component basis. It is important to note that here the focus is on affirmative

imperatives, hence the optional *don't/do not* is omitted. Being directly mapped from the imperative syntax, this query would ideally have perfect precision and recall, but instead was found to be extremely problematic. Although it matches imperative structure, only 28% of matches retrieved by the search are true imperatives.

The following section outlines the query, followed by an error check. This demonstrates the problems with this search. An alternative method to search for directives/imperatives in a more accurate manner is presented in the following section. As explained in Section 6.3, the component-by-component structure of imperatives is:

OPTIONAL PRE-MODIFIER (adverb) + OPTIONAL SUBJECT (2nd person pronoun *you*/vocative/3rd person pronoun) + BASE FORM OF VERB

The first element specified is an optional modifier. Premodifiers are typically adverbs such as *just*, *please*, *never* and *always*. Here *do* is omitted, as mentioned by Biber et al. (1999), because this will be captured by the later finite verb element. A quick search of the corpus revealed that these adverbs are labelled with the *RR* part-of-speech tag and hence can be matched with the simple search *[pos="RR"]*. To limit the problem of potential mistags, this search was edited to *[pos="R.* "]?* which returns any adverb POS tag zero or one times, making this element optional (see Chapter 4 for a more in depth explanation of CQP query syntax).

The next component to search for was the subject which, as outlined in Section 6.3, can be the 2nd person personal pronoun *you*, a third person pronoun or a vocative. Thus, we combine these POS tags with the Boolean 'or' operator (|) and mark the entire expression as optional using the zero or once (*?*) repetition operator. Here, the *PPY* POS tag returns *you*. To match the third person pronouns that Biber et al. (1999) discussed such as 'somebody', we use the *PN1* tag, which matches

indefinite singular pronouns (which is how these are labelled in CLAWS), rather than as third person pronouns (which match things like 'he' and 'she'). Names within the corpus are anonymised and a search for these anonymised tags reveals that these are labelled either *NP1, NN1* or *JJ*. Thus, the *N.** option specifies that any POS tag beginning with an *N* may be matched and the *JJ* retrieves any anonymised names labelled *JJ*. The overall component for the optional subject, therefore, is:

[pos="(PPY|PN1|N.*|JJ) "]?

The final and most central component of the imperative is the base form of the verb, which is easy to identify in CQP syntax. The search requires a POS tag with a character string beginning with a *V* (which indicates a verb) and ending with an *0* (which marks a finite, base form of a verb), using the *.** regular expression to match any number of arbitrary middle characters. Thus, the component query for the base form of the verb is: *[pos="V.*0"]*

Thus, the full mapped query for imperatives is as follows:

[pos="RR"]? [pos="(PPY|PN1|N.*|JJ) "]? [pos="V.*0"]

This query returned 2606 matches from the entire corpus. A scan of the concordance lines, however, revealed that whilst this query matched all imperatives in the corpus, it included all finite verbs. Thus, the recall is flawed with many false positives: that is, examples included in the data set which are not imperatives.

An error check on a 200 concordance line sample was conducted. First, the validity of the match was noted; either the match was a true imperative or it was an error (a false positive). Once errors were identified, these concordance lines were analysed to identify the root of the problem. Of the 144 errors in the sample concordance lines, there were three key issues: mistags (16 instances, 8% of total

returns), auxiliary verbs, and cases where a finite verb was matched in a non-imperative sentence structure (128 instances, 64% of total returns). It is important to note here that this query would also capture negative imperatives, through capturing their initial finite *do*. This is also problematic, because they can be considered a different type of imperative, as explained in Section 6.3.

A key issue within the matches was mistags, a common problem of POS tagging. This involved cases where a *V*0* was matched, but the token was not a base verb. This happened on 16 occasions within the 200 concordance line sample, some examples of which are given in Table 6.2. There are a couple of reasons for this tagging error. First we saw mistagging of novel words or unusual typography like 'ickle' and 'c-a-l-m'. We also get instances where nouns which are potentially grammatically ambiguous are labelled as verbs, like 'picture' and 'sound'. In addition are examples like 'coz', which was often marked as a base verb, instead of a conjunction.

Table 6.2.

Examples of mistagging errors in results from the mapped imperative query.

not_XX Theseus_NP1 I_PPIS1 think_VV0 the_AT King_NNB Ageus_NP1 's_GE son_NN1 is_VBZ	Theseus_NP1 coz_VV0	he_PPHS1 's_VBZ the_AT one_PN1 that_CST kills_VVZ the_AT minotaur_NN1 so_CS we_PPIS2
doing_VDG ?_YQUE Which_DDQ letter_NN1 does_VDZ it_PPH1 start_VVI with_IW ?_YQUE which_DDQ	sound_VV0	?_YQUE w-i-n-d_NN1 good_JJ w-i-nd_NN1 can_VM you_PPY put_VVI that_DD1 all_DB together_RL
's_VBZ your_APPGE last_MD one_PN1 ?_YQUE wind_NN1 good_JJ girl_NN1 wind_NN1 which_DDQ	picture_VV0	?_YQUE wind_VV0 %_NNU ?_YQUE is_VBZ there_EX wind_VV0 in_II that_DD1 picture_NN1
do_VD0 n't_XX know_VVI magical_JJ words_NN2 were_VBDR they_PPHS2 ?_YQUE they_PPHS2 disappeared_VVD	ickle_VV0	words_NN2 right_RR yes_UH right_RR let_VM21 's_VM22 just_RR get_VVI this_DD1 up_RP
's_VBZ not_XX storm_NN1 what_DDQ letter_NN1 does_VDZ it_PPH1 start_VVI with_IW ?_YQUE	c-a-l-m_VV0	good_JJ it_PPH1 actually_RR says_VVZ calm_NN1 calm_VV0 so_RR which_DDQ

The second and more frequent error involved the matching of the base/finite verb. A finite (and therefore base form of a verb) is simply the verb within a sentence that carries tense/mood. Thus, the finite verb can occur in any sentence, not just the imperative. The fact that the defining characteristic of imperative structures is the finite base form of a verb is problematic. This is because this query matches a series of optional elements followed by a base-form verb, meaning that any finite verb in the corpus is matched by this query. This is a significant issue because 64% of the finite verbs matched were not imperative. There were two key ways in which finite verbs could erroneously be matched: either they were auxiliary verbs (which are typically

the first verb in a clause, and hence are often finite) or they were finite verbs in a non-imperative sentence. Examples of both are provided in Table 6.3.

Table 6.3.

Examples of finite verb in non-imperative sentences errors in results from the mapped imperative query.

Error type	Examples		
Finite verbs in non-imperative sentences	I_PPIS1 think_VV0 we_PPIS2 'll_VM do_VDI one_MC1 more_DAR example_NN1 before_CS we_PPIS2	listen_VV0	to_II some_DD people_NN from_II yesterday_RT I_PPIS1 think_VV0 we_PPIS2 'll_VM have_VHI
	angry_JJ and_CC mad_JJ brilliant_JJ that_CST could_VM be_VBI the_AT sentence_NN1 that_CST	you_PPY write_VV0	down_RP ANONnameStudent_NN1 is_VBZ predicting_VVG that_CST if_CS Robin_NP1 Hood_NP1 gets_VVZ away_RL
Finite auxiliary verbs	I_PPIS1 like_VV0 it_PPH1 you_PPY like_VV0 it_PPH1 %_NNU ?_YQUE brilliant_JJ how_RRQ	do_VD0	you_PPY know_VVI if_CSW you_PPY 're_VBR winning_VVG the_AT most_DAT points_NN2 though_RR
	of_IO language_NN1 we_PPIS2 know_VV0 our_APPGE poem_NN1 uses_VVZ ?_YQUE cos_CS we_PPIS2	've_VH0	done_VDN them_PPHO2 last_MD week_NNT1 it_PPH1 was_VBDZ last_MD week_NNT1 what_DDQ words_NN2
	that_DD1 what_DDQ you_PPY 're_VBR saying_VVG yeah_UH oh_UH my_APPGE word_NN1 I_PPIS1	do_VD0	n't_XX want_VVI to_TO no_AT pressure_NN1 but_CCB who_PNQS was_VBDZ in_II the_AT

In the first finite, but not imperative, example the lexical verb 'listen' is finite as it is the first verb in the clause, but this is placed within a declarative sentence. This is the same with the verb 'write' in the second example. In terms of the finite auxiliaries, all three are finite because they are the first verbs in their respective

clauses, but these clauses are not imperative in structure, instead they are declarative or interrogative. Thus, the major issue with this mapped imperative query is its reliance on matching optional elements and a central finite verb. The only definite element matched (given the others are optional) is thus the finite verb, which is problematic because these verbs are extremely prevalent and not exclusive to imperative forms. Thus, whilst this search has more-or-less perfect recall - it will never miss an imperative - the precision is flawed, as it matches lots of other, non-imperative examples too.

6.4.2. An alternative query method. This brief error-check indicated that the mapped search query is not accurate enough to retrieve matches of all simple imperatives for analysis. Further, as the central component of an imperative is the finite verb, any query matching these will inevitably be flawed and hence will require some manual analysis to remove errors. For the purpose of this study, the number of matches had to be reduced. It seemed most appropriate to search for directives/imperatives that matched those discussed in the literature for two reasons. First, this would allow imperatives with specific directive functions to be assessed. Second, doing this would reduce the number of matches, making manual analysis much easier.

For those reasons, imperatives were grouped into types of directives, in order to form more specific queries. Here we need to return to the distinction between verbal and action directives. Within verbal directives, the same query was used for both types (elaboratives and imitatives). For action directives, it was necessary to separate the queries into one for physical action directives and two queries for the different types of behaviour management directives (which hereafter will be labelled negative imperatives and prohibitive directives). Figure 6.1. explains this.
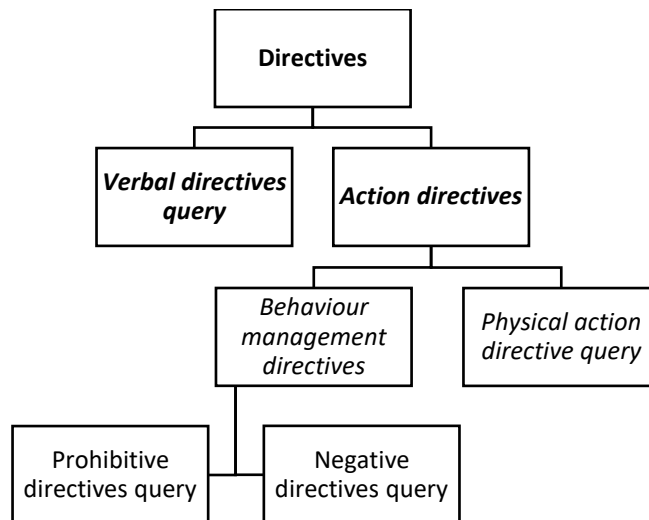
Figure 6.1.

An explanation of the nested structure of directive types and subsequent queries.

In the remains of Section 6.4 the completed set of imperative/directive queries is outlined, which have been adapted from the mapped query and informed by the literature about components of these directive types.

6.4.3. Query for verbal directives. Elaboratives and imitatives were grouped into a single search as verbal directives, because they are identical in form; each involves an imperative and a speech verb, but they differ according to the meaning of the verb. Thus, these involve the same query, the results of which are labelled as the verbal directives query and could be categorized later in manual analysis. In Section 6.3, these directives were linked to imperatives and it was also pointed out that these directives most often involve a verb of speech, which is what will be focussed upon in query definition for this imperative type. When forming an ideal mapped query, a central problem was looking for optional elements preceding the finite verb. So, in order to maximise the consistency of the queries, only the finite

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verb was searched for and the surrounding context was examined in later analysis. Whilst this new query faces the same problems of finite verb identification as with the previous mapped query, it returns fewer matches and hence will be much easier to analyse manually for errors.

Elaborative and imitatives are both imperative in structure and involve a verb of speech. The search, therefore, involved a search for a base form of a verb with a speech meaning. This was extremely easy to do using CQP syntax with an expression that considers both POS tags and semantic tags (*semtags*) at the annotation level. The expression first specifies that the token must be labelled with a *V.*0* POS tag, which returns base finite verb forms. The query, however, also specifies the semtag this word must have, using the Boolean operator *&*. The semtag chosen was *Q2.**, with the arbitrary character and zero or more regular expressions meaning that any tag beginning *Q2* will be matched. Tags beginning *Q2* are those for speech acts (Wilson and Thomas, 1997). Thus the full search *[pos="V.*0" & semtag="Q2.* "]* matches any base verb which has a speech act meaning.

The full semtags of all speech verbs matched was checked. This enabled consideration of whether there were any other semantic labels applied to these verbs which may fit with an imitative or elaborative function and whether a full semtag search would be more appropriate than a simple semtag. From the full semtag results, the instances each semtag occurred in as part of a full semtag was counted. Interestingly, only five semantic tags occurred in more than 10 matches of the 106 results of the speech verbs query. These were *Q2.1* (in 84 matches), *Q2.2* (in 81 matches), *X3* (in 41 matches), *A10+* (in 38 matches) and *Z4* (in 28 matches). *Q2.1* and *Q2.2* were ignored because these would be captured in the original simple semantic search. The *Z4* discourse bin semantic tag was also ignored, because this tag is

applied to any discourse markers that do not fit any other tag (which would not be applicable to imperative speech verbs, as these should have some related semantic tag). The *X3* and *A10+* tags were potentially more interesting as their labels (sensory and open/finding/showing respectively) did not immediately exclude them from potentially capturing speech verbs. For these two categories, all matches within the corpus were searched to assess whether they did, indeed, capture verbs of speech. There were no verbs within the corpus labelled with these tags as their primary semantic tag which could be considered to function as a verb of speech. As a result, these semantic tags were excluded. This process, therefore, revealed that the two semantic tags appropriate for this search were *Q2.1* and *Q2.2*, which were already included in the query.

Next, was a consideration of whether it would be best to do a full semtag search including these two values, rather than a simple semtag search, which would match all examples where these were listed as potential tags, not simply as the primary semantic function. This is called a *broadsweep* search (Semino and Demjen, 2017:68). USAS assigns a list of semantic tags to each given word or phrase, in order of likely relevance in context. Normally, however, tools are often limited to the first-choice semantic tag for each word or phrase. A *broadsweep* search allows us to search for a specific semantic tag anywhere in this list of possible tags, rather than just in the first-choice tags. This was done by running the query search, but replacing *semtag="Q2.*"* with *fullsemtag contains "Q2.1|Q2.2"*. This returned 275 matches (as opposed to the 106 from the earlier query). Examination revealed that this search was full of errors; the primary function of many of the results was not a speech act. For example, we see frequent examples like 'go on' and 'put your hand up'. As a result, a full semtag search was not used and instead conducted a simple semtag search which

returned fewer errors when matching speech verbs. This process not only allowed the semantic tags involved in the query to be tested, it also allowed decisions to be made whether a simple semtag query was a better fit to return more accurate matches for finite speech verbs. Once this query was created, it was restricted to only teacher and teaching assistant utterances.

The next steps involved categorising directive type and error checking. Both were done at the same time using CQPweb's *categorise query* function, which allows labelling of every concordance line returned from a search and later save the categorised queries as separate saved queries. As a result, matches can be labelled as errors, an elaborative or an imitative. Labelling required a subjective decision, but was strictly guided by definitions of elaboratives and imitatives, with imitatives asking for repetitions and elaboratives requiring expansion. There were some interesting examples requiring decisions here, the most notable being imperatives including *read* and *sound out*, which, as will be explained in Section 6.5.2.1, were labelled as imitatives.

This categorization process led to the labelling of 16 imitatives, 35 elaboratives and 55 errors. Whilst this is a high error rate (51.9% of matches were errors), this process meant that errors could be eliminated. The search query had good recall, demonstrated by a failure to find anything it missed using the more extensive full semtag search. As a result, we know that this returned almost any possible imperative involving a verb of speech and can assume these 16 imitatives and 35 elaborative represent all the elaborative and imitative directives within the corpus.

6.4.4. Queries for action directives.

6.4.4.1. ***Query for behavioural management directives.*** Behavioural management directives attempt to restrain some behaviour on the part of the listener,

through requesting them to stop or limit one of their actions (see Section 6.3). These can occur in two forms: either a simple imperative with a verb meaning *stop* (hereafter labelled a prohibitive directive) or a negative directive.

Query for prohibitive directives. The central feature of a prohibitive directive is a finite verb with a prohibitive meaning. A similar method to that of verbal directives was used. First, CQPweb was used to examine all potential semantic labels for the only verb used in the literature *stop*. The result was *T2d/S8d/M8/H4/A1:1:1*. The USAS labels for these tags were examined to consider whether they are prohibitive in meaning. *H4* (residence) and *A:1:1:1* (general actions) were discarded immediately, as these are not linked to prohibition. The remaining tags were combined with *VV0* to see if any would match a prohibitive directive. *S8d* (hindering) as a tag was not relevant as with *VV0* all instances were *help* or *fight* which are not prohibitive. Likewise, all examples of *M8* (remaining/stationary) with *VV0* were *sit*, which again were not prohibitive in meaning. The only remaining tag was the one labelled the primary tag *T2d*, which indicates time:ending. This was the only tag which, when combined with *VV0*, matched prohibitive directives. An additional search of the full USAS tagset did not reveal any other relevant tags. A full semtag search was conducted to identify instances of prohibitive directives where the time:ending meaning was not the primary tag applied. None were found. As a result, a simply semtag query was used:

*[pos="V.*0" & semtag="T2.* "]*

This query searches for a finite base form of a verb, which is labelled with a time:ending meaning. As with all directive types, all matches were then categorised resulting in six prohibitives and 61 errors.

Query for negative directives. The second behavioural directive type examined was the negative directive, the structure of which was outlined in Section 6.3) as: do + negator (+ optional adverb) + infinitive verb. This was very easily translated into CQP syntax as follows:

[pos="VD0"][pos="XX"][pos="R. "]?[pos="V.*I"]*

The first element specifies a token with the POS tag *VD0* (*do*) must be matched. The next component matches a negator. The following component matches a token with a POS tag beginning with *R* (and therefore an adverb) zero or one times, hence making it optional. This was tested with the *** regular expression instead of *?* to match potential multiple adverbs but this returned no additional matches. Presence of *you* after the negator was also tested using the query

[pos="VD0"][pos="XX"][pos="PPY. "][pos="R.* "]?[pos="V.*I"]* but this returned no additional directive matches and hence was discarded. The final component matches an infinitive verb, through a POS tag starting with a *V* and ending with an *I.* The middle arbitrary character expression allows for *be*, *do* and *have*, as well as lexical verbs. As with all directive types, all matches were then categorised. This process resulted in 41 negative directives and 64 errors.

6.4.4.2. **Query for physical directives.** The final action directive type to identify were physical directives (see Section 6.2.2.1 for an explanation of this duplicate label) which are requests for physical action from the child. Of all directive types, this was the most difficult to identify, because a 'physical action' is not a notion for which we can find a single semantic tag. A simple *[pos="XX" & semtag="XX"]* query could not be formed. First, a frequency list was compiled of all finite verbs in the corpus using the search *[pos="V.*0"].* This list of 220 verbs was manually searched and only verbs of physical action were highlighted. All of the

following were discounted: speech and sensory verbs (e.g. *say*, *talk*, *answer*, *hear*, *look*, *listen*, *hiss*), cognition verbs (e.g. *think*, *concentrate*, *agree*) and all the prohibitive verbs included in the previous query. This left a list of the following 120 physical action verbs. All of these verbs were included as options in the query, using word annotation. The full query for directives was:

> *[pos="V.*0" & word="do|have|go|come|sit|show|thank|get|give*
>
> */cross|stand|put|help|hold|make|feel|hang|keep|write|start|use|calm|rhyme|*
>
> */blend|fall|draw|face|wait|flick|spell|save|press|hug|pedal|clear|combine|*
>
> */picture|wind|repeat|change|ship|bring|dare|kiss|bet|sign|pick|turn|setlle|send|*
>
> */time|pass|shake|play|guard|fight|line|collect|find|take|work|slow|sink|eat|*
>
> */weave|crash|smooth|wet|begin|pinch|fly|spray|move|swim|stay|strip|form|*
>
> */drown|bob|head|open|kick|lift|pause|splash|pace|churp|creep|fidget|throw|*
>
> */underline|fit|wear|skip|head|close|touch|cut|gag|kill|meet|check|unjumble|pop*
>
> */clap|match|disguise|grab|fish|brush|spin|mix|set|speed|kick|be|perform|mark|*
>
> *cool|steer" %c]*

This query specifies that any token matched must have a finite verb part of speech tag and the word must be one of the physical action verbs specified.

This query returned 1,420 matches, which were then categorised into errors and valid physical action directives. In contrast to previous coding, all non-physical action directives had to be excluded in addition to errors. The following decisions were made to guide this process. First, *go on* when used as a verbal prompt (e.g. 'go on tell me') was discarded, because it did not concern physical direction. However, examples of *go on* which prompted physical action (e.g. 'go on sit down') were retained. Whilst the *go on* prompt in itself might result in some interesting analyses, as it clearly has a role in supporting interaction, this was not a focus of the current

work. However, it could be explored in future research. Further, light verb constructions involving sensory actions such as *have a look* or cognitive actions like *have a think* were also discarded, as these do not explicitly refer to physical action. Any examples of *do* in a negative imperative were discarded, because these had already been included in the negative imperatives query. As with all directive types, matches were then categorised. This process resulted in 365 physical action directives and 1055 errors.

6.4.5. Method for analysing pupil responses to teacher directives.

Responses to teacher directives were coded by hand, because this could not be done with corpus software. First, all directives from the corpus were extracted, along with the four utterances following the directive and saved to a plain text file. Some directives were stacked; within a single utterance a teacher may use a directive, pause for response, then repeat this directive or use another (e.g. 'say it again (pause) go on say it again'). In these instances, the response was considered to relate to the final directive within a sentence and the other stacked directives were discarded.

For purpose of analysis, verbal and action directives were separated, because they require slightly different methods of analysis. For the verbal responses, naturally the intended pupil response is speech and hence relatively easy to identify by considering the utterances following the initial directive. Responses were categorized in three ways: no response (where the pupil did not provide any verbal input after the directive), correct responses (where the pupil responds in a way appropriate to the request of the directive), and incorrect responses (where the pupil responds to the directive but does not meet the request of the directive). After this, the linguistic features of the correct and incorrect responses were examined, including mean length of utterance, to assess exactly how children respond to directives.

Action directives proved slightly more complex, as naturally they aim to elicit a physical response. This is problematic, as only actions deemed meaningful were transcribed under the 'gap desc' tags within the corpus and hence many actions will not have been captured. This makes the identification of physical responses impossible. Thus, only verbal responses were examined. Signed and communication aided responses could be identified when looking at physical action directives. These responses are interesting because they include both an action response and a verbal response. These responses were analysed in a similar way to the responses to verbal directives.

6.5. Analysis of teacher directives

6.5.1. Frequency and distribution of teacher directives.

6.5.1.1. ***Verbal directives.*** The query returned 16 matches for imitative directives and 35 matches for elaborative directives. This works out at around 8.6 imitatives per thousand teacher utterances and 18.8 elaboratives per thousand teacher utterances (as there are a total of 1,861 teacher and teaching assistant utterances within the corpus). Elaboratives occurred more than twice as often as imitatives and hence were the most common type of verbal directive within the SEN Classrooms Corpus

Table 6.4 below shows the distribution of imitatives and elaboratives within teacher utterances within the corpus. Every single class witnessed a verbal directive in at least one lesson, indicating that both teachers used these in their lessons, but to varying degrees, dependent upon individual lessons or simply due to random variation across samples.

Table 6.4.

The distribution of verbal directives in the SEN Classrooms Corpus.

Verbal directive type	Category	Hits in category	Dispersion (no. texts with 1+ hits)	Teacher/TA utterances in text	Per 1000 teacher utterances
Imitatives	Class 1	3	3 out of 4	373	8.04
	Class 2	2	1 out of 4	562	3.56
	Class 3	3	1 out of 4	424	7.08
	Class 4	8	4 out of 4	502	15.94
	Total	16	9 out of 16	1861	8.6
Elaboratives	Class 1	8	2 out of 4	373	21.45
	Class 2	16	4 out of 4	562	28.47
	Class 3	4	2 out of 4	424	9.43
	Class 4	7	4 out of 4	502	13.94
	Total	35	12 out of 16	1861	18.8

Class 4 featured the most imitatives; eight were found, accounting for nearly 16% of teacher utterances in that class and 50% of the total imitatives in the corpus. This arose because these imitative directives featured in one specific section of class 4_260416, where the teacher was controlling an individual child's behaviour, telling them to 'say [teacher name] help'. This episode resulted in three of the eight imitatives in class 4. Despite this episode, class 4 was the only class with full dispersion; every single lesson contained at least one imitative. In contrast, classes 2 and 3's imitatives occurred in only one lesson in each case. Class 2 also had the lowest raw frequency of imitatives and also the lowest frequency per thousand teacher utterances. On the other hand, class 2 featured the most elaboratives, with 16 instances (28.47 per thousand teacher utterances). Classes 2 and 4 had full distribution, with elaboratives occurring in every single lesson; classes 1 and 3 only had half distribution, with elaboratives occurring only in two of the four lessons in each class.

Action directives: behavioural management directives.

Prohibitive directives were extremely infrequent in the corpus, occurring on only six

occasions (1.61 times per 1000 teacher utterances). As they were so infrequent, it is

difficult to consider dispersion. By way of contrast, negative directives were more

frequent, with 41 matches and 22.03 negative directives per 1000 teacher utterances.

The distribution of these behaviour management directives is shown in Table 6.5.

Table 6.5.

Distribution of behaviour management directives in the SEN Classrooms Corpus.

Behaviour management directive type	Category	Hits in category	Dispersion (no. texts with 1+ hits)	Teacher/TA utterances in text	Per 1000 teacher utterances
Prohibitive	Class 1	9	3 out of 4	373	24.13
	Class 2	17	4 out of 4	562	30.25
	Class 3	12	4 out of 4	424	28.3
	Class 4	3	3 out of 4	502	5.98
	Total	41	14 out of 16	1861	22.03
Negative directive	Class 1	3	1 out of 4	373	8.04
	Class 2	0	0 out of 4	562	0
	Class 3	3	2 out of 4	424	7.08
	Class 4	0	0 out of 4	502	0
	Total	6	3 out of 16	1861	3.22

Prohibitives occur in only two classes taught by the same teacher (classes 1

and 3). Prohibitives only occurred in three of the eight lessons for these classes and

importantly this was only on six occasions. Further, in text 1_050515 the two

examples were very near one another, with the TA and teacher engaging in a

repeating discourse. Thus, owing to their infrequency, prohibitives were not used

consistently enough in the SEN Classrooms Corpus to identify consistent patterns of

usage. By way of contract, negative directives occurred in 14 of the 16 lessons and

they occurred in all four classes in at least three lessons. This suggests they were very

well dispersed across classes and hence were probably a relatively important feature of classroom interaction (and, in turn, of teacher discourse). Class 2 featured the most negative directives, both in terms of number (30.25 per 1000 teacher utterances) and in terms of dispersion, with negative directives used in all four lessons of this class.

6.5.1.3. ***Action directives: physical action directives.*** Using the query, there were 365 physical action directives within the SEN Classrooms Corpus, which amounts to 196.13 per 1000 teacher utterances.

Table 6.6.

Distribution of physical action directives in the SEN Classrooms Corpus.

Category	Hits in category	Dispersion (no. texts with 1+ hits)	Teacher/TA utterances in text	Per 1000 teacher utterances
Class 1	27	4 out of 4	373	72.39
Class 2	155	4 out of 4	562	275.80
Class 3	55	4 out of 4	424	129.72
Class 4	128	4 out of 4	502	254.98
Total	365	16 out of 16	1861	19.61

Physical action directives were well distributed, occurring not only in all classes, but also in all lessons within these. When we combine frequency and dispersion information, both in terms of raw frequency and frequency per 1000 utterances, as shown in Table 6.6, they were used substantially more in classes 2 and 4.

6.5.1.4. ***Comparison of directive types.*** A comparison of the use of different types of directive to one another in the corpus as a whole can be found in Table 6.7. Prohibitives were the least frequent directive type, making up only 1.3% of all directives, and physical action directives were the most frequent type, accounting for 78.83% of all directives.

Table 6.7.

The frequency of directive types in the SEN Classrooms Corpus.

Directive type	Subtype	Raw frequency/ frequency per 1000 teacher utterances	Percentage of all directives
Verbal directives	Imitatives	16 8.6	3.46%
	Elaboratives	35 18.8	7.56%
Action directives: behaviour management directives	Prohibitives	6 1.61	1.3%
	Negative directives	41 22.03	8.86%
Action directives: physical action directives	Directives	365 196.13	78.83%
Total no. directives		463 248.79	
Note. Figures state first the raw frequency and second the frequency per 1000 teacher utterances in each class.			

Directive use can also be compared between teachers and classes. This can be seen in Table 6.8 in which the raw frequency and also frequency per 1000 utterances is shown (being normalised to take lesson length into account). Overall, directives were more common in classes 2 and 4. When comparing across classes, imitatives were most common in class 4 and elaboratives in class 2. Simple directives were the most common type in all classes.

Table 6.8.

The raw frequency and frequency per 1000 teacher utterances of directive types

across classes in SEN classrooms.

Directive type	Subtype	Class 1	Class 2	Class 3	Class 4
Verbal directives	Imitatives	3 8.04	2 3.56	3 7.08	8 15.94
	Elaboratives	8 21.45	16 28.47	4 9.43	7 13.94
Action directives: behaviour management directives	Prohibitives	3 8.04	0 0	3 7.08	0 0
	Negative directives	9 24.13	17 30.25	12 28.3	3 5.98
Action directives: physical action directives	Directives	27 72.39	155 275.8	55 129.72	128 254.98
Total no. directives		131 134.05	190 338.08	104 181.61	146 284.86
Note. Figures state first the raw frequency and second the frequency per 1000 teacher utterances in each class.					

6.5.1.5. *Summary of the results of frequency and distribution analyses of teacher directives.* The interpretation of the frequency results allows us to see the most common types of directives used within SEN classrooms, which in turn allows us to see what types of directions are most commonly used by SEN teachers in this data. The fact that physical action directives were the most common directive type in the SEN Classrooms Corpus is unsurprising, as these are an attempt by the teacher to control the classroom environment. Furthermore, it was speculated in the literature review that teachers would support more extensively – and hence use more directives - with lower ability children, which SEN children would undoubtedly be. This in turn might explain the choice of the teacher in classes 2 and 4 (the lower ability of the SEN classes) to do a roleplay activity in which they can guide the children more explicitly. Another contributing factor to the prevalence of physical action directives is that they involve the greatest range of verbs and direct the greatest range of actions and hence have the potential to be more frequent.

By way of comparison, verbal directives were considerably less common, suggesting that the direction of interaction plays less of a role in teacher discourse in the SEN Classrooms Corpus than the direction of physical action. When considering types of verbal directives, imitatives were less frequent than elaboratives. As outlined earlier, imitatives are considerably less complex than elaboratives, because they require simple imitation. That teachers use the more complex elaboratives more often in this data suggests that they are making attempts to inspire more complex verbal responses from children.

Behaviour management directives were the least common type of directive, with prohibitives being the least frequent directive type in SEN classroom discourse. One explanation for this may be in the nature of prohibitives, as they involve stopping a behaviour that is already in process, whereas negative imperatives involve stopping a behaviour before it happens. This could suggest that as a function behaviour management, teachers in this data prefer to limit behaviours before they happen. The infrequency of behaviour management directives as a whole, however, is surprising given that they were listed as a key function of directives in the literature (see Section 6.2). The results from the SEN Classrooms Corpus then refutes the literature, suggesting that in practice directives are rarely used for behaviour management.

Overall, results on the frequency of directives shed light upon the key functions of directives within in the SEN Classrooms Corpus. Directives here predominantly serve to organise the action within the classroom, as well as organising participation and comprehension, although to a lesser extent.

The second analysis, focused upon the distribution of directives across different classes, allowed us to investigate whether there are differences in directive use according to teacher style or pupil ability in the corpus. Directives were most

common in classes 2 and 4, which were the lower ability classes. One possibility is that teachers in these classrooms used directives to control the action and interaction of the classroom to a greater extent. This ability-based explanation is in line with the literature. When looking at these classes and the directives used in context, it became clear that the classroom activity could have a significant influence upon the use of directives. The classroom activities in classes 2 and 4 all centred around a role play activity, with children 'acting out' the story. Naturally, this kind of activity involves much direction from the teacher, meaning that we would expect many directives (both of action and or interaction) in these classes. This may still be linked to an ability-based explanation, as the teacher might have chosen these activities in the lower ability classes in order to support pupils more extensively. Thus, whilst the activity itself has more direct impact upon the prevalence of directives than the class ability, the initial choice of this activity is likely to be heavily influenced by the class ability, which in turn influences the frequency of directives. This makes clear that the context of interaction (particularly when we have such a small sample) plays a significant factor in the occurrence of features.

There were two more examples of contextual factors at play in the distribution of directives in certain classes which support the idea that context plays a key role in directive use. First, imitatives were most frequent in class 4, and less so in class 2, which is surprising given they were a similar ability and had the same teacher. The high frequency of imitatives in class 4, however, is due to a behavioural episode, which meant that the teacher was using more of these directives in the form of 'say [teacher name] help'. As a result, these directives were more frequent in this class than would be expected. Second, context appears to play an important role in the use of negative behaviour management directives. Class 2 featured the most negative

directives, both in terms of number (30.25 per 1000 teacher utterances) and dispersion. The majority (14/17) come from repetitions of the story, which included many negative directives (e.g. 'don't go to the surface', 'don't talk to people'). In contrast, class 4 had the same teacher but a different story and featured only three negative directives. This suggests again that we can often explain the frequency of features based on the context of the interaction.

Distribution analysis provides an interesting insight into the practical use of directives in the SEN Classrooms Corpus and shows that context has a significant influence on directive use: it is not simply determined by teacher style or children's ability.

6.5.2. Linguistic analysis of teacher directives.

6.5.2.1. ***Finite verbs used in directives***. In terms of frequency of finite speech verbs, the most common verb in imitatives was *say*, used in 75% of all imitatives, whilst the remaining matches (*read* and *sound*) were only used in 12.5% each. Both *read* and *sound* were included as imitatives rather than errors, because they involve reproduction of some written material. These were perhaps more complex than 'typical' imitatives involving *say*, because their repetition does not have a spoken stimulus, making the response more challenging. Turning to elaboratives, *tell* was the most frequently used finite speech verb involved with elaboratives, used in 88.6% of all instances, whereas *describe* was used just three times (8.6% of elaboratives). There was also an example of *let* as in 'let me know'. Here, the *let* was mislabelled as a finite speech verb. Although this is not the case and there is no speech verb present here, the combination of *let* and *know* convey the idea of communication and the *let* is a finite verb; hence this was considered a valid elaborative.

To interpret the relative frequencies of these verbs, the frequency of these verbs in the corpus were compared to those in spoken English using the spoken section of the BNC. The verbal directive query returned too many matches to manually assess for error. Therefore, a 100-word sample of the results of each verb was used to estimate the total number of imperative uses of that verb in the spoken part of the BNC as a whole. When converted to percentages, it was estimated that, of the verbs in imitatives within the BNC and therefore in general spoken English, *say* made up 82.2% and *read* made up 17.8% of the total, compared to the 75% of *say* and 12.5% of each *read* and *sound* distribution found in the SEN Classrooms Corpus. Interestingly, there were no matches for *sound* as a verbal directive in the 70 matches of *sound* as a finite verb in the spoken part of the BNC. This may be because, in the classroom, the *sound* verbal directives arise in the context of phonics instruction. When we consider that *sound* was absent in the BNC, it seems this missing 12.5% was distributed almost evenly then between *read* and *say*. In light of this, the frequencies of these two verbs were relatively similar to general spoken English. Using the same process, it was estimated that *tell* made up 90.6%, *describe* made up 2.1% and *let* made up 7.4% of verbs used in elaboratives in the BNC. Whilst the proportion of *tell* was similar in this corpus, the proportions of *let know* and *describe* were reversed, with *let know* being more common in general spoken English than in this corpus and *describe* being less common.

When looking at the frequency of the verbs in prohibitives, there are five instances of *stop* (making up 83.33% of prohibitives) and only one match with the verb *finish* (making up 16.67% of prohibitives). This is perhaps not surprising, given that all examples in the literature involve *stop*. Within the negative directive, the finite verb is always *do*, meaning this is of little interest. However, the infinitive verb

following the negator in the imperative is most interesting, given this verb specifies to the pupil what it is that they must not do. It is interesting, then, to consider the frequencies of these infinite verbs.

First, it is important to note that all instances of *go* and *talk* were ignored, as all examples of these are direct examples or repetition from 'The Little Mermaid' (as noted in Section 6.5.1.5). For the rest of the infinitive verbs, it was considered whether they were a verb of physical action or a mental process. Equal numbers (14 each) of the remaining matches were mental verbs and physical actions. For the cognitive verbs involved in mental processes, *worry* made up 12 of the 14, with *think* and *get (frustrated)* being the other two. With the physical actions, there was more variation, including *shout*, *make it up*, *do it/that*, *let*, *say*, *fiddle* and *be talking*. It is worth noting that speech verbs were included in physical action, although the behaviour managed in these cases is disruptive speech. These are included here though as they attempt to limit an audible activity. Thus, in terms of frequency, although the distribution of mental and physical verbs is relatively even, there is a bigger range of physical activities used in complement position. Likewise, in terms of overall frequency, *worry* is by far the most common behaviour which teachers attempt to limit.

Table 6.9.

A frequency breakdown of auxiliary do, negation and infinite verb combinations in

negative directives in the SEN Classrooms Corpus.

Search result	Number of occurrences	Percent
don't worry	9	21.95%
don't go	8	19.51%
don't shout	6	14.63%
don't talk	5	12.2%
do not worry	3	7.32%
don't do	3	7.32%
don't make, don't let, don't say, don't think, don't fiddle, don't get, don't be	1	2.44%

We can look at a frequency breakdown of the node word of the query to find out the most common finite verbs used in physical action directives. Full results of this can be seen in Appendix H. These verbs were grouped by semantic category, to see what meanings were encoded in the directives, by using the USAS semantic lexicon to identify the most common sematic tags applied to each. These semantic groupings are shown in Table 6.10.

Table 6.10.

Semantic groupings of finite verbs in directives.

Semantic category	Verbs involved	Raw frequency	% of all verbs in directives
M. Movement, location, travel and transport	come	71	19.45%
	sit	55	15.07%
	go	24	6.58%
	stand	23	6.3%
	hold	15	4.11%
	put	14	3.84%
	hang	12	3.29%
	send	4	1.1%
	bring, turn, lift	2	0.55%
	spin, bob, stay	1	0.27%
A. General and abstract terms	show	54	14.79%
	get	10	2.74%
	have	7	1.92%
	keep	5	1.37%
	find	3	0.82%
	press	2	0.55%
	use, flick, mix, make	1	0.27%
S. Social actions, states and processes	help	11	3.01%
T. Time	wait	6	1.64%
	start	2	0.55%
Q. Linguistic actions, states and processes	write	7	1.92%
	sign, spell	1	0.27%
X. Psychological actions, states and processes	pick, pop, fidget	1	0.27%
E. Emotional actions, states and processes	calm	2	0.55%
C. Arts and crafts	draw	3	0.82%
O. Substances, materials, objects and equipment	unjumble	1	0.27%
I. Money and commerce	save	1	0.27%
B. The body and the individual	Brush	1	0.27%

The most common semantic category in directives was *movement*. This was because directives concern a physical action and hence naturally often involve something moving. Instances involved verbs of general movement such as *come* and *go*, but also more specific movement verbs like *lift*, *spin* and *put*. The next most frequent category involved *general actions*, which again is perhaps not surprising, given the verbs were all identified as physical actions. There were also two matches for each of the *time, linguistic* and *psychological* labels. For time verbs, *wait* and *start* were seen, both of which were used in directives to monitor a physical action, either beginning it or pausing it. It was surprising to see verbs matching the *linguistic* category, as speech verbs had been removed. All the matches (*sign*, *spell* and *write*) were examples of physical processes in context, as well as communicative acts. The three *psychological* processes were examples of mislabelling: *pick*, *fidget* and *pop* were physical actions (picking out an item, putting something somewhere or moving around) as opposed to cognitive. Towards the end of the list, less frequent categories like *money* and *arts and crafts* were found. Overall, however the verbs involved in directives involved *movement* or *general action* but can also concern *linguistic processes* or *time actions*.

In addition to this general review of the meanings encoded in directives, the distribution of the directives and their surrounding context was considered. There is insufficient space to discuss all 40 here, so instead only the top three directive verbs (*come*, *sit* and *show*) are looked at, explaining their frequency, their distribution and the contexts in which they occur. *Come* was the most frequent verb in the category of directives, making up 19.5% of all instances. *Sit* was the next most frequent verb in directives, making up 15.1% of all directives. The third most common verb in directives was *show*, which occurs in 54 instances, making up 14.79% of all

directives. In terms of distribution, as shown in Table 6.11, all of these directive types

were more well dispersed and more frequently used in classes 2 and 4. When

considered in context, these directives were used frequently as a prompt for action,

which explained their prominence in classes using roleplay activities, where teachers

naturally direct physical action more. It is also interesting to look what followed the

finite verbs within these directives, in order to assess exactly what is being directed.

This is considered later in the next section.

Table 6.11.

Distribution of come, sit and show directives in the SEN Classrooms Corpus.

Directive type	Category	Hits in category	Dispersion (no. texts with 1+ hits)	Teacher/TA utterances in text	Per 1000 teacher utterances
come directives	Class 1	2	1 out of 4	373	5.36
	Class 2	41	4 out of 4	562	72.95
	Class 3	4	2 out of 4	424	9.43
	Class 4	24	3 out of 4	502	47.81
	Total	71	10 out of 16	1861	38.82
sit directives	Class 1	3	2 out of 4	373	8.04
	Class 2	33	4 out of 4	562	58.72
	Class 3	5	2 out of 4	424	11.79
	Class 4	14	4 out of 4	502	27.89
	Total	55	12 out of 16	1861	29.55
show directives	Class 1	0	0 out of 4	373	0
	Class 2	27	4 out of 4	562	48.04
	Class 3	2	1 out of 4	424	4.72
	Class 4	25	4 out of 4	502	49.80
	Total	54	9 out of 16	1861	29.02

6.5.2.2. ***Linguistic context preceding the finite speech verb.*** The

context preceding directives was classified into three types: a zero option (where the

imitative was the preceded by nothing), a subject, and a discourse marker. The

frequency of these elements for all directive types is found in Table 6.12.

When comparing elements preceding the directives, in all cases the zero

option is the most frequent, making up 65.23% of all preceding elements in directives,

in line with the literature outlined in Section 6.3 which specifies that the subject of the

imperative is usually omitted. More interesting, though, was that the next most

frequent preceding context is the subject, where the person to whom the directive is

addressed is specified, either in pronoun *you* or with their name. This is surprising,

given that in the linguistic literature we are told that the subject was normally omitted

in imperatives, but in the SEN Classrooms Corpus, we found that the subject occurs

before 21.38% of all directives.

Table 6.12.

Elements preceding directives in the SEN corpus.

Directive type	Preceding context	Frequency	Example
Verbal directives: imitatives	Nothing	6	say it again
	Subject	5	you say they are safe
	Discourse markers	5	right say that again
Verbal directives: elaboratives	Zero	16	tell me about King Titan
	Subject	11	you tell me if you can spell that
	Discourse markers	8	well tell me if you need a paper towel
Action directives: physical action directives	Zero	244	show me good sitting
	Subject	83	ANONnameStudent show me your cross and your mad face
	Discourse markers	38	right come back over here
Action directives: behaviour management directives: prohibitives	Zero	4	stop and listen
	Subject	0	
	Discourse markers	2	now Stop and listen
Action directives: behaviour management directives: negative directives	Zero	32	don't fiddle with the paper
	Subject	0	
	Discourse markers	9	right don't shout out
Total in all directives	Zero	302 (65.23%)	
	Subject	99 (21.38%)	
	Discourse markers	62 (13.39%)	

Whilst the zero option was the most common preceding element for all types of directive, the second most frequent element differed. For imitatives, subject and discourse markers were equally as frequent, meaning that the teachers were equally likely therefore to specify the individual using a subject or specify the manner of the directive or organise their talk using discourse markers. For elaboratives and physical action directives, subjects were more common than discourse markers as preceding elements. For example, statements using either the second person pronoun like 'You tell me if you can spell that' or vocatives like 'ANONnameStudent show me your cross and your mad face' were more frequent. This suggests that for these directive types, the teachers were more likely to specify the child they were addressing than to use a discourse marker. On the other hand, for the behaviour management types the discourse markers were more common preceding elements, suggesting that, for behaviour management, teachers were more likely to specify the manner of action using time adverbials like *now* or use discourse markers like *right* to organise their talk more clearly.

It is also worth noting that the contexts preceding the finite verb in negative directives were particularly interesting, as these included finite *do* followed by a negator. Of the two options of negation (*do not* or *don't*), the uncontracted form was the less frequent, occurring in only three of 41 matches (7.3% of matches); the contracted form was used in most occurring in 38 of the 41 (92.7%) matches. This is perhaps not surprising, when we consider the fact that this is a spoken medium, and hence contractions are more likely to be used. For example, in the BNC, we see that of all combinations of *do* and a negator, 80.0% are *don't*.

6.5.2.3. *Linguistic context following the finite speech verb.* The context following the directive verb was examined next; that is, what it was that the

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teacher was asking to be acted upon, repeated or elaborated upon. Whilst the preceding context of all directives were easily grouped, this was not the case for the following context and the elements available following the directive differed greatly based upon the directive type.

The context after the speech verb in imitatives was classified into five types: a direct reference (e.g. 'say bliz-a-r-d'), anaphoric reference (e.g. 'say it again'), a cut-off where the teacher does not finish their utterance, sounding-out words and reading words. The frequency of each type can be found in Table 6.13.

Table 6.13.

Categories of context following finite speech verbs in imitatives.

Following context	Frequency
Say with direct reference	7
Say with anaphoric reference	4
Cut-off directive	1
Sounding out	2
Reading	2

When considering the following context of elaborative speech verbs, *tell* elaboratives are focussed upon, as these were both the most frequent and the most interesting type. The first thing of note with these *tell* elaboratives was that in all cases they are followed by some nominal specifying who exactly it was that must be 'told' the information; 28 of 31 were followed by *me*, two by *us* and one by a pupil's name. Hereafter, *tell me* elaboratives will be focussed on specifically; not only were these the most common, but they also marked a direct interaction between pupil and teacher and hence involve more direct support. In *tell me* elaboratives, preposition phrases with *about* and questions are more commonly used following the directive in order to frame what information it is that the child should expand upon. Here, the

complementation pattern of *tell me* are considered and all 'types' are clausal direct objects, with the exception of adverbial noun phrases and *about* prepositions, which are phrasal. Of the 28 *tell me* elaboratives, 12 were followed by *about*, where the teacher specifies that the pupil must 'tell me about X'. The next most common structure following a *tell me* elaborative is a question, making up 7 of the 28 of the *tell me* elaboratives.

In terms of the context following prohibitives, there were two examples of 'stop and listen', where a conjunction is used to link two imperatives. We then saw two examples of the prohibitive 'stop repeating yourself'. We then had one example of a teacher using *it* as a direct object of the prohibitive in 'stop it', where the pronoun's exophoric reference lead back to some prior behaviour on the part of the child. In considering the infinitive verbs in negative directives, the directions involved and what behaviours should (not) be acted upon using these directives have already been discussed.

Given the number of different verbs and constructions used in physical action directives, it is impossible to look at all the following contexts, so the following context of the three most frequent physical action directive verbs (*come, sit, show*) were analysed. Table 6.14 shows the most frequent words following *come*. The most common combination was the use of *come on* which is commonly used as a prompting phrase to provoke a child into some action. This acted as a part of classroom interaction in that it was the adult encouraging some action, physical or verbal, on the part of the child. In addition, *and* was used frequently which suggests that multiple actions were linked, with the *come* inviting participation and the second element specifying the activity (e.g. 'come and sit', 'come and stand'). Here, the *come* was inclusive, as it suggested that the teacher is inviting the child towards them and

the linked verb then specified which activity the child must complete. This is interesting, as it suggests that teacher's directives encourage the child to work with them rather than independently. We also saw directions in the use of adverbs (*in*, *back*, *over*), as semantically *come* is a verb of movement which therefore involves a direction.

Table 6.14.

Frequency breakdown of words 1 right of come in directives in the SEN Classrooms Corpus.

No.	Search result	No. of occurrences	Percent
1	on	27	38.03%
2	and	19	26.76%
3	back	8	11.27%
4	over	4	5.63%
5	in	4	5.63%
6	to	3	4.23%
7	stand	2	2.82%
8	up	2	2.82%
9	sit	1	1.41%
10	into	1	1.41%

The frequencies of terms following *sit* are shown in Table 6.15. All of the examples were either adverbs or prepositions which specify where the child should sit (e.g. 'sit over there', 'sit back down', 'sit on the chair') or how the child should sit (e.g. 'sit up'). This is because *sit*, like *come*, is a movement verb.

Table 6.15.

Frequency breakdown 1 right of sit in directives in the SEN Classrooms Corpus.

No.	Search result	No. of occurrences	Percent
1	down	28	50.91%
2	back	10	18.18%
3	up	7	12.73%
4	on	3	5.45%
5	here	2	3.64%
6	over	2	3.64%
7	at	1	1.82%
8	in	1	1.82%
9	next	1	1.82%

An examination of the context following *show* directives, revealed that rather than physical directions (adverbs or prepositions), we saw pronouns (the indirect object) directing who must be *shown*, with examples of 'show me', 'show everyone' and 'show us'. This is because, unlike the first two examples, *show* is a general action as opposed to a movement, hence we do not need a spatial direction. These pronouns, however, served to direct the child in some way, through specifying who they must *show* and therefore where they must direct their response. This is also because *show* is transitive, hence requires an object, where *come* and *sit* in the previous examples are intransitive and hence they do not require direct objects.

Table 6.16.

Frequency breakdown 1 right of show in directives in the SEN Classrooms Corpus.

No.	Search result	No. of occurrences	Percent
1	me	49	90.74%
2	us	3	5.56%
3	everyone	2	3.7%

6.5.2.4. ***Summary of linguistic analysis of teacher directives.*** The analysis of the verbs involved in directives in the SEN Classrooms Corpus revealed that the verbs were dependent almost entirely upon the function of the directive. This was to be expected due to the fact that, as outlined in Section 6.3, the finite verb contains the element to be requested. For example, for verbal directives, *say* and *tell* were the most common verbs used in imitatives and elaboratives, respectively. This aligns with the examples provided in the literature review (Section 6.3). The same was true for directives used to manage behaviour, with *stop* being the most common prohibitive verb, as suggested by the literature in Section 6.3.

However, there was more variety in the verbs involved in physical action directives, which included movement verbs, linguistic and psychological actions and verbs of time. This arises because the physical action meaning allows more verbs. What is interesting, however, is that verbs of movement made up 62.2% of physical action verbs. This is considered further in the discussion in Section 6.7. Another unexpected finding was the negative verbs used in behaviour management directives. The findings involving verbs in behaviour management directives suggests that teachers attempt to limit cognitive as well as physical behaviours, but also that where physical behaviours are limited, there are a greater range of actions limited, whilst cognitive behaviour management mostly concerns limiting worry. This is also considered further in the discussion in Section 6.7.

When considering the results of the context preceding the directives within the corpus, we can see some interesting things both about the linguistic structure of directives and how this links to the linguistics literature, but also allows some insight into how the directive types are structured differently according to function, which is something lacking in previous literature.

The zero option was most common for all directive types. This is not surprising at all given the linguistic literature specifically states that the subject is most commonly omitted in imperatives, as explained in Section 6.3. The next most frequent element preceding the finite verb was a subject, where the person to whom the directive is addressed is specified, either in pronoun *you* or with their name. This is surprising, given that in the linguistic literature we are told that the subject is normally omitted in imperatives, but in the SEN Classrooms Corpus, we found that the subject occurs before 21.38% of all directives. This is most likely due to the setting of the interaction. First, it was a group setting, meaning teachers seek to disambiguate the person they are referring to. Second, as it was a classroom and the teacher used the directive to specifically request something on the part of an individual pupil, they used the subject to label and hence drew out or called the attention of this child.

We can also look at the context for the specific types of directive, where we see a difference in which is more common of discourse markers or subjects. For imitatives, these were equal. For elaboratives and physical action directives we see subjects were more common preceding elements, whereas for behaviour management discourse markers were more common. This suggests that, with elaboratives and physical action directives, teachers in the SEN Classrooms Corpus data are more likely to specify the person, whereas with behaviour management discourse markers are used to specify both the manner of the action and to control the interactions.

The final analysis of directives focused upon the elements which follow directives. Whilst for behaviour management and physical action directives, this did not shed too much light on the features and their use in teacher discourse, when looking at verbal action directives we found that the context following the directive

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itself was interesting, both in terms of content and in expanding the definitions provided by the literature.

There is a great deal of variation in the context following directive verbs in physical action directives, owing to the great variation of verbs and structures involved; hence these findings will not be synthesised here. Of the three main directive verbs (*come, sit* and *show*), we found markers of participation (e.g. *come on*), markers of environment in the presence of adverbs and prepositions after sit (e.g. *sit down*) and markers of recipient of the directive following show (e.g. *tell me, tell us, tell everyone*). This is interesting, as it shows the great variation, but we can also see that typically the elements following the verb controlled the environment, in terms of place or person.

The context following verbal directives was more interesting, as they provided interesting additions to the literature. When we looked specifically at imitatives, they involved some kind of statement to be repeated and the directives literature specifies this may occur in two ways, either being immediately labelled following the imitative or being mentioned in a labelling statement preceding the imitative and referred back to in the imitative using anaphoric reference (e.g. 'Giraffe. Say that'). Direct references match this first type, labelling the thing to be repeated in the imitative. This was the most common element following an imitative, occurring in 7 of the 16 matches. This prevalence is not surprising, given both their mention in the literature and also the fact that they are the simplest form of imitative in terms of the response required. The material repeated in the matches of imitatives from the SEN Classrooms Corpus occur were of three different types. First, we got three examples from class 4 where the imitative was a part of the classroom roleplay and the teacher was asking the child to repeat something as part of the acting out activity, in the examples 'say I

don't know', 'say I am sad' and 'say they are safe'. Second, we saw examples where the teacher told the pupil to 'say [teacher name] help', of which there are three examples in the imitative matches and which functions as behaviour management, with the teacher using it to direct the pupil on how to get assistance. Finally, we saw a single example in class 3 where the teacher said 'say bliz-a-r-d' (with the 'a-r-d' as separate sounds), which is similar to sounding out and perhaps more what we would expect of a 'typical' imitative like those mentioned in the literature (see Section 6.3). Thus, we can see referent of imitatives occur in three ways and have three functions: they serve either as a part of the roleplay activity, as a behavioural cue or as a means to get children to repeat and practice the production of tricky words.

The second imitative referent type, anaphoric reference, of which we saw four examples, was more complex. In the literature, it was shown that imitatives can involve an initial labelling statement, followed by the imitative which itself contains a reference back to this label in the form of the determiners *that* or *it*, as seen in the literature example 'Giraffe. Say that.' The anaphoric reference found in the SEN Classrooms Corpus differs, however, in that there were no labelling statements present. Instead, all instances involved the teacher asking the pupil to repeat a previous utterance with two examples of a teacher asking a child to 'say it again' and two where they asked a pupil to 'say that again'. It is possible that the teacher uses these imitatives to encourage the child to repeat themselves in order to get the child to confirm their knowledge and also to encourage reproduction of statements, which could be helpful in improving children's communication. As these made up 25% of all imitatives, it is clear that this type of imitative plays a key role in verbal directive use by teachers. These were more complex than those with a direct reference, as they refer back to the prior discourse, and hence require more complex cognitive skills.

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This could explain why they were used less frequently than the imitatives with a direct reference.

Overall, we find, then, that these results confirm the literature that the two main things following imitatives are direct reference or anaphor. However, this gives more information than the literature by giving us frequency information and confirming suspicions based on the nature of imitatives that those with direct reference were more common. Furthermore, this also goes against the literature notion of labelling statements with anaphor (e.g. 'say that'), instead having anaphor with no reference.

When considering the following context of elaborative speech verbs, focus will be placed upon *tell* elaboratives, as these were the most frequent and interesting type. The first thing of note with these *tell* elaboratives was that in all cases they were followed some nominal specifying who exactly it was that must be 'told' the information; 28 of 31 were followed by *me*, two by *us* and one by a pupil's name. This is interesting as we get a direction of who should be addressed, with the SEN teachers in this data marking themselves as the recipient, suggesting they are asking the child to interact with them.

In elaboratives preposition phrases with *about* and questions are more commonly used following the directive in order to frame what information it is that the child should expand upon. Here, the complementation pattern of tell are all clausal direct objects, with the exception of adverbial noun phrases and *about* prepositions, which are phrasal. Of the 28 *tell me* elaboratives, 12 were followed by *about*, where the teacher specifies that the pupil must 'tell me about X'. In elaboratives, *about* here serves as a prompt for exactly what information the pupil must provide in response to

this directive. The next most common structure following a *tell me* elaborative was a question, making up 7 of the 28 of the *tell me* elaboratives. Also, we saw two examples of subordinated interrogatives too, which are included here. This construction of a *tell me* elaborative followed by a question is particularly interesting when we consider the function of the utterance as a whole, as we must consider whether in these cases the directive is the *tell me* alone or whether the question is a part of it as well. In terms of grammar, sometimes they are grammatically independent (when the question has a question form or when 'something' is used to finish the 'tell me' clause'), but when subordinated as in 'tell me what it is' it is a part of the complementation of *tell*. However, whilst the two in the former case are structurally independent units, it could be argued that pragmatically they are linked. In a very similar way to the examples with *about*, in these examples the *tell me* acts as a prompt (and hence is the directive element) and the subsequent question is where the teacher specifies the information they require from the pupil's response. This adds to the directives literature, as we can see that typically *tell me* elaboratives are followed by either an about clause or a question, which function to specify exactly what must be expanded upon by pupils.

6.6. Results of pupil responses to teacher directives

6.6.1. Verbal directives. Of the 51 total verbal directives within the corpus, there were 23 non-responses, 25 correct responses and three incorrect responses. This means that only 54.9% of all verbal directives were responded to. When looking at the appropriateness of response, though, 89.3% were correct responses.

When separating the verbal directive types of the 16 total imitatives within the corpus, there were nine non-responses, six correct verbal responses, and one incorrect response. This means that, of imitatives, only 43.8% of all teacher directives in the

SEN Classrooms Corpus elicited a response from students as required. However, of the seven verbal responses to imitatives, 85.7% were correct responses. In fact, the only questionable response was where a teacher followed the directive 'you say I am sad' immediately by the question 'can you say that?'. The pupil's response ('yeah sad') suggests that they first respond literally to the teacher's question (giving an affirmative response) before attempting to repeat at least some part of the question. Of the 35 elaboratives, 60% of all teacher directives elicited a response (19 correct, 2 incorrect). Of the 21 verbal responses to elaboratives, 90.5% were correct responses. In both instances of questionable responses, the pupil first responded literally to the directive, either saying *okay* or *oh* and then the teacher prompted 'go on' before the pupil answered correctly. This suggests that the child did respond to the directive but required a second prompt.

Focusing on the imitative directive verbs, all three of the directive verbs (*say*, *read* and *sound*) yielded responses. In two of these the teacher gives the prompt (e.g. 'say they are safe') and in four cases they refer back to a previous utterance or an external source (e.g. 'say it again'). When looking at the elaborative directive verbs that yield responses, responses occur twice with *describe* and 17 times with *tell*. This is interesting, as only three of the total were *describe* meaning this was 66.7% effective, whilst only 17 of the 31 *tell* directives (54.8%) were successful.

The actual responses were very short, with a mean length of utterance of only 3.3 words for imitatives and 4.5 words for elaboratives. Elaboratives were expected to result in more extended responses. In terms of complexity, only six of the total responses to elaboratives involved use of complete sentences, the others involved only clauses or phrases, sometimes even only words. Even where sentences were provided as a response, they were very simple, such as 'he's old' or 'she picked the witch'. In

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all cases, the pupil responded to the given prompt and did not give any additional information.

6.6.2. Physical action directives. As explained in Section 6.4.5 it was not possible to accurately assess physical responses to action directives, due to the nature of transcription. However, it was possible to look for verbal responses to action directives; these may indicate some response or feedback from the pupil. Likewise, some physical action directives requested a child to *sign*, which is a physical action; however, the response was provided in these cases, as signs were consistently transcribed. As a result, both verbal and sign/communication aid responses to physical action directives were examined. Although this does not paint a full picture of the responses to action directives, it provides some insight at least into how pupils verbally (or non-verbally through signs) respond to these.

Of the 412 total action directives within the corpus, there were only four verbal responses and ten signed responses. More specifically, all of these were in response to physical action directives – there were no verbal responses to any of the behaviour management directives within the SEN Classrooms Corpus. This is perhaps not surprising, given these are aimed at limiting behaviours and therefore should not produce any response. Of the 365 physical action directives, 14 had verbal/signed/communication aided responses. This means that, of action directives, only 3.4% elicited a verbal or signed response and of physical action directives independently only 3.8% elicited a verbal or signed response. These values would be considerably higher if action responses were also considered, so these values do not represent the total number of 'correct' responses.

An analysis of patterns reveals the following. The mean length of utterance responding to a physical action directive was 2.25 words, which is shorter than for verbal directives, suggesting that the responses here might be more phatic. In two cases we get three-word responses when the teacher prompts the child 'do it again'. This shows the pupil repeating a previous utterance. There was one example of a pupil responding 'yeah' when a teacher told a child to write in a box, showing that the child agreed with the teacher. We see one example of a child responding 'that one' when a teacher asked them to 'show me the stormy sea'. Here we can infer the child is pointing to motioning to something, in their use of the deictic *that*.

Sign language will be considered in Chapter 7. However, it is interesting to note that signs and communication aided responses were an action response and a verbal response simultaneously. Of the ten responses here, three were via communication aid and seven were via Makaton sign language. This is most likely due to the infrequency of communication aid use by pupils. Two instances of communication aid resulted from a *show* directive and one from a 'press' directive, suggesting they function in a similar way to sign language responses, all of which stemmed from a 'show me' prompt. Due to the nature of the reduced Makaton sign language (for more detail see Chapter 7), it is not worthwhile looking at the mean length of utterance. Nonetheless, it is interesting to see pupils engaging and responding to prompts for sign language correctly.

In terms of frequency then, only 42 of the 463 directives in total in the corpus featured verbal responses, which is very low, showing children responded verbally to only 9% of directives. Of course, this would most likely be considerably higher, had it been possible to accurately assess physical responses, as physical action directives make up the most significant portion of all directives. It is also unsurprising that we

find the verbal directives the most successful both in frequency of verbal response and MLU of response, given these were directly aimed at prompting speech.

6.7. Discussion of teacher directives and pupil responses

As demonstrated in the summary of results sections throughout this chapter, we can compare the results of the directive types, comparing verbal directives, behaviour management directives and physical action directives, and consider what they can tell us about teacher discourse in the SEN Classrooms Corpus. Frequency analysis opens up discussion into the types of direction given in the SEN Classrooms Corpus. Distribution analysis shows us the importance of context with directives in this data. Linguistic analysis allows us interesting insights into the meaning encoded within directives in the SEN Classrooms Corpus, whilst also allowing us to look at the context of directives in use and the directions they specify. It is important to note from the outset that these results can only tell us about directive use by teachers in this specific data, we cannot use it to make generalisations about directive use in classrooms more generally due to restrictions imposed by the small, restricted corpus.

In terms of this thesis' research question, arguably the most important finding in this chapter is that it is possible to use corpus queries to accurately retrieve and classify directives from corpus data. This provides a contribution to the field, by providing a method by which to search for and retrieve directives in corpus data. In turn, these queries allow us to explore the frequency and distribution of directives in teacher discourse in the SEN Classrooms Corpus. There are, however, some methodological limitations exposed by this analysis. By providing only quantitative data, the context of directive use is not readily available for exploration using the corpus queries alone. As explained in the analysis, behavioural episodes or elements

such as story-content had a great influence on the directives and their frequency and distribution within the corpus. Without this contextual information the quantitative information might have been misinterpreted. For example, we might assume the frequency of directives was due to class ability, rather than simply being an affect to the roleplaying in lower ability classes. These findings remind us of the importance and influence of classroom context when considering frequency data, which is one of the main limitations of using quantitative methods without contextual qualitative interpretation. This finding in particular is important, as it shows that whilst the analyses demonstrate a corpus-based analysis is extremely useful in revealing patterns, we must still remember to consider the context of utterances.

In addition to the methodological insights, the results allows us to explore the use of directives as a part of teacher discourse in the SEN Classrooms Corpus. First, results suggest that direction of action was more common than the direction of speech or behaviour in the SEN Classrooms Corpus, which contrasts the previous literature, which focuses on directing language production and comprehension. This raises a conflict between literature and specific study of directives in the SEN Classrooms Corpus, with the former suggesting the direction of interaction is more important, whilst the latter suggests this feature functions to control the physical environment of the classrooms. These results align with this latter view, that directives predominantly control action, whilst controlling behaviour and speech to a lesser extent. Nonetheless, to confirm is the case in all SEN environments we would need a much broader study with a more representative data set.

The results of the context analysis allow insight into the structure of directives in the SEN Classrooms Corpus. In terms of preceding context, we found that, in line with the linguistic literature discussed in Section 6.3, we most often saw zero subjects

before the directive, given that the context specifies that the addressee should be obvious. In terms of the context following directives, for behaviour management and physical action directives in the SEN Classrooms Corpus, this did not shed too much light on the features and their use in teacher discourse. However, when looking at verbal action directives we found that the context following the directive itself was interesting, as it specified what must be said. This, however, simply confirms the directives literature, which specified that verbal directives would contain a statement to be repeated.

The results of the analysis of the verbs in directives provokes some interesting conclusions on the nature of the directions requested within directives in the SEN Classrooms Corpus. Mostly, we found that the directive verb was dependent entirely upon the function of the directive. However, we saw two exceptions to this. First, with physical action directives, we saw a variance in meaning that allows us to discover that the most common control was of the physical environment, given movement verbs were most prevalent, suggesting teachers most commonly control the literal space of action of the classroom in the SEN Classrooms Corpus. This links to the point made earlier explaining that physical action directives are most common due to the need to control the physical classroom environment. Second, with negative behaviour management directives, analysis of the verbs involved in these in the SEN Classrooms Corpus provides an interesting addition to the existing literature, as we find cognitive as well as physical processes. Not only were cognitive verbs as common as action verbs, *worry* was found to be the most common verb in negative directives in the SEN Classrooms Corpus. This is most likely because teachers seek to keep children calm and confident in the classroom and use this as a supportive tool to learning. The findings involving verbs in behaviour management directives suggests

both that teachers in this data attempt to limit cognitive as well as physical behaviours, but also that where physical behaviours are limited, there are a greater range of actions limited, whilst cognitive behaviour management mostly concerns limiting worry. These results might then contribute a new idea to the study of teacher discourse and directives; teachers might direct cognitive processes as much as they direct verbal and physical processes. This suggests directives may be used with cognitive ends as well as physical or learning/comprehension or production-based ends. To confirm this is the case in SEN teaching more widely we must explore this in a more representative corpus of SEN classroom environments.

Discussion of pupil responses allows us to investigate whether directives achieved their aims in the SEN Classrooms Corpus data. As pointed out, we could only look at verbal responses, due to the transcription, so we could only really look in depth at responses to verbal directives. As noted, overall the response rate to verbal directives was just 54.9%. This suggests that directives, despite their intent, are not successful in eliciting responses and therefore promoting production in the SEN Classrooms Corpus, as was listed as a key aim of directives in Section 6.2. Although the literature did not specify response rates, this gives an interesting insight, as it suggests (in this small data set at least) that these directives do not achieve their production aims. Of the two directive types, elaboratives were a lot more successful, producing responses 60% of the time in the SEN Classrooms Corpus as opposed to just 43.9% for imitatives. This is surprising, given elaboratives are more complex and require longer responses, hence, based upon the literature and the nature of this data, where pupils were of a lower ability, imitatives would be expected to have a better response rate. This result suggests that complexity of response required perhaps does not affect the likelihood of response. Whilst verbal directives were not as successful at

promoting responses from pupils, where there were responses in the SEN Classrooms Corpus, these were correct in 89.3% of cases. This suggests that they are successful in promoting comprehension. The fact that, when responded to, directives in this data more often than not elicited a correct response suggests that they are successful in inspiring appropriate verbal responses from pupils.

6.8. Conclusion

This chapter demonstrates the potential of corpus methods in searching for and retrieving quantitative information about teacher directive use in a classroom corpus. However, some results stress the need for more contextual analysis than is afforded by corpus methods. This suggests that, whilst corpus methods allow us initial insights into the use of directives, we need to analyse results in a qualitative manner in order to see the use of features in context. In addition, these results only allow us to explore the use of directives in the SEN Classrooms Corpus and make inferences regarding their use in these specific classrooms. A much larger and more representative corpus would be needed to make implications about directive use in SEN classrooms more widely.

Nonetheless, in terms of directive use in teacher discourse in the SEN Classrooms Corpus, the analyses in this chapter allowed a number of insights. All of these analyses demonstrate that directives are an important feature of teacher discourse in the SEN Classrooms Corpus. In particular, those which direct physical action are extremely prevalent in this data, most likely due to the fact that both allow teachers to directly control both the interaction and the action involved within the classroom and evoke participation, either physical or verbal. This fits very well with the socio-cultural model of learning outlined in Chapter 2 by which interaction and participation are viewed as essential precursors to development. Although responses

to directives were often limited, when pupils did respond, they typically responded in a correct or appropriate manner, which suggests that as a feature of teacher discourse in the SEN Classrooms Corpus, directives are very useful in promoting comprehension and understanding and sometimes more complex production skills.

Chapter 7: Augmentative and Alternative Communication (AAC)

7.1. Introduction

This chapter comprises four sections. The first considers the literature on the use of Augmentative and Alternative Communication (AAC), including the use of Total Communication and speech-generating devices. The next section addressed how this can be identified within the SEN classrooms' corpus. The third section presents the analysis of the use of AAC systems within the corpus and in the final section these findings are integrated and the implications are discussed.

7.2. An overview of Augmentative and Alternative Communication (AAC)

7.2.1. An introduction to AAC.
Augmentative and Alternative Communication (AAC) systems are designed "either to supplement (i.e., augment) an individual's existing speech or to act as their primary (i.e., alternative) method of expressive communication" (Mirenda, 2003:203. See also Glennen, 1997a:4 and Schlosser and Wendt, 2008:212). AAC is implemented through a variety of different methods, termed *systems* in this field of research. There are two main types of AAC systems: unaided and aided (Glennen, 1997b:60; Mirenda, 2003:204). Unaided techniques are those which do not require any equipment other than the body and involve use of manual signs and gestures. The main form of unaided AAC is sign language, which is discussed in Section 7.2.2. Aided communication involves the use of devices that are external to the individual, such as speech generating devices and these systems are discussed in Section 7.2.3.

AAC has many goals. First, AAC systems provide children who have developmental delays with an immediate means of communication; thus, they prompt improvements in speech production (Weitz et al., 1997:395, Schlosser and Wendt,

2008:212). Schlosser and Wendt (2008:226) reviewed 29 studies and found that the majority reported gains in speech production when AAC was used; Millar et al. (2006:246) found that AAC leads to gains in speech production in 89% of studies. AAC systems are intended to enhance children's communicative competence and facilitate the development of language skills (Millar et al. 2006:248). Specifically, Weitz et al. (1997:395) explain that AAC can facilitate the development of expressive and receptive language. Lund and Light (2006; 2007) report that for users of AAC progress can be seen in the areas of complex syntax and grammar, turn taking and linguistic complexity. Weitz et al. (1997:399) also note that AAC can be used to improve language comprehension, particularly where the system combines a visual representation of the spoken message with the spoken message itself, such as speech paired with manual signs or with symbols. This helps support comprehension, slows down the delivery of the message, and often promotes conversational exchange. With all these points in mind, the primary aim of AAC is to serve as both a bridge between conversational partners and as a means to foster language and communication development and is therefore a bridge to future language use. AAC provides a mode of expressive communication for use in the present to children who will, in most cases, progress to use speech in the future (Mirenda, 2001:142; Weitz et al., 1997:395).

For these reasons, AAC is now considered one of the mainstream communication options for individuals with severe speech impairments (Glennen, 1997a; Lal, 2010:120). Weitz et al. (1997:385) maintain that AAC has proven extremely helpful for children with severe speech and language disabilities, providing desirable educational outcomes and a strong foundation for communication. This stands in contradiction to the belief that AAC systems either limit or entirely replace

verbal communication, as shown in teacher and parent perceptions reported in many of the previous studies (Millar et al., 2006; Schlosser and Wendt, 2008; Weitz et al.,1997). In fact, more often than not, for individuals with severe impairments, AAC can complement the acquisition of functional communication and language skills (Millar et al., 2006:248; Schlosser and Wendt, 2008:226; Weitz et al., 1997:399).

In what follows, focus will be placed upon the two AAC systems used within the data: Total Communication and speech-generating devices.

7.2.2. Total Communication. Total Communication (TC) advocates the use of multiple modes of communication at once – sign language and verbal language, in the case of the SEN classrooms and the literature that will be considered hereafter. TC is widely agreed to be the most efficient mode of sign-based intervention, given that, as Mirenda (2003:204) explains, "Total Communication results in faster and more complete receptive and/or expressive vocabulary acquisition than does speech alone". TC is an example of the augmented sub-type of AAC, as it involves non-verbal communication used simultaneously with speech.

Goldstein and Hockenberger (1991) and Goldstein (2002) summarise an extensive range of literature on communication intervention in SEN environments, focussing on sign language and TC. Hence, emphasis will be placed upon their work in this brief overview of research in this field. The general consensus of such reviews of the literature is that TC holds great potential for individuals with SEN (Goldstein and Hockenberger, 1991:407).

One of the key benefits of TC when used in SEN environments is that it leads to improvements in children's content knowledge and vocabulary learning. In particular, on the basis of a review of the literature, Goldstein (2002:385) claims that "[t]otal communication appears to be a viable treatment strategy for teaching

receptive and expressive vocabulary (i.e., language content)". Goldstein goes on to explain that research typically finds speech alone less effective, particularly with individuals who have poor imitation skills. Goldstein and Hockenberger (1991:407) similarly explain that TC has been shown to promote verbal production in many cases, citing a range of studies with such results (Barrera and Sulzer-Azaroff, 1983; Barrera, Lobatos-Barrera and Sulzer-Azaroff, 1980; Duker & Grinsven, 1983; Sisson and Barrett, 1984). Thus, research to date shows that TC may be used as a way to provide an additional level of understanding and conceptualisation for children, which in turn promotes vocabulary learning and verbal production.

Goldstein (2002) proposes a number of reasons why TC may be useful in promoting language learning and verbal production in SEN environments. First, Goldstein (2002:385) explains that signs are less transient than words, meaning they are easier to imitate. Further, Goldstein (2002:385) suggests that, because signs present an *additional* form of symbolic representation, use of a sign provides the child with a greater chance both of comprehending and of participating themselves, as if they fail in one method of communication, the other method may not fail.

Next, having provided a general review of the aims and outcomes of TC in SEN environments in mind, some contemporary study within this field will be considered. Research here is split into two groups: studies which compare TC to other modes of communication (most commonly speech alone and sign alone), and studies which investigate TC independently.

When comparing TC to other communication methods, without fail the studies reviewed here find the AAC system to be preferable. Some of these studies address speech production and others address verbal comprehension. The majority focus upon

TC's effects on speech production. First, Barrrera and Sulzer-Azaroff (1983) report, in a study of three autistic children, that when compared to sign alone and speech alone methods, TC was the most successful at improving labelling skills, and hence the language that the children produced. A similar study of 60 autistic children with a limited expressive vocabulary by Yoder and Layton (1988) found that TC was more successful in facilitating child-initiated speech than sign alone. Likewise, Pattison and Robertson (2015:146) found that, when used as an intervention for a low-verbal child in a classroom setting, simultaneous speech and sign was associated with the greatest improvement in that child's Mean Length of Utterance (MLU). Finally, Sisson and Barrett (1984:559) found that when, compared to speech alone, TC was better at facilitating four-word sentence repetition in a study of three children with SEN. These studies demonstrate that TC is successful in facilitating speech production in children with SEN. It is worth noting here that most of the studies in the field involve only small numbers of children, whilst this thesis will study a much larger group of pupils.

However, there is some disagreement across different studies on the question of whether TC is successful at promoting language *comprehension* in SEN children. For example, although Layton (1988:342) found that systems involving signs were better at facilitating language production, these systems were not successful in promoting comprehension. They went so far as to claim that "the effect of combining both treatment modalities appeared to degrade language comprehension". Much other research contradicts this, however, and demonstrates that in many cases TC may improve some areas of language comprehension. Barrera and Sulzer-Azaroff (1983) found that the labelling skills of autistic children improved most with TC, compared to other intervention methods. Although labelling is a production skill, it also involves some degree of comprehension. In another study, Barrera et al. (1980) found that TC

(when compared to sign and speech alone methods) was the best programme for improving the word learning of a mute autistic three-year-old. This led Barrera et al. to claim that TC encourages children to develop expressive language skills and does not simply facilitate productive repetitive skills. These studies seem to suggest that, whilst predominantly facilitating production, TC may also influence a child's language comprehension, an effect that is mostly manifested in their production of expressive language.

Rather than comparing TC to other methods, some other studies have looked specifically at TC in SEN environments and hence focused in more depth upon its practical uses and benefits. First, Fulwiler and Fouts (1976) conducted a study with a 5-year-old nonverbal autistic child, involving 20 hours of TC training. Following the TC intervention, the child displayed an increase in vocal speech, improved syntax and an increase in social interaction, suggesting that this AAC system is beneficial to language production. In addition, Fulwiler and Fouts (1976) found that nouns were the most frequent category of word produced, followed by verbs, then pronouns and adverbs. This pattern is also found in the linguistic literature on grammatical frequencies in general English usage (Hardie, 2007; Hudson, 1994). A study by Schaeffer et al. (1977) examined the effects of sign language combined with speech as a means of communication for three originally non-verbal autistic boys. Schaeffer et al. (1977:287) found that the pattern of use "progressed from spontaneous sign language, to spontaneous signed speech, to spontaneous verbal language", and thus argue that "the spontaneity that manual language promotes transfers to speech". In particular, Schaeffer et al. (1977:287) claim that the speech that remained was used in a "creative and generative fashion"; the authors' wording here suggests improvements in both production and comprehension. Schaeffer et al. (1977:316-317) also suggest

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several explanations as to why these nonverbal children come to initiate speech, including: (i) that sign language activates previously untapped expressive skills in these children; (ii) that the child's motor imitation of signs may stimulate attempts at concurrent verbal imitation; (iii) that the child's spontaneous and productive sign language may prime the same in his speech; and (iv) that sign language allows these children a release from fear and frustration, due to signing being a mode through which the nonverbal child can be spontaneous and successful.

Finally, Lal (2010) considers the use of Makaton in schools in Mumbai as a TC AAC system. Makaton is an artificial sign language designed to be used alongside speech: it was the primary AAC system whose use can be observed in the corpus. Lal gave children 12 sessions of language intervention with Makaton, and used the Language Assessment Tool for Autistic Children and Social Behaviour Rating Scale to assess children's skills before and after the Makaton intervention. Lal (2010:119) found a change in language and social behaviour, as the scores on both scales had improved at the post-test for all children. Lal (2010) argue that this demonstrates that the TC AAC system have a positive effect on the development of receptive and expressive language, and in turn affect the social behaviour of children with autism. In all, Lal's (2010) research provides yet more evidence that TC may indeed facilitate verbal production and compression; but it also demonstrates that Makaton in particular, the sign language used in the SEN Classrooms Corpus data, can be a very successful AAC system in SEN classrooms.

7.2.3. Speech-generating devices.

Speech-generating devices (SGDs) are "portable electronic device[s] that, when activated by the individual intending to communicate, will produce a previously recorded or digitized spoken message" (Rispoli et al., 2010:277). These devices and their verbal outputs then act as a

replacement for verbal communication; hence their use is an example of the alternative sub-type of AAC.

Three reviews of the SGD literature will be considered: Rispoli et al., 2015; Van Der Meer, 2010; Lorah et al., 2015. Collectively, these reviews constitute a concise but thorough review of contemporary research into use of SGDs as communication interventions for participants with developmental language disorders. Rispoli et al. (2010) provide an extensive review of research into the use of SGDs as an intervention for individuals with developmental language disorders. Van Der Meer and Rispoli (2010) review the use of SGDs as a communication intervention specifically for children with autism – a literature of especial relevance here, as children with autism made up eight participants within the SEN Classrooms Corpus data. Finally, Lorah et al. (2015) focus on the use of tablet computers as SGDs for autistic children, again a topic of particular relevance here due to the use of this SGD within the SEN Classrooms Corpus data. The overall conclusions of all three reviews agree on a simple point: that, more often than not, SGDs (and in the case of Lorah et al., 2015, tablets specifically) are very successful when used in communication interventions for people with developmental disorders in general and, according to the latter two reviews, for children with autism in particular.

Rispoli et al.'s (2010:279) review considered a total of 86 papers, whilst Van Der Meer and Rispoli (2010:296) considers 51 total participants across studies. The verbal ability of pupils is the main distinguishing factor addressed in the more general literature considered by Rispoli et al. (2010:279); they explain that across the studies included in the literature review 52% of pupils were considered non-verbal, a further 18% were non-verbal but used gestures, 29% had "limited verbal skills" (a spoken vocabulary of fewer than ten words) and only one of the 86 participants was classified

as verbal (a spoken vocabulary of more than ten words). This suggests that, in the majority of studies of the use of SGDs, pupils are either non-verbal or have extremely limited verbal ability. This is also true of the pupils who used SGDs in the SEN Classrooms Corpus data. The mean participant age across the studies that Rispoli et al. (2010:279) review was 12.9 years (range of 1.1-42 years), whereas the studies reviewed by Van Der Meer (2010:296) consider only children aged 3-16 years with a mean age of 7.7 years. We see, then, that even in the former group of studies, which look at SGD interventions in the general population rather than in children specifically as in the latter group, the participants in the interventions are generally young adolescents or children (rather than pre-schoolers or adults).

The function to which SGDs are put is considered in both Rispoli et al.'s (2010) and Lorah et al.'s (2015) reviews. Rispoli et al. (2010:279) found that generally, five key areas are targeted in interventions using SGDs,: (a) the skill of requesting attention, food, or items, (b) social or conversational skills (e.g. increasing the number of conversational turns, staying on topic), (c) the skill of labelling items, (d) receptive skills (e.g. pointing to pictures, answering questions) or (e) multiple skill areas. Rispoli et al. (2010:279) found that the majority of the studies (58%) target requesting; however, only 27% target social or conversational skills, just 4% target labelling, and only 2% target multiple skills. This suggests that generally, within interventions for developmental disorders, SGDs are used to teach children functional (requesting) and social behaviours rather than any complex language skills. Lorah et al.'s (2015:3800) review of the use of tablets as SGDs with autistic children specifically confirm this; 6 of the 17 studies reviewed focused on the children's acquisition of a requesting repertoire, but only three investigated skills beyond this functional behaviour.

The studies in these reviews tested different SGDs. For example, Rispoli et al. (2010) find use of 17 different types of SGD across 35 studies. By contrast, as explained previously, Lorah et al. (2015) looked only at studies involving tablet or handheld computing devices. Interestingly, all 17 of these studies involve the use of iPads, and 14 of these involved the use of the Proloqu2Go SGD application; this is the same application whose use is recorded in the SEN Classrooms Corpus data. This suggests that although there is some variation in the SGDs used within interventions, iPads are prominent (and the Proloqu2Go software is very common). Both Rispoli et al. (2010) and Van Der Meer and Rispoli (2010) find that the school setting is the most studied setting in the research they review, both for developmental disorders and for ASD more specifically. This suggests that SGDs are more commonly used in educational settings than elsewhere, such as the home.

Finally, the outcomes of interventions involving SGD were agreed to be positive, in general. Rispoli et al. (2010:290) and Van Der Meer and Rispoli (2010:302) both classify the outcomes of individual studies as either positive (studies in which the target communication skill(s) improved for all participants), negative (studies in which the target communication skill(s) improved for none of the participants) or mixed (studies in which some participants made improvements and others did not, or in which some target skills improved and others did not). The large majority of reviews have positive outcomes (86% and 87% in Rispoli et al. 2010 and Van Der Meer and Rispoli 2010 respectively). In both cases, the remaining studies have mixed outcomes and no studies have negative outcomes. Similarly, although they do not quantify the outcomes in this way, Lorah et al. (2015:3802) find that the interventions using SGDs typically have positive results. This suggests that, more

often than not, SGD interventions are successful, and at the very least, they are never entirely unsuccessful.

Thus, research shows that SGDs are a widely used AAC system for individuals with SEN. Typically the interventions studied in such research take place in classroom environments with younger people as participants. Moreover, there is a wealth of positive data on the use of SGDs as an AAC system for autistic individuals, specifically involving the use of iPads and other mobile technology. The consensus of research in this field is that interventions using SGDs generally meet their aim of providing a mode of communication for minimally verbal or non-verbal individuals. Research also indicates that this communication typically takes the form of requesting behaviours, but more research needs to be conducted in this area.

7.2.4. Summary. Overall, research into AAC systems shows them to be an important form of classroom in SEN classroom environments, affording children the means to communicate more proficiently. TC is an augmented communication method, which is designed to facilitate speech production but which may also have benefits for comprehension. Use of SGDs allows minimally verbal or non-verbal children to communicate despite their lack of verbal production skills. The use of both these AAC systems can be observed in the SEN Classrooms Corpus data. In the remainder of this chapter, the use of TC and SGDs within this dataset will be analysed.

7.3. Methodology

In this section, first the two prominent AAC systems (Makaton as a TC method, and the iPad application Proloqu2Go as a speech-generating device) will be

briefly introduced, with explanation then given about how the use of these AAC systems was identified within the corpus.

Makaton is an artificial sign language, meaning it has been intentionally designed for a purpose, rather than naturally developing in a community of use like a natural sign language such as British Sign Language (BSL). Makaton consists of a vocabulary of manual signs taken from BSL, used alongside speech in spoken-word order, taking no grammar or syntax. Makaton was designed in 1972 by Margaret Walker, a speech and language pathologist, in response to the needs of deaf adults with severe learning difficulties. Since then it has been constantly evolving, and Walker's original work has grown into a major project has addressing the teaching of TC to people with a wide range of disabilities (Grove and Walker, 1990:15,25). Makaton is the most widely-used AAC sign system in the UK, currently employed by over 100,000 children and adults (The Makaton Charity, 2018a; see also Grove and Walker, 1990:15; Walker, 1996a). Makaton is designed to be used alongside speech, and thus, when it is so used, is a form of TC.

In terms of content, Makaton has two vocabularies: a small 'Core Vocabulary' of basic concepts essential to everyday life (see Figure 7.1) and a much larger, open-ended, topic-based 'Resource Vocabulary' covering broader life experiences (see Figure 7.2). For the purpose of this research, the Resource Vocabulary was not readily available. It is assumed, however, that signs beyond the Core Vocabulary may have two origins. Either they will stem from the Resource Vocabulary or they will be taken from BSL, as per the Makaton Charity's recommendations that any signs not contained in the Vocabulary will be taken from BSL (The Makaton Charity, 2018a).

The Core Vocabulary of Makaton is taught first and is introduced in stages of increasing complexity, with earlier stages introducing those concepts found to be

more centrally important (Grove and Walker, 1990;Walker, 1996a). Grove and

Walker (1990:17) explain that this "allow[s] for gradual expansion and differentiation

of the student's linguistic experience".
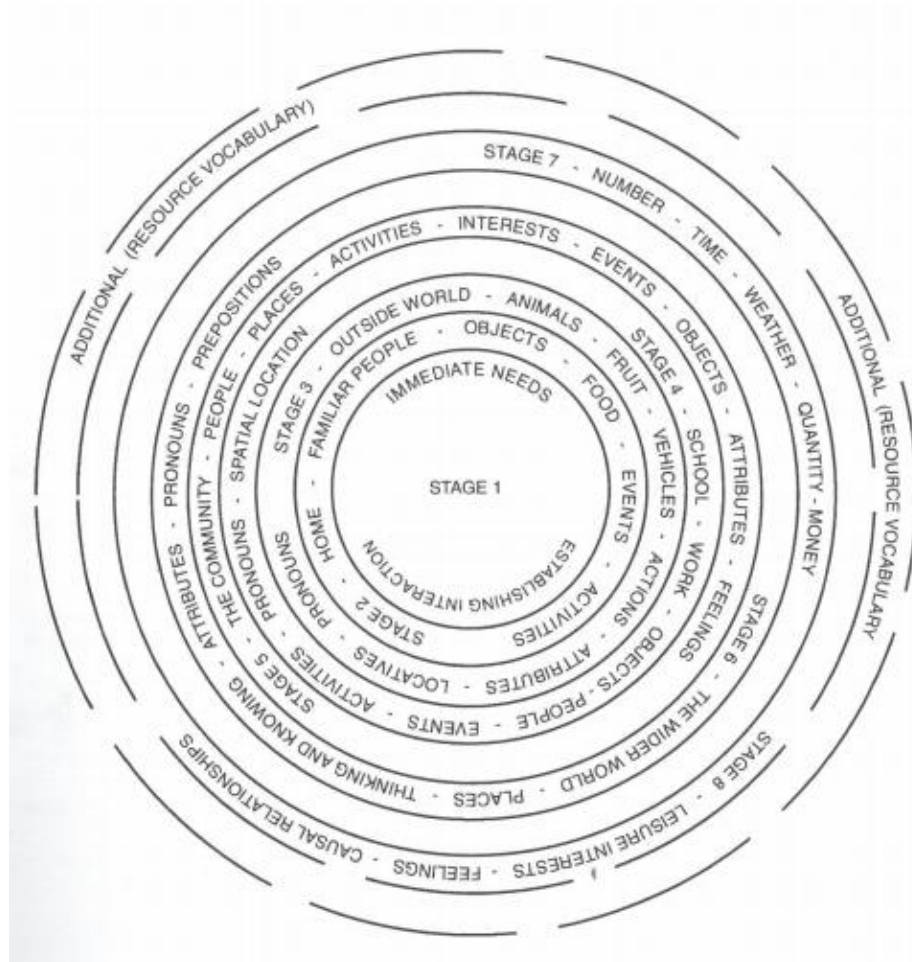
Figure 7.1.

The Makaton Core Vocabulary topics and stages (reproduced from Walker, 1996a).
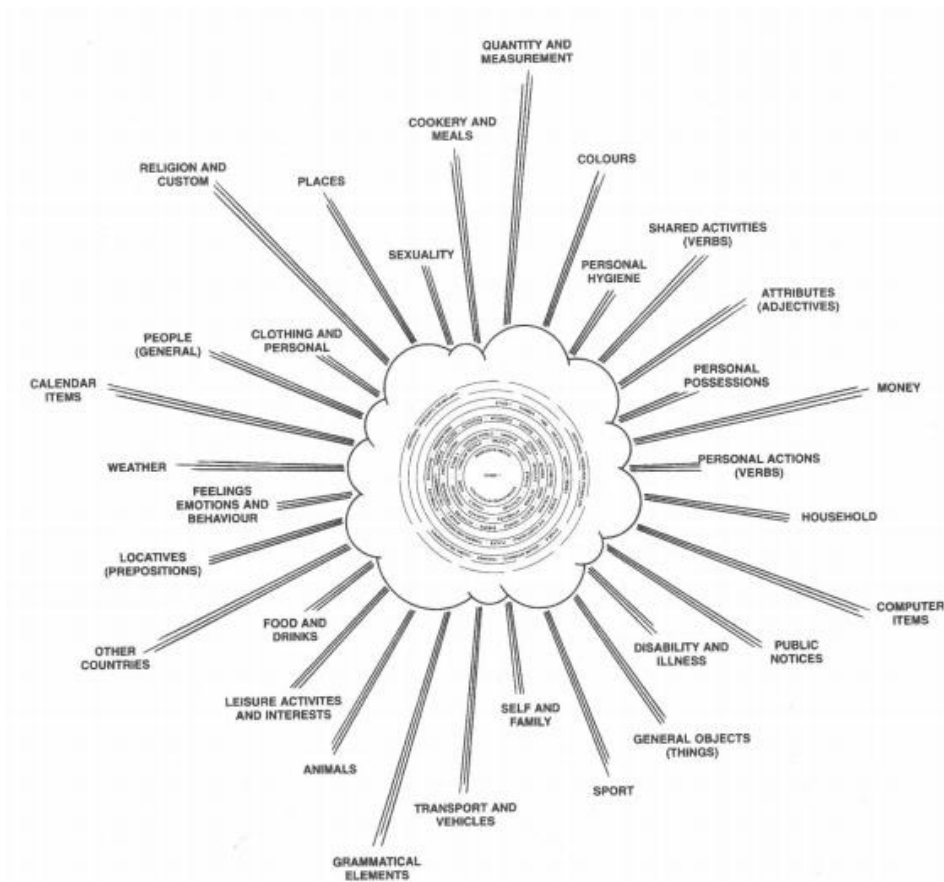
Figure 7.2.

The Makaton Resource Vocabulary topics (reproduced from Walker, 1996a).

Makaton consists of an open-ended lexicon, based around a common core of

functional concepts (Grove and Walker, 1990). The individual signs used within the

Makaton Vocabulary were selected entirely from British Sign Language (Walker,

1996a). In terms of content, the Core Vocabulary consists of 350 concepts of nouns,

verbs and describing words. There is no attempt, in Makaton, to mark the grammatical

inflections of spoken English or of BSL. Signs are used alongside speech, and in

English word order. The Core Vocabulary document specifies that a sequence of signs

that parallels a particular spoken sentence may include signs representing: (a) just the

keywords in a sentence, (b) every word in the sentence or (c) the whole sentence function (Walker, 1996a). Figure 7.3. provides an example of this.
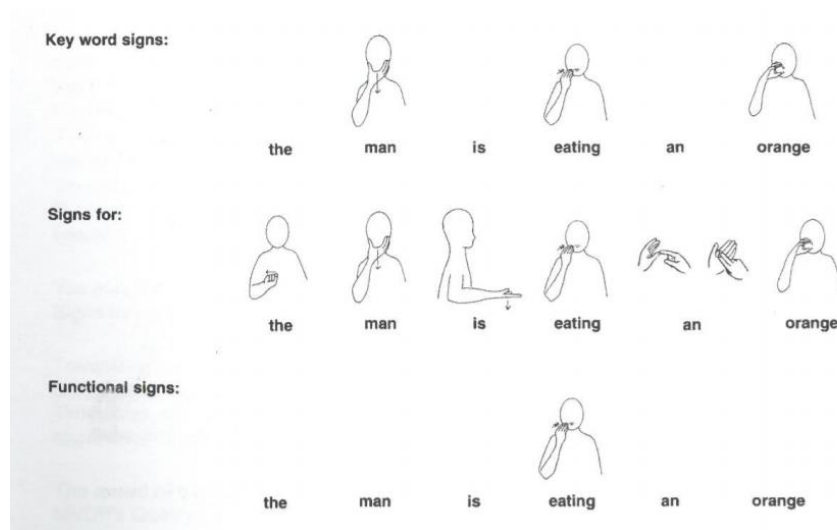
Figure 7.3.

Examples of how Makaton may be used alongside speech (reproduced from Walker, 1996a:viii).

Within the corpus, words expressed as Makaton signs are transcribed as the equivalent English words and surrounded by the XML region tags <Makaton> and </Makaton> (see Chapter 3). Hence, within the corpus, Makaton can be retrieved simply by searching for these tags. Hereafter, I shall term this use of Makaton a "Makaton utterance". These Makaton utterances may be within a longer utterance which also contains some spoken English. To retrieve full Makaton utterances using a CQP syntax query (see Chapter 4), we simply look for an arbitrary token (*[]*) followed by the repetition operator for one or more (+), which in combination with the XML tags returns a full utterance. Thus the query for Makaton utterances within the corpus was: *<Makaton> []+ </Makaton>*

This query returned 317 Makaton utterances within the corpus. As will be explained later where relevant, in some analyses CQPweb's restricted query function was used to locate only the instances of Makaton within utterances spoken by teachers or by pupils. Likewise, in some analyses CQPweb's *categorise query* function was used to annotate, and thus further divide up, this dataset. The analyses focus on Makaton as an augmentative AAC system, given that it is designed to be used alongside speech. However, as will be shown in Section 7.4.2.5, the extent to which the Makaton matches the accompanying speech is itself a question that can be investigated, in order to assess how closely Makaton fits the AAC model.

The SGD whose use is observed in the SEN Classrooms Corpus data is the Proloquo2Go application. Proloquo2Go is a symbol-supported communication application used to promote language development and communication skills for people with a range of developmental disorders including autism and cerebral palsy (Assistiveware, 2018). Within the app, users are presented with symbols (pictures) and written words simultaneously (see Figure 7.4). When a symbol/word is touched, the device (iPads in the case of this data) produces a verbal output of the appropriate word.

Figure 7.4.

An example of the Proloquo2Go interface, reproduced from the Proloquo2Go manual (Assistiveware, 2018).

Within the corpus, any words produced using the SGD were transcribed and marked up using XML region tags. Hereafter these will be referred to as "SGD utterances". All SGD utterances are surrounded by <Aided> and </Aided>. This means that SGD use can be retrieved by searching for these tags using CQP syntax. As with Makaton, we simply searched for an arbitrary token (*[]*) followed by the repetition operator for one or more (+), which in combination with the XML tags

returns a full SGD utterance. Hence the search for SGD utterances within the corpus

was: *<Aided> []+ </Aided>*

In all, this returned 18 SGD utterances.

7.4. Analysis of the use of AAC systems in SEN Classrooms Corpus

7.4.1. SGD. Because there were only 18 SGD utterances within the corpus, subsequent analyses were necessarily limited. Further, it is difficult to generalise results to a wider population from such a small sample. We can, however, consider the distribution of SGD use across texts (that is, across individual classroom sessions) and by speaker, in order to investigate how individuals use SGDs.

The 18 SGD utterances in the corpus were produced by three pupils in class 2, as these were the only pupils within the corpus who had access to SGDs. Two had diagnoses resulting in low or non-verbal skills; participant 12 had non-verbal ataxic cerebral palsy and participant 16 had Worster-Drought Syndrome, a form of cerebral palsy which leads to limited vocal ability. There was no diagnosis on record for the remaining SGD user, participant 18. However, of this participant's 33 utterances, 11 involved the SGD and the remaining 21 were fully verbal. These 21 verbal responses were all imitative, in that they copied a single word from the teacher's previous utterance, suggesting that this pupil's verbal skills were also limited. Thus, all three pupils who use SGDs can be classified as being of low verbal ability. This is unsurprising in light of reports in the literature that SGDs are typically used by those with more limited verbal ability (see Section 7.2).

One analysis that is possible with this small dataset is an analysis of the function of SGD utterances. Rispoli et al. (2010) identified five key functions of SGD use: (a) the skill of requesting attention, food, or items, (b) social or conversational

skills (e.g. increasing the number of conversational turns, staying on topic), (c) the skill of labelling items, (d) receptive skills (e.g. pointing to pictures, answering questions) or (e) multiple skill areas. In particular, labelling is the most frequent function of SGD utterances. To ascertain whether this was the case for the 18 SGD utterances in the SEN Classrooms Corpus, all these utterances were manually analysed and labelled according to Rispoli et al.'s (2010) five key functions.

T:	mermaid fabulous ANONnameStudent who's in our story?
P:	*Ariel*
T:	Ariel fabulous Ariel amazing Ariel is in our story
T:	my goodness how do you think they felt ANONnameStudent?
P:	*Bad*
T:	they felt bad did they # ? why did they
T:	who is in the story ? ANONnameStudent % ?
P:	*King*
T:	Titan fabulous King Titan good work hands on knees ANONnameStudent
T:	show me where 's our story ?
P:	*Land*
T:	no it doesn't where does it take place ?

Figure 7.5.

Examples of SGD utterances in context. Note: SGD sections are in italics.

All 18 SGD utterances in the SEN Classrooms Corpus (examples given above) matched the definition of the "receptive" function given by Rispoli et al. (2010); 16 were responses to teacher questions. Some of these SGD utterances might additionally fit Rispoli et al.'s (2010) "labelling" function, since they involved the pupil naming a character in response to a request by the teacher to do so. Eight of the 18 SGD

utterances would therefore fit a hybrid receptive-labelling definition. This finding stands in contrast to the reports in the literature that SGDs are used to meet basic needs; it instead suggests that in fact use of SGDs in the SEN Classrooms Corpus promotes more complex communication – the central goal of AAC methods.

7.4.2. Total Communication.

7.4.2.1. ***Frequency and distribution: texts.*** Considering the frequency and distribution of Makaton utterances allows us to see exactly where AAC systems of the TC type are used within SEN classrooms. Use of Makaton was found only in classes 2 and 4, the lower ability classes with the same teacher. This could suggest that the use of Makaton (and therefore TC) is teacher-specific, not school-wide in this data set. Alternatively, this could show that these methods are more likely to be used in lower ability classes within this school. Use of Makaton was dispersed across all four lessons recorded in both of class 2 and class 4, showing that it was a consistent feature of classroom interaction for these classes. Makaton was used almost twice as often in class 2 as in class 4.

Table 7.1.

Distribution of Makaton in the SEN Classrooms Corpus.

Class	Hits in category	Dispersion	Frequency per 1000 utterances in category
Class 2	222	4 out of 4	202.74
Class 4	95	4 out of 4	101.6

7.4.2.2. ***Frequency and distribution: speakers.*** Next, let us consider the distribution of Makaton by speaker in order to assess exactly who is using TC within the SEN classrooms. Of the 317 instances of Makaton within the corpus, 176 were produced by teachers and 141 by pupils, showing that both teachers and pupils use the

TC AAC system. Within classes 2 and 4, every participant used Makaton at least once. However, there was a lot of variation among pupils in terms of frequency of use of Makaton, with the number of instances of use ranged between 1 and 28. Unsurprisingly, there are many more (176) instances produced by the teacher. A few participants used Makaton in every class in which they were present (the teacher, P12, P14, P16), whilst the others did not.

Table 7.2.

Distribution of Makaton by speaker in the SEN Classrooms Corpus.

Frequency of use	Speaker	Hits in category	Dispersion	Frequency per 1000 utterances per speaker	Speaker diagnoses
High usage (100% of classes	P12	14	4 out of 4	538.46	Non-verbal ataxic cerebral palsy
	P14	15	4 out of 4	217.39	None
	P16	7	3 out of 3	250	Worster-Drought Syndrome
	T2	176	8 out of 8	169.07	n/a
Mid usage (50% or more classes, but not every class)	ALL	34	7 out of 14	850	n/a
	P11	16	6 out of 8	7.24	ASD
	P13	28	5 out of 7	152.17	None
	P15	3	2 out of 3	88.24	None
	P17	4	2 out of 4	114.29	None
	P18	11	3 out of 4	164.18	None
	P21	4	2 out of 4	22.35	None
	P22	4	2 out of 3	74.07	Down Syndrome
Low usage (less than 50% of classes)	P10	1	1 out of 4	21.28	None

The highest relative frequency of Makaton use was attributed to "ALL", the speaker label for utterances where the entire class responded to the teacher. Makaton signs occurred within, or constitute the entirety of, 85% of such utterances within the corpus overall, which is extremely high. This suggests that the other teachers and classes are doing things that do not involve whole-class responses (signed or spoken). This in turn suggests that this teacher specifically focussed on teaching Makaton signs and testing how well the pupils comprehended them. Some individuals made very frequent use of Makaton relative to their total utterances in the corpus. Pupils 12, 13, 14, 17 and 18 and the teacher all used Makaton in at least 10% of their utterances. Interestingly, of these, three pupils (12, 16 and 18) were also SGD users. Furthermore, the pupil in the Makaton-using classes with the lowest relative frequency of Makaton use was P11, who used signs in only 0.7% of their utterances and was only child in this class with an ASD diagnosis. While not probative in any way, this is certainly of interest.

7.4.2.3. *Vocabulary used in Makaton.* The specific language used within Makaton is particularly interesting. First, the frequency of words and word classes was analysed, and then the stages of Makaton Vocabulary these signs appear in was considered. These analyses together allow certain inferences to be made about the language used in Makaton in the SEN Classrooms Corpus and its complexity. For these analyses, only the top 50 most frequent Makaton signs, all of which occurred at least twice in the corpus, were included (see Appendix I for more information). This was both for ease of analysis and for consistency with later analyses. These words made up 297 of the 317 total Makaton words within the corpus.

Table 7.3.

The top 10 most frequent signs in the SEN Classrooms Corpus.

Sign	Makaton stage	Word class	No. of occurrences
Yes	1	Interjection	72
No	1	Interjection	16
Good	1	Adjective	14
Bad	1	Adjective	10
Happy	5	Adjective	10
lightning	n/a	Noun	9
Family	n/a	Noun	8
Shake	n/a	Noun	8
spear	n/a	Noun	8
Fish	3	Noun	7

The five most frequent words (*yes, no, good, bad, happy*) are all very simple, both in terms of form and semantic concepts. In context, all were used in questions or imitative responses. For example, the teacher would present a statement and then ask 'yes or no?' using Makaton and speech simultaneously. The top five all came from binary pairs (*yes/no, good/bad, happy/sad*), which was mentioned in the literature (see Section 7.2).

Table 7.4

Frequency of word classes across signs.

Grouping	Percentage (of top 50 signs)	Word class	Frequency	Percentage (of top 50 signs)
Interjections	29.6%	Interjections	88	29.6%
Content words	65%	Nouns	84	28.3%
		Adjectives	65	21.9%
		Letters	21	7.1%
		Verbs	12	4%
		Numbers	9	3%
		Adverbs	2	0.7%
Grammatical words	5.5%	Determiners	7	2.4%
		Wh-words	7	2.4%
		Pronouns	2	0.7%

The word classes can be grouped into three types; interjections, content words (nouns, adjectives, verbs, adverbs, letters and numbers) which carry meaning, and grammatical words (pronouns, wh-words and determiners) which are structural.

The most common type of word returned by the Makaton search in the SEN Classrooms Corpus was content words, making up 65% of all Makaton tokens. Nouns make up the largest portion of these, making up 28.3% of all Makaton tokens; nouns are predicted to be the most common word class in the literature (Section 7.2). The nouns expressed in Makaton in the corpus were mostly linked to the storybook on which the class activity was centred (e.g. *family, king, dad, ship, sea, lighting, hood, contest, thunder, storm, fairy, wizard, shake spear, rain, hood, forest, bird, money*). Adjectives were the next most common content word, making up 21.9% of Makaton tokens in the corpus. Pupils used these signs either to describe characters (e.g. *rich, poor, little*) or to express inferences about characters' feelings (e.g. *happy, sad, good, bad, angry, excited*). Letters, numbers, verbs and adverbs made up the remaining

content words used in Makaton in the corpus. That content words were so prominently used within Makaton highlights that this is mostly used to describe key story content and meaning in the SEN Classrooms Corpus. This is supported by the fact that grammatical words combined only made up 5.5% of Makaton words in the corpus. Following content words, the interjections *yes* and *no* made up the next largest portion (29.6%) of Makaton word types in the data. This was due to the frequent use of 'yes or no?' as a question tag appended by the teacher to statements in order to confirm pupils' comprehension.

Overall, this suggests that in terms of their function, Makaton words were most commonly content words, referential to story content (nouns) and descriptive of personal traits or emotions of characters (adjectives). By contrast, they were very rarely grammatical. These results also show Makaton use in the SEN Classrooms Corpus to be largely confirmatory, through the prevalence of interjections.

The four most frequent signs (*yes, no, good, bad*), which together accounted for over a third of the top 50 Makaton tokens in the corpus, were all signs from Makaton stage 1, the earliest and most basic and essential stage of the vocabulary. When comparing the frequency profile of these words to their use in the BNC. we find different patterns. *No* (93,546 occurrences) is more frequent than *yes* (28,562 occurrences) in the Spoken BNC 2014. Nonetheless, these all were in the top 250 words in the Spoken BNC 2014, suggesting that, although used in different ways in the classroom (favouring affirmation over negation), the prevalence of these words in Makaton maps their use in general English and hence potentially confirms why they are included in stage 1, being frequently used terms. This also suggests that they might be frequently used in Makaton owing to their prevalence in general language use.

14 of the top 50 total Makaton types in the corpus were labelled 'n/a', meaning these were not from the Makaton Core Vocabulary. This might be taken to suggest that the teacher and pupils in the SEN Classrooms Corpus were using vocabulary that was more complex than the lexis at stage 1, and hence were using signs from outside the Makaton Core Vocabulary. The use of these unusual words was confirmed, when we look at the four n/a terms in the top ten most frequent Makaton utterances (*family, lightning, shake* and *spear*) and compare to their frequency in the Spoken BNC 2014. The highest ranked was *family* which is the 374th most popular word in the Spoken BNC, *fish* was 675th in the BNC and *shake*, *spear* and *lightning* occurred outside the top 1000 most frequent words. However, examination of the words in question shows them to be associated with the content of the class storybook (e.g. *hood, rich* and *poor* all link to *Robin Hood*; *wizard, lightning, thunder, family, sailing, fairy, shake* and *spear* all link to *The Tempest*). This contrasts with the initial expectation that these children would use more basic signs, whilst supporting the literature on children's reading schemes, which suggests that children's literature contains this more complex lexis (Stuart et al., 2010). This also, however, supports the linguistic view that in any discourse we expect more novel, complex words used to be linked to topic (and therefore, in this case to story content) (see Section 7.5.2 for further discussion of this point).

7.4.2.4. **Functions of Makaton.** Next, the function of Makaton utterances was considered. First, the data was reviewed and three categories of function were devised:

1.   Spoken word repetition

2.   Asking/answering high cognition questions

3.   Asking/answering low cognition questions.

With the spoken word repetition, function signs were used simply to repeat spoken words in gestural form, in a labelling fashion. The remaining signs were all used either to ask or answer questions (with teachers asking and pupils responding). In terms of function, the questions being asked/answered were separated by the level of cognition required, in line with the question functions outlined in Chapter 5. Thus, wh-questions and non-interrogative questions were grouped together as high cognition questions, as they require a more complex response, often involving inference making. The YNA questions were similarly grouped as low cognition questions, given they involve repetition of a stimulus, rather than more advanced inference skills. CQPweb's *categorise query* function was used to separate the Makaton matches into three disjunct sets of matches based on their functional category. The matches were also separated out by speaker status (teacher or pupil), which allowed separation of questions being asked and being responded to.

The literature mainly considers the function of Makaton utterances in terms of production versus comprehension. Thus, the goals of the three functions were aligned with production and comprehension. It is agreed that AAC systems like Makaton can function to increase a person's lexis, utterance length and initiation of utterances (Barrera and Sulzer-Azaroff, 1983; Barrera et al., 1980; Duker and Grinsven,1983; Goldstein and Hockenberger, 1991; Goldstein, 2002; Fulwiler and Fouts, 1976; Pattison and Robertson, 2015; Sisson and Barrett, 1984; Yoder & Layton, 1988). There is less consensus regarding whether AAC can function to increase language comprehension skills, although many link the improvement of expressive and receptive language skills to greater comprehension (Barrera et al., 1980; Lal, 2010; Layton, 1988; Schaeffer et al., 1977).

The three functions seem to fall on two clines. First, there is a cline of production-related cognition skills, from high to low. Second, there is a cline of high to low comprehension skills. These clines are linked to one another, as will be explained hereafter and is demonstrated in Figure 7.6. In terms of production skills, the spoken word repetition function is high production, given that it replicates the spoken word, hence mirroring that communicative mode. On the other hand, the spoken word repetition function is low on the comprehension skills cline, given that imitation does not involve understanding. In terms of production, questions fall midway on the cline of production, promoting a response (and hence production) from pupils, but also aiming to promote comprehension (in prompting some answer and therefore inference). The level of comprehension cognition skills entailed is dependent upon the question type, similar to the distinctions made in Chapter 5 about high and low constraint questions. YNA questions require a lower level of repetition, involving repetition of one of a number of stimuli. Whilst this seems more production centred than other question types, it *does* involve the respondent making a choice among options (and therefore mid-level comprehension when compared to other question types). Wh-questions and non-interrogative questions involve a higher level of comprehension, as they require the respondent to use more complex inference skills. Hereafter, the former YNA questions will be labelled low-cognition questions and the remaining questions will be labelled high-cognition questions. This distinction between the cognition skills involved with different question types was dealt with in more detail in Chapter 5, Section 5.2. A simplified view of the relationship between comprehension, production and the three Makaton functions is diagrammed in Figure 7.6; examples of the functions are given in Table 7.5.
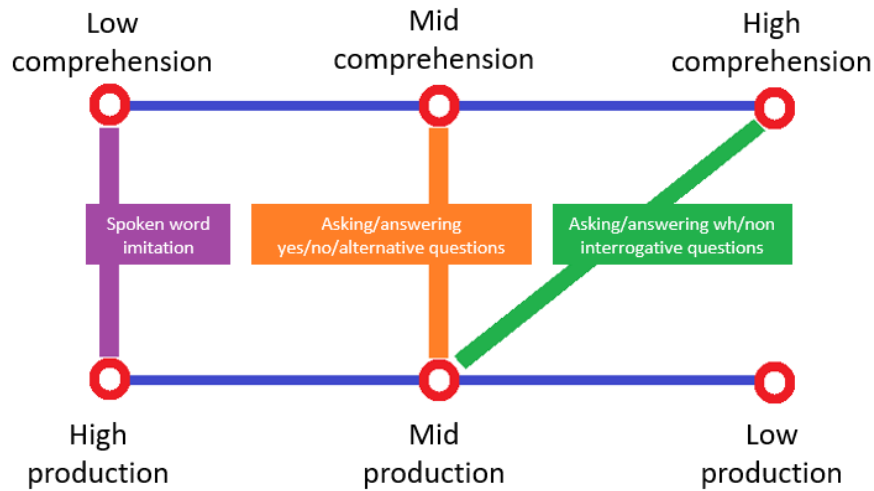
Figure 7.6.

The relationship between production, comprehension and Makaton functions.

Table 7.5.

Examples of the functions of Makaton. Note: signs within examples in the table are

shown in italics.

Participant	Function	Example(s)
Teacher	Spoken word repetition	T: her family family that was great reading ANONnameStudent is n't he good ? Ariel was a mermaid *long haired fish woman* she lived under the sea *sea* with her family *family*
	Asking low-cognition questions	2_050515_T: yes ANONnameStudent yes or no % ? yes no yes or no % ? *yes no*
	Asking high-cognition questions	2_050515_T: why *why* is the witch bad ?
Pupil	Spoken word repetition	2_280415_P5: lived *lived* under the sea *sea* with her family *family*
	Answering low-cognition questions	2_050515_T: yes ANONnameStudent yes or no % ? *yes no* yes or no % ? *yes no* 2_050515_P3: *yes*
	Asking high-cognition questions	2_060515_T: a ship % ? is that what ANONnameStudent said as well ? a ship now tell me something how do you think Ariel would feel when she saw that ship ? 2_060515_P4: happy *happy* and glad

Once they were identified and labelled within the corpus, it was possible to assess the frequency of these functions and their distribution by speaker. Results of this analysis are shown in Table 7.6.

Table 7.6.

Makaton utterances from teachers and pupils expressed as the total frequency per group and as the percentage of that group's Makaton utterances

	Spoken word repetition		Asking/answering* low-cognition questions		Asking/answering high-cognition questions	
	Frequency	%	Frequency	%	Frequency	%
Teachers	97	55	63	36	16	9
Pupils	56	40	38	27	47	33
Note: in terms of questions, teachers asked and pupils answered.						

Spoken word repetition was the most common function of Makaton for both the teacher and pupils who used Makaton. The teacher who used Makaton did so with this function on 55% of all occasions, suggesting this was a very important aspect of Makaton use for this teacher. Pupils' use of this function on average across all pupils accounted for 40% of their overall Makaton use, with pupils using these between one and seven times. Although it was still the most common function, this lower percentage suggests that pupils in the SEN Classrooms Corpus use this function to a lesser extent than do teachers, and moreover that the other functions may be more important in the pupils' Makaton use.

The mid-production and low-comprehension YNA question function is identified for 36% of all teacher Makaton utterances, making it the second most common function of teacher Makaton use in the SEN Classrooms Corpus. We might infer that teachers focus primarily upon low comprehension and high production (the

function of spoken word repetition), and then secondarily on deeper comprehension. This is supported by the fact that wh-questions and non-interrogative questions made up only 9% of teacher Makaton use, suggesting that they were least focused on functions involving higher levels of comprehension in this data set.

However, when compared to teacher functions there were stark differences in pupils' use of these functions. Answers to YNA questions make up only 27% of pupil Makaton, with 38 Makaton responses to questions (compared to 63 Makaton teacher YNA questions). Answers to wh-questions and non-interrogative questions, however, made up 33% of pupil Makaton, with 47 responses (compared to only 16 teacher Makaton wh- and non-interrogative questions). These results suggest that when teachers ask YNA questions in the SEN Classrooms Corpus, typically fewer pupils respond than respond to a wh/non-interrogative question.

The difference in these percentage and raw frequencies between teacher input and pupil response is found when we look at the context; either pupils were more likely to respond to higher level comprehension questions, contrasting with the previous literature, or the teacher was more likely to allow multiple answers to higher cognition questions. This is most likely due to the fact that wh-questions are more likely to admit multiple answers. For example, the question 'how do you think he feels?' allows pupils to have different opinions. This contrasts the YNA questions, where there is a limited range of responses.

It is important to note that, by looking only at Makaton questions and Makaton responses, this ignores the fact that Makaton questions might be verbally answered and likewise verbal questions might be answered in Makaton. We might find interesting differences, should we assess Makaton questions and answers alongside

verbal questions and answers like those studied in Chapter 5. However, this is beyond

the scope of this thesis at present, as it would require both a recategorization of the

questions and Makaton saved queries and would also require a more in-depth analysis

regarding the possibility multiple responses to questions. Whilst this is an avenue of

future research, it will not be discussed in more depth hereafter. Instead, we can use

the differences in raw frequencies to form a number of assumptions. First, teacher

Makaton low cognition questions (63 questions) are more common in the SEN

Classrooms Corpus than high cognition ones (16 questions). This might suggest that

Makaton is more commonly used to prompt a lower level of understanding in this

data, however this could also be due to these question types being easier to formulate

in Makaton (for example it is easier to sign 'yes or no?' than it is to sign 'what was

the colour?'). When considering the raw frequency of responses, we see quite similar

numbers of pupil Makaton responses to low cognition questions (38 responses) and

high cognition questions (47 responses) in the corpus. This might suggest that pupils

respond in Makaton to questions in similar ways in these classes, despite the cognition

level or complexity of stimulus. In addition, the frequency with which pupils

answered overall can also be explained in that they use considerably fewer spoken

word repetition signs than teachers, meaning their Makaton use was split more across

answering questions (hence answer functions take up a greater portion of their overall

utterances).

    7.4.2.5.   *Use of Makaton alongside speech*. Next, the use of Makaton

alongside speech was considered; Makaton signs are, as noted above, intended to be

used in combination with speech as a TC AAC system. To do this, CQPweb's

categorise query function was used to label how the signs matched surrounding

spoken utterances. Due to the nature of the transcription conventions, signs could be

recorded before or after the spoken cue. This means that the utterances preceding and following the Makaton utterances had to be taken into account during the categorisation process. Likewise, sign-speech matches were only considered where the sign utterance and spoken utterance were from the same speaker. The labels given to sign-speech pairings (Walker, 1996a:viii) were:

1. *Exact match*: signs matched spoken utterance word-for-word

2. *Keywords only*: signs only replicated keywords of the spoken utterance

3. *Sentence function only*: signs replicated the sentence function of the spoken utterance overall.

Two further categories were added, based upon this dataset:

4. *Exact with translation*: where signs matched the spoken utterance, but where a spoken word was translated, due to a lack of sign for this spoken word. For example, no Makaton sign exists for *mermaid* (or if one does, the Makaton users in the SEN Classrooms Corpus do not know it), so instead the teacher signed 'little fish woman'.

5. *No corresponding speech*: where no spoken utterance matched the sign.

Additionally, for this analysis teacher and pupil Makaton utterances were separated using CQPweb's *restricted query* function, in order to assess how teachers and pupils pair signs and speech in different ways.

Teacher 2 produced 176 Makaton utterances in the corpus. The frequency of the different types of sign-speech matches within these utterances is reported in Table 7.7. Of these, the most common relationship was *exact match* (and *exact with*

translation), which made up 128 of the total 176 matches (73%). Moreover, the teacher never used signs with *no corresponding speech*. These points suggest that the teacher in the corpus was using TC in a very consistent manner. Interestingly, 71 of these *exact* sign-speech matches were used within questions – particularly YNA questions. That teachers used signs *and* speech in these instances suggests that the teacher in the SEN Classrooms might have been using signs to provide another layer of support for pupils, in order to encourage maximal production on the part of all students. There might be a number of reasons the teacher reproduced speech in Makaton:

- To model this dual-production behaviour for the pupils
- To reduce risk of pupil comprehension failures
- To make the process of producing a response less of a cognitive load
- To demonstrate new Makaton vocabulary (including topic specific words)

Of the two more complex sign-speech matches, it was more common for the teacher to sign the *keywords* of a sentence than for a teacher to replicate a sentence via a single sign that expressed the overall *sentence function*. This suggests that the teacher in the SEN Classrooms Corpus aimed to reproduce more of the key elements rather than simply a single sign indicating sentence function, supporting the previous claims that teachers aim to reproduce as much of the utterance as possible in order to ensure dual-production and dual-comprehension. Interestingly, looking at *sentence functions*, 9 of the 14 Makaton utterances were question words and four were verbs acting as imperatives.

Table 7.7.

The frequency of sign to speech match categories in teacher and pupil utterances.

	Exact Match		Exact with translation		Keywords only		Sentence function only		No corresponding speech	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Teachers	114	65	14	8	34	19	14	8	0	0
Pupils	47	34	8	6	23	16	1	0.7	62	44

By contrast, for pupils, the most common pairing was *no corresponding speech*, as is indicated by the results in Table 7.7. This suggests that the pupils in the SEN Classrooms Corpus did not always use Makaton as a form of TC as the teachers did. Of these sign-alone utterances, five were responses to imperative prompts and 57 were answers to teacher questions. In all instances, the teacher prompt involved sign and speech, but in response the pupil only imitated the sign. Next, *exact* (and *exact translation*) sign-speech matches made up 40% of pupil Makaton utterances. Thus, we can see that, although it is not the most common way for them to employ Makaton signs, pupils do still use Makaton alongside speech as TC in the SEN Classrooms Corpus, as teachers did. As with the teacher, the *sentence function* pairing was the least frequent (one example only). As this pairing requires the most complex cognitive skills, this is perhaps not surprising.

7.5. Discussion of the use of AAC systems in the SEN Classrooms Corpus

7.5.1. Use of SGDs in SEN classrooms. The results concerning the use of SGDs were very limited, due to their infrequent use. However, the data did support claims in the literature that these would be used as an alternative-type AAC system, in

that they were used by non-verbal children. However, there was also evidence of use of SGDs for augmented communication alongside speech, for example in the case of pupil 18. This possibility was not anticipated from the literature reviewed. Further, the fact that this pupil in particular was minimally verbal (not non-verbal as per the recommendation in the literature for SGD use) suggests that (in this data at least) the utilisation of an SGD for augmented communication may be a specific function of use of SGDs by low-verbal children.

Reviews of the literature suggested the SGD utterance would mostly be simple, with a labelling function and hence only require very simple productive skills. The results from the SEN Classrooms Corpus, however, showed that SGD utterances in these classes fit a more receptive and responsive function. This shows that, in practice – in the SEN Classrooms Corpus at least – SGDs may be used to promote the development of more complex skills than simply labelling and meeting basic needs. Instead the SGDs were used to answer questions, and hence involved both comprehension and production skills. Thus, use of SGDs as an AAC system, may promote more complex skills than anticipated in the literature. These results demonstrate that it is indeed possible to use corpus methods to retrieve examples of SGD use. Like in previous chapters, though, this numerical data needs further contextual and manual exploration.

7.5.2. Use of TC in SEN classrooms. The results presented demonstrate that we can also use corpus methods to search for and retrieve instances of Makaton sign language within the SEN Classrooms corpus. These methods allow us to identify Makaton and gain some insights into the language involved. Of particular benefit was the comparison of speech and sign utterances, which allows us to consider the use of Makaton as an AAC system. It is important to note, however, that these corpus

queries were only possibly due to the preconceived transcription and annotation schemes which marked up Makaton use. Another limitation, like mentioned in previous chapters, is that these results only allow us quantitative, decontextualized instances of Makaton use and we need to perform manual analyses in order to provide pedagogic interpretations. Likewise, the results only inform us about Makaton use in this specific data set and cannot be generalised to all SEN environments.

Nonetheless, three key points emerge from the results of the analysis of TC (in the form of combined speech and Makaton signing) in the SEN Classrooms Corpus, as follows:

1. Makaton might act as an alternative AAC system, as well as an augmentative system (as per the description of TC).

2. TC falls on a cline of comprehension.

3. TC has more complex functions than expected.

This section will be used to discuss how each of these three key points emerge from the above findings. It must be noted that this applies only to the SEN Classrooms Corpus and cannot be used to make wider generalisations. However, it can show us how Makaton was used within these specific classrooms and might be an insight for future study in more representative data.

First, although the literature suggests that Makaton is a form of TC, which is an augmentative communication system, with sign language used alongside speech, the results from the SEN Classrooms Corpus suggests that it was used as an alternative system too, with signs being used without speech. It was apparent that in the corpus Makaton was used most often by pupils who also used SGDs, and who were non-verbal or minimally verbal. This means that, for the most part, these pupils used Makaton signs as an *alternative* communication method, in place of speech,

rather than as an *additional* means of communication. It was expected that, as per the TC model, Makaton signs would be used alongside speech. However, pupils in the SEN Classrooms Corpus often used signs independent of speech, suggesting that Makaton can act as an alternative communication system, rather than acting simply to support and facilitate speech. The Makaton charity's recommendation is that Makaton is to be used alongside speech (The Makaton Charity, 2018a). Its usage alone, as observed in the corpus, runs contrary to that recommendation, and yet, being used in this way allows Makaton to facilitate interaction in multiple ways, for pupils with varying abilities.

Second, when used, it seemed that TC as an AAC system in the SEN Classrooms Corpus falls on a cline of comprehension, with signs and their functions requiring different levels of comprehension. Whilst forms involving lower comprehension were most common in SEN Classrooms Corpus data, more complex comprehension functions are still used. Content words were the most common word type in Makaton in the corpus. Nouns concerned with story content were the most common word class, followed by adjectives; these two classes involve more complex comprehension skills. Interjections were also a common word class among Makaton signs. Given that interjections have interactive or expressive rather than referential meaning, and the Makaton interjections are often used in the context of teachers asking the alternative question 'yes or no?', the use of interjection signs could be seen as a simple form of communication. Such usage requires only a confirmatory response on the part of the child, rather than any advanced comprehension or inference skills. Thus, in terms of grammatical category, Makaton use in the SEN Classrooms Corpus has, at its core, content and meaning, before more complex grammatical categories. This suggests that teachers in this data set are aware of this

cline of comprehension, using simple terms most often, whilst also introducing more complex forms.

A similar pattern is seen in the function analysis, with the most common function of Makaton in the SEN Classrooms Corpus being the simple repetition of spoken words. The more complex functions exhibit differences in teacher and pupil uses. Teachers used lower comprehension question types more often than higher comprehension question types; however, pupils responded in Makaton more so to higher comprehension questions. This suggests that teachers in the SEN Classrooms Corpus work along this cline of comprehension, spending more time using lower comprehension questions when using Makaton, whilst pupils are more likely to respond to higher comprehension questions (verbal or signed) using Makaton. There could be a number of explanations for this. For example, it may be that pupils in these classes were more likely to respond in Makaton to complex questions because such questions challenged their cognition at a higher level and hence perhaps were more interesting. On the other hand, and perhaps more likely, these high-cognition questions provided a wider range of responses from pupils than YNA low-cognition questions, and hence offer a wider range of opportunities for response (and hence produce more pupil responses). As mentioned in the analysis, this is something not considered in this thesis, but which could be an avenue of future research. Similar results were found with regard to the use of Makaton alongside speech in the SEN Classrooms Corpus: *exact* sign-to-speech translation was the most common relationship between speech and sign, and the most complex relationship (*sentence function*) was used very rarely. Again, this evidence supports the idea that although in general teachers in this data set use forms with a low cognitive load (of *exact* sign-speech pairings), they do introduce more complex forms on occasion (in particular,

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keywords). Thus, these findings overall suggest that teachers in the SEN Classrooms Corpus work along this cline of comprehension, using the simplest word classes, functions and sign-speech relationships most often, but still introducing more complex vocabulary, functions and sign-speech relationships on occasion to promote more advanced comprehension and production skills.

The third key finding that emerged from the results is that TC was used with more complex functions in the SEN Classrooms Corpus than has been described in the AAC literature. Many of the signs within the corpus were from outside the Makaton Core Vocabulary. This suggests that a significant portion of the TC interaction in this data utilises lexis that was more complex than provided by the initial Makaton vocabulary. On further analysis, these terms were found mostly to be story content words, (e.g. *fairy, storm, wizard*). This suggests that children's literature includes low frequency terms, which by virtue of their rarity, are more complex than would be expected (or allowed) to be part of as simple a sign vocabulary as that of Makaton. This is in line with the literature on children's reading schemes, which suggests that children's literature contains this more complex lexis (Stuart et al., 2010). From a linguistic point of view, however, in any discourse we would expect these more complex, novel words to be linked to the topic – in this case the story (e.g., in a story about magic, it is not surprising to see *wizard* and *fairy* occurring frequently). Use of complex words in unrelated contexts (e.g., use of *computer wizard* outside a magical discourse) marks a more complex and low frequency use of the term. This did not happen within the SEN Classrooms Corpus data, which again supports the idea that these novel words were a result of the discourse itself. Likewise, when considering the frequency profile of any corpus, the largest portion of words would be hapax legomena, items that only occur one time. For example, in the BNC

over half of the types occur only once (Brezina, 2018:44). Hence, the occurrence of these low frequency words within the classrooms might not be so unusual.

When considering word class, interjections were common. Whilst these are simple in function, it could be argued that they target some more advanced skills in their use, requiring a child to interact and make a judgement on the truth value of the yes/no question. Further, adjectives were common signs within the corpus. They involve a deeper sense of comprehension, such as understanding story content and characters. These results from the SEN Classrooms Corpus supports Barrera et al.'s (1980) claims that TC can encourage the development of expressive (not just receptive) language skills. Finally, as already discussed, there was a misalignment of teacher questions and pupil responses in the SEN Classrooms Corpus when we considered the function of utterances: pupils were more likely to respond in Makaton to more complex question types. Hence, it seems that the children in this data may be more receptive than anticipated to the more advanced functions of Makaton use on some occasions. Thus, we find that Makaton use in the SEN Classrooms Corpus is more complex, both in terms of lexis and function, than might be expected on the basis of the previous research and recommendations for Makaton use, with children using complex terms outside the Core Vocabulary and answering more complex questions more often than simpler question types.

7.6. Conclusion

This chapter has demonstrated that, with appropriate transcription and corpus annotation, it is possible to identify use of sign language and speech generating devices in classroom corpus data. Specifically, it allows up to perform subsequent searches to retrieve frequency and distribution information about these features, which

can then be analysed in different ways. However, as mentioned previously, we still need to perform manual and contextual analyses in order to interpret these results.

The analysis and results in this chapter allow us to explore the use of Makaton and speech-generating devices as AAC methods in the SEN Classrooms Corpus. This chapter has provided evidence to challenge the popular belief amongst teachers and parents mentioned in the literature review that AAC can hinder children's development, as the findings in this chapter clearly demonstrate that AAC plays an important and useful role in the SEN classrooms in this data. Particularly within these classes TC is used more prevalently than SGD. The findings suggest that both AAC systems are not purely augmented or alternative in the SEN Classrooms Corpus. Whilst TC was used as an augmented system, as described in the Makaton literature, the results showed it could also be used as an alternative system in cases where it was used without speech. Likewise, whilst SGD use was mostly alternative, used instead of speech, as specified in the SGD literature, it was also used in an augmented way by one individual, who used the system alongside speech. This contrasts with the AAC literature, as it suggests that rather than being rigid systems with fixed functions, AAC systems may be used more flexibly, meaning the same system might be used to support speech (as an augmented system) or to replace speech (as an alternative system). This flexibility might also of benefit in these settings, as it is tailorable to individual pupils and their needs.

Further, the functions of both TC and SGD were found to be more complex in the SEN Classrooms Corpus than the literature suggested, focusing more on fostering comprehension and promoting interaction than expected. However, whilst focussing on comprehension, with TC in particular, teachers in the SEN Classrooms Corpus dedicate more time to use of the lower comprehension forms (exact pairings) and

functions (repetition), rather than more complex skills like questioning. This suggests that whilst AAC systems are used more for comprehension than expected, these are still working at the lower ends of the comprehension scale.

These results show that AAC can be a useful part of interaction SEN classrooms, with more complex functions than anticipated in the literature, promoting comprehension and interaction, rather than simply prompting production. This concept of a cline of comprehension and production is something that should be considered in more depth in a future study. This study also opens doors regarding the study of AAC systems using corpus methods. It suggests the importance of mark up for these features, but also demonstrates an opening for more research using corpus methods. Further, these results suggest that future work might combine analyses of verbal questions (as found in Chapter 5) and Makaton in order to provide a fuller picture of how verbal and Makaton questions and responses might interact.

Chapter 8: Feedback

8.1. Introduction

Feedback is a feature of teacher discourse, used to react to children's behaviours or verbalisations. This chapter begins with a literature review to examine what is meant by feedback and to clarify the definition used in this thesis. This is followed by a manual analysis of the presence of different types of feedback in a small sample of the SEN Classrooms Corpus dataset. The next analysis used corpus methods different to those utilised in previous chapters to investigate the language used in this small sample of teacher feedback. The final analysis applies findings from this initial small-scale analysis to the study of one feedback type (positive evaluation feedback) in the SEN Classrooms Corpus.

8.2. Literature review

It is important to note that, unlike previous features and chapters, feedback was not defined in any of the contemporary grammars (Quirk et al., 1975; Biber et al., 1999; Huddleston and Pullum, 2002). Hence, a wider sample linguistic and pedagogic literature was reviewed.

8.2.1. Pedagogic literature review.
In the survey in Methodology II (Chapter 4), feedback was listed as one of the main features of teacher discourse and is defined as a reaction to the child's behaviour or verbalisation. Whilst feedback can be verbal or nonverbal, in this chapter only verbal feedback will be considered. This is because the transcription process only recorded speech, omitting physical actions other than Makaton. Among the studies of teacher discourse discussed in Chapter 4, those which mention feedback are DeLoache and DeMendoza (1985), Mahoney and

Wheeden (1999) and Whitehurst et al. (1988). The review of these studies indicated only vague reference to feedback.

Mahoney and Wheeden (1999) considered feedback to be a measure of teacher behaviour, but only mentioned that it is a part of teacher talk, rather than giving any definition. Mahoney and Wheeden (1999:56) considered supportiveness (the degree to which the teacher demonstrates support of the child), responsiveness (the appropriateness and promptness of the teacher's responses) and verbal praise as elements of feedback. Mahoney and Wheeden (1999) found that these features were positively correlated with the engagement of children with disabilities, encouraging them to become involved in interaction.

Similarly, Whitehurst et al. (1988) included feedback in their model of teacher talk in picture book reading, but again they did not provide an extensive definition of exactly what was meant by the term feedback. The only explanation they provided was that instructing teachers to "respond appropriately to children's attempts" was an important part of the intervention to optimise parental reading of picture books to young children. Following such an intervention, Whitehurst et al. (1988) found that children scored higher on post-tests of expressive language ability, and also had a higher mean length of utterance and a higher frequency of phrases (and lower frequency of single words).

Finally, within the literature, DeLoache and DeMendoza (1985) considered the structure and content of picture-book interactions between mothers and young children, defining feedback as an important and prevalent feature. They defined feedback as any instance in which the mother reacts to the child's behaviour or verbalisation in such a way as to indicate whether the child was right or wrong.

DeLoache and DeMendoza made a further distinction between positive and negative feedback. Positive feedback involved the mother explicitly confirming the child's utterance. Negative feedback involved the mother's indication that a child's response was unacceptable, by either explicitly negating it or by using a variety of more indirect rejections.

Thus, although the literature discusses feedback and gives some preliminary definitions, this initial review lacks a concrete definition of what feedback is. Whilst we have some indication that feedback is a response to a child's utterance which may be positively or negatively charged, we lack any explicit definition of either the linguistic form or the function of feedback in teacher discourse.

8.2.2. IRF literature review. More clarity can be given when we focus specifically on the IRF literature discussed in Chapter 2. As noted, this forms a bridge between linguistic conversational analysis and pedagogic study. Feedback is a central part of the triadic IRF sequence outlined in the literature review in Chapter 2. The concept of the IRF sequence was first introduced by Sinclair and Coulthard (1975), who explained that a typical classroom exchange usually consists of: an *initiation* by the teacher, followed by a *response* by the pupil, followed by *feedback* to the pupil's response from the teacher. However, even in this seminal text, Sinclair and Coulthard (1975) failed to fully define what was meant by the term 'feedback', other than that it follows a pupil response. They did, however, outline the speech acts that may potentially be involved in feedback, which include *evaluate* acts, in which the teacher evaluates the pupil's response and creates a basis for proceeding (Sinclair and Coulthard, 1975:37). Evaluate acts often involved an *accept* act, in which the teacher confirms that they have heard a response and that it was an appropriate one (Sinclair and Coulthard, 1975:37). Furthermore, feedback may fall under the *follow-up*

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category, which functions to tell pupils how well they have performed (Sinclair and Coulthard, 1975:42).

Mehan (1979) built upon Sinclair and Coulthard's initial IRF model, relabelling the sequence *initiation-reply-evaluation*, where the final evaluation act matches Sinclair and Coulthard's (1975) feedback level. Mehan (1979:54) explaind that this final part of the sequence "positively evaluates the completion of the initiation-reply pair" and plays a significant role in instructional discourse, and hence in classrooms. Mehan (1979:64) further explained that evaluation "contributes information about the initiator's intended meaning to the negotiation of a mutually acceptable reply". Like DeLoache and DeMendoza (1985), Mehan (1979) made a distinction between positive and negative feedback.

Whilst these studies give slightly more insight about how feedback occurs, they still do not give an explicit or linguistic definition. It is, then, appropriate to consider work on feedback from a second field, namely, literature on formative assessment.

8.2.3. Formative assessment literature review. Formative assessment

involves procedures used by teachers during the learning process to modify and improve student attainment, which typically involves qualitative feedback (as opposed to quantitative feedback and test scores). Formative assessment stands in contrast to summative assessment, which monitors educational outcomes and hence is provided after the classroom interaction. Two key studies of feedback in formative assessment are those of Brookhart (2011) and Tunstall and Gipps (1996).

Brookhart (2011:225) explained that feedback plays a special role within formative assessment, as it is through the feedback that students get important

information about what they know and can do, and about what they need to do next. Brookhart (2011:227) claimed that the role of teacher feedback "is to present students with the means, motive, and opportunity for the internal regulation of learning". Brookhart also made recommendations about various aspects which make feedback more successful. First, Brookhart (2011:230) suggested that the mode of feedback is important, with interactive feedback being best where possible. In terms of audience, Brookhart (2011:231) suggested that individual feedback should be used to communicate that the teacher values the individual's learning, but that group or class feedback must be used if most of the class missed the same concept. Brookhart (2011:234) pointed out that the valence of feedback is extremely important. He suggested that where negative descriptions are given, positive suggestions for improvement should also be supplied. In terms of clarity Brookhart recommended that teachers use appropriate vocabulary and concepts relative to the level of the pupil; moreover they ought to adopt a tone which communicates respect for the pupil (Brookhart, 2011:235-6). Likewise, Brookhart (2011:236) recommended that the language used should position the child as the agent.

8.2.3.1.   A typology of feedback. Whilst Brookhart (2011) gave recommendations on the best modes of feedback, Tunstall and Gipps (1996) provided a fuller typology of feedback in formative assessment. Initially, they explained that feedback lies on a continuum from evaluative (judgemental) to descriptive (task-related). Tunstall and Gipps' (1996) typology, utilising this continuum, is shown in full in Figure 1.

Type	S	A1	B1	C1	D1
Category	Socialisation	Rewarding	Approving	Specifying attainment	Constructing achievement
Type		A2	B2	C2	D2
Category		Punishing	Disapproving	Specifying improvement	Constructing the way forward
Role	Socialisation/ management	Classroom/ individual management	Performance orientation	Mastery orientation	Learning orientation

Figure 8.1.

Tunstall and Gipps' typology of feedback (reproduced from Tunstall and Gipps, 1996:392).

In the sequence of types from S to D1/D2, the forms of feedback on the left-hand side represents more evaluative feedback and forms on the right-hand side characterise more descriptive feedback. Tunstall and Gipps (1996) explained that feedback changes in style and purpose as it moves between evaluation and description. At the evaluative end, feedback is clearly either positive or negative, whilst at the descriptive end it is, rather, focused on discussion of either achievement or improvement. Thus, amongst feedback types, those labelled 1 are positive or achievement focussed and those labelled 2 are negative or improvement focussed. Tunstall and Gipps (1996:395) explained that as these feedback types are on a continuum rather than being distinct categories and that there may be overlaps or use of two categories simultaneously. Hereafter, Tunstall and Gipp's categorisations of specific feedback types will be explained in more depth.

8.2.3.2. **Socialisation feedback.** *Socialisation feedback* reinforces how children are expected to work and behave in the classroom community (Tunstall and Gipps, 1996:393). Tunstall and Gipps observed socialisation feedback to have much

in common across teachers, reflecting common values - including the need for kindness in the classroom community, the importance of independence and the importance of effort (Tunstall and Gipps, 1996:393). They gave the example "I'm only helping people who are sitting down with their hands up'.

     8.2.3.3.   ***Assessment feedback.*** Assessment feedback is split into four types (A, B, C, D), each of which is divided into two categories based on the respective positive/negative and achievement/improvement distinctions outline in Section 8.3.2.1. These are outlined in Figure 2. All definitions hereafter are based upon Tunstall and Gipps' (1996) definitions and all examples given also come directly from this study.

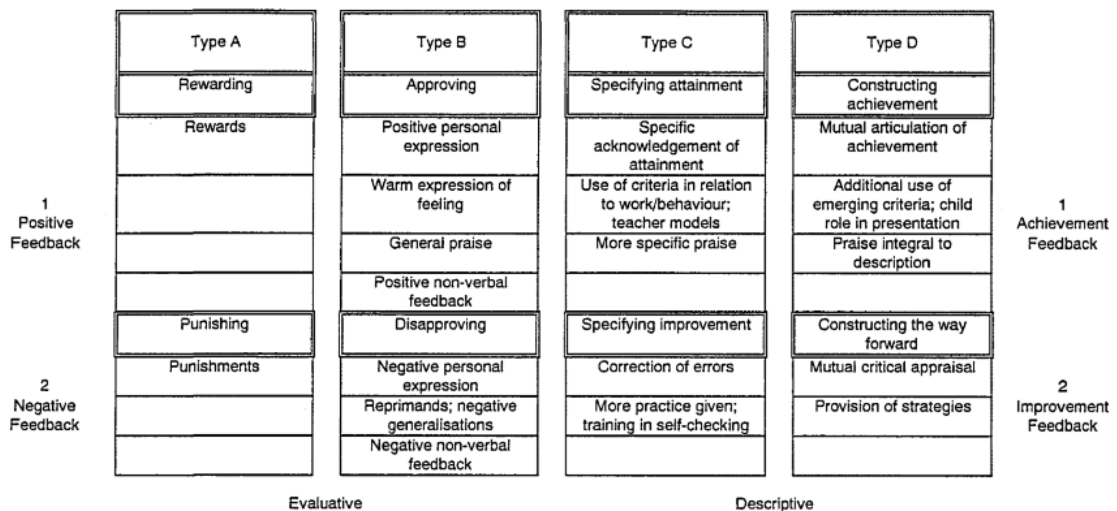|	Type A	Type B	Type C	Type D	
	Rewarding	Approving	Specifying attainment	Constructing achievement	
	Rewards	Positive personal expression	Specific acknowledgement of attainment	Mutual articulation of achievement	
1 Positive Feedback		Warm expression of feeling	Use of criteria in relation to work/behaviour; teacher models	Additional use of emerging criteria; child role in presentation	1 Achievement Feedback
		General praise	More specific praise	Praise integral to description	
		Positive non-verbal feedback			
	Punishing	Disapproving	Specifying improvement	Constructing the way forward	
2 Negative Feedback	Punishments	Negative personal expression	Correction of errors	Mutual critical appraisal	2 Improvement Feedback
		Reprimands; negative generalisations	More practice given; training in self-checking	Provision of strategies	
		Negative non-verbal feedback			
	Evaluative		Descriptive		

Figure 8.2.

Tunstall and Gipps' classification of assessment feedback types (reproduced from Tunstall and Gipps, 1996:394).

     8.2.3.4.   ***Type A: rewarding/punishing.*** The rewarding (A1) feedback type is used by teachers to express their desire to reward children for their efforts either in work or in behaviour. This feedback is mostly given to children whom

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teachers judge to have invested the most effort in their work or who have shown particular skills and/or attitudes. Rewarding (A1) is the feedback type of extrinsic motivation and involves bringing fun into the classroom through use of various rewards. Tunstall and Gipps (1996:395) gave examples of rewarding feedback including: symbols (e.g. smiley faces, stickers, stars, badges), treats, and recognition of child's performance by a wider audience. They gave the verbal example 'you'll get a little frog'.

The punishing (A2) feedback type is negative evaluative feedback used to signify teacher disapproval, used when the teacher judges that acceptable classroom norms have been transgressed, with the purpose of discouraging this unsatisfactory behaviour (Tunstall and Gipps, 1996:395). Tunstall and Gipps (1996:396) explained that this feedback type is more commonly associated with the physical aspects of learning and classroom behaviour, rather than cognitive aspects. Examples of this type of feedback include: removal from social contact, being deprived of something the child enjoys, destruction of work, or removal of other children or teacher as friends. Tunstall and Gipps (1996:396) gave the verbal example 'you're not going to go out to play until you've done more work than that'.

8.2.3.5. *Type B: approving/disapproving.* The approving (B1) feedback type is used when teachers judge children to be achieving work or behaviour beyond what was expected of them. It is shown as the warm expression of teacher approval of the child's work or engagement. It is often applied to effort and concentration, in addition to work that is well done and is often used to encourage children to try. This feedback type is more directly personal than descriptive feedback and was often used to express the teacher's personal pleasure or pride. Tunstall and Gipps (1996) found that approving feedback played a significant part in class management, bonding the

class as a happy community. It could be non-verbal or verbal. Non-verbal examples include: touch, facial expression, and ticks. Verbal examples include: the expression of personal feelings, use of endearments, use of labels, use of comparisons, reference to the importance of effort. Tunstall and Gipps (1996:397) gave verbal examples such as 'brilliant ideas', 'I'm very pleased with you' and 'that's wonderful'.

The disapproving (B2) feedback type is negative evaluative feedback used when norms are judged to have been contravened. It is feedback given when the child is deemed to be at fault, whether in terms of behaviour, work, a lack of effort or concentration that is considered to be poor. It often involves the expression of personal feelings of disapproval and is motivated by an intention on the teacher's part to correct children's social skills and attitudes and the more conative aspects of their learning. Non-verbal examples include: facial expressions, tone of voice, volume, voice modulation, gestures, and use of height. Verbal examples include: expression of anger, disappointment or annoyance, use of threats, personal humiliation strategies, negative expression, use of labels, teacher judgement that work has no value or teacher judgement based on social values. Tunstall and Gipps (1996:398) gave verbal examples such as 'you're a silly boy', 'oh for goodness' sake' and 'you weren't listening when I told everyone'.

8.2.3.6. ***Type C: specifying attainment/improvement.*** The specifying attainment (C1) feedback type is a more descriptive feedback type than in categories A and B, used to identify specific aspects of successful attainment and used by teachers to identify and label the successful components of attainment. Tunstall and Gipps (1996:398) explained that it is used to support children's work or behaviour through specific praise and by affirming what children were engaged in or had carried out successfully. It is more work-focused and less personal than previous types.

Examples include: identification of specific criteria for success, providing models and giving practice. Tunstall and Gipps (1996:398) gave the verbal examples 'we will try to write a sentence together' and 'you used some words that you didn't know about'.

The specifying improvements (C2) feedback type is descriptive feedback used to specify how something which is being learned can be corrected. Like C1, it is more work-focussed and less personal than the previous types. It is also more dispassionate or neutral in tone than earlier types, relating more to cognitive tasks than personal attributes. C2 takes the form of teachers pointing out to children what they need improve in their work; it involves teachers directing children to engage in correcting activities themselves. Examples include: specifying what is wrong, correction, specifying criteria for success, expression of teacher expectation, provision of teacher models, importance of self-checking and of independent learning. Tunstall and Gipps (1996:399) included verbal examples such as 'Is that "went?" Just try that one again' and 'you're trying very hard. Watch. Around and around. Good girl. You can when you practise. I want you to practise little a…''

8.2.3.7.   *Type D: constructing achievement/the way forward.* The constructing achievement (D1) feedback type is descriptive and attainment focussed, used to convey a sense of work in progress, heightening awareness of what was being undertaken and reflecting on it. Tunstall and Gipps (1996:399) explained that this type of feedback seems to be used to bestow importance on the child's work, shifting emphasis more to the child's own role in learning, making the teacher more of a facilitator than a judge. Examples include: articulating the processes in which the child was or is engaged, aspects of work the child has produced, enabling the child to draw comparisons between present achievements and previous work, praise linked with future development, teacher joining in as a 'learner' in an activity, and feedback

which extends thinking about achievements. Tunstall and Gipps (1996:400) included the verbal example 'There's Polly's lovely picture of an apple. Great, she's not only used one type of green, she's used two different types, a light one and a dark one. Very good, well done'.

The constructing the way forward (D2) feedback type is descriptive and improvement focused, used by teachers to articulate future learning possibilities. Like D1, it usually gives the child more responsibility. Tunstall and Gipps (1996:400) explained that instead of telling children what to do to improve, the development tended to be identified mutually in such a way as to involve the child in decision making and it suggests that there is again a greater feel of teachers participating as learners in the classroom. Examples include: articulating the relevance of a future development, diagnosing problems with the child, specifying criteria and articulating standards as they emerged in children's work, involving children in evaluating standards, prompting and supporting children in examining their work, comparison with previous performance, role reversal, and discussion of strategies that help in developing work. Tunstall and Gipps (1996:400) included the verbal example 'What we've got to do is look at that very first sound to give you a clue as to what the word is haven't you? So when you've learnt all your sounds, you'll be able to have a better guess at these words won't you?'.

8.2.4. Literature review evaluation. This extended literature review has allowed the development of an understanding of what is meant by teacher feedback. The pedagogic literature reveals an initial definition of feedback as a response to a child's behaviour or verbalisations. The linguistic IRF literature allows us to formulate an understanding of the structure of feedback, allowing us to define feedback as the final component in an IRF/IRE sequence. Finally, Tunstall and Gipps'

work on feedback in formative assessment provides us with an outline of the different types of feedback, which closely links to the function of the teacher responses. These findings, specifically on the structure/form and function of teacher feedback will be drawn upon in analysis. First, only utterances following a pupil utterance will be considered feedback and second Tunstall and Gipps' typology will be operationalised for categorising feedback types.

8.3. Manual analysis

8.3.1. Method. Following this initial literature review, the next step in the methodological process involved in this thesis (outlined in Chapter 4) was to move to the contemporary grammars to provide a formal linguistic definition of teacher feedback. However, as the individual types of feedback are varied in form, as demonstrated in this initial literature review, we cannot identify a single linguistic form to match all kinds of feedback. Thus, this means we cannot translate this form into an appropriate corpus query. That is not to say that corpus methodologies cannot be used to investigate teacher feedback, instead it suggests we must approach this differently than in previous chapters. The starting point here must be a preliminary manual analysis. This manual analysis allows two insights; first it will enable the identification of types of feedback and prototypical examples of different types of feedback. This information will inform further analyses. For this manual analysis, a single random session was taken from each class and the text for this session was then manually annotated to mark up each of Tunstall and Gipps' feedback types. Feedback was only coded in teacher utterances and was sectioned by what I will henceforth refer to as 'feedback statements', which were an uninterrupted section of one feedback type with no overlap with another feedback type. This allowed the counting and comparison of individual feedback types, including the frequency of feedback

types, valence and orientation and frequency of feedback by class. The results of this initial analysis allowed the identification of common patterns of feedback, which can in turn inform the later corpus analyses.

8.3.2. Results. Within the manual sample, the first and most obvious way of approaching a study of the data is to quantify each type of feedback. The frequency of feedback statements matching each type are found in Table 8.1. Both raw frequencies and normalised frequencies per 1000 words in each text are reported. Normalised frequencies are used to demonstrate that, as the texts were very similar sizes (1_050515 is 4225 words, 2_070515 is 3112 words, 3_300316 is 3648 words and 4_270416 is 3578 words), the volume of evidence in each file does not explain the variation of feedback raw frequency, given the normalised frequencies show the same patterns. Hereafter, the raw frequency of each type was worked out as a percentage of all feedback found within the sample.

Table 8.1.

The raw frequency of types of feedback in the manually coded sample, with

normalised frequencies per 100 words in each text in brackets.

	S	A1	A2	B1	B2	C1	C2	D1	D2	TOTAL
1_050515	0	0	0	31 (7.3)	6 (1.4)	15 (3.6)	20 (4.7)	1 (0.2)	0	73 (17.3)
2_070515	0	0	0	32 (10.3)	7 (2.2)	12 (3.9)	17 (5.5)	1 (0.3)	1 (0.3)	70 (22.5)
3_300316	0	0	0	38 (10.4)	14 (3.8)	9 (2.5)	8 (2.2)	4 (1.1)	1 (0.3)	74 (20.3)
4_270416	0	0	0	56 (15.7)	6 (1.7)	8 (2.2)	15 (4.2)	0	12 (3.4)	97 (27.1)
TOTAL	0	0	0	157 (10.8)	33 (2.3)	44 (3.0)	60 (4.1)	6 (0.4)	14 (1.0)	314 (21.6)

The approving (B1) feedback type used to show the teacher's approval makes

up exactly half (50%) of the teacher feedback in the manually coded sample.

Examples include the use of evaluative adjectives like *fantastic* and *brilliant* and

evaluative phrases like *well done* and *good girl*. The prominence of this feedback

within this SEN Classrooms Corpus sample could perhaps be due to the affirmative,

positive nature of the teacher comments. Such affirmative responses allow teachers to

support children's understanding, through highlighting and in turn reinforcing correct

work and behaviours. Further, Tunstall and Gipps (1996) claim this feedback type

played a significant role in classroom management and maintaining a happy

community, suggesting the prevalence of this feedback might be for this reason.

The next most common types of feedback within the manually coded sample

were the specifying achievement (C1) and specifying improvement (C2) types, which

accounted for 14% and 19.1% of feedback in the sample respectively. The prevalence

of these types is perhaps not surprising, given that these are the forms most closely

linked to teacher scaffolding, bridging a gap between what is known (C1) and what could be learnt (C2). Specifying achievement (C1) feedback such as 'you're absolutely right' and 'that's it' allow the teacher to indicate what the pupil is doing correctly, hence labelling the successful components of classroom attainment. Specifying improvement (C2) feedback such as 'listen again' or 'here's another clue' allows teachers to push children to go beyond this current attainment, often requesting further examples or for pupils to clarify previous answers. It is clear, then, that these feedback types work at either end of Vygotsky's zone of proximal development (see Chapter 2), with specifying achievement (C1) addressing children's current knowledge and specifying improvement (C2) pushing them beyond this.

The next most common feedback type within the manually coded sample was disapproving feedback (B2), where teachers provided negative evaluative feedback such as 'don't be talking coz I'm finding that quiet rude at the minute' and 'if you can't behave you will sit back down', which arguably served as behavioural and classroom management. This type made up 10.5% of feedback in the manually coded sample. First, it is interesting that this is considerably less frequent than its positive evaluative counterpart, approving feedback (E1) and which suggests that, comparatively, affirmation is more prevalent in the classrooms in the SEN Classrooms Corpus than disapproval. This is perhaps due to the nature of teacher discourse, where supporting (and hence affirmation) is more important than correction or discipline. Nonetheless, we can see that disapproval is still a large part of teacher feedback in this data. Looking at examples we can see the functions line up very closely with Tunstall and Gipps' definitions, being used to mark work or behaviours considered to be poor ('it's not really good enough', 'sit up properly please') and can

include expression of anger, disappointment or annoyance ('I'm not happy', 'I'm finding that quiet rude').

By comparison, the constructing achievement (D1) and constructing the way forwards (D2) feedback types were extremely infrequent within the sample, making up only 1.9% and 4.5% of teacher feedback respectively. The focus of these feedback types is progressive, focusing upon attainment and improvement in progress. This complexity, along with the fact that Tunstall and Gipps (1996) identified that these feedback types shift the focus to the child as an agent in their own learning might explain why these feedback types are less common in the SEN Classrooms Corpus. This is a cognitively advanced skill which might be inappropriate for lower ability children. Further, the agency might be inappropriate, putting too much pressure on children, removing teacher supports which are a more necessary part of scaffolding in this domain.

Within the manually coded sample there were no examples of rewarding (A1) or punishing (A2) feedback, nor was there any evidence of socialisation (S) feedback. Whilst we would expect rewarding or punishing statements to be common in the classroom, as Tunstall and Gipps (1996) stressed that they are used to incentivise or discourage certain behaviour, these feedback types are not used within the sample. Although contradicting initial expectations, this can be explained in that within these classes there did not appear to be a structured reward of punishment system, such as the badges or stickers mentioned by Tunstall and Gipps (1996), who identified that these feedback types were more physical than verbal. The absence of these physical systems in turn accounts for the lack of rewarding or punishing feedback. Another hypothesis that might account for the data observed is that teachers instead turn more

towards the approving and disapproving feedback types in order to support the classroom environment.

The absence of socialisation feedback seems due to the definition of the type. It is outlined as the feedback type which reinforces how children are expected to work and behave in the classroom. In practice, however, it is difficult to distinguish this function from the other types of feedback, which in turn makes it difficult to identify socialisation feedback. For example, a negative personal expression such as 'I am disappointed' would be labelled disapproving (B2) feedback. However, this type inevitably has a socialisation function too, implying to the child that the behaviour was not appropriate and hence should not be continued. Indeed, I would argue that any type of assessment feedback also fits the socialisation definition, as every type aims to reinforce how children are expected to work or behave in some way. This fits with a socio-interactionist model, where feedback is intended to support social development as well as knowledge.

Following a discussion of the frequency of individual feedback types, it is also possible to assess the overall valence and orientation of feedback within the manually annotated sample. As mentioned, the evaluative feedback was seen as either positive or negative, whilst the descriptive feedback varied in terms of orientation either to achievement or improvement. Using the data in Table 8.1, it is possible to quantify the frequency of positive/negative and achievement/orientation feedback. Overall, we can see that evaluative feedback made up 60.5%, whilst descriptive feedback made up 39.5%. This suggests that, within the SEN Classrooms Corpus, evaluation plays a larger role than description; teachers place more emphasis on affirmation and disaffirmation than on describing achievement and improvement.

Of the evaluative types, positive evaluation made up 50% of all feedback, whilst negative evaluation accounted for 10.5% of all feedback. As a proportion of evaluative feedback alone, positive feedback made up 82.6%, whilst negative evaluative feedback made up only 17.4% of evaluative feedback. This supports the previous finding, that positive feedback plays a larger role within the SEN classroom, both within feedback as a whole and within evaluative feedback as a sub grouping. When we consider descriptive feedback, we found that in terms of orientation achievement made up 15.9% of feedback overall, whilst improvement orientation made up 23.6%. Although less common than evaluative feedback overall, both were more common than negative evaluative feedback, suggesting that description of attainment and improvement play a pivotal role in the SEN Classrooms Corpus. This might suggest than that, within in these SEN classrooms, although positive evaluation is arguably most important, the description of knowledge attained and in progress is also important. When compared, achievement feedback made up 40.3% of the descriptive feedback, whilst orientation accounted for 59.7%. Thus, both stressing current knowledge and advancing that knowledge is an important part of teacher discourse in the SEN Classrooms Corpus.

8.3.3. Conclusion, limitations and moving forwards. This manual analysis allows some initial insight into the nature of teacher feedback in the SEN Classrooms Corpus. In terms of frequency, we find that approving feedback is by far the most common, suggesting that teachers construct the classroom as a positive supportive environment. Although less common than approving feedback, disapproving feedback is common, showing discipline has a role in teacher feedback and organising the classroom in this data. Specifying achievement and improvement also play a key role, showing the importance not only of evaluation, but also of structuring knowledge

currently attained and to be developed in the SEN Classrooms Corpus. These ideas are also supported in the study of valence and orientation, which shows positive evaluation to be most common, followed by descriptive achievement and improvement, followed by negative evaluation. The absence of feedback types also proves interesting. First, rewards and punishments are notably absent from the manually coded data, due to the nature of the classroom. Perhaps more interesting is the absence of socialisation feedback, which is arguably due to the nature of the definition, which overlaps with assessment feedback types. This suggests that, rather than two overarching feedback types (assessment and socialisation), instead all feedback functions both as socialisation, but also as assessment (and hence matching types A-D).

Before moving on, it is important to consider the limitations of this manual coding process and subsequent assumptions made based on this. First, the manual sample comprised only one sample per class from the corpus, meaning that, in total only four of sixteen sessions were manually coded. Naturally, this means findings based upon this sample cannot confidently be generalised, either to the corpus as a whole or to SEN classrooms more widely. However, it is a reasonable sample upon which to make some preliminary hypotheses and to shape later analyses. Second, manual coding is naturally subject to researcher bias, as the coder applies labels according to their own understanding of the guidelines and making judgements accordingly. Not only is this problematic due to its subjective nature, it is also subject to human error – things can be missed of labels can be applied incorrectly. One solution is to use multiple coders and inter-rater testing, but this was not possible here due to time and financial constraints.

Despite these limitations, manual coding was essential for teacher feedback. As identified earlier, there is no definition of the linguistic form of teacher feedback, preventing the creating of corpus queries. This initial manual analysis allows us a smaller, coded sample upon which to perform some corpus analyses (as will be demonstrated in Section 8.4). Further, it allows insight into the frequency of feedback types and which features are more interesting in order to direct our attention to the more relevant elements in later analyses.

In particular, this initial manual analysis raised a few points. First, limitations of the initial feedback types was raised. The socialisation/assessment dichotomy is flawed, given socialisation overlaps with all assessment types (and hence was not present in the manual sample). This suggests that in future analyses socialisation should not be considered a separate type. Instead we should consider the socialisation function of individual types of feedback and case by case examples. Further, based upon the frequency analysis and the results of comparison of valence and orientation, it seems that the evaluation/description and positive/negative or achievement/orientation categories are more effective than the individual types, some of which are entirely absent. Perhaps this suggests that Tunstall and Gipps' (1996) model has too many distinctions to operationalise in this data. Hence, future analyses will use a simplified model, where first the evaluative and descriptive as dichotomy is compared and then the valence of evaluative feedback and orientation of descriptive feedback is marked.

Hence, moving forwards, the categorisations of Tunstall and Gipps (1996) are adapted as follows.

E. Evaluative feedback

    E1. Positive evaluation

    E2. Negative evaluation

D. Descriptive feedback

    D1. Description of achievement

    D2. Description of improvement

8.4. Corpus analysis

8.4.1. Introduction. I will conduct two corpus analyses: i) one focused upon the feedback sample and using corpus methods to investigate the language of feedback in the SEN Classrooms Corpus and ii) another using these findings and that of the manual analysis to investigate one feedback type within the entire SEN Classrooms Corpus using CQPweb. The first analysis of the manually coded sample will allow us to explore what feedback looks like in this small sample, focussing specifically on frequent words and keywords. This will allow us to identify key themes or topics within teacher feedback. The second analysis will focus upon the positive evaluative feedback, as this was identified to be the most important in the small sample. Based upon the manual analysis and the first corpus analysis, this feedback type will be explored within the SEN Classrooms Corpus, focusing specifically on two key features of positive evaluation feedback: exclamations and evaluative adjectives.

8.4.2. An analysis of feedback in the manually coded sample.

8.4.2.1. **Method.** This analysis will consider the most frequent words and keywords within this small sample of manually coded teacher feedback. Looking at prominent words allows us to identify key themes or discourses in a genre, in this case, in teacher feedback. In this analysis, #LancsBox was used. #LancsBox is a new-generation software for the analysis of corpora developed at Lancaster Univeristy (Brezina et al., 2015). Specifically, this analysis used #LancsBox's Words tool, which allows the in-depth analysis of frequencies of types, as well as comparison of corpora using the keywords technique (Brezina et al., 2015). The first analysis involved extracting a wordlist, with the words in the corpus organised by their absolute frequency, allowing us to see the most common words in this small sample. The second analysis involves keywords analysis. Keywords are words that are more frequent in one corpus when compared to another corpus, which we can then say are typical of the corpus of interest and are important in identifying key discourses and typical vocabulary in a genre (Brezina, 2018:80). The Words module in #LancsBox computes a comparison of frequencies between two corpora/wordlists using a selected statistical measure – in this case, simple maths (#LancsBox 4.0 Manual, p.26). In terms of the statistic, simple maths looks at a ratio between the relative frequencies of words in the target corpus (C) and the reference corpus (R). As a ratio can only be calculated if the values in R are greater than zero, (division by zero is not defined in mathematics), Kilgarriff (2009) suggests adding a constant k to both relative frequencies before calculating the ratio (k=100 in this study). The resulting measure is called the simple maths parameter (SMP) and is calculated as follows:

$$\text{simple maths parameter} = \frac{\text{relative frequency of } w \text{ in C } + k}{\text{relative frequency of } w \text{ in R } + k}$$

The constant k simultaneously serves as a filter that allows focusing on words above certain relative frequencies in the corpus. For example, if we use 1 as the constant, we highlight low-frequency unique words, while 100 would filter out words that occur with the relative frequency smaller than 100 per million words if the relative frequency per million words is used (Brezina, 2018:85). For purpose of analyses, the wordlist results and keywords were grouped according to their linguistic form or category, in order to inform interpretations.

      8.4.2.2.   ***Results.*** 14 of the most frequent words in teacher feedback in the SEN Classrooms Corpus sample were grammatical function words (*the, to, a, and, right, on, but, out, back, if, coz, of, so, up, no, not).* The aim of this analysis is to use keywords to reveal key discourses and hence meaning within the texts. As these words are grammatical words, rather than content words, these provide little insight into the meanings conveyed in feedback. The determiners (*a, the)* simply determine the kind of reference a word has. Similarly, the prepositions (*to, of, on*) simply express the relation of the noun to another word in the clause. The adverbs (*out, back, up, right*) were all place adverbs, used only to describe where an action takes place and tells us little about the action itself. The conjunctions (*and, if, but, coz, so*) were used to connect clauses within feedback. Although this might prove interesting to show how feedback is structured in the SEN Classrooms Corpus sample, we cannot infer the meanings here simply based upon conjunction keywords. The negators (*no, not*) indicated negation, which demonstrated that feedback can contain negative terms. However, the idea of positive and negative feedback and their respective traits will be considered in more depth in later, more rigorous corpus analyses. Thus, although these grammatical words might indicate things about the structures of feedback, they give little insight into key content or meaning behind feedback within the sample.

13 of the most common words in the sample were pronouns, proper nouns or noun labels (*you, that's, that, it, you're, I, your, it's, we, your, girl, what, there, name*). It is worth noting that for *it's you're* and *that's,* the pronouns (*it, you, that*) will be considered as here and the clitic verbs will be considered with alongside the other verb keywords that follows. The frequency of these types of words shows that naming plays a big role in feedback, which in turn suggests that feedback is often individual centred in this sample (*you found the word fairy, you should be alert, good girl*). On the other hand, it is interesting *we* occurred frequently, which suggests feedback in the sample is also collaborative (*shall we have a think? we need to help, that's what we are learning*). The presence of this individual and collaborative feedback is perhaps not surprising, given feedback aims to correct the behaviour of an individual, often in relation to the listener's perception of this behaviour. The non-personal pronouns (*that, it, what, there*) show that feedback in this sample is also directional, pointing to elements in relation to the physical classroom environment (*skip that word out, look that says wizard, skip it, hold it*).

13 of the most common types were verbs. We saw six variations of "is" (*(that)'s, (you)'re, be, was, is, (it)'s*), suggesting feedback addressed what is happening in the classroom. Next, we saw various imperative verbs frequently within the sample (*do/don't, listen, come, have*), which, as shown in the directives chapter (Chapter 6) are used by the teacher to control the classroom environment. These involved both mental (*do not worry, need to calm down, have a think*) and physical actions (*don't shout out, do it properly, don't do that, listen again, come back, come on, have a look*). Not only does this suggest that feedback in this data is physical and mental, it also shows that directives play a big role in feedback – something not raised by the analysis in the directives chapter. Finally, we also see the verb *know* used

frequently in the feedback sample, used to specify either "you know" or "you don't know", with each occurring six times respectively. This is clearly linked to the descriptive feedback type, outlining children's current knowledge.

The next most common grammatical grouping within the SEN Classrooms Corpus sample were modifiers, specifically adjectives and adverbs, with eight examples (*brilliant, good, please, fantastic, fabulous, just, really, excellent*). These naturally link to the positive and evaluative nature of feedback and the bias towards this feedback type found within the sample. Further, the presence of *please* and *just* within the keywords in the feedback sample hinted at politeness, as both were used to minimise imposition ('just wait', 'just get on with it quietly') or reduce face threats ('please don't shout out', 'sit up properly please'). This in turn suggests that politeness has a role within the SEN classroom feedback in this data. Finally, three of the top 50 words are exclamations (*well done, thank (you)*). Again, this clearly links to the use of positive evaluative feedback, referring to the quality of work and/or behaviour.

Table 8.2.

A frequency list of words in the teacher feedback manual sample corpus (4 files, 1295

tokens, 385 types)

	Word	Raw frequency	Frequency per 1000 words		Word	Raw frequency	Frequency per 1000 words
1	You	41	31.66023	26	is	10	7.722008
2	The	40	30.88803	27	it's	10	7.722008
3	Well	37	28.57143	28	we	10	7.722008
4	Done	34	26.25483	29	need	9	6.949807
5	that's	31	23.93822	30	on	9	6.949807
6	To	31	23.93822	31	but	9	6.949807
7	That	26	20.07722	32	out	9	6.949807
8	brilliant	25	19.30502	33	your	8	6.177606
9	A	24	18.53282	34	please	8	6.177606
10	Good	22	16.98842	35	girl	8	6.177606
11	It	21	16.21622	36	what	8	6.177606
12	And	19	14.67181	37	listen	8	6.177606
13	Not	18	13.89961	38	do	7	5.405405
14	you're	17	13.12741	39	back	7	5.405405
15	fantastic	16	12.35521	40	there	7	5.405405
16	Be	15	11.58301	41	if	7	5.405405
17	don't	14	10.81081	42	have	7	5.405405
18	I	13	10.03861	43	coz	7	5.405405
19	Right	13	10.03861	44	of	7	5.405405
20	thank	13	10.03861	45	so	7	5.405405
21	No	13	10.03861	46	up	7	5.405405
22	fabulous	13	10.03861	47	name	7	5.405405
23	know	12	9.266409	48	come	7	5.405405
24	Was	11	8.494208	49	excellent	6	4.633205
25	really	11	8.494208	50	just	6	4.633205

First, it is interesting to identify keywords in the feedback sample when
compared to general spoken English. The reference corpus used here was the spoken
component of the BNC2014, which contains conversations from the UK public
collected between 2012 and 2016 (and hence in a similar time frame to the SEN
Classrooms Corpus). The spoken BNC2014 totals 11.5 million words with a total of
672 speakers, representing general conversational British English. As explained in the
method in Section 8.4.2.1, simple maths is the statistic chosen to measure keyness.

The top 50 keywords according to simple maths score were collected and some were removed, as their significance was a result of difference transcription processes between corpora. *coz* was removed as this was transcribed cos in the BNC and *mmm* was removed as it was *mm* in the BNC. The words involving apostrophes (*that's, you're, don't, it's, I'm, here's, doesn't, he's, can't, you've, there's, we've*) were removed as these were separated as two words in the BNC. *a%* and *is%* were also removed as by-products of coding which tagged certain questions types in this data that was not present in the BNC. This left 34 keywords, which were then grouped according to topic, as it has been established that keywords reveal key discourses and topics within certain genres compared to others – in this case in feedback compared to general English.

The most prominent grouping of keywords from the sample were those linked to classroom environment. These fell into three categories: story content, classroom activity and physical environment. Eight of the top 50 keywords were linked to story content (*wizard, ghostly, Prospero, galleon, fairy, moon, magic, Crete)*, showing feedback in this data is often directly linked to the story content. Seven of the top 50 keywords form the sample were linked to the classroom activity (*adjectives, metaphor, object, sounding, kr, sentence, clue*), suggesting feedback often links to the specific task. Finally, one of the top 50 keywords was linked to the physical environment (*toilet*), showing that feedback can be used to control the physical environment of the classroom too (e.g. allowing bathroom breaks).

The next grouping of keywords from the sample were evaluative adjectives. The top three keywords were *fabulous*, *brilliant* and *fantastic*, all of which were over 75 times more common in feedback than the spoken BNC2014. The keywords *excellent* and *marvellous* were also included in this group. These keywords were all

evaluative and positive in nature, suggesting that positive evaluation is more common in the SEN Classrooms Corpus than in general spoken English. The keyword *cross* also fell under the evaluative adjective grouping. This is interesting, as it is not positive, instead showing a negative emotion. This was used where the teacher said "*I will be cross*", showing that perhaps the display of negative emotion is more common in the classrooms than in general English.

On a similar strand, four of the top 50 keywords from the sample were parts of exclamation phrases (*well done, thank, girl). Well* was found 37 times within the sample and *done* occurred 34 times. They were used in combination as the phrase *well done* in 33 cases. *Thank* occurs 13 times within the sample and was always followed by the pronoun *you (*also a keyword) as a part of the phrase *thank you* in all cases. *Girl* was used eight times within the sample and was always preceded by *good* (also a keyword) as a part of the exclamation *good girl*. These, again, show positive affirmation – and additionally politeness - to play a greater role in teacher feedback in this data than in general spoken English. Similarly we saw three adverbs in the keywords (*properly, please, quiet*), which suggests that feedback is also used to model correct behaviour in the SEN Classrooms Corpus, both through politeness and through marking correct behaviours.

Finally, six of the top 50 keywords form the SEN Classrooms Corpus sample were verbs (*listen, listening, fiddling, skip, sitting, worry*). These verbs concerned both physical (*fiddling, sitting*) and behavioural (*listen, listening, skip*) actions, which suggests feedback is used to monitor both. *Worry* as a keyword is interesting, as it suggests teachers in these classes also seek to monitor cognitive actions (*not to worry, don't worry*), which links to findings on directives in Section 6.7.

Table 8.3.

Keywords in the teacher feedback corpus compared to the spoken BNC 2014.

Type	Raw frequency in feedback	Raw frequency in Spoken BNC 2014	Statistic (Simple Maths)
Fabulous	13	108	91.89
Brilliant	25	1518	79.11
Fantastic	16	661	76.27
Wizard	5	25	38.68
Listen	8	923	33.33
excellent	6	487	32.28
Toilet	6	630	29.53
Done	34	8751	28.11
Ghostly	3	4	24.07
adjectives	3	7	24.01
marvellous	3	71	22.63
Properly	5	880	21.50
Thank	13	3974	21.11
Girl	8	2075	21.02
Sentence	3	254	19.44
Clue	3	269	19.22
Please	8	2788	17.11
Galleon	2	0	16.44
prospero	2	0	16.44
Kr	2	2	16.41
metaphor	2	15	16.21
Crete	2	16	16.2
Fiddling	2	33	15.94
Cross	3	543	15.90
sounding	2	55	15.62
Listening	3	600	15.35
Worry	4	1179	14.98
Quiet	3	660	14.81
Object	2	130	14.62
Fairy	2	142	14.48
Skip	2	154	14.33
Sitting	4	1330	14.03
Moon	2	184	13.98
Magic	2	192	13.89

It is also interesting to compare feedback types to one another, in order to investigate key topics in individual feedback types. For this purpose, I separated the

feedback types into four different corpora (positive evaluation, negative evaluation, description of achievement and description of improvement). Each corpus was then compared to a reference corpus including all other feedback combined. As before, simple maths was the keyword statistic used. Here, due to limits in scope of this thesis, only the top ten keywords will be considered for the feedback types and only the most prominent groupings will be considered. Groupings will be formed in the same way as the previous section.

The positive evaluation keywords from the sample were dominated by evaluative adjectives and adverbs (*fantastic, excellent, brilliant, very, much, great*) and exclamation (*thank* - which was always used with *you*, *wow* and *well done* – both of which are keywords here). Raw frequencies and simple maths statistics for these can be found in Table 8.4. All of these keywords occurred between 58 and 458 times more commonly in this feedback than in other feedback types based upon the simple maths statistics. These are perhaps not surprising, given the nature of this feedback. The positive nature of these keywords suggest that this feedback type meets its primary function – to positively evaluate. The keyword *girl* (used in this feedback 229 times more than other feedback) suggests that this positive feedback is more commonly linked to individuals than other types, which is perhaps not surprising given Tunstall and Gipps noted this type was often the most personal. The keyword *worry*, used in the context "don't worry", which was 115 times more common in positive feedback than other types, shows that positive evaluation feedback in the SEN Classrooms Corpus also serves as positive reassurance, rather than simply positive affirmation. This suggests that feedback can be used to maintain a relationship, not simply for giving comments.

Table 8.4.

Keywords in positive evaluation feedback compared to other feedback.

Type	Raw frequency in positive evaluation corpus	Raw frequency in positive evaluation reference corpus	Simple maths statistic
Fantastic	16	0	458.14
Thank	13	0	372.43
Girl	8	0	229.57
very, excellent	6	0	172.43
much, worry	4	0	115.29
Done	33	1	81.49
Brilliant	24	1	59.29
great, did, wow, like, doing, yesterday	2	0	58.14

When looking at negative evaluation, we found many of the keywords in this sample are verbs and specifically concordancing reveals that many were imperative verbs (*put down, stop, wait, hold, calm, shh*), all of which were between 52 and 103 times more frequent in this feedback than other types. This shows that direction is an important part of feedback in the SEN Classrooms Corpus, and particularly where negative direction is concerned. Other keywords concerned behaviours (*chatty, rude, talking, standards, straight, behave*), all of which were 52 times more common here than in other feedback. This links to the correction of behaviours deemed negative. This suggests that negative evaluation in this data is constructed in relation to positive evaluation in sense it refers to correct actions.

Table 8.5.

Keywords in negative evaluation feedback compared to other feedback.

Type	Raw frequency in negative evaluation corpus	Raw frequency in negative evaluation reference corpus	Simple maths statistic
down, will	3	0	154.84
bit, put, hard	2	0	103.56
chatty, her, let, shhh, standards, rude, stop, wait, talking, into, manners, quicker, straight, calm, fun, date, theirs, hold, talk, finish, finding, shh, guys, little, away, waiting, their, behave, sorry, I've, busy, over, enough, minute, happens	1	0	52.28

It is harder to identify patterns in the keywords for descriptive feedback of achievement in the sample – this is perhaps due to the nature of descriptive feedback, where things have to be explained in more detail. We can found that keywords involved explaining classroom strategies as a part of description of achievement feedback ('good *sounding* out', 'we need to *skip* it out', 'read the other *sentence'*, 'wouldn't make sense in the *context', '*a clue on the *board'*), suggesting that achievement can discuss practises. *Works* as a keyword showed the teacher affirming correct achievement in the form of answers, as the concordances show these were used in the affirmative responses 'that works' and 'marvellous medicine works'. This suggests repetition of correctness is more important in this feedback type in the SEN Classrooms Corpus. Guess is used in a similar way in once instance used as 'good guess'.

Table 8.6.

Keywords in description of achievement feedback compared to other feedback.

Type	Raw frequency in description of achievement corpus	Raw frequency in description of achievement reference corpus	Simple maths statistic
as, sentence, she	3	0	88.98
fairy, context, words, guess, skip, sounding, board, yourself	2	0	59.65

Keywords in descriptive improvement feedback in the SEN Classrooms

Corpus sample are also difficult to interpret. Many of the keywords here are content

words linked to the story, with nouns referring to characters (*wizard, prospero, king),*

locations (*Crete*), and topics (*galleon, magic, sink*) from the stories used in the

classrooms. This is probably due to the nature of this feedback, where teachers

correct pupils about story details. Two of the keywords (*fiddling* used in 'you're

fiddling' and *listening* used in 'you're not listening' and 'you should be alert and

listening') were linked to correcting behaviours, suggesting this feedback can model

behaviour as well as knowledge. *Says* as a keyword is interesting, as it shows a

correction, with two examples where teachers said 'that says' and 'that word says',

suggesting this feedback type is also used to directly correct, rather than to suggest

improvements. Similar is the keyword *could,* a modal verb indicating possibility, used

twice in the phrase 'could be'. This is a more discrete form of correction, as rather

than correcting directly, it is used by teachers to express ambiguity and suggest there

may be other possible answers. Finally, *time* can be interesting as it is used to

organise activity ('it's not thunder *time'*, 'come on toilet *time'*). This suggests this

feedback concerns organising time as an activity more than other types.

Table 8.7.

Keywords in descriptive improvement feedback compared to other feedback.

Type	Raw frequency in descriptive improvement corpus	Raw frequency in descriptive improvement reference corpus	Simple maths statistic
Wizard	5	0	123.25
doesn't	4	0	98.8
ghostly, could, listening, he	3	0	74.35
sure, means, kr, Crete, magic, fiddling, Prospero, king, galleon, sink, says, go, uses, time	2	0	49.9

8.4.2.3. *Discussion.* These analyses of the most common and keywords

in the manual feedback sample allow us interesting insight into exactly how feedback

occurs, allowing us to see three main things: first that exclamation and evaluation are

prominent, second that feedback and direction are strongly linked and finally that

classroom environment is important too.

Perhaps the most obvious findings from this small corpus analysis of the

feedback sample are those concerning evaluation and exclamation. Both the wordlist

and the keywords revealed the prevalence of both evaluative adjectives and

exclamations within the sample. This could be a result of the bias in the sample

towards approving (E1) feedback, which will naturally lead to more evaluation and

exclamation due to its nature. However, this bias in itself and the subsequent

prevalence of evaluation and exclamation demonstrates that feedback, in this sample

at least, is heavily focused upon approval. Of the two, evaluation is used to

demonstrate the teacher's judgements regarding the value of the student's work or behaviours. In particular, the prevalence of evaluative adjectives in the keywords and wordlists, all of which bar one concordancing revealed are positive and not negated, suggests that feedback in the SEN Classrooms Corpus focuses upon the expression of positive evaluation, and in particular this is more common here than in general spoken English. Evaluation plays an important role in teacher discourse, allowing teachers to identify and in turn praise positive actions by the student, in order to suggest the pupil continues these behaviours. Exclamations are remarks that express some kind of emotion. The key phrase *well done* is a form of positive affirmation, praising children's behaviours or actions. This again suggests that feedback in this sample is more focused upon approval and reinforcement than general spoken English, which in turn is to promote correct behaviours and actions. The key phrase *thank you* is an exclamation expressing gratitude. That this is a keyword suggests that there is more focus on politeness in feedback in the SEN Classrooms Corpus than in general spoken English. This might suggest that teachers here use this term more often in order to model politeness behaviours to children. The adverbial keyword *please* also supports this argument.

Directives were found to play a key role in teacher feedback in the SEN Classrooms Corpus sample, as shown in the prominence of verbs used in imperative structures in the keywords of this sample when compared to the BNC. This might suggest that feedback in these cases includes instruction or direction as well as positive affirmation. It was identified in the directives chapter that these function in two ways; first, they allow teachers to directly control both the interaction and the action involved within the classroom and second they evoke participation, either physical or verbal. Although not anticipated in the directives chapter, directives fit

within Tunstall and Gipps' (1996) definition of feedback, which can be descriptive as well as evaluative. Hence directives might be used to describe actions or improvements required of children. The verbs in the keywords refer to physical and mental actions, similar to those in the directives chapter, suggesting that teachers in this sample use feedback to support both the children's mental and physical actions. When comparing individual feedback types, imperative keywords and phrases were more prominent in negative evaluation, which might suggest that direction is particularly important when telling children what not to do (*put down, stop, wait, hold, calm, shh*). This shows that teachers in the SEN Classrooms Corpus use directives within feedback in order to control negative behaviours, not only to support positive affirmation like previously considered.

Finally, many of the feedback keywords in the SEN Classrooms Corpus sample focused upon classroom content. On first inspection, these might not be surprising, given words such as *wizard* or *sentence* might be more novel in general English, whilst they will naturally be prevalent in the classroom. However, the prominence of these terms can still tell us a lot about feedback in the SEN Classrooms Corpus. First, it demonstrates that stories, settings and characters are commonly referred to in this feedback, it is used to reinforce the classroom activities. The use of story content words (*magic, wizard, prospero, king, galleon, sink, fairy)* in descriptive feedback in this data suggests that teachers model (and therefore scaffold) knowledge (and expansion of it), by referencing tasks and the environment. Second, feedback in the SEN Classrooms Corpus also makes reference to the physical classroom environment, which in turn suggests that teachers use feedback to control the physical as well as the learning environment. This matches findings on directives. Finally, the fact that these classroom environment keywords are most prominent in descriptive as

opposed to evaluative feedback suggests that this feedback type is more focused upon describing achievement and improvement and linking this to the tasks and the physical environment. This fits with Tunstall and Gipps' (1996) definition of descriptive feedback, which includes more task and classroom-based information than evaluative feedback. Finally, we also see the use of behavioural words and classroom strategies ('good sounding out', 'we need to skip it out', 'read the other sentence', 'wouldn't make sense in the context', 'a clue on the board', 'you're fiddling', 'you're not listening', 'you should be alert and listening') in descriptive feedback. This suggests that teachers in the SEN Classrooms Corpus use this feedback type to suggest successful learning strategies and promote an ideal learning environment.

This broad analysis of keywords and frequent words show us a number of things about feedback in the sample from the SEN Classrooms Corpus. Exclamation and evaluation were prominent in this sample, suggesting that positive affirmation and politeness play a central role in feedback in the SEN Classrooms Corpus data. The use of directives shows that feedback can contain instructions for pupils, specifically concerning what they should not be doing. Feedback also references the classroom environment and learning strategies, as the teachers in this data describe and model good practises for the children.

8.4.3. An analysis of positive evaluation in the SEN Classrooms Corpus.

This second analysis will focus upon the positive evaluative feedback, as this was identified to be the most important in the small sample. Based upon the manual analysis and the first corpus analysis, this feedback type will be explored within the SEN Classrooms Corpus, focusing specifically on two key features of positive evaluation feedback: exclamations and evaluative adjectives. For this analysis I will focus upon E1 (approving feedback), as this was the most common feedback type

within the sample and is also arguably the easiest to identify. Initially, I needed to assess the most common words in E1 feedback within the manually analysed sample. The previous keywords analysis showed not only that positive evaluation was key in feedback compared to general English, but also in E1 compared to other feedback types. Adjectives of positive evaluation (*fantastic, excellent, brilliant, grea*t) and exclamation (*thank you, well done*) were amongst the top keywords. Similarly, when we look at a wordlist of the most frequent words in E1 approving feedback, we see *well done* and *thank you* alongside a series of adjectives and adverbs (*brilliant, good, fantastic, fabulous, excellent, lovely, amazing*). This informed the decision, not only to focus upon exclamation and evaluative adjectives, but also to only consider *brilliant, good, fantastic,* and *fabulous*, as these were the only adjectives in the keywords and wordlists to occur more than 50 times within the corpus.

Table 8.8.

Wordlist of types in the E1 feedback by raw frequency.

Type	Raw frequency
Well	34
Done	33
Brilliant	24
Good	19
You	17
that's, fantastic	16
Thank	13
Fabulous	12
Girl	8
very, excellent, that, really	6
Lovely	5
much, I, amazing, worry, you're	4

8.4.3.1.   *A linguistic review of evaluative adjectives and exclamation.*

With these terms identified, it is possible to provide some linguistic background to the terms, in order to provide a more grounded definition and interpret the relevance of these terms within positive evaluation feedback. *Well done* and *thank you* are exclamations. First the distinction is made between exclamative sentence type and the exclamation discourse function. As Quirk et al (1985:803) explained, "exclamatives are sentences which have an initial phrase introduced by what or how, usually with subject-verb order". Instead we are looking at exclamations the discourse function, defined as being "primarily used for expressing the extent to which the speaker is impressed by something" (Quirk et al., 1985:804). Biber et al (1999:219) explain that "exclamations can be expressed in a range of structures, both clausal and non-clausal". Huddleston and Pullum (2002:923) further explained that "Not all exclamations take the form of exclamative clauses. The concept of exclamation is, moreover, a somewhat nebulous one, and it is not possible to present a well-defined set of grammatical constructions that express exclamatory meaning". Exclamations link to feedback, in that they express the extent to which a teacher is impressed by the child's work or behaviour.

Examples of evaluative examples that occurred in this corpus are: *brilliant*, *good*, *fantastic* and *fabulous* are evaluative adjectives. Huddleston and Pullum (2002:528) explained that adjectives typical modify nouns and may have three functions: attributive (*brilliant people*), predicative (*they are brilliant*), postpositive (*someone brilliant*). The evaluative adjectives are attributive, which Biber et al. (1999:505) explained "modify nominal expressions" but also can modify personal pronouns, particularly in exclamations (1999:510), something which Biber et al. (1999:510) claimed is not common in any register, but occurs occasionally in

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conversation and fiction based on corpus data. Biber et al (1999:508) provided a further semantic distinction between adjective types: descriptors (prototypical adjectives denoting features like colour, size etc.) and classifiers (which delimit a noun's referent by placing it in a category in relation to other referents). All adjectives considered here are descriptors. Specifically, they fit into Biber et al.'s (1999:509) evaluative/emotive descriptor type, as they denote judgement and/or emphasis. Additionally, Biber et al. (1999:521) explained that "adjectives often serve as exclamations, especially in conversation and fictional dialogue" (e.g. *Great! Good!*), which is something that will be followed up in the analysis. Evaluative adjectives naturally link to positive evaluative feedback, being used to judge work positively. This in turn creates a positive learning space, or the "happy classroom community" Tunstall and Gipps (1996) mentioned.

This brief linguistic review has explained first what is meant by exclamation and evaluative adjectives, and second how these are important within teacher feedback. Moving forwards, I shall analyse how these occur within the SEN Classrooms Corpus. First, I will consider the frequency and distribution of key exclamations and evaluative adjectives. Second, I shall look at the context these keywords appear in, in order to assess whether they are used independently or in sentences and to whom they might be directed. To find examples of the terms (*brilliant, good, fantastic, fabulous*, *well done, thank you*) in feedback, I simply searched for each term independently, restricting the query to teacher utterances only. As with previous analyses, the queries were then categorised as correct (if they were a part of feedback) or incorrect (if they were not a part of feedback) and only those categorised as correct were separated and saved for future analysis. The frequency of terms in separated feedback can be found in Table 8.9.

8.4.3.2.   ***Results.*** First, we can compare the overall frequencies of the terms in feedback in the corpus as a whole, in order to assess which were more frequently used. The absolute frequencies of terms, as well as the frequency per 1000 teacher utterances, are found in Table 8.9.

Table 8.9.

The frequency of feedback terms in the SEN Classrooms Corpus.

Term	Absolute frequency	Frequency per 1000 teacher utterances
well done	125	69.1
thank you	37	20.45
Brilliant	98	54.17
Good	121	66.89
Fantastic	58	32.06
Fabulous	71	23.9

This shows that, although all the terms were used significantly in approving feedback and although they were all keywords, their use was quite limited in the classroom as a part of feedback when compared to some of the other features of teacher discourse considered in this thesis. In addition, there was variation in frequency of use between the terms. It seems that *well done* and *good* were the most common, occurring more almost four time as much as the least frequent term *thank you*. This first suggests that affirmative exclamations (*well done*) were more prominent in the SEN Classrooms Corpus than polite ones (*thank you*). The prominence of *good* aligned with Biber et al.'s (1999:521) findings that the most common evaluative adjectives in conversation were monosyllabic. However, in order to look at the terms in use, we needed more at the context in which they are used, which follows this initial frequency analysis.

We can also asses frequency related to the distribution of terms by teacher and by class, in order to see if there were patterns according to these. Table 8.10 shows the relative frequency per 1000 teacher utterances of each term in each class and Table 8.11 shows the relative frequency of terms per 1000 teacher utterances for each teacher.

Table 8.10.

The frequency of terms per 1000 teacher utterances in each class.

	Well done	Thank you	Brilliant	Good	Fantastic	Fabulous
Class 1	31.07	31.07	110.17	53.67	56.5	5.65
Class 2	71.82	31.31	40.52	53.41	1.84	68.14
Class 3	63.11	12.14	53.4	92.23	50.97	24.27
Class 4	98	8	30	70	32	10
Overall	69.1	20.45	54.17	66.89	32.06	29.85

Table 8.11.

The frequency of terms per 1000 teacher utterances by teacher.

Teacher averages	Well done	Thank you	Brilliant	Good	Fantastic	Fabulous	ALL
Teacher 1	47.09	21.60	81.78	72.95	53.73	14.96	48.69
Teacher 2	84.91	19.65	35.26	61.7	16.92	39.07	42.92

In terms of distribution by class, there were no easily identifiable patterns, as no one class had a more sizeable use or non-use of any one term. This in turn suggests that the variation in term use across classes was a result of random variation, rather than being a result of any variable dependent upon the class itself. When considering use of terms by teacher, generally both used feedback terms at similar frequencies, with the selected feedback terms occurring 48.69 times per 1000 teacher 1 utterances

and 42.92 times per 1000 teacher 2 utterances. This suggests that feedback terms in the SEN Classrooms Corpus are not largely differentiated based upon teacher style, given both teachers used them fairly often. Whilst some terms were use fairly similarly by teachers (*thank you, good*), whilst others were more commonly used by teacher 1 (*brilliant, fantastic*) and others were more commonly used by teacher 2 (*well done fabulous*). This in turn suggests that the individual terms were used differently according to teacher style, with certain teacher favouring certain terms, but overall they used feedback terms a similar amount.

In order to better understand the selected feedback terms and their use in feedback, it is important to consider the context in which they are used. This is particularly interesting to identify if evaluative adjectives are used as exclamations and therefore as independent clauses, as opposed to being followed by parts of a clause. To look at context, I used CQPweb's *frequency breakdown* function to find the most frequent words one to the left and one to the right of the feedback terms. I opted for such a narrow context, as my main concern was whether the evaluative adjectives and exclamations were used within clauses or independently, hence this window was sufficient. For purpose of analyses, I grouped the exclamation terms and the evaluative adjective terms to compare their uses. I searched all results and removed any words included as a part of a pupil utterance and grouped these separately. The analysis of the words immediately preceding and immediately following the feedback terms allows us to see first what the term modifies and second whether it is used within a clause or as a separate clause. For the purpose of simplifying these analyses, I shall only consider those words that occur more than three times left or right of the feedback term. Similarly, terms will be grouped by function for ease of analysis.

Table 8.12.

Frequency of words 1 left of exclamations (thank you, well done) and evaluative

adjectives (good, brilliant, fabulous, fantastic).

Exclamations (well done, thank you) 103 types, 169 tokens				Evaluative adjectives (brilliant, good, fantastic, fabulous) 169 types, 331 tokens			
No.	Query result	No. of occurrence	Percent	No.	Query result	No. of occurrence	Percent
1	Pupil utterance	31	18.34%	1	Pupil utterance	113	34.14%
2	?	16	9.47%	2	?	18	5.44%
3	ANON nameStudent	14	8.28%	3	really	18	5.44%
4	down	4	2.37%	4	A	11	3.32%
5	So	4	2.37%	5	's	10	3.02%
6	but	3	1.78%	6	very	9	2.72%
7	It	3	1.78%	7	oh	8	2.42%
8	Oh	3	1.78%	8	was	7	2.11%
9	you	3	1.78%	9	good	4	1.21%
10	one	3	1.78%	10	down	4	1.21%
				11	right	4	1.21%
				12	some	4	1.21%
				13	that	4	1.21%
				14	brilliant	3	0.91%
				15	fantastic	3	0.91%
				16	is	3	0.91%
				17	looking	3	0.91%
				18	so	3	0.91%

The most common element preceding both exclamations and evaluative
adjectives in the SEN Classrooms Corpus were pupil utterances. This was more
common in evaluative adjectives (making up 34.14% of results) compared to
exclamations (making up 18.34% of results). This initially suggests that feedback in
this data usually starts an utterance, given it is not preceded by anything in the teacher
utterance. Second, that evaluative adjectives start utterances might suggest that they

are used as exclamations. Finally, this might suggest that, although this was the most common preceding element for both feedback types, exclamations occur most at the start of utterances. This does not suggest that evaluative adjectives are less likely to be standalone utterances, but that they are more likely to be preceded by other full clauses in this data (as will be supported in later analyses). This is supported when we consider preceding verbs. If exclamations or evaluative adjectives were a part of a larger clause, we might expect preceding verbs, for example 'that was well done', 'this is fantastic work'. Within the corpus, exclamations were never preceded by a verb, meaning they were not part of a larger clause and only 6.95% of the evaluative adjectives were preceded by verbs (*was, 's, is, looking*), suggesting that whilst they can occur within clauses, this was rare. This was also supported by the fact that the second most common preceding elements of both types of feedback terms was the question mark, which makes up 9.47% of elements one left of exclamations and 5.44% of elements one left of evaluative adjectives. As a question mark is clause final, this again shows that the feedback terms were often used clause initially.

Sometimes we found that feedback terms in the SEN Classrooms Corpus include pre-modifiers. This was more common with evaluative adjectives. The only exclamation premodifier was *oh* which made up only 1.78% of the words one left of exclamations. However, the pre-modifiers *right, some, oh, very* and *really* made up 13% of the terms one left of evaluative adjectives. This shows that evaluative adjectives, of the feedback types in the corpus, were more likely to be modified, both by interjections which mark an aside and by intensifiers, which mark emphasis. On the other hand, we found that exclamations were typically preceded by a name on 8.28% of occasions in the corpus. This suggests that this type of feedback is often

directed towards individuals in this data, rather than the whole class and hence may be way teachers can tailor their interaction to address to individual pupils.

Finally, we found that feedback in the SEN Classrooms Corpus is often stacked, being preceded by other feedback terms, with *you* used 1.78% of the time before exclamations, in all cases being where *thank you* is repeated. Before evaluation, we saw *good, brilliant* and *fantastic* being repeated in 3.03% of examples. This suggests that positive evaluation feedback is often repeated in order to reinforce the feedback within the corpus.

In order to confirm whether feedback terms are used independently and hence as exclamations we need to also consider the right context. I marked the results one right of the feedback terms as either word being modified by the term (a name or a noun), conjoining clauses (conjunctions), new independent clauses (adverbs, pronouns, interjections) or, like with the left feedback, whether there was a repeated feedback term.

Table 8.13.

Frequency of words 1 right of exclamations (thank you, well done) and evaluative adjectives (good, brilliant, fabulous, fantastic).

Evaluative adjectives				Exclamation			
No.	Query result	No. of occurrences	Percent	No.	Query result	No. of occurrences	Percent
1	ANONnameStudent	18	5.44	1	ANONnameStudent	51	30.18
2	right	14	4.23	2	very	8	4.73
3	the	14	4.23	3	right	6	3.55
4	so	13	3.93	4	so	6	3.55
5	girl	12	3.63	5	that	6	3.55
6	that	12	3.63	6	what	6	3.55
7	and	11	3.32	7	you	5	2.96
8	what	10	3.02	8	do	4	2.37
9	one	9	2.72	9	he	4	2.37
10	try	7	2.11	10	I	4	2.37
11	now	5	1.51	11	the	3	1.78
12	oh	5	1.51	12	well	3	1.78
13	work	5	1.51	13	which	3	1.78
14	brilliant	4	1.21				
15	cos	4	1.21				
16	go	4	1.21				
17	good	4	1.21				
18	it	4	1.21				
19	okay	4	1.21				
20	well	4	1.21				
21	who	4	1.21				
22	boy	3	0.91				
23	coz	3	0.91				
24	do	3	0.91				
25	her	3	0.91				
26	I	3	0.91				
27	ideas	3	0.91				
28	intonation	3	0.91				
29	sign	3	0.91				
30	sitting	3	0.91				
31	thank	3	0.91				
32	was	3	0.91				
33	why	3	0.91				

Of the results included, exclamations in the corpus were most commonly followed by a name (in 30.18% of cases), suggesting, like the names preceding the feedback terms, that feedback is often directed at individuals. It is important to note, though, that all of these names were clause-final. All the other results following the exclamations were clause-initial, including adverbs (*right, so, that, what, well, which*), adjectives (*very)*, dummy auxiliary question verbs (*do*), pronouns (*I, he, you)* and determiners (*the*). This demonstrates that, within the SEN Classrooms Corpus, the exclamation terms selected were used as a part of independent clauses.

If evaluative adjectives were to act as exclamations, we would expect them to behave similarly. Only 5.44% of the results following the evaluative adjectives were conjunctions (*cos, coz, and*), which suggests that the feedback terms in the SEN Classrooms Corpus are infrequently linked to another clause. On the other hand, 35.35% of cases are followed by words marking new clauses, with interjections and adverbs (*so, right, well, oh, okay, now*), pronouns (*I, it, her, who*, *why, that, what, one*), determiners (*the),* verbs as parts of questions (*was, do*). This, along with the findings that evaluative adjectives were often clause initial then suggests that, as Biber et al. (1999:521) proposed, evaluative adjectives can be used as exclamations. It is interesting to then consider the implications this has upon both teacher feedback, discussion of which follows in section 8.4.3.3.

Finally, we again find that feedback terms can be repeated in their following context, with *thank, good* and *brilliant* making up 3.33% of following context. This supports the previous notion that feedback is often repeated and therefore reinforces.

8.4.3.3. ***Discussion.*** These analyses of selected positive evaluation feedback terms in the SEN Classrooms Corpus allow us insight into what this type of

feedback looks like in this data and how it is used in teacher-pupil interactions. First, it appears that the use of feedback is not affected by any aspects of the classroom or the teacher in the SEN Classrooms corpus. Second, it seems that, although distinguishable based on their linguistic form, both exclamations and evaluative adjectives are used as independent clauses within positive evaluation feedback with the same expressive function. Third, we find that feedback terms are often repeated, suggesting feedback, when used, is often reinforced.

First, it appeared that the frequency and distribution of positive evaluation terms in the corpus, and therefore of positive evaluation more generally, was not affected by class or by teacher. This suggests that positive evaluation feedback is a universal feature of all teacher discourse in this data, and hence is not class or teacher dependent. This might be due to the need for feedback and specifically positive affirmation to ensure children know what they are doing right and in turn what they need to continue doing in order to succeed. In addition, it suggests that feedback is not affected by class ability in the SEN Classrooms Corpus. However, we do see some differences between the teachers' preferred feedback terms, which might suggest the idiolect of the teacher plays a role in the specific feedback terminology employed in each classroom.

These analyses also align with Biber et al.'s (1999) claims that evaluative adjectives, when used in spoken English often take the form of exclamations. This is demonstrated in the evidence that evaluative adjectives in the SEN Classrooms Corpus typically occur in clause initial and clause final position in much the same way as the exclamations, which in turn suggests they are independent clauses. Thus, being standalone clauses with an expressive function, it seems most evaluative adjectives within the corpus (and hence most positive evaluation feedback) comes in

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the form of exclamation. This first has implications for feedback, suggesting that positive evaluation in the corpus comes in the form of standalone expressive remarks (*brilliant*), rather than in longer descriptive clauses (*these are fabulous ideas*). This in itself suggests that brevity and emotive functions are of key importance to this feedback type (at least in this data set). That these are so common in positive evaluation feedback, and subsequently in feedback overall due to the prominence of this feedback type, suggests that, for the most part, feedback in the SEN Classrooms Corpus is expressive and exclamatory. This is also supported by the findings that in this data evaluative adjectives are often pre-modified and hence emphasised, further supporting the idea that teacher feedback is expressive and emphatic in order to express teacher judgements which in turn support the child's development.

Similarly, these analyses demonstrated that feedback terms were often repeated within the SEN Classrooms Corpus. This supports the previous claims about positive evaluation feedback being expressive, with judgements repeated for emphasis. This also might suggest that a central part of this feedback type in the SEN Classrooms Corpus and in turn potentially in teacher discourse is reinforcement. In the same way teachers repeat key knowledge, feedback is repeated to stress the importance of correct behaviour or actions.

8.5. Conclusion

This chapter has demonstrated that teacher feedback is an important part of teacher discourse. First, it has demonstrated that definitions of feedback are scarce, particularly from a linguistic perspective. This meant that the methods outlined in Chapter 4 were not applicable, but in turn I have demonstrated that we can still use corpus methods following initial manual analysis. This proves a methodological

development in this field, showing how methodologies can be adapted to fit different features of teacher discourse, whilst demonstrating the importance of manual analysis in these instances.

The key methodological implication of this chapter lies in the analytical process, where manual analysis informs a sample corpus analysis which is then scaled up to the corpus as a whole. This demonstrates that, although some features might be difficult to identify using the typical query methods outlined in the Methodology II (Chapter 4), corpus tools can still be used in different ways to explore the data. Theoretically, this chapter suggests we might need to simplify our categorisation of feedback types to apply to empirical data. The results of this chapter open windows for future study. Specifically, it would be interesting to broaden the final analysis to look at key feedback terms in the other feedback types (negative evaluation, description of achievement and description of achievement) in order to provide a fuller picture of all feedback in the SEN Classrooms Corpus, rather than focusing on the most prominent positive evaluation feedback type.

The analyses also allow exploration of feedback in the SEN Classrooms Corpus, although again these findings are limited to this data set and cannot be generalised to wider SEN environments. The manual analysis first demonstrated the need to simplify Tunstall and Gipps' (1996) model of teacher feedback to better fit empirical classroom data. First, socialisation feedback was found to be flawed, given that all feedback is, in essence, socialising, promoting correct behaviours. Further, the distinctions between the individual types was more tenuous. Hence, only the wider evaluative and descriptive categories were retained hereafter. Second, the manual analysis revealed which feedback types were used more prevalently in the SEN

classrooms sample. This in turn informed later analyses, suggesting which types were more common and hence more apt for further study.

The first corpus analysis of frequent and keywords in the manually coded sample of teacher feedback allowed insight into the forms of teacher feedback in the SEN Classrooms Corpus. Exclamation and evaluative adjectives were particularly prominent within feedback in this data, alongside the use of imperative verbs which indicate that direction also plays a key role. In addition, this analysis demonstrated how we might use corpus tools on a smaller sample of data to advance out understanding of the language used, in order to not only advance our understanding of this feature, but also to inform later, wider corpus analyses.

The second corpus analysis of positive evaluation feedback terms in the SEN Classrooms Corpus allowed us to broaden our investigation to the entire data set and how the most frequent feedback type occurs within this data. The findings were threefold. First, positive evaluation feedback was found to be a universal feature in the corpus, evident in all classrooms and used by both teachers. Second, positive evaluation feedback was found to be exclamatory in nature in the SEN Classrooms Corpus, hence suggesting that some feedback is expressive and emotive. Finally, positive evaluation feedback in the corpus was repetitive, showing the importance of the reinforcement of feedback in these settings. This analysis also demonstrated how it is possible to size up smaller scale studies to apply to the corpus as a whole.

Chapter 9: Conclusion

9.1. Introduction

This thesis has used corpus methods to investigate teacher discourse and classroom interaction in SEN classrooms. The research aims outlined in Chapter 1 were:

(1) To collect a bespoke corpus of SEN classroom interactions

(2) To create a methodology to investigate features of teacher discourse the corpus created in (1)

(3) To use data from (2) to explore the use of different teacher discourse features in the SEN Classrooms Corpus

The first research aim was achieved in the creation of a 52,813 word SEN classroom corpus of teacher-pupil interactions during shared reading activities. This thesis has outlined the design, data collection and corpus construction processes involved in the creation of this corpus. The second research aim was achieved by creating a methodology by which we could move from definitions of features in the teacher discourse literature often found to be too vague to inform queries, to full corpus searches. This methodology was outlined in Chapter 4 and the analyses presented (Chapters 5, 6, 7 and 8) adapted this method on a feature-by-feature basis. The final research aim was achieved in the analyses (Chapters 5, 6, 7 and 8) where the methods created in (2) were used to explore teacher discourse in a corpus created as a part of research aim (1). These analyses allowed me to use corpus methods to explore how certain teacher discourse features (questions, directives, augmentative and alternative communication and feedback) work in practice in the SEN classroom.

I next discuss the key findings and subsequent implications. The most significant implications are methodological findings which provide insight into the processes involved in this study. Pedagogical findings which shed light on the nature of teacher discourse in the SEN Classrooms Corpus will also be discussed briefly. This chapter concludes with a review of the limitations of this study and potential avenues for future research.

9.2. Methodological implications

The first set of implications of this thesis were methodological, demonstrating significant advances both in the fields of corpus linguistics and teacher discourse. First, corpus methods have provided successful results, whilst demonstrating a need to use manual analyses to support these automated corpus analyses. There were also a number of important implications from the data collection and corpus construction elements of this thesis that should be considered.

The key methodological advance of this thesis lies in its application of corpus linguistics to a field previously only researched from a pedagogic or psychological background, which in turn provides significant contributions to both fields. On the part of corpus linguistics, this thesis demonstrated that corpus methods might be utilised in fields which have not used it previously. This included a number of novel contributions mentioned throughout this concluding chapter, including the creation of a bespoke spoken corpus or classroom language and creating methodological frameworks by which features of teacher discourse can be investigated. On the other hand, this project took a different approach to pedagogic or psychological research in the field of teacher talk, which usually uses experimental or observational data on a much smaller scale than this corpus-based analysis. The bespoke corpus of SEN

classroom interaction created for this thesis allowed a more extensive body of naturally occurring language to be analysed, compared to the experimental settings used in previous research to measure individual children's performance on tasks outside of the classroom, in experimental settings. In addition, the use of a corpus afforded the support of computational tools to perform analyses that would be extremely costly in terms of speed and reliability with manual analyses. For example, the search language CQP advanced syntax available in CQPweb allowed me to perform extremely complex searches on the corpus. This also reduced researcher bias present in manually analysed data, allowing me to search for features of teacher discourse in a more rigorous and systematic way. The many benefits of the use of corpus methods to research teacher discourse in the SEN Classrooms Corpus is considered further in Section 9.3 where I will consider the results of this thesis and the implications of these findings.

This thesis has also demonstrated the importance of manual analysis. While I would stress that automated corpus processes are important, it is nonetheless true that manual analysis has been essential for this thesis. It helped with the interpretation of the data and proved to be a valuable guiding influence for the corpus analyses undertaken.

First, manual analysis was an important part of the corpus analysis process throughout this thesis when using CQPweb's *categorise query* function. This function was used with two purposes: to remove errors and to separate matches returned by an individual query. The *categorise query* function was used to remove errors from matches of the queries for wh-questions, verbal directives, behaviour management directives, physical action directives and positive evaluation feedback. In this sense, this manual analysis embedded within the corpus process allowed me to error-check

the data. For example, for wh-questions, this allowed me to remove 66 errors in the 1107 results of the wh-questions query. The *categorise query* function was also used to separate matches according to my different aims. For example, in the directives chapter this function was used to separate the different types of verbal directive, hence allowing me to create sub-groupings within matches of a query. In the AAC chapter, on the other hand, this manual categorisation allowed me to separate the functions of SGD/Makaton utterances, again allowing me to create sub-groupings, but on the basis of function rather than linguistic form. This allowed me interesting insights into the roles of teacher discourse features in the classroom in addition to their structures. The *categorise query* function as a manual analysis embedded within this corpus process allowed me to group the matches of the corpus query manually and hence allows me to consider differences within a single query that I could not explore using corpus methods. The sub-groupings then informed later corpus analyses. The *categorise query* function (and therefore manual analysis) played a central role in the corpus process and the categorisation and interpretation of results.

Second, manual analysis of results was used to interpret and supplement the frequency and quantitative information retrieved from the corpus. This thesis has, in a number of places, demonstrated that we must be aware of context and that this requires manual analyses on occasion. For example, contextual analysis was used to shed further light on the initial linguistic frequency analyses for both questions and directives. We were able to manually analyse words before and after certain features in order to look in more depth at the context of teacher discourse and exactly how these features were used. These results demonstrated the need for manual, qualitative concordance analysis alongside more automated and quantitative methods, which was a common finding throughout this thesis.

Third, manual analysis was demonstrated to be an important starting point for analyses when attempting to explore features I could not retrieve using more basic CQP syntax. This was demonstrated in Chapter 8 on teacher feedback, where it was necessary to use initial manual analysis to inform later corpus searches. The key methodological implication of this chapter lies in the analytical process, where manual analysis informed a sample corpus analysis which was then scaled up to the corpus as a whole. This process demonstrated that, although certain features of teacher discourse were difficult to identify using the typical methods of corpus analysis, manual analysis could be used to support and develop corpus analyses in these cases.

Thus, whilst stressing the benefits of using corpus methods, the results of this thesis also demonstrate that manual analyses are important. Manual analyses are useful to separate the data, to interpret results and to develop corpus analyses. In addition, the two are complementary and when used together help to advance the scope and precision of corpus methods. Hence, whilst the results of this thesis discussed in the following section demonstrate the potential corpus methods offer research in teacher discourse, manual analysis is still needed to provide certain insights.

In terms of data collection, this thesis provides insight into the methods by which we can create a corpus of this nature. First, throughout the data collection process a number of issues were faced which are important to raise for those aspiring to collect such data in the future. The data was extremely difficult to access; not only are SEN schools rare, it was often difficult to gain access to these schools. This meant that the data for this project was downsized from two schools to one. The difficulty of collecting such data is something that might be worth bearing in mind in future

research. Another point that should be anticipated in future research is the environment observed. Teachers in this school suggested that one-on-one interaction would be less productive, as children would often opt not to participate. Thus, in this thesis group interactions were observed instead. Again, this is something to consider in future research. This suggests that, unless considerable time is devoted to collecting a much larger set of one-on-one data, choosing instead to explore group settings is a better option. It would save researcher time and maximise productivity in order to collect a body of data large enough for a corpus analysis. This was also of benefit to the thesis, allowing the observation on naturalistic lessons and classroom interactions. Thus, the data collection process raised points for consideration that were not mentioned in previous research or anticipated at the inception of this study. This is an important note of guidance for future researchers wishing to build corpora in SEN classroom settings.

Further methodological implications for corpus construction arise from the creation of a transcription scheme with which to mark up this data. A bespoke transcription scheme was adapted (see Appendix C) from an existing spoken corpus scheme. The conventions chosen were heavily based on those used in the Trinity Lancaster Corpus of learner language as constructed by Gablasova et al. (2015, 2019), based in turn on Hardie (2014). Adaptations were made to this scheme using XML to add extra detail to the transcription in a way that could be automatically processed. This allowed the mark up of names, emphasis, conversation features, non-verbal language use, contextual elements, non-verbal communication and contextual information. In addition to the XML and shorthands included in the transcription scheme, markup was included for different types of questions. Thus, the transcription scheme that was created allowed me to add general features of spoken interaction (e.g.

emphasis), whilst also adding features specific to these data (e.g. non-verbal communication). Not only does this add information to the transcription, this markup allowed me to search for this information in the corpus.

Overall, therefore, we can see that there were a number of significant methodological implications of this thesis. First, it has demonstrated the benefits of corpus methods in this field, whilst also stressing the importance of manual analyses. Second, it has raised a number of potential issues in the data collection process. Third, it has demonstrated how a bespoke transcription scheme might be used to fit this kind of data and subsequent analyses.

9.3. Pedagogical implications

The findings from the analyses of the corpus result in a number of pedagogical implications regarding teacher discourse and its actual use in the SEN Classrooms Corpus. As noted, this can only inform us about the use of the features of teacher discourse in this data, not about the state of teacher discourse in SEN environments more widely. First, I shall outline the results on a chapter-by-chapter basis, before synthesising findings.

Chapter 5 explored the use of questions in SEN classrooms. The findings supported ideas in the literature that questions as a part of classroom interaction require involvement (and hence production) on the part of the child, which in turn might lead to improved comprehension. However, results on pupil responses in the SEN Classrooms Corpus brought into question the success of questions in terms of pupil production and comprehension.

Chapter 6 demonstrated the importance of directives in teacher discourse in the SEN Classrooms Corpus. Physical action directives were particularly prevalent,

used by teachers to control the interaction and action in the classroom, but also to evoke participation. Interestingly, this was found to include cognitive aspects (specifically worry) as well as physical activity, showing that teachers in this data control mental aspects of the classroom as well as the physical environment. Finally, this chapter demonstrated that, for directives at least, the context (and more specifically the classroom activity) was a central influencing factor in their use.

Chapter 7 explored Augmentative and Alternative Communication (AAC) use within the SEN Classrooms Corpus. This analysis provided evidence that, contrary to popular beliefs that AAC can hinder children's development, AAC systems played an important and useful role in the SEN classrooms in the corpus. Further, contrary to the literature, neither AAC system in the corpus was used in a purely augmented or alternative manner. This adds to existing AAC literature, as it implied that rather than being fixed function systems, AAC systems might be used more flexibly to support speech (as an augmented system), to replace speech (as an alternative system) or to do both. In addition, the functions of both AAC systems investigated were found to be more complex in the SEN Classrooms Corpus than suggested in the literature, promoting comprehension, communication and interaction more than anticipated.

Chapter 8 demonstrated that teacher feedback played an important role in teacher discourse in the SEN Classrooms Corpus. The corpus analysis of a manually annotated sample allowed insight into the forms of teacher feedback in this data, finding exclamation and evaluative adjectives particularly prominent and hence worthy of future wider study. This led to the analysis of positive evaluation feedback terms in the SEN Classrooms Corpus as a whole. First, positive evaluation was found to be a universal feature, used in all classrooms by both teachers. Second, positive evaluation feedback was exclamatory in nature, suggesting that some feedback is

expressive and emotive. Third, positive evaluation feedback was repetitive in nature, showing the importance of the reinforcement of feedback in these settings. Thus, this chapter provided a methodological advance and allowed me to explore the nature of feedback in the SEN Classrooms Corpus.

The pedagogic implications of the results of each analysis of this thesis have been outlined. Each chapter provided insight into how the individual features of teacher discourse occurred and were used within the SEN Classrooms Corpus. There are some findings we might synthesise to make links to the existing literature on teacher discourse. First, these analyses have demonstrated that the four features of teacher discourse were used in very different ways in the SEN classrooms observed in this corpus. Some features were considered universal features of teacher discourse across the corpus. Positive evaluation and questions in particular were found in every lesson within the SEN Classrooms Corpus. This suggested that these features and their subsequent functions are integral in this environment, forming an important part of classroom interaction. On the other hand, the remaining features analysed were found to be less universal and more varied in terms of their use and distribution across classes in the corpus. These features, we can assume, differ according to the context of the class, which can include the pupils, the teachers and the classroom activity. These analyses also demonstrated that, although the literature on features of teacher discourse tends to focus upon the production aims of features, results in this thesis suggested that many of these features also promote comprehension within the corpus. For example, whilst being generally poor at eliciting responses from children (and hence at promoting production), when responded to, both directives and questions were more likely to prompt correct responses (and hence indicate good comprehension on the part of the children). Similarly, whilst the previous research

literature has considered whether or not AAC can increase children's language production, analysis of AAC within the SEN Classrooms Corpus found that these systems were also used to answer questions and hence be used to evaluate children's comprehension. These findings support the claims made in the literature review in Chapter 2 that we need to bear in mind the interactive nature of teacher discourse and classroom interaction. Further, it suggested the distinction between promoting comprehension and production might not be as clear cut, and we need to use contextual analyses to explore both further. Therefore, a number of pedagogic implications arise from this thesis. We can see how the individual features of teacher discourse were used within the SEN Classrooms Corpus, often contrary to expectations set by the literature and how these results when synthesised provided key insight into how features were used and the functions they held.

9.4. Limitations and future research

The findings of this thesis might be used to inspire further discussion of how features of teacher discourse are used within SEN classrooms. Some stem from limitations of this thesis, whilst others are inspired by the results themselves. As with the implications, these avenues of future research are separated into methodological and pedagogical paths.

9.4.1. Methodological limitations and future research. Although this thesis demonstrated a number of methodological advances, outlined in Section 9.2, it has also exposed some limitations or areas of improvement for future research. First, I have demonstrated the benefits of coding features at the point of transcription, as was done with non-verbal communication and question types. However, this transcription scheme was by no means comprehensive. Even the coding of question types was

limited by the initial decision to only mark tag questions and non-interrogative questions with distinct markers, whilst all other questions were marked with a simple question mark. This is problematic, as it means wh-questions and YNA questions were all marked the same, and hence, due to their complex structure, were difficult to separate in later automated analyses. As annotation was found to be extremely useful in the corpus querying process, future research might take a more systematic approach to this. Thus, instead of making a speculative attempt at creating an appropriate annotation scheme, we might start with a list of all the features of teacher discourse we wish to discuss. We could then use contemporary grammars to give these a linguistic form, which could then allow annotations to be applied at the point of transcription to mark up all features of interest. This would allow the identification of use of features of teacher discourse using CQPweb, without having to create complex queries for individual features. This process, however, might have other limitations. It would require more intense work on behalf of the transcriber, given it would require the annotation of considerably more detail to the transcripts. Further, it would require a higher level of linguistic expertise on the transcriber's behalf. Nonetheless, working in such a top-down manner, where we begin with features in mind, would inevitably allow me to create better transcription (and in turn methodological) processes by which to work with this kind of data and analyses.

A further methodological issue this raises is the problem of identifying a functional category using linguistic criteria upon which to base a corpus query. As this thesis demonstrates, the success of the transition from literature definitions to linguistically identifiable forms was extremely variable. For some features, such as Makaton, it was possible to capture all instances, whilst for others queries were not possible (such as YNA questions). Another limitation is that by focusing on the function-form relationship, much can be lost, given this relies on the assumption each teacher discourse feature will have one underlying linguistic form. For example, when considering directives, the closest identifiable linguistic form was imperatives. However, directives might occur in a number of other forms such as questions, which were discarded due to the need for a single query and for ease of analysis. Thus, by pairing the linguistic form (imperatives) with the much wider functional category (directives) in this manner, we miss lots of other potential directive forms.

A related issue is that the results we can obtain from the corpus are decontextualized examples of linguistic forms, meaning we cannot fully explore the features in a pragmatic or functional sense without wider manual analyses. Although in many cases this was possible through expanding concordance lines and looking at context before and after the corpus matches, it could be argued that this manual analysis contradicts the initial aim of using corpus methods, to speed up and make the process automated. However, by using the corpus to retrieve these examples we save some time and some researcher bias, which then make subsequent manual analyses quicker. In addition, being decontextualized examples from only a very restricted data set means that although we can find out interesting insights as to teacher discourse in these classrooms, implications for wider SEN environments cannot be determined. However, the results in this data might prove insightful for future study on the matter.

There are a number of instances throughout the thesis where findings seemed to overlap. This thesis, from a methodological standpoint, kept each feature as a standalone analysis. There could, however, be much to be learned through combining the analyses of some features. For example, for both directives and questions, when considering pupil responses, I found very similar results. It would be interesting to combine these analyses and compare the use of these two features. Another example comes in the use of Makaton to ask and answer questions. As explained in Chapter 7, although we can assess teacher questions asked in Makaton and pupil responses in Makaton, we cannot compare the two. If we were to combine the analysis of questions and Makaton, we might find more complex insights into how sign and speech interact in the function of question and answer and the dynamics of classroom interaction. This would provide interesting understanding into both the use of questions and their functions and also into the use of sign language by pupils and teachers.

9.4.2. Pedagogical limitations and future research. Although this thesis demonstrated a number of insights into teacher discourse in the SEN Classrooms Corpus, outlined in Section 9.3, it has also exposed some limitations or areas of improvement for future research. It has already been mentioned that, due to the limits of the corpus, these findings cannot be generalised to all SEN classroom environments and hence these findings are only true of this small data set. In order to explore the implications more widely we would need to create and use a much more representative corpus. Furthermore, there are some additional pedagogic limitations to consider. First, I shall explain those limitations and expansions mentioned in each analysis chapter, before moving on to consider more general avenues of improvement and future research on this topic.

Within the questions chapter, some limitations and areas of potential research were highlighted. First, although there were no substantial differences in the distribution of wh-questions by text in the SEN Classrooms Corpus, there were differences related to teachers that were not explored. This was due to the limits that using a small corpus imposes. Future research, working with more data, might try to investigate differences between teachers and potential explanations in more depth. Second, although results from the SEN Classrooms Corpus show that questions did not always promote responses, more work could be done to identify the cause of this. This might include a more in-depth analysis of which question types prompt more responses and likewise what responses to individual types look like. It would also be interesting to consider pupil responses (and indeed non-responses) to teacher questions, in order to identify any structural or strategic issues children face when answering questions, which in turn would allow recommendations to be made regarding ways that teachers can ask questions in order to improve response rates.

Within the AAC chapter, the central area for improvement involved looking at the functions of Makaton use. Makaton could be used to ask questions or to answer questions. However, due to the limits of this study, it was not possible to look at either Makaton questions with verbal responses or verbal questions with Makaton responses. As identified in Section 9.4.1, combining the analyses of Makaton and questions would provide an interesting insight into how speech and sign interact in the form of teacher initiations and pupil responses. For example, we might be able to explore which verbal question types (e.g. high or low complexity) promote Makaton responses and in turn make inferences about the nature of Makaton as a response mechanism. Likewise, we might investigate which Makaton questions promote verbal responses. This is particularly important given that the results in Chapter 7

demonstrated that Makaton can be used as both an augmentative and an alternative system, which warrants further investigation of exactly how this AAC system is used.

Finally, with the feedback chapter, the key limitation is that, whilst demonstrating a sound methodological process by which to scale up manual analysis to the corpus, only one specific kind of feedback (positive evaluation) was explored. It would be good to use this same method to scale up the study of all feedback types (negative evaluation, description of achievement and description of improvement) to the corpus as a whole, in order to provide a fuller picture of feedback use in the SEN Classrooms Corpus. This would prove beneficial not only to test the capabilities of this method, but also to provide insight into the use of different, less common feedback types within the corpus.

In addition to these limitations of very specific chapters, there are some more general limitations that might be considered and improved upon in future research. First, although this thesis involved analysis of pupil responses, this was not applied to all features, meaning that, in places the interactive element stressed as being of central importance in the literature review in Chapter 2 was lost. Second, there is a wealth of metadata in this corpus that, for the most part, is not explored. For example, we have information about pupil age, diagnosis and L1, none of which are used in the analysis. This was partly due to the extremely small sample size, which made such demographic generalisations more difficult. However, if researchers began to look more at the interactive nature of classroom interaction in a more representative data, this would facilitate a consideration of individual characteristics. Further, the metadata contains a wealth of information about the lessons themselves, with detailed descriptions of the individual classroom activities. As this thesis has shown that this context is often a contributing factor in the prevalence of certain teacher discourse

features, future research might seek to explore these activities in more depth and investigate the effects the models and structures of classroom activities might have upon teacher discourse.

Finally, and perhaps most importantly, we must be aware that this thesis presents an investigation into only a very small set of features of teacher discourse in a relatively small corpus. Hence we cannot make any generalisations about teacher discourse more widely in a range of SEN environments. In Chapter 4, I identified 24 broad features of teacher discourse which were subsequently grouped into seven over-arching categories. Only four are considered in this thesis. Naturally, any work aiming to present a picture of teacher discourse in SEN environments using corpus methods must expand the repertoire of corpus searches of teacher discourse features established in this thesis. Likewise, as previous mentioned, in order to make wider pedagogic generalisations we would need a much larger and more diverse corpus. On a similar note, it is important to situate this work within both the field of corpus linguistics and SEN classroom research. To do so, not only does this work need to be expanded in the ways described above and disseminated to the appropriate audiences, it also needs to be combined and compared to similar research. At present, this is very limited. However, moving forwards it is necessary to ensure this project interacts with other works and developments in this new field of enquiry. Perhaps most relevant at present is the work of Liam Blything, Kate Cain and Andrew Hardie mentioned in Chapter 5. As explained, this is another project from CASS at Lancaster University, working with the same methodologies and a different data set involving mainstream schools. My research was designed to coincide with Blything's work but moved on to challenge some of their models. Hence a natural progression would be to compare, contrast and potentially combine these studies. This would not only provide a clearer

picture of teacher discourse informed by analyses using corpus methods, it might also

allow me to explore teaching across different educational settings, the results of which

might expand the pedagogical implications outlined earlier in this chapter.

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List of appendices

Appendix A: Corpus metadata

Table A1: Classroom metadata

FILE	DATE	CLASS	TEACHERS	TEACHING ASSISTANTS	PUPILS	PARTICIPANTS PRESENT	ACTIVE PARTICIPANTS	EXERCISE
1_280415	28/04/2015	1	1	2	9	T, TA1, TA2, P1, P2, P3, P4, P5, P6, P7, P8, P9	T, TA1, TA2, P1, P2, P3, P4, P5, P6, P7, P8, P9	Shared reading/discussion exercise on the Highwayman. 20 minutes discussing what they remembered from the text, themes, etc. 10 minutes working independently
1_290415	29/04/2015	1	1	2	9	T, TA1, TA2, P1, P2, P3, P4, P5, P6, P7, P8, P9	T, TA1, TA2, P1, P2, P3, P4, P5, P6, P7, P8, P9	5 mins TA asking questions (as teacher was running late) about the story from the previous day. Classroom exercise focussing on similes – began with discussion of metaphors (as they had learnt about these previously). Teacher explained similes (whilst asking questions). Pupils asked to create their own similes (on whiteboards)
1_050515	05/05/2015	1	1	2	9	T, TA1, TA2, P1, P2, P3, P4, P5, P6, P7, P8, P9	T, TA1, TA2, P1, P2, P3, P4, P5, P6, P7, P8, P9	Discussion at start about what narrative poems are. This followed by a shared reading exercise looking at the structure of the Highwayman poem.
1_060515	06/05/2015	1	1	2	8	T, TA1, TA2, P1, P2, P3, P4, P5, P6, P7, P8	T, TA1, TA2, P1, P2, P3, P4, P5, P6, P7, P8	Discussion of the structure and plot of the poem, followed by exercises creating their own, new ending of the poem. First the teacher asked them what happened at the end, before instructing them to create an ending where Bess did not die.
2_280415	28/04/2015	2	1	2	9	T, TA1, TA2, P1, P2, P3, P4, P5, P6, P7, P8, P9	T, TA1, TA2, P1, P2, P3, P4, P5, P6, P7, P8, P9	20 minutes shared reading of The Little Mermaid, alongside questions and interactive elements acting out the story – 10 minutes focused on one smaller group (3 pupils), discussing the story in more depth
2_050515	05/05/2015	2	1	2	9	T, TA1, TA2, P1, P2, P3, P4, P5, P6, P7, P8, P9	T, TA1, TA2, P1, P2, P3, P4, P5, P6, P7, P8, P9	Shared reading of The Little Mermaid, during which the teacher asked questions and the pupils acted out the story. This included asking how they felt about the ending of the story.
2_060515	06/05/2015	2	1	2	7	T, TA1, TA2, P1, P2, P3, P4, P7, P8, P9	T, TA1, P1, P2, P3, P4, P7, P8, P9	Shared reading of The Little Mermaid, during which the teacher asked questions and the pupils acted out the story.
2_070515	07/05/2015	2	1	2	8	T, T2, TA1, TA2, P1, P2, P3, P4, P5, P6, P8, P9	T, T2, TA1, P1, P2, P3, P4, P5, P6, P8, P9	Shared reading exercise on The Little Mermaid. As usual, went through stories and asked questions as going along. Came to end of story and asked about how they felt. 10 minutes group exercise putting parts of the story in order (three pupils).
3_290316	29/03/2016	3	1	2	7	T, TA1, TA2, P1, P2, P3, P4, P5, P6, P10	T, TA1, TA2, P1, P2, P3, P4, P5, P6, P10	Shared reading task about mythical creatures. Pupils took one another's descriptions of mythical creatures and practised reading them aloud, whilst doing a number of smaller activities.
3_300316	30/03/2016	3	1	2	7	T, TA1, TA2, P1, P2, P3, P4, P5, P6, P10	T, TA1, P1, P2, P3, P4, P5, P6, P10	Task involving discussion and practice of reading strategies. Teacher questioned pupils about reading strategies and then asked pupils to practice their own strategies.
3_060416	06/04/2016	3	1	1	8	T, TA1, P1, P2, P3, P4, P5, P6, P10, P11	T, TA1, P1, P2, P3, P4, P5, P6, P10, P11	Task where pupils read out sentences they had written and the whole class gave feedback on reading strategies.
3_270416	27/04/2016	3	1	1	7	T, TA1, P1, P2, P3, P4, P5, P6, P10	T, TA1, P1, P2, P3, P4, P5, P6, P10	Task where pupils were working on reading aloud poems and creating their own. They worked as a group creating their own poem. Pupils then created their own poems and read them aloud. The class then evaluated these according to their 'performance success criteria'.
4_290316	29/03/2016	4	1	2	4	T, TA1, TA2 P2, P4, P10, P11	T, P2, P4, P10, P11	Shared reading of Robin Hood. Pupils and teacher read the story together from the whiteboard (which plays noises as they go along). Then a small group split off and performed the story.
4_060416	06/04/2016	4	1	2	3	T, TA1, TA2, P2, P4, P10	T, P2, P4, P10	Watching poem video and filling in blanks. Shared reading of Robin Hood. Pupils and teacher read the story together. Pupils then split into a smaller group to do a shared discussion of a sentence.
4_260416	26/04/2016	4	1	2	4	T, TA1, TA2, P2, P4, P10, P11	T, TA1, P2, P4, P10, P11	Pupils began a new story (The Tempest). The teachers asked questions as they read the story aloud - these mostly focussed on the plot and William Shakespeare. There was also role play of the story. Note: there were many behavioural issues within this class.
4_270416	27/04/2016	4	1	2	4	T, TA1, TA2 P2, P4, P10, P11	T, TA1, P2, P4, P10, P12	Reading through The Tempest. Teacher and pupils engaged in a dynamic roleplay activity and pupils also acted out the story. Later in the task this group split off with the teacher. They did activities in their work folders with scaffolded teacher supports.

Table A2: Word count, utterance and teacher utterances counts per text.

FILE	WORD COUNT	UTTERANCES	TEACHER UTTERANCES
1_280415	2718	158	76
1_290415	4179	240	115
1_050515	4225	241	111
1_060515	2807	101	52
TOTAL	*13929*	*740*	*354*
2_280415	3186	229	115
2_050515	4618	327	159
2_060515	3909	317	156
2_070515	3112	222	113
TOTAL	*14825*	*1095*	*543*
3_290316	4580	207	104
3_300316	3648	146	72
3_060416	4232	177	92
3_270416	4489	289	144
TOTAL	*16949*	*819*	*412*
4_290316	3495	234	117
4_060416	3124	192	107
4_260416	3743	268	151
4_270416	3578	241	125
TOTAL	*13940*	*935*	*500*
OVERALL TOTAL	*59643*	*3589*	*1809*

Appendix B: Consent form

Lancaster University

Individual parent consent form

Title of Project: Study of classroom interactions between teachers and children

Investigators: Prof Kate Cain and Gillian Smith

If you are happy to participate in this study then please initial each statement below and sign at the bottom of the form and return to the school no later than [DATE TO BE AGREED WITH SCHOOL].

1. I have read the enclosed information and I am happy for my child to take part in the above study.
2. I understand that my child will be video and audio recorded taking part in a storybook reading session, and that these recordings will be transcribed and later deleted.
3. I understand that I and my child have the right to withdraw consent at any time.
4. I have been given contact details for the researchers.
5. I understand that all data collected will remain confidential.
6. I have been offered the opportunity to contact the researchers for any extra information if required.

Name of parent:

Signature of parent:

Date:

Name of child:

Child's date of birth:

Male/female (please circle one)

Language(s) spoken at home:

Appendix C: Full transcription scheme

Table C1: Typing conventions

Transcription convention	Explanation	Examples from corpus
Questions	Question marks (?) are used to mark standard questions. The mark '%?' was applied, to show instances where, whilst not interrogative in form, an utterance was used to question as evident in rising intonation. '#?' is used to identify a tag question.	what is special about a narrative poem? who can tell me the story of our narrative poem The Highwayman? <name>%? we don't want anything bad to happen to them do we#?
Capitalisation	Capital letters within transcription are restricted only to proper nouns and the pronoun 'I'	what kind of writing is The Highwayman? I'm going to ask <name> but well done!
Spelling conventions	For clear words normal British spellings are used The following non-standard forms are transcribed orthographically using dictionary-accepted forms: cos, dunno, gonna, gotta, kinda, sorta, wanna and yeah Other non-standard forms (such as nonsense words) are transcribed orthographically Numbers are spelt out in full 'Okay' is spelt out in full	was it last week? cos yesterday we did our spelling and handwriting work, didn't we#? yeah mum loves dad and dad loves mum we are gonna have a look at part two right <.> okay <.> put your hand up if you would like to give your opinion
Phonetic spelling	Where speakers 'sound out' the letters or syllables of a word this is marked by a -	T: go on make the a- r- d- sound the a- r- d- <.> P6: ard capital r- here and a full stop at the end <.> we need a capital h- somewhere where does that go?
Fillers	Only the following fillers are used: ah, er, erm, huh, mm, oh and uhu	oh I know what it is! cos erm erm cos the King has ghosts

Table C2: Fluency features

Transcription convention	Explanation	Examples from corpus
Unclear speech	Where speech is indecipherable it is marked <unclear>	because he Bess <unclear> got love but they wanted <unclear>
Pauses	<.> for a pause of three seconds or less, <pause=*s> for a measured pause of longer than three seconds	you're welcome <.> lovely manners <.> can we get pens please <name>? what is a narrative poem? <pause=5s>
False starts	False started are marked with a hyphens separating elements of the false start	make sure that the pe-people don't do wrong cos erm th-the <pause=4s>
Truncated speech	Where a word is not finished this is marked by =	where a= where are the people what do you think thei= what do you think their job is?

Table C3: Speaker identification

Transcription convention	Explanation	Examples from corpus
Anonymisation	Pupil names within utterances appear as <name>, teaching assistant names as <TA name>, teacher names as <T name>, the school name as <school name> and the research's name as <R name>	<name> have a go and start but I will come and help you you can have some help if you tell <TA name> the answer thank you <T name>

Table C4: Paralinguistic features

Transcription convention	Explanation	Examples from corpus
Contextual elements	Where some non-linguistic action is relevant to understand the interaction, this is transcribed <gap desc="description of action"/>	<gap desc="teacher points at pupil"/> what's this? <gap desc="holds up a shell"/> <gap desc="non-participating pupil answers"/>
Emphasis	<stress> is used to mark a shift in intonation and </stress> to mark shift back to normal intonation	think you're sat <stress> absolutely brilliantly </stress>
Gasps	<gasps>	<gasps> put your hands up and he says what might he say?
Sign language and communication aids	<Makaton=word(s) signed> is used to mark where participants use sign language and <Communication aid=word(s) pressed> where they use a communication aid	The <Makaton=the> <.> Little <Makaton=little> <.> <Makaton=fish> <communication aid=King Titan>
Laughter	<laughs>	<stress> brilliant </stress> <laughs> that's everyone in the story <.> <laughs> a dodgeball snow fight <.> I love that idea <.>
Whispering	<whispers>	<whispers> the surface <.> good try one that we have really needed to remember because <whispers> it's very important it's what I am doing
Shouting	<shouts>	<shouts> oh right right I get it <interruption> <shouts> the landlord's daughter

Table C5: Conversation features

Transcription convention	Explanation	Examples from corpus
Overlaps	\<overlap> marks the start of a section of concurrent speech and \</overlap> marks its end	T: they speak and they tell the what P5: \<overlap> story P6: the story \</overlap>
Interruptions	Interruptions are marked \<interruption> at the start of an intervening utterance	T: it was a gun \<.> can anyone and I'll be very impressed if you can remember P2: \<interruption> pistol
Anonymisation	Pupil names within utterances appear as \<name>, teaching assistant names as \<TA name>, teacher names as \<T name>, the school name as \<school name> and the research's name as \<R name>	\<name> have a go and start but I will come and help you you can have some help if you tell \<TA name> the answer thank you \<T name>

Appendix D: UCREL CLAWS6 Tagset

Retrieved from: http://ucrel.lancs.ac.uk/claws6tags.html

APPGE possessive pronoun, pre-nominal (e.g. my, your, our)

AT article (e.g. the, no)

AT1 singular article (e.g. a, an, every)

BCL before-clause marker (e.g. in order (that), in order (to))

CC coordinating conjunction (e.g. and, or)

CCB adversative coordinating conjunction (but)

CS subordinating conjunction (e.g. if, because, unless, so, for)

CSA as (as conjunction)

CSN than (as conjunction)

CST that (as conjunction)

CSW whether (as conjunction)

DA after-determiner or post-determiner capable of pronominal function (e.g. such, former, same)

DA1 singular after-determiner (e.g. little, much)

DA2 plural after-determiner (e.g. few, several, many)

DAR comparative after-determiner (e.g. more, less, fewer)

DAT superlative after-determiner (e.g. most, least, fewest)

DB before determiner or pre-determiner capable of pronominal function (all, half)

DB2 plural before-determiner (both)

DD determiner (capable of pronominal function) (e.g any, some)

DD1 singular determiner (e.g. this, that, another)

DD2 plural determiner (these, those)

DDQ wh-determiner (which, what)

DDQGE wh-determiner, genitive (whose)

DDQV wh-ever determiner, (whichever, whatever)

EX existential there

FO Formula

FU unclassified word

FW foreign word

GE germanic genitive marker - (' or 's)

IF for (as preposition)

II general preposition

IO of (as preposition)

IW with, without (as prepositions)

JJ general adjective

JJR general comparative adjective (e.g. older, better, stronger)

JJT general superlative adjective (e.g. oldest, best, strongest)

JK	catenative adjective (able in be able to, willing in be willing to)
MC	cardinal number, neutral for number (two, three..)
MC1	singular cardinal number (one)
MC2	plural cardinal number (e.g. sixes, sevens)
MCGE	genitive cardinal number, neutral for number (two's, 100's)
MCMC	hyphenated number (40-50, 1770-1827)
MD	ordinal number (e.g. first, second, next, last)
MF	fraction, neutral for number (e.g. quarters, two-thirds)
ND1	singular noun of direction (e.g. north, southeast)
NN	common noun, neutral for number (e.g. sheep, cod, headquarters)
NN1	singular common noun (e.g. book, girl)
NN2	plural common noun (e.g. books, girls)
NNA	following noun of title (e.g. M.A.)
NNB	preceding noun of title (e.g. Mr., Prof.)
NNL1	singular locative noun (e.g. Island, Street)
NNL2	plural locative noun (e.g. Islands, Streets)
NNO	numeral noun, neutral for number (e.g. dozen, hundred)
NNO2	numeral noun, plural (e.g. hundreds, thousands)
NNT1	temporal noun, singular (e.g. day, week, year)
NNT2	temporal noun, plural (e.g. days, weeks, years)
NNU	unit of measurement, neutral for number (e.g. in, cc)
NNU1	singular unit of measurement (e.g. inch, centimetre)
NNU2	plural unit of measurement (e.g. ins., feet)
NP	proper noun, neutral for number (e.g. IBM, Andes)
NP1	singular proper noun (e.g. London, Jane, Frederick)
NP2	plural proper noun (e.g. Browns, Reagans, Koreas)
NPD1	singular weekday noun (e.g. Sunday)
NPD2	plural weekday noun (e.g. Sundays)
NPM1	singular month noun (e.g. October)
NPM2	plural month noun (e.g. Octobers)
PN	indefinite pronoun, neutral for number (none)
PN1	indefinite pronoun, singular (e.g. anyone, everything, nobody, one)
PNQO	objective wh-pronoun (whom)
PNQS	subjective wh-pronoun (who)
PNQV	wh-ever pronoun (whoever)
PNX1	reflexive indefinite pronoun (oneself)
PPGE	nominal possessive personal pronoun (e.g. mine, yours)
PPH1	3rd person sing. neuter personal pronoun (it)
PPHO1	3rd person sing. objective personal pronoun (him, her)
PPHO2	3rd person plural objective personal pronoun (them)
PPHS1	3rd person sing. subjective personal pronoun (he, she)

PPHS2	3rd person plural subjective personal pronoun (they)
PPIO1	1st person sing. objective personal pronoun (me)
PPIO2	1st person plural objective personal pronoun (us)
PPIS1	1st person sing. subjective personal pronoun (I)
PPIS2	1st person plural subjective personal pronoun (we)
PPX1	singular reflexive personal pronoun (e.g. yourself, itself)
PPX2	plural reflexive personal pronoun (e.g. yourselves, themselves)
PPY	2nd person personal pronoun (you)
RA	adverb, after nominal head (e.g. else, galore)
REX	adverb introducing appositional constructions (namely, e.g.)
RG	degree adverb (very, so, too)
RGQ	wh- degree adverb (how)
RGQV	wh-ever degree adverb (however)
RGR	comparative degree adverb (more, less)
RGT	superlative degree adverb (most, least)
RL	locative adverb (e.g. alongside, forward)
RP	prep. adverb, particle (e.g. about, in)
RPK	prep. adv., catenative (about in be about to)
RR	general adverb
RRQ	wh- general adverb (where, when, why, how)
RRQV	wh-ever general adverb (wherever, whenever)
RRR	comparative general adverb (e.g. better, longer)
RRT	superlative general adverb (e.g. best, longest)
RT	quasi-nominal adverb of time (e.g. now, tomorrow)
TO	infinitive marker (to)
UH	interjection (e.g. oh, yes, um)
VB0	be, base form (finite i.e. imperative, subjunctive)
VBDR	Were
VBDZ	Was
VBG	Being
VBI	be, infinitive (To be or not... It will be ..)
VBM	Am
VBN	Been
VBR	Are
VBZ	Is
VD0	do, base form (finite)
VDD	Did
VDG	Doing
VDI	do, infinitive (I may do... To do...)
VDN	Done
VDZ	Does

VH0	have, base form (finite)
VHD	had (past tense)
VHG	Having
VHI	have, infinitive
VHN	had (past participle)
VHZ	Has
VM	modal auxiliary (can, will, would, etc.)
VMK	modal catenative (ought, used)
VV0	base form of lexical verb (e.g. give, work)
VVD	past tense of lexical verb (e.g. gave, worked)
VVG	-ing participle of lexical verb (e.g. giving, working)
VVGK	-ing participle catenative (going in be going to)
VVI	infinitive (e.g. to give... It will work...)
VVN	past participle of lexical verb (e.g. given, worked)
VVNK	past participle catenative (e.g. bound in be bound to)
VVZ	-s form of lexical verb (e.g. gives, works)
XX	not, n't
YEX	punctuation tag - exclamation mark
YQUO	punctuation tag – quotes
YBL	punctuation tag - left bracket
YBR	punctuation tag - right bracket
YCOM	punctuation tag – comma
YDSH	punctuation tag – dash
YSTP	punctuation tag - full-stop
YLIP	punctuation tag – ellipsis
YCOL	punctuation tag – colon
YSCOL	punctuation tag - semicolon
YQUE	punctuation tag - question mark
ZZ1	singular letter of the alphabet (e.g. A,b)
ZZ2	plural letter of the alphabet (e.g. A's, b's)

Appendix E: USAS Tagset

Retrieved from: http://ucrel.lancs.ac.uk/usas/

A GENERAL & ABSTRACT TERMS

A1 General

    A1.1.1 General actions, making etc.

    A1.1.2 Damaging and destroying

    A1.2 Suitability

    A1.3 Caution

    A1.4 Chance, luck

    A1.5 Use

        A1.5.1 Using

        A1.5.2 Usefulness

    A1.6 Physical/mental

    A1.7 Constraint

    A1.8 Inclusion/Exclusion

    A1.9 Avoiding

A2 Affect

    A2.1 Affect: Modify, change

    A2.2 Affect: Cause/Connected

A3 Being

A4 Classification

    A4.1 Generally kinds, groups, examples

    A4.2 Particular/general; detail

A5 Evaluation

    A5.1 Evaluation: Good/bad

    A5.2 Evaluation: True/false

    A5.3 Evaluation: Accuracy

    A5.4 Evaluation: Authenticity

A6 Comparing

    A6.1 Comparing: Similar/different

E2 Liking

E3 Calm/Violent/Angry

E4 Happy/sad

       E4.1 Happy/sad: Happy

       E4.2 Happy/sad: Contentment

E5 Fear/bravery/shock

E6 Worry, concern, confident

F FOOD & FARMING

F1 Food

F2 Drinks

F3 Cigarettes and drugs

F4 Farming & Horticulture

G GOVT. & THE PUBLIC DOMAIN

G1 Government, Politics & elections

       G1.1 Government etc.

       G1.2 Politics

G2 Crime, law and order

       G2.1 Crime, law and order: Law & order

       G2.2 General ethics

G3 Warfare, defence and the army; Weapons

H ARCHITECTURE, BUILDINGS, HOUSES & THE HOME

H1 Architecture, kinds of houses & buildings

H2 Parts of buildings

H3 Areas around or near houses

H4 Residence

H5 Furniture and household fittings

I MONEY & COMMERCE

I1 Money generally

       I1.1 Money: Affluence

       I1.2 Money: Debts

N NUMBERS & MEASUREMENT

N1 Numbers

N2 Mathematics

N3 Measurement

     N3.1 Measurement: General

     N3.2 Measurement: Size

     N3.3 Measurement: Distance

     N3.4 Measurement: Volume

     N3.5 Measurement: Weight

     N3.6 Measurement: Area

     N3.7 Measurement: Length & height

     N3.8 Measurement: Speed

N4 Linear order

N5 Quantities

     N5.1 Entirety; maximum

     N5.2 Exceeding; waste

N6 Frequency etc.

O SUBSTANCES, MATERIALS, OBJECTS & EQUIPMENT

O1 Substances and materials generally

     O1.1 Substances and materials generally: Solid

     O1.2 Substances and materials generally: Liquid

     O1.3 Substances and materials generally: Gas

O2 Objects generally

O3 Electricity and electrical equipment

O4 Physical attributes

     O4.1 General appearance and physical properties

     O4.2 Judgement of appearance (pretty etc.)

     O4.3 Colour and colour patterns

     O4.4 Shape

     O4.5 Texture

S2 People

    S2.1 People: Female

    S2.2 People: Male

S3 Relationship

    S3.1 Relationship: General

    S3.2 Relationship: Intimate/sexual

S4 Kin

S5 Groups and affiliation

S6 Obligation and necessity

S7 Power relationship

    S7.1 Power, organizing

    S7.2 Respect

    S7.3 Competition

    S7.4 Permission

S8 Helping/hindering

S9 Religion and the supernatural

T TIME

T1 Time

    T1.1 Time: General

        T1.1.1 Time: General: Past

        T1.1.2 Time: General: Present; simultaneous

        T1.1.3 Time: General: Future

    T1.2 Time: Momentary

    T1.3 Time: Period

T2 Time: Beginning and ending

T3 Time: Old, new and young; age

T4 Time: Early/late

W THE WORLD & OUR ENVIRONMENT

W1 The universe

W2 Light

W3 Geographical terms

W4 Weather

W5 Green issues

X PSYCHOLOGICAL ACTIONS, STATES & PROCESSES

X1 General

X2 Mental actions and processes

      X2.1 Thought, belief

      X2.2 Knowledge

      X2.3 Learn

      X2.4 Investigate, examine, test, search

      X2.5 Understand

      X2.6 Expect

X3 Sensory

      X3.1 Sensory: Taste

      X3.2 Sensory: Sound

      X3.3 Sensory: Touch

      X3.4 Sensory: Sight

      X3.5 Sensory: Smell

X4 Mental object

      X4.1 Mental object: Conceptual object

      X4.2 Mental object: Means, method

X5 Attention

      X5.1 Attention

      X5.2 Interest/boredom/excited/energetic

X6 Deciding

X7 Wanting; planning; choosing

X8 Trying

X9 Ability

      X9.1 Ability: Ability, intelligence

      X9.2 Ability: Success and failure

Y SCIENCE & TECHNOLOGY

Y1 Science and technology in general

Y2 Information technology and computing

Z NAMES & GRAMMATICAL WORDS

Z0 Unmatched proper noun

Z1 Personal names

Z2 Geographical names

Z3 Other proper names

Z4 Discourse Bin

Z5 Grammatical bin

Z6 Negative

Z7 If

Z8 Pronouns etc.

Z9 Trash can

Z99 Unmatched

Appendix F: Features of teacher discourse

Table F1. Features of teacher talk based upon a review of the literature.

Feature	Definition	References
Behaviour management talk	Utterances which explicitly state rules, redirecting a child without explanation, or telling a child what to do when misbehaving	Irvin et al. (2013), Irvin et al. (2014), Girolametto et al. (2000)
Orientation/attention gaining and maintenance	Utterances or vocalisations aimed at focusing and maintaining the child's attention or at controlling the child's behaviour	DeLoache & DeMendoza (1985), Girolametto et al. (2000)
Labelling statements	Utterances naming depicted objects, persons, and so on	Ninio (1983), DeLoache & DeMendoza (1985)
Comments	Utterances adding in direct commands and statements	Pierucci (2016)
Imitation-eliciting requests/directions	Directives labelling with request to imitate	Ninio (1983), Whitehurst et al. (1988)
Directives	Utterances requesting nonverbal action	Whitehurst et al (1988), Mahoney & Wheeden (1999), Girolametto et al. (2003)
Elaboratives	Utterances providing more task information than is needed	Wilcox-Herzog & Kontos (1998)
Prompts	Behaviours or verbal/visual cues that increase the likelihood that the child would participate in the desired behaviour	Pierucci (2016)
Summaries/clarifications	Utterances giving overviews on content	Brown & Palinscar (1984)
Think-alouds/predictions	Utterances where teachers vocalise their cognitive processes or make predictions about the future	Rosenshine & Meister (1992), Benson (1997), Williams (2010), Seymour & Helena (2003), Palinscar & Brown (1984, 1985), De Rivera et al. (2005), Puntambekar & Kolodner (2005), Wilcox-Herzog & Kontos (1998), Winn (1994)
Wh-questions	Questions eliciting specific information	Bellon et al. (2000), Ninio (1983), Crain-Thoreson & Dale (1999)
Binary choices	Utterances offering the child alternate options	Bellon et al. (2000)
Open ended questions	Utterances containing non-specific request for description ("tell me more")	Crain-Thoreson & Dale (1999), Wilcox-Herzog & Kontos (1998)
Topic continuing questions	Questions which seek to promote continued interaction on the given topic	Crain-Thoreson & Dale (1999)
Yes/no questions	Questions which promote a yes or no answer	Whitehurst et al. (1988)
Function/attribute questions	Questions where the expected answer is a function, attribute or actions	Whitehurst et al. (1988)
Repetition	Copy or reduced copy of child's utterance	Whitehurst et al. (1988), Stone (1998), Langer & Applebee (1986)
Expansion	Elaboration of a child's child utterance	Bellon et al. (2000), Crain-Thoreson & Dale (1999), Whitehurst et al. (1988)
Recasting (repetition)	Repetition of an utterance with added elements	Bellon et al. (2000), Crain-Thoreson & Dale (1999), Whitehurst et al. (1988)
Cloze procedures	Adult pause to indicate that the child fill in information	Bellon et al. (2000)
(Maternal) repairs	Utterances involving a correction of answers or linguistic errors	Barachetti & Lavelli (2011), Radford et al. (2015)
Hints/problematizing	Utterances involving strategies for solving problems	Radford et al. (2015)
Feedback	Verbal reaction to the child's behaviour or verbalization (spontaneous or elicited) to indicate that they were right or wrong	DeLoache & DeMendoza (1985), Mahoney & Wheeden (1999), Whitehurst et al. (1988)

Table F2. Broader categories of teacher discourse features.

Category	Label
Statements	Labelling statements
	Comments
	Hints/problematizing
	Prompts
	Summaries/clarifications
Directives	Imitation-eliciting directives
	Elaboratives
	Behavioural management
	Physical action directives
Cloze procedures	Cloze procedures
Feedback	Feedback
Think-alouds and predictions	Think-alouds
	Predictions
Questions	Wh-questions
	Binary choices
	Open ended questions
	Requests
	Topic continuing questions
	Yes/no questions
	Function/attribute questions
	Binary choices
Repetition	Repetition
	Recasting
	Expansion

Appendix G: Distribution of teacher questions

Table G1. Distribution of all teacher questions across classes.

Text (lesson ID)	Total teacher utterances	Total teacher questions	Teacher questions per 100 teacher utterances
1_280415	76	109	143.4
1_290415	115	120	104.3
1_050515	111	137	123.4
1_060515	52	80	153.8
CLASS 1 TOTAL	354	446	126
2_280415	115	176	153
2_050515	159	330	207.5
2_060515	156	224	143.6
2_070515	113	173	153.1
CLASS 2 TOTAL	543	903	166.3
3_290316	104	119	114.4
3_300316	72	85	118.1
3_060416	92	113	122.8
3_270416	144	143	99.3
CLASS 3 TOTAL	412	460	111.7
4_290316	117	155	132.5
4_060416	107	131	122.4
4_260416	151	181	119.9
4_270416	125	153	122.4
CLASS 4 TOTAL	500	620	124
OVERALL TOTAL	1809	2429	134.3

Appendix H: Finite speech verbs in directives

Table H1. A frequency breakdown of finite speech verbs in directives in the SEN Classrooms Corpus.

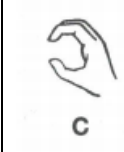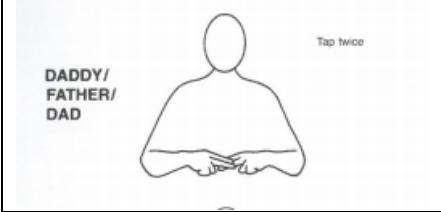| No.	Search result	Number of occurrences	Percent
1	come	71	19.45%
2	sit	55	15.07%
3	show	54	14.79%
4	go	24	6.58%
5	stand	23	6.3%
6	hold	15	4.11%
7	put	14	3.84%
8	do	13	3.56%
9	hang	12	3.29%
10	help	11	3.01%
11	get	10	2.74%
12	write	7	1.92%
13	have	7	1.92%
14	wait	6	1.64%
15	keep	5	1.37%
16	send	4	1.1%
17	draw	3	0.82%
18	find	3	0.82%
19	turn	2	0.55%
20	bring	2	0.55%
21	start	2	0.55%
22	calm	2	0.55%
23	lift	2	0.55%
24	press	2	0.55%
25	save	1	0.27%
26	make	1	0.27%
27	sign	1	0.27%
28	bob	1	0.27%
29	spell	1	0.27%
30	skip	1	0.27%
31	flick	1	0.27%
32	pick	1	0.27%
33	fidget	1	0.27%
34	use	1	0.27%
35	unjumble	1	0.27%
36	stay	1	0.27%
37	brush	1	0.27%
38	spin	1	0.27%
39	mix	1	0.27%
40	pop	1	0.27%
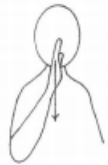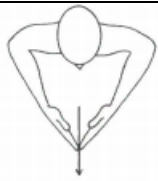
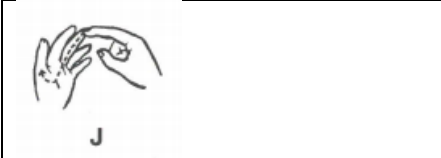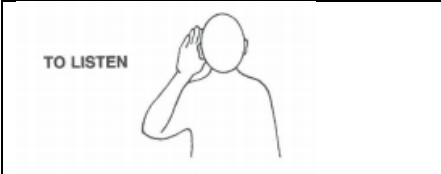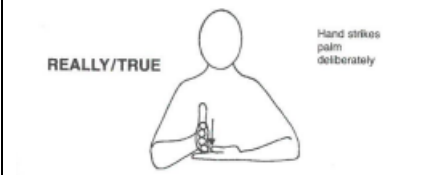# Appendix I: Top 50 Makaton signs in the SEN Classrooms Corpus

Table I1: The 50 most frequent Makaton signs in the SEN Classrooms Corpus,

including diagrams, stages in which signs appear, word classes of signs and number

of occurrences within the corpus.

Note: n/a means signs are not from the Makaton Core Vocabulary.

Sign	Makaton stage	Word class(es)	No. of occurrences
YES (Bend wrist)	1	Interjection	72
NO (see video for examples of use)	1	Interjection	16
GOOD (1) (Use both hands for "VERY GOOD")	1	Adjective	14
BAD/NAUGHTY	1	Adjective	10
HAPPY/ PLEASED	5	Adjective	10
Lightning	n/a	Noun	9
Family	n/a	Noun	8
Shake	n/a	Noun	8
Spear	n/a	Noun	8
FISH (1)	3	Noun	7

Sign	Makaton stage	Word class(es)	No. of occurrences
LITTLE/TINY	3	Adjective	7
SEA	6	Noun	7
THE	Additional	Determiner	7
W	Additional	Letter	7
ANGRY (see video for examples of use) Show tension in hands. Use one or both hands as relevant	5	Adjective	6
Hood	n/a	Noun	6
R	Additional	Letter	6
Wizard	n/a	Noun	6
KING	Additional	Noun	5
WHY?	8	Wh-word	5
H	Additional	Letter	4

Sign	Makaton stage	Word class(es)	No. of occurrences
SAD/ MISERABLE	5	Adjective	4
TO DO — Small striking movement made once	4	Verb	3
Mad	n/a	Adjective	3
NUMBER 1	7	Number	3
Poor	n/a	Adjective	3
Sailing	n/a	Verb	3
BOAT	3	Noun	3
Storm	n/a	Noun	3
NUMBER 3	7	Number	3
NUMBER 2	7	Number	3
A	Additional	Letter	2
BIRD	2	Noun	2

Sign	Makaton stage	Word class(es)	No. of occurrences
C	Additional	Noun	2
DADDY/ FATHER/ DAD	1	Noun	2
Excited	n/a	Adjective	2
Fairy	n/a	Noun	2
TREE	2	Noun	2
TO GIVE (1) (see video for examples of use)	1	Verb	2
Her	n/a	Pronoun	2
J	Additional	Letter	2
TO LISTEN	6	Verb	2
Long	n/a	Adjective	2
MONEY	5	Noun	2
REALLY/TRUE	8	Adjective	2
Rich	n/a	Adjective	2
Thunder	n/a	Noun	2

Sign	Makaton stage	Word class(es)	No. of occurrences
UP	3	Adverb	2
TO WALK (see video for examples of use)	3	Verb	2
WHAT? (see video for examples of use)	1	Wh-word	2