

**CHARACTERISING THE LANGUAGE DEMANDS OF THE KEY STAGE 3
NATIONAL CURRICULUM FOR WALES (2000) – TOWARDS A ‘FUNCTIONAL
APPROACH’ TO PLANNING ENGLISH AS AN ADDITIONAL LANGUAGE
DEVELOPMENT**

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Submitted for the Degree of Doctor of Philosophy, School of Education and Lifelong
Learning, University of Wales, Aberystwyth

March 2010

DECLARATION

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

STATEMENT 1

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Characterising the language demands of the Key Stage 3 National Curriculum for Wales (2000) – Towards a ‘functional approach’ to planning English as an Additional Language development

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ABSTRACT

This thesis presents the first extensive study carried out in the Welsh education policy context to adopt a Hallidayan ‘functional’ approach to identifying curriculum language demands and planning English as an additional language development within the National Curriculum (NC) in Wales at Key Stage 3 (KS3).

The study is located within the field of English as an Additional Language (EAL), specifically within the sub-field which examines the relationship between ‘language and content’. The thesis characterises the language demands of the KS3 curriculum by working from an overview of subject disciplines and discourses, through individual curriculum goals, to language models suitable for supporting EAL pupils in the classroom.

The main argument of the thesis proposes that teachers use the contextual information available to them in advance of a subject lesson to construct integrated language and learning goals and to identify suitable models of language which may be used in activities directed at achieving the curriculum goals.

The study draws upon several insights into the nature of the English language from Hallidayan Systemic Functional Linguistic Theory. These insights explain how the constraints of context act to narrow the options in language choice and how inherent variability in the language system allows for differentiation of language models to express similar meanings.

Throughout the thesis, points are illustrated by examples and findings from a computer-assisted textual analysis of the text of the statutory KS3 National Curriculum orders for Wales (2000) carried out to inform the study about the roles and purposes of language use in the service of teaching, learning and assessment goals.

The thesis concludes that to assist teachers in making more appropriate choices about which language models to use, a substantial corpus of texts, written to fulfil curriculum purposes, should be analysed for typical structures, collocations and patterns.

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TABLE OF CONTENTS

Contents	pg
List of figures and tables	xii
Typographical conventions	xiii
<u>1. Introduction</u>	1
1.1 The achievement of minority ethnic additional language learners in Wales: a challenge for researchers and practitioners	2
1.2 Overcoming barriers to effective planning of integrated subject learning and EAL development in the KS3 curriculum	4
1.3 The nature and significance of the study	6
1.4 Research aims and questions	8
1.5 Thesis outline	10
1.6 Rationale for the approach, structure and content of the thesis	12
1.6.1 The field of literature	12
1.6.2 A focus on the clause	13
1.6.3 Social constructivist methodology	13
1.6.4 Working within the curriculum	15
1.6.5 Computer-assisted corpus analysis	15
<u>2. The Education Context</u>	18
2.1 Additional language development in Wales: a matter of effective planning	19
2.2 Migration and diversity in Wales	21
2.2.1 Diversity in schools	22
2.3 Wales' bilingual education system	23
2.4 Ethnicity, language proficiency and attainment	26
2.4.1 Patterns of attainment outcomes by ethnicity	26
2.4.2 Additional language proficiency and attainment	28
2.4.3 Time taken to reach parity and most effective pedagogy	29
2.4.4 Summary conclusion	30
2.5 The National Curriculum in Wales: entitlements and requirements	31
2.5.1 The 1989 national curriculum	31
2.5.2 The 1995 revision of the national curriculum orders	34
2.5.3 The 2000 revision of the national curriculum orders	35
2.5.4 The 2008 revision of the national curriculum - a skills-focused	35

curriculum

2.6	Additional language support and funding in Wales	38
2.6.1	Section 11 and subsequent achievement grants	38
2.6.2	Models of support provision in the field of EAL	41
2.6.3	Models of support in Wales	44
2.7	Planning for EAL development in the curriculum	46
2.7.1	4-way model of negotiation for planning additional language development	47
2.7.2	Negotiation and the relationship between subject and EAL discourses	49
2.7.3	The role of the teacher as 'interpreter' of socio-cultural appropriacy	51
2.7.4	'Predicting' language models as a focus for learning	52
2.7.5	Differentiating language models	53
2.8	Summary conclusion	54
<u>3.</u>	<u>Research Methods</u>	55
3.1	Introduction	56
3.2	The original corpus text of the statutory national curriculum orders for Wales (2000)	59
3.2.1	Rationale behind the selection of texts for the corpus	59
3.2.2	Rationale for the choice of ten subjects	59
3.2.3	Rationale for the inclusion of the Programmes of Study	60
3.2.4	Rationale for the inclusion of the Attainment Target Level Descriptions 1-6	60
3.3	Computer-assisted analysis of corpora	63
3.3.1	Principles of transformation and selection	63
3.3.2	Terms used in referring to the elements of 'Wordlist' tables	63
3.3.3	Sorting words by alphabetical order and frequency	64
3.3.4	One-word or cluster lists	64
3.3.5	Mark-up – tagging	65
3.3.6	Frequencies of occurrence	65
3.3.7	Detailed Consistency Lists	65
3.3.8	Collocation	66
3.3.9	Lemmas	66
3.4	Conventional approaches to semantic analysis of lexical items	68
3.4.1	Subjective semantic judgements	68
3.4.2	Derivational morphology	69
3.4.3	Semantic specificity	69
3.4.4	Polysemic variation	69
3.4.5	Reduction	69
3.4.6	Synonymy	70
3.4.7	Hyponymy	70
3.4.8	Hypernymic generality	70
3.4.9	Necessity and sufficiency	70
3.4.10	Foregrounding and backgrounding	71

3.5	Approaches to writing educational objectives and classifying domains	72
3.5.1	Classifying domains or types of behaviour	72
3.6	General features of the text of the national curriculum orders	74
3.6.1	General structure of the orders	75
3.6.2	Semantic density in the text	76
3.6.3	Ellipsis	76
3.6.4	Anaphoric reference	76
3.6.4.1	‘These’	77
3.6.4.2	‘This’	77
3.6.4.3	‘It’	77
3.6.5	Verb forms used as indicators of expected pupil behaviours	77
3.6.6	Non-verb forms used as indicators of expected pupil behaviours	79
3.6.7	Absence of stated pupil behaviours in parts of the Programmes of Study	80
3.6.8	Summary conclusion	81
3.7	Defining a standardised format for isolating curriculum demands	82
3.7.1	Types of educational objective	82
3.7.1.1	Product objectives	82
3.7.1.2	Process objectives	83
3.7.1.3	Competences	83
3.7.1.4	Mager’s model of product objectives	84
3.7.2	A standardised format for the ‘curriculum goal	84
3.8	The phases and stages of database construction and data analysis	85
3.9	Summary conclusion	86
4.	<u>Making Sense of Language Use in a Subject-Based Curriculum: from Subject Discourses and Curriculum Goals to Language Models</u>	87
4.1	Introduction	88
4.2	The relationship between Context and Text: a Hallidayan view	93
4.2.1	Language as a functional resource for achieving social goals	93
4.2.2	Features of language facilitating the relationship between Context and Text	95
4.2.3	Constraints	95
4.2.3.1	How clause structure models human experience	95
a)	Participants, Processes and Circumstances	95
b)	Active and Passive	99
i.	Active	99
ii.	Passive	99
c)	Tense	100
4.2.3.2	Collocation and patterning in Text	101
4.2.3.3	Intertextuality	104

4.2.3.4	Predictability	105
4.3	Curriculum subject disciplines as ‘contexts’ with specific discourses	108
4.3.1	Introduction	108
4.3.2	Education as a social process	108
4.3.3	Characterising the subject disciplines in terms of what pupils are expected to do – behaviours and practices	110
4.3.3.1	A cline of semantic specificity	111
4.3.3.2	Semantically general verbs	111
4.3.3.3	More semantically specific verbs	112
4.3.3.4	Synonymy and hyponymy in relation to behaviour verbs	113
4.3.3.5	Collocational range and polysemic variation in relation to behaviour verbs	113
4.3.4	Developing an overview of the subject disciplines and expected pupil behaviours	115
4.3.4.1	Comparing the subjects	116
a)	Verbs shared between subjects	116
b)	Verbs showing the distinctiveness of each subject	118
c)	Overview of ten curriculum subjects	119
i.	English	120
ii.	Mathematics	121
iii.	Science	122
iv.	Design Technology	123
v.	Information Technology	123
vi.	Geography	124
vii.	History	125
viii.	Art	126
ix.	Music	126
x.	Physical Education	127
d)	Conclusions drawn from the analysis of behaviour verbs	128
e)	Elements of subject content	128
i.	Art	129
ii.	History	130
4.3.5	Summary and conclusion	133
4.4	Curriculum goals as ‘contextual’ constraints	136
4.4.1	Planning in the subject-based curriculum	137
4.4.2	Difficulties teachers may encounter when deriving information about language use from subject-based curriculum goals	138
4.4.2.1	Subject-based curriculum goals	138
4.4.3	Curriculum goals describe several different ‘types’ of expected behaviour, of which language use is one	139
4.4.4	Language use is <i>not</i> essential to achieve <i>every</i> curriculum goal	140
4.4.5	Language plays an <i>essential</i> role in achieving some curriculum goals	141
4.4.6	Some curriculum goals are oriented towards <i>one primary type</i> of behaviour	141
4.4.7	Some curriculum goals require <i>several types of behaviour</i> to be achieved	142
4.4.8	Language plays a <i>contributory</i> role in conjunction with other types of behaviour	142
4.4.9	Language plays a <i>complementary</i> role in relation to other types of behaviour	142

4.4.10	Language is used to assess and evaluate what pupils do	143
4.4.11	The wording of curriculum goals	144
4.4.11.1	Linguistic behaviour may be backgrounded	144
4.4.11.2	Specific linguistic behaviours are 'concealed' within holonyms	144
4.4.11.3	Cognitive outcomes do not make linguistic behaviour explicit	145
4.4.12	Summary and conclusion	146
4.5	Turning curriculum learning goals into integrated language and learning goals	148
4.5.1	Deriving a list of 'language-specific' verbs from within the curriculum	148
4.5.2	Verbs used to refer to linguistic behaviour in the curriculum	149
4.5.3	Verbs with strong semantic associations with linguistic behaviour	149
4.5.4	Interrogating curriculum goals to construct integrated language and learning goals	150
4.5.5	Combining behaviour verbs with elements of subject content	151
4.5.6	Examples of integrated language and learning goals	151
4.5.7	Summary conclusion	153
4.6	From curriculum goals to lexicogrammar via semantics	154
4.6.1	Language as a resource for creating meanings	155
4.6.2	Halliday's three metafunctions: Ideational, Interpersonal and Textual	157
4.6.3	Register variables of Field, Tenor and Mode	157
4.6.4	The balance of register variables in curriculum learning goals	160
4.6.4.1	Variation in Field	161
4.6.4.2	Variation in Tenor	162
4.6.4.3	Variation in Mode	165
4.6.4.4	Academic register is expected for assessment purposes	168
4.6.4.5	Variation of Field, Tenor and Mode in learning activities	169
4.6.5	The realisation of semantics in the lexicogrammar	172
4.6.5.1	Realising Ideational meanings	172
4.6.5.2	Realising Interpersonal meanings	174
a)	Speech functions	176
b)	Tense	179
c)	Polarity	181
d)	Modality	182
4.6.5.3	Realising Textual meanings	183
a)	Reference	185
b)	Substitution	187
c)	Conjunction	187
d)	Lexical cohesion	189
4.6.6	Summary conclusion	190
4.7	Finding meaning in integrated language and learning goals	193
4.7.4	Finding meaning in the verb	194
4.7.4.1	DESCRIBE	194
4.7.4.2	EXPLAIN	195
4.7.4.3	COMPARE, INSTRUCT, PREDICT, HYPOTHESISE	197
4.7.5	Finding meaning in the element of subject content	199
4.7.5.1	Topic vocabulary	199
4.7.5.2	Clarifying 'Participants'	201
a)	General v specific Participants	201
b)	Adjectives (features, properties and characteristics)	202
c)	Concepts	203

4.7.6	Summary and conclusion	206
4.8	The Interpretation Gap	208
4.9	Halliday's insights into variation in language choice	212
4.9.1	Language as a system contains variability	213
4.9.2	The same wording can perform different social functions	214
4.9.3	Different wordings can fulfil the same social function	214
4.9.4	The correlation between social function, meaning and wording is one of variation	216
4.9.5	Two axes of language choice to realise meaning – paradigmatic and syntagmatic	217
4.9.5.1	Paradigmatic choice	217
4.9.5.2	Syntagmatic choice	219
4.9.5.3	Application of this insight to meeting EAL pupils' needs	220
4.9.6	Synonymy, hyponymy and meronymy	221
4.9.6.1	Extending vocabulary range	221
4.9.6.2	Refining understanding	223
4.9.7	Rank shifting and grammatical metaphor	223
4.9.7.1	Manipulating the lexicogrammar	225
4.9.8	Summary conclusion	226
4.10	Selection and differentiation of language models	228
4.11	Application to a particular lesson	229
4.12	Summary conclusion	233
5.	<u>Conclusion</u>	235
5.1	Introduction	236
5.2	Summary of the thesis	236
5.3	Research questions	238
5.4	Implications of the study	239
5.5	Limitations of the study	240
5.6	Recommendations	240
	List of references	242
	Appendices	250
	Appendix A – All Wales 5-Stage model: Stages of English as an Additional Language Acquisition	251
	Appendix B – Ethnic background of pupils in Wales (2008) by Assembly constituency	252
	Appendix C – KS2 and KS3 pupil attainment by ethnic background 2006-2008	253
	Appendix D – The phases and stages of database construction and data analysis	255
	Appendix E – Collocations of behaviour verbs with 3 elements of subject content: data, materials and questions.	265
	Appendix F - List of verbs used to indicate linguistic behaviour in curriculum goals	271

LIST OF FIGURES AND TABLES

List of figures and tables	page
FIGURES	
Fig. 2.1	Example statements of attainment from the 1989 English order. 32
Fig. 2.2.	4-way model of negotiation to plan integrated language models 48
Fig. 3.1	Structure adopted for modelling curriculum goals in the database 84
Fig. 4.1	How teachers' planning can be informed by Hallidayan insights into Constraints and Variation in language 89
Fig. 4.2	Language is used to achieve purposefully motivated social goals 93
Fig. 4.3	Subject disciplines and discourses as contextual constraints 108
Fig. 4.4	Cline of semantic specificity 111
Fig. 4.5	Comparison of behaviour verbs in Science, History and Art 118
Fig. 4.6	Overlapping language resources in subject discourses 134
Fig. 4.7	Curriculum goals as 'contextual' constraints 136
Fig. 4.8	Planning to meet curriculum goals within subject disciplines 137
Fig. 4.9	Model of educational objective 138
Fig. 4.10	Negotiating the role and purposes of language in relation to curriculum goals 146
Fig. 4.11	Examining semantics to get closer to lexicogrammar 155
Fig. 4.12	From curriculum goals to lexicogrammar via semantics 156
Fig. 4.13	Looking for meaning and subject-related language 193
Fig. 4.14	Intra- and Inter-personal Interpretation 208
Fig. 4.15	Variation and 'predicting' language models 213
Fig. 4.16	Differentiating language models 229
TABLES	
Table 3.1	Extract of Statistics data table in 'Wordlist' showing types and tokens 63
Table 3.2	Extract of Word, Frequency, % and Text columns in 'Wordlist' 64
Table 3.3	Detailed Consistency List example 65
Table 4.1	Trend in specialisation indicated by subject behaviour verbs 116
Table 4.2	Comparison of behaviour verbs shared between IT & Geography 117
Table 4.3	Comparison of behaviour verbs not shared between IT & Geography 119
Table 4.4	General category Participants 201
Table 4.5	Specific Participants 202
Table 4.6	Examples of concepts in national curriculum goals 204
Table 4.7	Substitution table illustrating paradigmatic choice in a sentence 218
Table 4.8	Rank Scale of grammatical units 224
Table 4.9	Potential sources of language information and their associated language forms 230

TYPOGRAPHIC CONVENTIONS

Typographic conventions used in this thesis:

Author's text	Arial 12pt one and a half line spaced.
Text highlighted as significant to convey a particular emphasis	bold
Text distinguished from other text to draw attention to its particular meaning in that context.	'single quotation marks'
Short quotations integrated within the text.	Arial 12 pt "enclosed in double quotation marks", one and a half line spaced.
Long quotations taken directly from sources.	Indented Arial 12 pt, single line spaced, separated from main text. "Enclosed in double quotation marks."
References	Enclosed in parentheses (author, year: page)
Author's words inserted or added to quotations from other sources.	[square brackets]
Behaviour verbs in author's illustrative or example text.	<i>UPPER CASE italics</i>
Examples of language selected by the author to make and illustrate points but not drawn from either the original NC orders or the corpus database.	<i>Arial 12pt italic</i>
Lists of examples distinguished from the main body of text and from each other e.g.	- Indented En Dash bullet points
Potential alternative words that may be used in a particular context example e.g. <i>write/write down/note/record</i>	/ Slash
Examples of 'ungrammatical' or 'non-sense' language e.g. * <i>the field pattern produces a bar magnet</i>	* asterisk
Text taken directly from the original of the national curriculum orders.	Times New Roman italic " <i>Sentence case</i> " or " <i>lower case</i> " in double speech marks
Text illustrating curriculum goals drawn from the national curriculum corpus database.	Times New Roman italic <i>Sentence case</i>
Verbs which form part of a curriculum goal derived from the national curriculum corpus database.	Times New Roman italic <i>UPPER CASE</i>
Elements of subject content collocated with a verb in a curriculum goal.	Times New Roman italic <i>lower case</i>
Single words or phrases taken directly	Times New Roman italic <i>lower case</i>

from the original NC orders or the NC corpus database which are integrated within the flow of the author's text	
Special terms drawn from Systemic Functional Linguistic which have particular typological conventions in SFL discourse	TRANSITIVITY, MOOD, THEME-RHEME: All CAPITALS Field, Tenor, Mode, Context, Text ... etc.: Initial Capital
Referencing NC source texts: Abbreviations for subject orders	En = English Ma = Mathematics Sc = Science DT = Design Technology IT = Information Technology Ge = Geography Hi = History Art = Art Mu = Music PE = Physical Education PoS = Programme of Study AT = Attainment Target L = Level Description L1/2/3 etc = Attainment Target Level Description Level 1/2/3 etc.
Text referenced as taken from the NC corpus database refers to the source from which the piece of text has been derived. Note: the Programmes of Study for English, Mathematics and Science are divided into different areas of learning. These are numbered 1-4. The areas of learning relate to Attainment Target Descriptions for assessment which are divided into Levels.	Arial 12 pt enclosed in parentheses. (En 1 PoS) = English subject, Programme of Study, Area of Learning 1 Oracy. (IT AT L2) = Information Technology, Attainment Target Level Description Level 2. (Sc AT3 L4) = Science Attainment Target 3 Level Description Level 4.
Footnotes	Times New Roman 10 pt Sentence case

CHAPTER 1

Introduction

CHAPTER 1

Introduction

1.1 The achievement of minority ethnic additional language learners in Wales: a challenge for researchers and practitioners

Recent statistics from the Welsh Assembly Government (WAG, 2003a; NAFW, 2006a; WAG, 2006a, 2006b and 2006c; WAG, 2008a) identify clear gaps between the educational attainment of pupils from minority ethnic backgrounds who are learning English as an Additional Language (EAL pupils) and pupils from majority ethnic backgrounds for whom English or Welsh is a first language. In Wales (WAG, 2003), level of proficiency in English¹ was identified as the most significant factor impacting on levels of attainment for EAL pupils in English-medium schools.

The capacity to understand and use language for academic purposes in school, including the ability to respond to the varying language demands of different subject discourses, is required in order to attain the highest grades in school coursework and examinations. The academic language demands of the National Curriculum in Wales increase through the key stages, particularly at Key Stage 3 (KS3), which means that pupils learning English as an additional language are pursuing a moving target. They are at a disadvantage compared to their peers whose own internalised English language resources are more developed, enabling them to learn and demonstrate their personal knowledge, understanding and skills more effectively.

There is, therefore, a need for EAL pupils to continually extend, expand and refine their English language resources, so they can meet the demands placed on them by the learning goals of the curriculum. To attain the highest grades they are capable of, and approach any level of parity with their peers in formal examinations at age 16, EAL pupils need to develop at a faster rate and 'catch up' during KS3.

In order to help EAL pupils develop their use of academic English, support for language development is required through careful planning, foregrounding and modelling of language in content-driven subject lessons across the curriculum. This is not a straightforward task for subject specialist or language support specialist teachers

¹ As assessed against the All Wales 5 Stage model. See Appendix A.

working at Key Stage 3, as the subject curricula defined in the statutory national curriculum orders have not been designed as curricula for learning English as an additional language, but rather for subject learning. They are based on assumptions of idealised norms of native-English-speaking pupils who have progressed through the earlier key stages of the education system in Wales.

Therefore, subject and language support teachers would benefit from an approach to planning which assists them in interpreting and organising their pedagogy, and in choosing appropriate linguistic resources for modelling that help to facilitate progressive, integrated language and content learning. Because EAL pupils in the same class may be at different stages of development, language resources need to be selected and differentiated to tailor to the needs of the individual.

So there are two clear needs which this thesis aims to address:

- 1) for EAL pupils to extend, expand and refine their English language resources to meet the demands of academic language use in the curriculum; and
- 2) for teachers to plan effectively to support the integrated development of language and subject learning.

In addressing these general needs, this study is primarily concerned with exploring an approach to **identifying language resources**, which can be foregrounded or modelled for EAL pupils, as **one component** of an integrated approach to **planning**. The scope of the study does **not** extend to any detailed consideration of **methodology** but it is important to state at the outset that language modelling should form part of a methodology that utilises a range of different teaching and learning strategies, providing multimodal support for subject learning and creating opportunities for language use in order to ensure that EAL pupils can participate fully in curriculum learning **and** develop their English language resources.

Within some approaches to planning that are focused on subject content or on activity design, identifying clear models of language directly related to the substance of subject-oriented lessons can be considered problematic. Certain barriers need to be addressed in order to develop an integrated planning process.

1.2 Overcoming the barriers to effective planning of integrated subject learning and EAL development in the KS3 curriculum

In order to plan effectively for additional language development in the curriculum, subject knowledge and subject teaching expertise, language knowledge and language teaching expertise all need to be brought together in an 'integrated' way. In practice, there are a number of problems that can hinder this process.

Problem 1: A strong emphasis in EAL practice on pupil-centred methodologies that promote interactive language **use** in the classroom, means that the **forms** of language used by pupils during activities can appear largely 'unpredictable' or 'uncontrolled'. There is a danger that such unpredictability can lead teachers to give up trying to impose any kind of control over the particular wordings that pupils use. This runs the risk of leaving EAL pupils to try and make sense out of the seemingly haphazard combinations of words surrounding them in learning activities. It also runs the risk of leaving pupils to rely upon a limited range of existing language resources to respond to a variety of learning demands, without continually extending, expanding and refining them. Potentially, focusing only on using methods to encourage language **use** can miss valuable opportunities for more productive language **development** through scaffolded modelling of particular patterns tailored to the needs of learners.

To address this problem, emphasis needs to be placed upon selecting and differentiating a range of language models that can be incorporated in language-focused learning activities or introduced during teacher-pupil and pupil-pupil interactions to promote more structured, productive development of language.

Problem 2: Conventional approaches to organising English language teaching in a linear progression do not 'fit' with the non-linear uses of language needed to meet subject-driven language demands across the curriculum.

To address this problem, a different conception of progression based on 'diversification' of language resources needs to be employed. Rather than trying to impose a contrived linear progression of grammatical structures and common vocabulary onto a subject-based curriculum, the diverse range of language resources required to meet curriculum demands needs to be clearly identified and used as a

framework, within which teachers can select and differentiate particular language resources appropriate to the subject learning tasks.

Problem 3: At the planning stage, insufficient information about, or understanding of, the way in which the contexts and content of subject learning determine language choice, makes it more difficult to select and differentiate appropriate language models in advance.

To address this problem, the kinds of information teachers need to examine, to determine potential language resources, need to be identified; and a process needs to be defined for negotiating an integrated approach to subject learning and language development. In practice, several sources of information will have to be considered to balance the selection of linguistic resources required to meet both the demands of the curriculum and the language development needs of specific individuals. In this study, the main source of information considered is the series of published statutory orders for the National Curriculum in Wales, which specify the requirements for what should be taught at KS3. This source provides information about the prescribed goals of the curriculum which teachers are required to plan for and which influence the contexts and content of much subject learning.

Problem 4: In a subject-based content-driven or skills-driven curriculum, learning goals are often constructed in a way that does not clearly specify any role or purpose for language use. This makes it more difficult to draw out information leading to the choice of language resources appropriate to the goals of the lesson.

To address this problem, an approach needs to be developed where the goals constructed as lesson objectives and outcomes clearly indicate a purpose for language in the service of subject content learning and skills development. In this study, a corpus-based analysis of the national curriculum orders is used to draw out the roles and purposes of language use, which may be used to inform the construction of more integrated language and learning goals for subject lessons.

1.3 The nature and significance of the study

This study is located within the field of English as an Additional Language development, specifically within the sub-field which examines the relationship between 'language and content'. It is the first extensive study carried out in the Welsh education policy context to draw on 'functional' and 'language and content' approaches and apply them to analysis of the specific content and language demands of the national curriculum at Key Stage 3. There has, however, been applied research of this nature, particularly in Australia, and some practitioner applications of theoretical models to lesson planning in England. Much of this work has focused on Genre Theory approaches to literacy (Halliday and Hasan, 1976; Painter and Martin, 1986; Cope and Kalantzis, 1993; Christie and Martin, 2000; Martin and Rose, 2008), originally developed from Michael Halliday's Theory of Systemic Functional Linguistics (SFL) (1973, 1978, 1985, 1994).

This thesis draws upon insights from Hallidayan Systemic Functional Linguistics and relates them to language development at the level of clause and clause complex construction. It illustrates how Halliday's insights into the relationship between Context and Text can be applied to the planning of EAL development at KS3 of the National Curriculum in Wales. The study is designed to be at the interface of theory and practice, bringing theoretical insights about language as a social semiotic to the planning of educational practice. The outcomes of the research have significant implications for pedagogy and are of relevance to both secondary subject specialists and additional language support specialists who work with EAL pupils.

The study was carried out on a part-time basis between 1998 and 2009, during which time developments in literacy and language use in statutory education progressed apace with the introduction of the National Literacy Strategy and the Literacy strand of the Key Stage 3 Strategy in England. In Wales, Literacy was not made a statutory component of the curriculum. Although many aspects of the approaches advocated in the National Literacy Strategy, in particular, have been incorporated into day-to-day practice in many schools, implementation is a matter of local discretion resulting in variation between Local Authorities and schools. Also, the kind of guidance produced for teachers in England promoting good practice in working with EAL pupils has not been replicated in Wales. This has contributed to a lack of professional advice on EAL

development relating to the National Curriculum in Wales. This thesis attempts to redress some of that weakness and make a contribution to the professional development of teachers working with EAL pupils in Wales.

1.4 Research aims and questions

The thesis aims to address the problems outlined in section 1.2 above by advancing an approach to planning that could allow teachers to identify a range of potential language resources to meet some of the demands of the curriculum. The main argument of the thesis, contained in Chapter 4, aims to trace a line of reasoning from a position of limited information about language in the curriculum, to a more informed position where appropriate choices can be made about which language resources may be modelled for EAL pupils to assist their language and content learning.

A functional approach, informed by the insights of Hallidayan Systemic Functional Theory, seems to offer the greatest potential for fulfilling these aims.

“A functional approach to language means, first of all, investigating how language is used: trying to find out what are the purposes that language serves for us, and how we are able to achieve purposes through speaking and listening, reading and writing. But it also means more than this. It means seeking to explain the nature of language in functional terms: seeing whether language itself has been shaped by use, and if so, in what ways – how the form of language has been determined by the functions it has evolved to serve.” (Halliday, 1973: 7)

The first two research questions of the thesis paraphrase Halliday’s words from this quotation and apply them to the context of the national curriculum:

- 1. What are the purposes that language serves in the curriculum?**
- 2. How is the character of language in the curriculum shaped and determined by what pupils are expected to use it for?**

The third research question is more specific to the planning process and seeks to address the need for teachers to identify, in advance, forms of language which may be required to meet the demands of curriculum goals, so they can select and incorporate models into planned learning activities.

- 3. What information do teachers need in order to ‘predict’ forms of language that may be used to fulfil the purposes of language use in the curriculum?**

The first question is addressed by analysing a database, constructed from a corpus of text compiled from the KS3 national curriculum subject orders for Wales, to identify the purposes of language use that are indicated in the prescribed goals of the curriculum.

The second question is addressed by examining Halliday's insights into the relationship between Context and Text, and how English as a language system realises contextual influences in the lexicogrammar. Halliday's insights are applied to, and illustrated with, some of the purposes of language use identified by the corpus analysis.

The third question is addressed by examining the contextual and semantic information available in the prescribed goals of the curriculum which, when combined with Halliday's insights into the Context to Text relationship, may be used to anticipate a range of language resources needed to meet some of the demands of curriculum goals.

It is important to clarify that, in addressing the research questions, I am **not** analysing sample texts transcribed from actual classroom language use. I am **not** working '**from Text to Context**' - 'looking from within' - in order to deduce something about the demands of the curriculum from instances of language that pupils and teachers have actually used during learning activities. Rather, I am working '**from Context to Text**' - 'looking from outside' - from the point of view of educational behaviour, starting with the descriptions that teachers are required to use to inform their planning of what pupils should 'learn' and 'do', and then analysing what information can be used to lead towards language form. The computer assisted analysis of the published text of the statutory national curriculum orders is carried out to isolate, correlate and compare contextual and semantic information indicated in the wording of the prescribed goals of the curriculum about the roles and purposes of language use. This information is then interpreted with reference to insights about English as a lexicogrammatical language system, drawn from Hallidayan Systemic Functional Linguistics, to explore the potential of 'predicting', at the planning stage, a selection of forms of language which may be used to meet the requirements of the curriculum.

1.5 Thesis outline

In Chapter 2, 'The Education Context', I set out the context in Wales within which planning for EAL development at KS3 takes place. I begin by outlining the bilingual nature of the education system in Wales and briefly mention how this impacts on minority ethnic additional language learners. I describe the distribution of EAL pupils across Wales and examine attainment data relating to minority ethnic pupils, many of whom are learning English as an additional language. I discuss the developmental background to the statutory National Curriculum in Wales and provide an overview of current approaches to meeting EAL pupils' language development needs. I conclude by defining the need for a coherent approach to planning additional language development, which includes modelling language appropriate to the demands of the curriculum.

In Chapter 3, 'Research Methods', I present an overview of the methods, drawn from the fields of corpus linguistics and lexical semantics, that were used in the computer-assisted analysis of a corpus of selected text from the published national curriculum subject orders. The purpose of the corpus analysis was to construct a database of curriculum goals which can be interrogated to identify the roles and purposes of language use in the curriculum. The information gleaned from analyses of the database informs the main discussion in Chapter 4, and provides the examples which are used to illustrate curriculum goals throughout the thesis. The technical detail of the corpus analysis and database construction is presented in Appendix D.

In Chapter 4, 'From Subject Discourses and Curriculum Goals to Differentiated Language Models', I present the main argument of the thesis addressing the research questions. The structural organisation of the chapter follows a pattern, moving from the general to the specific, from curriculum overview to individual language models. The main themes of the first two research questions, which can be summarised as **purposes** and **structure**, are addressed throughout the discussion but in the earlier sections of the chapter following the introduction, the emphasis is on the **purposes** of language **use** in the KS3 curriculum. In the latter sections of the chapter, the emphasis is on how language is **structured** or shaped by its purposes of use. Linking the two together is **semantics**, which runs as an undercurrent through the whole argument but is brought to the surface and highlighted in the middle sections of the chapter. The

theme of the third research question is addressed cumulatively throughout the chapter and is clarified at the end of section 4.10 and in section 4.11.

Halliday's insights into the nature and structure of language as a semiotic system are examined at several points in the discussion to explore the relationship between Context and Text. In this relationship, contextual variables act as **constraints** on language choice but the inherent flexibility in the relationship between social function, semantics and lexicogrammar leads to **variation**. Both of these features are presented as significant for the process of identifying, selecting and differentiating language resources to use as models for EAL pupils in the curriculum.

In chapter 5, 'Conclusions and Recommendations', I summarise the main points of the argument and its conclusions, making recommendations for future research arising from the study, in particular the need for a corpus of texts produced specifically to meet the demands of curriculum goals and to represent the subject content knowledge embedded in them, which can be analysed to identify typical patterns, collocations and occurrences of clause types and grammatical structures within specific areas of study. I also point out some of the limitations of the study.

1.6 Rationale for the approach, structure and content of the thesis

A number of significant choices had to be made when considering the approach, structure and content of this thesis, concerning which field of literature to draw upon, which aspects of additional language development to focus on, which methodologies to espouse, which attitude to adopt towards the national curriculum, and how to analyse the language demands of the curriculum.

1.6.1 The field of literature

For the main argument of this thesis, I have chosen to draw predominantly upon the literature of Hallidayan Systemic Functional Linguistics (SFL) (Bloor and Bloor, 1995; Eggins, 2004; Gerot and Wignell, 1994; Halliday, 1994, 2004a), rather than to draw more eclectically upon the wider spectrum of literature that addresses 'language and content' integration, EAL pedagogy and bilingual education (Chamot and O'Malley, 1986, 1987; Cummins, 1979, 1996; Finocciarro and Brumfit, 1983; Mohan, 1986; Munby, 1978; Ovando and Collier, 1998; Snow, Met and Genesee, 1987; Widdowson, 1978; Wilkins, 1976) which, in some cases, has been derived from quite different and possibly incommensurate theories of linguistics and language acquisition.

SFL provides a comprehensive and coherent theory within which to address additional language development. It is specifically focused on the analysis of language as a system and the way in which lexicogrammatical structure operates in relation to the meanings and social purposes of language use in context.

There is a substantial body of literature applying SFL theory to education through genre-based approaches to teaching literacy (Christie and Martin, 2000; Cope and Kalantzis, 1993; Derewianka, 1991; Martin, Christie & Rothery, 1987; Painter and Martin, 1986; Martin and Rose, 2008; Rothery, 1986; Veel and Coffin, 1996). This work provides valuable insights into the teaching of extended texts, clarifying the social purposes of genres, their schematic structures and the cohesive resources they use to create coherent pieces of meaningful writing. Genre analysis has revealed many features of lexicogrammar characteristically associated with particular genres which teachers can use to inform their planning of language support for EAL pupils. However,

for the purposes of this thesis, I have chosen to focus on language use **below** the level of genre, at the level of clause construction. Consequently, literature from Genre Theory is only drawn upon occasionally.

1.6.2 A focus on the clause

The reason why I have chosen to focus on the construction of language at the level of the **clause and clause complex**, rather than at the level of genre, is because all extended texts are constructed out of a flow of meaning realised through sequences of clauses. Halliday (2004a: 10) asserts that the clause is the “central processing unit in the lexicogrammar” that models events, happenings and relationships. In order for EAL pupils at KS3 to write extended genre texts, for example, they must first learn how to construct clauses. In many schools in Wales, genre-based approaches to literacy have been interpreted in terms of the use of Writing Frames, which provide a generic schematic framework to structure pupils’ writing, and within which pupils can construct their own clauses linked together using cohesive devices. EAL pupils, particularly those in the earlier stages of English language development, sometimes have difficulty working within Writing Frames because they are unable to complete the sections within them by constructing grammatical sentences. Ofsted (1999: 24) noted that many EAL pupils have less difficulty using specialist technical vocabulary, which is usually taught explicitly by subject teachers, than they do with the ‘bits between’. The clause and its complexes are where the resources of language are manipulated to make meaning. Clause construction is one of the key points where EAL pupils need support and it also offers some of the greatest opportunities for language development.

1.6.3 Social constructivist methodology

The main focus of this thesis is on **language as ‘what’ needs to be learned and used for the purposes of subject content learning**, rather than on the **methodology of ‘how’ to teach integrated language and content** using specially designed activities or interactional approaches that promote language use.

The two are, of course, interrelated and need to be brought together at the planning stage when teachers engage in a process of negotiation about the design of learning activities and the choice of language models². In this negotiation, the methods and language resources will impact on one another leading to a selection of potential clause and clause complex level models, which can be differentiated to the needs of individual pupils.

It is my view that the kind of methodology most appropriate for utilising language models should be rooted in Vygotskian **social constructivist** approaches with multisensory, multimodal teaching and learning activities which can be used to model forms and patterns of English through **scaffolded** and **guided** interactions (see Gibbons, 2002). Combined with types of bilingual education that promote the use of EAL pupils' first languages to support learning, such activities should create opportunities for pupils to: bring their own knowledge to bear on the learning; contribute their own ideas in collaborative work; derive meaning from a range of different sources; and encounter language models that will help them develop their language use for academic purposes directed to meeting the demands of the relevant curriculum goals. Unanticipated language demands will arise during the more unpredictable interactions of pupils engaged in learning activities but, even though they are more difficult to plan for, teachers can also use these opportunities to model language resources for pupils and help them to extend, expand and refine their academic language use.

For the purposes of this thesis, the various ways in which English language forms can be presented and their meanings made accessible to EAL pupils are considered to be matters of methodology. Apart from the context setting discussion in chapter 2 and some fairly brief references in chapter 4, discussion of methodology has been largely omitted in order to retain a narrow focus on examining information that can be gleaned from the prescribed goals of the curriculum, and from Halliday's insights, about the choice of formal language resources³.

² See section 2.7 for a brief outline of a proposed model of 4-way negotiation.

³ This is not to suggest that the whole language development agenda must be teacher-generated or that language for every activity should be modelled but that teachers need to inject some formal modelling of language into the learning process to ensure that EAL pupils continually develop their English whilst constructing meanings in curriculum learning.

1.6.4 Working within the curriculum

Cope and Kalantzis (1993b: 63-89) make a strong case for reconstructing or rewriting national curricula to make them more equitable, culturally diverse and to give a higher priority to language and the ways it is used in learning. Whilst ideologically supportive of their arguments, I have chosen to address the matter of planning EAL development in the national curriculum in Wales, **as it is** within the current framework, **rather than challenging** the ideology, structure and content of the curriculum itself.

The absence of a significant critique should not be misinterpreted as an endorsement. I recognise that the theories of language, learning and cultural ideology underpinning the National Curriculum in Wales have a significant impact on the achievement of minority ethnic pupils and on the opportunities available for productive additional language development. However, in this study I do not aim to ‘rethink’ the pedagogies or ‘reconstitute’ a curriculum for additional language or literacy development in the thorough-going way advocated by Cope and Kalantzis. Rather I am seeking to address a present need, based on the premise that whatever curriculum is worked to, whatever subjects are studied, and whatever lesson objectives and outcomes are prescribed or chosen, teachers need to **plan** constructively for additional language development if EAL pupils are to progressively extend, expand and refine their English language resources to meet curriculum goals - the process cannot be left to happen ‘naturally’.

1.6.5 Computer-assisted corpus analysis

Throughout the thesis, points are illustrated by examples and findings from a computer-assisted analysis of the text of the statutory KS3 national curriculum orders for Wales (2000) carried out to inform the study about the roles and purposes of language use in the service of teaching, learning and assessment goals.

Mohan (1986) suggests that an approach to planning integrated language and content learning should be constructed through an examination of “language and learning across the whole curriculum” (Mohan, 1986: 7). He points out that **subject curricula** contain the thinking processes and learning activities which constitute the educational objectives of the curriculum (Mohan, 1986: 91). The curriculum therefore serves as a

source of reference, a starting point for planning. The national curriculum orders are the statutory basis for planning the content of schemes of work and lessons in maintained schools and they contain educational objectives detailing subject content knowledge, thinking processes and expected pupil learning behaviours. In order to tailor learning activities and language models to the needs of individual pupils, teachers will have to consider other information sources as well, but the statutory orders are the one common source of information that all teachers will refer to and be familiar with. In order to get an overview of the roles and purposes of language in the service of the published curriculum goals across the curriculum, a textual analysis of the orders seemed the most productive approach to adopt⁴.

This approach contrasts with more ethnographic approaches, based on the recording of real instances of language use in classroom contexts. An ethnographic approach was not followed in this study for a number of reasons.

Firstly, the task of **recording and transcribing sufficient data** to analyse pupils' language use in response to demands across the curriculum is far greater than the scope of this study could accommodate.

Secondly, a more manageable sample size of selected examples, drawn from a limited number of subject learning contexts would **not yield the kind of overview** of the purposes of language use **across the curriculum** that can be gained from analysis of the orders.

Thirdly, the kind of **language used by pupils in classrooms** does not necessarily reflect the kind of language EAL pupils need to learn for academic purposes. Peers do not always provide suitable models of academic language use that EAL pupils need to develop their academic language resources. Indeed, teachers do not always do so either, which is why there is a need to examine an approach which could assist teachers in choosing suitable models of language, which are appropriate for meeting

⁴ Note that the corpus analysis in this study is not a conventional Hallidayan analysis used for identifying the semantic and lexicogrammatical constituent relations in text from an SFL perspective. It is a computer-assisted deconstruction of the wording of the NC orders to clearly identify the prescribed goals of the curriculum and the roles and purposes of language use indicated within them. A few examples from the NC text are used in the thesis to illustrate SFL constituent analyses and linguistic features but the main corpus database is used to provide examples of curriculum goals and demands.

curriculum demands, and which can be differentiated to the varying levels of linguistic and cognitive resources of different learners.

Lastly, the aim of the thesis is to **support planning**, and planning takes place **in advance** of the lesson, when teachers consider the intended objectives and outcomes of an upcoming lesson and devise activities to achieve them. Such planning can only be based on the information available to teachers at the time, which does not include information arising spontaneously in the day-to-day interactions of the interpersonal exchanges of the classroom. These exchanges can and should be used to modify language choices, adapting to pupils' immediate needs, but it is my contention that both planned and unplanned opportunities can be made more productive by teachers having a clear idea of what language pupils should be aiming for, working towards it through scaffolded interactions.

So, whilst I acknowledge that the orders do not account for every type of language use that takes place across the curriculum and that there is some empirical distance between the planning of lessons based on statutory national curriculum goals and the actual language that pupils use in the classroom, this study seeks to demonstrate how, by adopting a functional approach to planning, it is possible to use contextual information, such as that derived from the curriculum orders, to move closer to the language choices that need to be made.

For these reasons, a text-based corpus analysis was selected rather than a more ethnographic approach. The most effective way to carry out textual analysis on a corpus of this size is to use the assistance offered by computer software. Although the process of text preparation needed prior to analysis is time-consuming (See Appendix D), the analytical capacity of software makes it much easier to compare different elements of text across and within the whole corpus, revealing patterns of data that would otherwise be very difficult to determine.

CHAPTER 2

The Education Context

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The Education Context

2.1 Additional language development in Wales: a matter of effective planning

In this chapter, I provide an overview of the situation of minority ethnic additional language learners in Wales and the provision offered for meeting their needs.

In section 2.2, I describe a brief general picture of historical migration to Wales and the extent of diversity and distribution of ethnic minorities.

In section 2.3, I outline the bilingual nature of the education system in Wales and mention some of the issues around classification of pupils learning additional languages in different language-medium schools.

In section 2.4, I examine recent statistics and research findings on educational attainment and ethnicity which show a correlation between level of proficiency in English and level of attainment.

In section 2.5, I discuss the evolution of the nature and structure of the National Curriculum for Wales, explaining some of its statutory requirements and the demands it places on EAL pupils, as well as the entitlements it affords.

In section 2.6, I provide an account of educational support and provision offered to EAL pupils in Wales, funded in part by Section 11 and latterly by the Ethnic Minority and Minority Ethnic Achievement Grants. I make reference to some of the issues of debate relating to the location, status and orientation of additional language support, and I describe the range of support models currently adopted in Wales.

In Section 2.7, I consider the matter of planning for progressive additional language development, highlighting the role of the teacher, at the planning stage, in identifying and selecting models of language which are appropriate to meet both the demands of the curriculum and the language development needs of pupils. I propose a model of negotiation to illustrate the kind of process that needs to be undertaken to promote integrated subject learning and language development.

In section 2.8, I conclude that for teachers to plan effectively for EAL development in the KS3 curriculum in Wales, they need to understand the relationship between Context and Text and to know what kind of information they need to gather in order to choose appropriate language resources for modelling.

2.2 Migration and diversity in Wales

Wales has a long history of ethnic, cultural, religious and linguistic diversity from its earliest Stone Age peoples, through the various Celtic tribes, Romans, Vikings, Anglo-Saxons and Normans, to the many Irish, Jewish, Roma Gypsy and continental European people who made Wales their home prior to the 20th century. During the last hundred years or so, this diversity has continued to be enriched by people from many other countries around the world.

The geographical distribution of different ethnic groupings in Wales is largely a result of historical, political, economic, familial and social factors influencing settlement patterns. For example, in the past many Somali and Yemeni merchant seamen settled around the Docks areas of Cardiff and Newport; Italians set up temperance bars, cafes and ice-cream parlours in the Valleys of South Wales (Williams, Evans and O'Leary, 2003); and Bangladeshis who came to the country during the 1960s and 70s have been joined later by other family members. More recently, Filipino medical staff have come to work in Welsh hospitals and skilled migrant workers from European Accession countries have moved to towns and cities right across Wales to take up employment. Asylum seekers and refugees fleeing persecution, environmental catastrophes and war in their countries of origin have also been dispersed more widely around Wales.

Throughout the years, many people from different racial and ethnic backgrounds have integrated with existing Welsh communities, mixed socially and established relationships. In the 2001 National Population Census, the 'Mixed' category for racial/ethnic classification was the second largest minority grouping in Wales after 'Asian' (ONS, 2004), and 2008 school census figures (Appendix B), show it is the joint largest minority grouping along with 'Asian'. These figures suggest a high level of social mixing and acceptance between people of certain communities. However, others moving into Wales have found it more difficult to integrate with Welsh society, some experiencing considerable discrimination and inequality (Scourfield et al, 2002). Many migrants have retained aspects of their original cultural, religious and linguistic heritages, passing them onto their children and enriching the diversity of Welsh culture and society. Others have lost many aspects of their ancestral heritages, including their heritage languages.

The largest visible minority communities have become established in the large towns and cities of south Wales. Although most multiethnic communities in Wales comprise people from a wide range of different backgrounds, and demographics are constantly changing, some communities have a predominant minority grouping such as those of Bangladeshi heritage in Swansea or Pakistani heritage in Newport (WAG, 2007a). Cardiff has the greatest diversity of ethnic groupings and the largest populations for most minority ethnic groups (Appendix B).

2.2.1 Diversity in schools

Altogether, approximately 26,500⁵ children and young people from a wide range of ethnicities other than White British/Welsh are represented in the school population of Wales (WAG, 2009b), bringing many aspects of diverse cultural, linguistic and religious heritages to their schools and communities.

Figures for 2008 (WAG, 2008c, Appendix B) indicate that pupils from all of the major racial/ethnic groupings used in the Census attend schools in almost all of the Welsh Assembly constituencies. The least diverse area is Dwyfor Meirionydd in West Wales where only 0.9% of the school population are of non-white British/Welsh background. Cardiff Central has the greatest diversity with more than 22% of pupils being of non-white British/Welsh background⁶.

Many children and young people in these communities learn languages other than English and Welsh from birth. In Cardiff, at least 140 different first languages and dialects are used by pupils (unpublished 2009 data obtained from Cardiff LEA).

⁵ This figure is drawn from the Pupil Level Annual School Census 2008/09. However, the ethnicity of all children and young people in Wales is not yet accurately recorded in PLASC. Figures submitted by LEAs for Minority Ethnic Achievement Grant submissions in 2008 indicate that the figure is closer to 27,500.

⁶ No collated national statistics are available for minority ethnic or EAL pupils at KS3.

2.3 Wales' bilingual education system

The education system in Wales is officially bilingual. There are English-medium, Welsh-medium and bilingual English-Welsh schools. In bilingual schools, the balance of how much of the curriculum is taught through English or Welsh varies between schools (Redknapp *et al*, 2006). At KS3, all state schools follow the same national curriculum, as written in English or in Welsh. Within the prescribed curriculum constraints, there is scope for each school, subject department and teacher to exercise some degree of choice over the specific content chosen to teach aspects of each curriculum subject. This provides some leeway for differences in the depth or extent to which schools develop cross-curricular dimensions such as the Curriculum Cymreig (integrated content specifically oriented to aspects of Wales, Welsh culture and Welsh identity) or of cultural diversity.

Apart from local variation within subjects, the most significant curriculum level difference lies in the teaching of Welsh as a **First** or as a **Second** Language as a timetabled subject. Schools with a proportion of pupils whose first language is Welsh, or who are quite proficient in Welsh, may choose to teach Welsh as a **First** Language at a level equivalent to that of the English subject. Schools with a majority of pupils whose first language is English, and who are not proficient in Welsh, usually choose to teach Welsh as a **Second** Language at a level similar to that of a Modern Foreign Language. Schools can choose to teach both. For example, some bilingual schools run Welsh and English language 'streams', where some pupils study Welsh as a First Language and some or all of their curriculum subjects through the medium of Welsh; and other pupils study Welsh as a Second Language and most or all of their curriculum subjects through English.

The officially bilingual status of Wales and its bilingual education system presents a unique set of challenges for additional language learners. At whatever age they start their life in Wales, pupils whose first languages are neither English nor Welsh will have to learn **two new** languages⁷ in addition to their existing repertoire⁸. The curriculum will

⁷ In secondary schools, they also need to learn a Modern Foreign Language (MFL). Although the knowledge gap between them and their first language peers in relation to the MFL is likely to be much smaller, they may still be at a disadvantage because the MFL teacher may use English or Welsh to explain and clarify aspects of the MFL. However, more proficient additional language learners may be at an advantage because already being bilingual assists the learning of new languages.

⁸ Essentially, they are becoming trilingual or multilingual, not just bilingual, in order to meet the demands of their daily life at home and at school.

be taught through one or both of these languages and, in many cases, there will not be a teacher who can speak the child's home language to interpret and explain what they do not understand.

Although bilingual teaching assistants are employed in the large cities, offering support in several minority languages, there are few available to work with pupils in other areas. Most bilingual assistants work in primary schools rather than at KS3. In most secondary schools, the pupil's home language will not be spoken by the majority of other children and young people and it will not be supported through extensive use in public arenas outside school or in the media. Only with same-language friends, family and in certain community settings will opportunities exist for first languages to be developed.

In English-medium schools, pupils from abroad and those of minority ethnic backgrounds whose first language is neither English nor Welsh are officially described as learning English as an Additional Language (EAL). However, this term does not recognise the fact that small but increasing numbers of such pupils attend Welsh-medium and bilingual schools where they need to learn both English **and** Welsh as additional languages for learning where part or all of the curriculum is delivered through the medium of Welsh. The term EAL does not recognise that all pupils, in all mediums of school, are learning both English and Welsh, either as a medium of instruction or as a curriculum subject. There is, therefore, a difficulty with definitions of additional language development in Wales.

Discussions around the potential use of the term Welsh as an Additional Language (WAL) or English and Welsh as Additional Languages (EWAL) are complicated by three main factors.

The first is that Welsh language support for **all** learners whose first language is not Welsh is predominantly funded by the Welsh Language Board. EAL support is funded by the Minority Ethnic Achievement Grant (MEAG) based on a formula that includes pupils' levels of proficiency in EAL. This bureaucratic distinction means that matters of pupil entitlement and funding for language support in **both** languages would need to be resolved before the adoption of a unifying term such as EWAL.

The second is that support for each language draws upon different professional discourses and pedagogies. Therefore, considerable dialogue would be needed before a coherent concept of EWAL development, and agreed good practice in supporting EWAL development, could be negotiated.

The third is the potential confusion between the terms Welsh as a Second Language and Welsh as an Additional Language. The former is used to refer to both minority and majority ethnic pupils whose first language is English or any language other than Welsh. The latter would only be used to refer to minority ethnic pupils whose first language is neither English nor Welsh. These matters require resolution in order for a more coherent professional discipline of additional language development in Wales to be advanced.

Currently, there is very little robust data or research on minority ethnolinguistic pupils attending Welsh-medium and bilingual schools. The majority of additional language learners in Wales attend English-medium schools (WAG, 2003) and, although they will be taught Welsh as a Second Language as a discrete curriculum subject, the rest of the national curriculum will be taught through the medium of English. Consequently, this thesis addresses the development of **English** as an Additional Language⁹.

⁹ The underlying principles and conclusions of the study concerning the purposes of language use in the National Curriculum in Wales, and the relationship between Context and Text, may be extrapolated to 'Welsh as an Additional Language'. However, the substance of the language analysis in chapter 4 is based around the structure of English, so a comparative study would be required to take account of the differing nature and structure of the Welsh language and make it directly relevant.

2.4 Ethnicity, language proficiency and attainment

The link between ethnicity, language proficiency and attainment is important to this thesis because any correlation between them that reveals underattainment of EAL pupils in Wales would suggest there is a need for more effective language development support¹⁰. Whether the causal relationship is presented as a deficit located in the EAL pupil or as a failure of the assessment system to take account of pupils' bilingualism and genuine academic potential, the raw outcomes of officially recognised qualifications have an impact on pupils' chances to pursue Further and Higher Education or to gain access to certain professions and careers. Realising their own personal academic potential through English, and reaching parity with their peers in education outcomes whilst at secondary school, are therefore significant for their future success (Schleppegrell and Colombi, 2002: 4). For these reasons, the need for EAL pupils to progress quickly towards academic proficiency in English through KS3 is considered as essential in this thesis.

2.4.1 Patterns of attainment outcomes by ethnicity

Recent figures show clear disparities of education outcomes in the grouped attainments of pupils of different ethnic backgrounds in end of key stage statutory assessments and GCSE examinations (WAG, 2003a; NAFW, 2006a; WAG, 2006a, 2006b and 2006c; WAG, 2008a; WAG, 2009; Appendix C).

The study by the English as an Additional Language Association of Wales (EALAW) (WAG, 2003a), Pupil Level Annual School Census (PLASC) data for 2005 – 2007 (NAFW, 2006a; WAG, 2006a and 2006c; WAG, 2008a; WAG, 2009; Appendix C) and an analysis of a sample of minority ethnic students in secondary schools in Wales (WAG, 2006b) found that, when grouped by ethnicity, figures for White British, Chinese, Indian and Mixed White/Asian heritage pupils were generally on or above the national average in the Core Subjects, although there were differences between key stages, with Chinese heritage pupils having the highest figures overall.

¹⁰ Attainment data matched with EAL is not available through PLASC in Wales, as it is in England. Raw figures for numbers of EAL pupils at different stages (1-5 on the all-Wales model, Appendix A) are currently collected directly from LEAs for MEAG applications. The collection of EAL stage data through PLASC is currently being piloted (Estyn, 2009: 8). Therefore, a degree of extrapolation is needed to interpret ethnicity data in relation to EAL, where certain groupings are likely to have higher proportions of EAL pupils compared to others.

The percentage of pupils of Black Caribbean heritage attaining the expected levels generally declined through each key stage compared to other groupings until, by KS4, their figures were well below the national averages. The majority of Black Caribbean heritage pupils in Wales speak English as their first language. Although some may use dialectal variations related to Patois and Creoles, language development concerns are not generally as marked for this grouping, which points to other factors impacting on their underattainment.

Percentages of pupils of Pakistani, Bangladeshi, Somali and Yemeni heritages were well below national averages across all key stages but with varying gaps between these groupings. The majority of pupils from these four groupings are those for whom English is an additional language. With some variation by key stage, the lowest proportions of pupils attaining the Core Subject Indicator (CSI) overall were Black African, Mixed White/Black African or Caribbean and Bangladeshi (WAG, 2006b and 2006c; WAG, 2008a; WAG, 2009; Appendix C).

According to latest available figures (WAG, 2009; Appendix C), the underattainment gaps in English, Mathematics, Science and the CSI between the Black African (predominantly Somali) and Bangladeshi ethnic groupings compared to national averages **increase** between KS2 and KS3 by an average of 4.8% and 2% respectively. The figures for the 'Other ethnic group' category, which includes Yemeni heritage pupils, indicate an increase in the attainment gap by an average of 1.5% between KS2 and KS3. Figures for the Pakistani ethnic grouping, whilst narrowing slightly by 1.2% are still behind the national figures by an average of 4.4%. These figures clearly indicate that KS3 is a crucial area of concern for many EAL pupils in Wales.

Many different factors can impact on pupil attainment including family poverty, parents' levels of education and literacy, pupils' prior education experience, low teacher expectations, racial and religious discrimination and undifferentiated curriculum provision (Ofsted, 1999; Gillborn and Mirza, 2000; WAG, 2003a; DfES, 2005; WAG, 2007a); but one of the most significant and constant factors impacting on EAL pupils is their 'level of proficiency' in the languages of education.

2.4.2 Additional language proficiency and attainment

The EALAW study (WAG, 2003a: 16) found a highly significant association between the levels of proficiency in EAL and attainment in curriculum tests and examinations in English-medium schools. This association reveals a clear correlation between **higher levels of proficiency** in English and **higher attainment**.

In England, DfES analyses (DfES, 2005; DfES, 2006) have found that, on average, EAL pupils have lower attainment than pupils whose first language is English although the gap in attainment narrows between KS1 and KS4 (DfES, 2005: 13; DfES, 2006: 61). Value-added results also show that EAL pupils make better progress than English first language pupils over time although many make insufficient progress to close the attainment gap altogether by the end of KS4. This progress is attributed to an increase in their proficiency in English:

... their relative improvement is likely to be due to their increasing fluency in English, allowing them to start to narrow the achievement gap by improving at a faster rate than other pupils with similar prior attainment. (DfES, 2005: 11)

In addition to those pupils who have had the opportunity to go through the education system in Wales from an early age, allowing value-added progress comparisons between pupils with 'similar prior attainment' (DfES, 2005: 11), there are many individuals who arrive late into the education system with varying levels of proficiency in English, varying levels of literacy in their home languages and varying experiences of previous formal education. The older such pupils are when they enter the school system, and the greater the disparity is between their linguistic resources or educational experiences and those of their peers, the greater their need is likely to be to catch up rapidly in terms of both English language development and curriculum learning. At KS3, where the language demands of the curriculum begin to extend towards more academic language use, the challenges facing such EAL pupils can be considerable, and teacher intervention will almost certainly be needed to help them to develop their English language quickly.

2.4.3 Time taken to reach parity and most effective pedagogy

The EALAW study found that, in Wales, the average EAL pupil takes a **minimum** of 7-10 years to move from Stage A (beginner) to Stage E (proficient), depending on their age and background, but that some pupils do not reach Stage E before they leave school (WAG, 2003: 17). Cameron et al (1996) suggest that many EAL pupils remain at the stage of 'Becoming confident as a user of English' for most of their time spent in secondary school education.

Schleppegrell and Colombi express concern about pupils who do not receive the most appropriate support for language development:

“Students who are learning English as a second language are at great risk of school failure, as research suggests that with current practice it takes students many years to develop the advanced literacy skills that enable them to do grade-level work in English (Collier, 1987). Many ESL students spend years in classrooms where they are expected to *pick up* English through immersion; losing valuable time in which they could be developing language skills through structured opportunities to learn the genres and registers that are important for school success.” (Schleppegrell and Colombi, 2002: 4)

Studies (Thomas and Collier, 2002; Baker, 2001) have found that strong bilingual education programmes can reduce the amount of time it takes for pupils to reach parity with their native-English speaking peers, suggesting that the pertinent question is not ‘How long does it take EAL pupils to learn English?’ but ‘What is the most effective way of helping EAL pupils to learn English?’. The differences in outcomes between the programme models in the US point to the significance of getting the pedagogy right.

Such bilingual programme options for being taught the curriculum through both English and a minority language **other than Welsh** are not currently available in Wales and may not be very feasible because of the diversity of languages found in Welsh multilingual communities. Current political concerns about racial segregation and community cohesion also reduce the likelihood of such models being implemented to any great extent in Wales. Whilst approaches that support the bilingual or multilingual development of EAL pupils in schools must be encouraged, in a majority of situations intervention support from teachers will only be available through the medium of English. Therefore, the most effective ways to help EAL pupils at KS3 develop their English language resources need to be identified and promoted.

2.4.4 Summary conclusion

Although research findings indicate that English language proficiency is not the sole factor in determining the levels of attainment of minority ethnic pupils, it is highly significant for EAL pupils. Current attainment figures and the slow rates at which attainment gaps are narrowing, or even increasing between key stages, remain a cause for concern in relation to several minority ethnic groupings with high proportions of EAL pupils. Targeted support, using appropriate approaches for raising achievement and promoting English language development, is needed to enhance progress. The limited availability of minority language bilingual education support and the location and multilingual nature of many of Wales' local communities mean that most teachers will teach only through English. Therefore, approaches are needed which maximise the opportunities for developing proficiency in English.

2.5 The National Curriculum in Wales: entitlements and requirements

As much of this thesis concerns the demands placed on EAL pupils by the statutory curriculum, in this section I will spend some time discussing the national curriculum orders, their structure, substance and impact on EAL pupils in schools. I will also illustrate some of the distinctions between England and Wales, as the various revisions in 1995, 2000 and 2008 have led to greater diversification between the curricula of the two nations.

2.5.1 The 1989 national curriculum

The 1988 Education Reform Act (ERA), which led to the establishment of the 1989 national curriculum, provided a legal entitlement for EAL pupils, along with **all** other pupils, to a broad and balanced education. The ERA also authorised the setting up of the Curriculum Council for Wales (CCW) as an independent body to give advice to the Secretary of State for Wales and provide guidance and support to teachers in implementing and developing the National Curriculum in Wales (CCW, 1992).

The first series of statutory national curriculum orders were produced for both England and Wales, with the only differences relating to the teaching of Welsh. The orders comprised programmes of study and associated assessment schemes for each of the three core subjects in England: English, Mathematics and Science; with Welsh as a fourth core subject in schools in Wales where Welsh was used as a medium of education; and one for each of the seven foundation subjects in England: History, Geography, Design Technology, Music, Art, Physical Education and a Modern Foreign Language; with Welsh as a Second Language as an eighth foundation subject in English-medium schools in Wales (Cox, 2000). Cox points out the inclusion of Welsh as an additional subject meant that “the curriculum load imposed by the NC is significantly greater in Wales than in England” (Cox, 2000: 68) although it was not made a compulsory subject for all key stages until the late 1990s.

Phillips and Sanders (2000) also note how the CCW approached the national curriculum from a slightly different perspective than the National Curriculum Council (NCC) in England but, at this time, other than the inclusion of Welsh as an additional

subject, and the provision of guidance on developing a Curriculum Cymreig (CCW, 1993), the approaches to implementing the national curriculum adopted in Wales were very similar to those in England.

The Programmes of Study were organised around areas of learning which constituted the targets of pupil attainment. These reflected a strong bias towards teaching a centrally prescribed body of subject content knowledge, leading to a description of the curriculum as ‘content-driven’. Assessment was carried out with reference to discrete learning objectives or ‘statements of attainment’ which defined what pupils were expected to do to demonstrate their achievement at each level. Some statements were illustrated with non-statutory examples (Figure 2.1). For instance:

Figure 2.1 Example statements of attainment from the 1989 English order.

Statements of Attainment	Example
Pupils should be able to:	
<ul style="list-style-type: none"> Participate as speakers and listeners in a group engaged in a given task 	<i>Compose a story together; design and make a model; assume a role in a play activity</i>

(English Attainment Target 1: Speaking and Listening, Level 2)

<ul style="list-style-type: none"> begin to revise and redraft in discussion with the teacher, other adults, or other children in the class, paying attention to meaning and clarity as well as checking for matters such as correct and consistent use of tenses and pronouns 	
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(English Attainment Target 3: Writing, Level 3)

The statements of attainment in all subjects were arranged in ten levels intended to track pupils’ progress from the start of their education to the end of KS4. Over time, pupils were expected to progress through the levels as they got older and as their knowledge, understanding and skills developed. By KS3, teaching and learning was expected to build upon all the work from previous key stages and extend beyond it, therefore making the demands of KS3 more substantial than earlier key stages – including the requirement to use more standard, grammatical English.

The **'typical' pupil** was expected to move up one level approximately every two years (DES, 1991). The progression was based on notional norms of age-appropriate attainment predicted for **'typical' native-English speakers**, not those who were learning English as an additional language. This significantly disadvantaged EAL pupils who did not start learning English as their main language of communication until they started school, or who arrived later into the system and so had not followed the curriculum all the way from the start of KS1.

The national curriculum orders were also shaped by ideological discourses, strongly influenced by political intervention. These particularly affected the choice of subject content which teachers were required to teach, the majority of which was British- and Euro-centric (Andrews, 1994). So whilst the entitlement provided by the ERA for EAL pupils to follow the same broad and balanced curriculum was welcome on **equality** grounds, the implicit assumption that the curriculum needs of minority ethnic pupils were the same as those for all other pupils, was less helpful.

“monolingual assumptions and a view of a multilingual, multicultural society which is founded on the idea that minorities should be assimilated into the majority language and culture continue to prevail, even if inexplicitly and in a generally undertheorised way.” (Carter 1995: 93)

The significant absence of reference to diversity in the first curriculum was a matter of particular concern to those working with minority ethnic pupils whose identities and heritages were largely invisible¹¹. Within this fairly rigid, largely 'monocultural' framework, EAL pupils were less able to 'demonstrate their achievement' compared to their peers.

The National Curriculum orders formed the statutory basis for all planning within the curriculum leading to the design of schemes of work, modules and units, all directed towards meeting the statutory requirements. Teaching and learning activities were designed to meet those goals, and textbooks and published resources were written to support curriculum teaching, drawn from the common framework.

¹¹ This is a significant dimension of promoting motivation, engagement and achievement in education and is part of the broader Equalities and Inclusion agenda but cannot be explored here in any greater depth. (See Cummins, 1996; Coelho, 1998; Blackledge, 2001 and Richardson, 2004.)

2.5.2 The 1995 revision of the national curriculum orders

The first version of the national curriculum faced a great deal of criticism and in the face of “overwhelming evidence of unmanageability” (Cox, 2000: 67), and following lobbying from teaching unions and the boycotting of statutory tests in 1993 (Poulson et al, 1996: 34), the recommendations of the Dearing Report (Dearing, 1994) in England, and the CCW Report (CCW, 1993 cited in Cox, 2000: 67) in Wales, led to a remodelling of the curriculum to a more reduced form in 1995. Some elements of the prescribed subject content detail were removed, the ten assessment levels were reduced to eight (plus an extra level for exceptional performance) and the statements of attainment were amalgamated into paragraphs which allowed assessment to be based on more global, ‘best-fit’ judgements of pupils’ performance.

Although Wales was still subject to education legislation for England and Wales, the curriculum authority (CCW) and inspection body (OHMCI) had the freedom to ‘depart’ from English policy to some extent under the principle of local variation (Cox, 2000; Phillips and Sanders, 2000). This was evidenced in some of the orders of the revised 1995 curriculum (e.g. Music, Art, History and Geography) which reflected a more explicit Curriculum Cymreig (CCW, 1993) in their content prescriptions and, as Phillips and Sanders (2000: 15) suggest, reflected a slightly more European ideology. Some of the orders for both England and Wales included more references to culturally diverse content.

The Dearing Report (Dearing, 1994) also recommended a renewed focus on ‘basic skills’ which led ultimately to the development of the National Literacy Strategy in 1998 and the statutory Literacy Hour. This strategy, developed in England, was not made compulsory in Wales. Instead, the Inspectorate (OHMCI) issued guidance welcoming the adoption of elements of the strategy but on the basis of local discretion¹² (OHMCI, 1998). Consequently, no **national frame of reference** for conceptualising language and literacy development in Wales has been devised. In England, guidance has been developed on implementing and adapting literacy approaches for EAL pupils but in Wales the absence of a centralised lead has meant that no similar guidance was produced for teachers in Wales.

¹² In 2000, Estyn (2000b) published guidance for LEAs with recommended good practice for raising standards of literacy but each LEA was left to draw up their own ‘local’ strategy.

2.5.3 The 2000 revision of the national curriculum orders

In 2000, the curriculum was revised again although the overall structure of the Programmes of Study and Attainment Target Level Descriptions remained largely unchanged. The curriculum remained content-driven. However, this time there was a greater divergence between the sets of orders produced for England and Wales. Much of the core content inherited from the earlier versions was retained in both, but the orders for Wales contained less detail in their prescriptions and reflected a stronger Curriculum Cymreig¹³. Increased references to diversity, equality and meeting the needs of EAL pupils in the orders for England were not reflected to the same extent in the orders for Wales, but an introductory section in each subject order on 'Access for All Pupils' included the following statement:

"Appropriate provision should be made for pupils whose first language is not English or Welsh." (ACCAC, 2000a: 4)

Without any official guidance to support this statement, developing good practice in meeting EAL pupils' needs within the curriculum has been left largely to the initiative of LEA advisers, minority ethnic achievement support services and individual schools.

2.5.4 The 2008 revision of the national curriculum – a skills-focused curriculum

At the time of writing this thesis, a new revision of the National Curriculum has been developed and introduced in September 2008. This revision indicates a departure from the previous content-driven curriculum models which have prioritised a body of knowledge to be taught as the main organising factor in planning, towards a model which prioritises skills. All subject orders follow a consistent format with the Programmes of Study divided into two sections: Skills and Range. The phrase 'knowledge, understanding and skills', from earlier versions, has been rewritten as 'skills, knowledge and understanding' and in all subjects the Skills section now **precedes** the Range. In this way, teachers are expected to use Skills as the organising factor in planning, developing the Skills **through** the Range of subject content.

¹³ The corpus analysis of curriculum orders carried out to support this thesis was based on the 2000 orders. More detail of their structure and substance is contained in Chapter 3, Research Methods.

Many of the statements that define subject Skills are similar or identical to those in the 2000 orders e.g.

“Pupils should be given opportunities to:

1. select, recall and organise historical information with increasing independence and accuracy” (ACCAC, 2000a: 11 and WAG, 2008b: 15 KS3 History: Organisation and Communication).

Others have been reduced or made more specific. The subject content requirements described in the Range have also been reduced and made less prescriptive in most subject areas. Thinking, Communication, ICT and Number are defined as distinct sets of skills in a separate Skills Framework (WAG, 2008a) and at the start of each subject order. The foregrounding of skills is intended to draw more attention to the importance of adapting teaching to the various skill levels of children in a class. The reduction of prescriptive detail of subject content is intended to give teachers greater flexibility in the choice of subject matter through which they can teach the skills.

In the introduction to each of the revised 2008 National Curriculum Orders, pupils’ educational entitlement is reiterated (WAG, 2008b: 5), and a statement on ‘Including All Learners’, which replaces the ‘Access for All Pupils’ statement in the 2000 version, makes the most explicit references to minority ethnic EAL pupils in any of the curriculum orders to date:

Schools should develop approaches that support the ethnic and cultural identities of all learners and reflect a range of perspectives, to engage learners and prepare them for life as global citizens. (WAG, 2008b: 4)

For learners whose first language is neither English nor Welsh, schools should take specific action to help them learn both English and Welsh through the curriculum. Schools should provide learners with material that is appropriate to their ability, previous education and experience, and which extends their language development. Schools should also encourage the use of learners’ home languages for learning. (WAG, 2008b: 4)

These statements support the revised Qualified Teacher Status (QTS) standards (NAfW, 2006b) for Wales which now make clear references to supporting minority ethnic and EAL pupils. For example, in order to gain QTS, trainee teachers must achieve the following standards:

“...take account of and support pupils’ varying needs so that girls and boys, from all ethnic groups, can make good progress.” (Standard S3.1.2, NAfW, 2006b: 16)

“...begin to analyse the language demands and learning activities in order to provide cognitive challenge as well as language support.” (Standard S3.2.5, NAFW, 2006b: 17/18)

“...support those pupils learning English or Welsh where this is the language in which they are being taught and is different from the language or form of language of their home, with the help of an experienced teacher where appropriate.” (Standard S3.3.5, NAFW, 2006b: 21)

The successful implementation of these obligations, and those in the orders, will depend largely on the level and quality of training provided by Initial Teacher Training (ITT) institutions, LEAs and schools for trainee teachers, Newly Qualified Teachers (NQTs) and for qualified teachers engaged in Continuing Professional Development (CPD).

2.6 Additional language support and funding in Wales

During the past few decades, support for EAL pupils has taken different forms and been funded in different ways. In Wales, it is only since the 1990s that substantial numbers of language support specialists have been employed across Wales through Local Authority services, and only in the last decade that specialist teachers have been employed to work in all authorities advising schools or directly supporting pupils, and professional cooperation has begun to develop a professional consensus about good practice.

2.6.1 Section 11 and subsequent achievement grants

Between 1966 and 1999, funding from Home Office Section 11 was made available to local authorities in England and Wales with substantial numbers of New Commonwealth origin pupils to help them overcome 'linguistic and cultural barriers' that might hinder them from assimilating into British society (Bourne, 1989). Initially, much of this funding was used to pay for staff working in Language Units where learners were taught separately from the mainstream education provision offered in schools, often for quite long periods of time (CRE, 1986). In Wales, prior to the 1990s some Language Units operated in the major cities but most authorities were not deemed to have 'substantial' numbers of EAL pupils and did not receive Section 11 funding. A few LEAs paid for individual teachers or small teams of specialist staff out of their central education budgets to support pupils' additional language development and to offer advice to schools.

Following the Swann (DES, 1985) and Calderdale (CRE, 1986) reports, segregated classes were considered discriminatory on the grounds that they did not provide minority ethnic children with access to the full curricular and educational experiences they were entitled to. Segregated teaching was no longer officially condoned within the field of ESL/EAL. Together with the Education Reform Act (1988), these reports led to the full integration of minority ethnic pupils in mainstream schools and the majority of additional language support, specifically that funded through Section 11, was transferred to the mainstream classroom context. However, Cable, Leung and Vasquez (NALDIC, 2004) observe that even though segregated teaching 'disappeared'

from public educational discourse, in reality “off-site provision and language centres continued to operate in some areas up until at least 1992 and many secondary schools continued to utilise withdrawal classes and induction programmes to support new arrivals” (NALDIC, 2004: 6).

In the early 1990s, a small number of Welsh authorities with the largest numbers of minority ethnic EAL pupils submitted successful bids under a new Section 11 bidding system that enabled them to employ larger teams of EAL teachers and bilingual teaching assistants for several years. However, across Wales, many schools and pupils still received no specialist support, so mainstream teachers alone had responsibility for supporting their additional language learners even though few had any relevant training.

The first official report on provision for EAL in Wales, produced by Estyn (2000), identified inconsistencies in provision for EAL pupils across Wales and, in schools that had no specialist support, such pupils were “unable to receive their full curriculum entitlement” (Estyn 2000: 2). Few schools had specific procedures for dealing with racism and promoting racial equality, and mainstream teachers often had little understanding of how to meet the needs of EAL pupils. There were indications that EAL support as a profession was marginalised in Wales and that, although most support took place in mainstream classes, withdrawal to a separate teaching room was also used as a teaching strategy. Whilst the report identified that the specialist support offered was generally effective, it was clear that there was little consistency in approaches to identifying and helping EAL pupils to meet the language demands required to achieve the goals of the curriculum.

Following the closure of Section 11, the funds were moved to the School Standards section of the Department for Education and Skills (DfES) in England and to the Welsh Office in Wales (Estyn, 2000). The fund was renamed the Ethnic Minority Achievement Grant (EMAG) to reflect the targeting of support aimed at raising minority ethnic pupils’ achievement, not just developing English as an additional language or overcoming linguistic and cultural barriers (Jones and Wallace, 2001). This move was supported by evidence from studies (see Gillborn and Gipps, 1996) which revealed disparities in the achievements of minority ethnic pupils and identified a range of contributory factors impacting on attainment **in addition to** language proficiency.

In the late 1990s, recognising that governmental responsibilities for education, and the curricula for England and Wales, were diverging, a group of EAL specialists and Local Authority service heads set up a professional association called the English as an Additional Language Association of Wales (EALAW) as a sister organisation to the already established National Association for Language Development In the Curriculum (NALDIC). Its aim was to promote professional development and good practice in the field of EAL to bring greater consistency to education provision for EAL pupil across Wales.

Since devolution in 1999, the responsibility for administering EMAG in Wales has lain with the Welsh Assembly Government (WAG). However, it can be argued that a lack of experience in addressing minority ethnic achievement and EAL issues at strategic levels in government, together with dominant restoration agendas for the Welsh language and identity (Phillips and Sanders, 2000; WAG, 2003b), has meant that EAL provision and support for languages other than English and Welsh have been accorded a fairly low priority status. Official guidance for EAL in Wales has remained minimal whilst in England the Qualifications and Curriculum Authority (QCA) and the DfES (now DCSF) have produced quite extensive guidance on differentiating mainstream initiatives to meet the needs of EAL pupils.

In recent years, several factors have contributed to an increase in demand for additional language support¹⁴. Growing awareness of the need to support minority ethnic pupils' language and learning needs; more accurate reporting of numbers through ethnic monitoring; and an actual increase in numbers through dispersion of asylum seekers, European in-migration and the employment of people from abroad have all led to a marked increase in the total figures of pupils now deemed eligible for support. Recognition of this has brought about a progressive increase in funding from WAG.

In 2007, a separate grant for Asylum Seekers was merged with EMAG to form a new Minority Ethnic Achievement Grant (MEAG). MEAG currently operates as a match-funded stand-alone grant of approximately £9m divided between all 22 LEAs in Wales using a weighted formula based on figures submitted annually. Asylum seekers and early stage learners (assessed on an All-Wales 5 Stage scale, see Appendix A)

¹⁴ Demand is now also increasing in Welsh-medium and bilingual schools raising important, but as yet unanswered, questions about equivalent support for English and Welsh Additional Language (EWAL) provision.

receive higher weightings to ensure that funds are directed to the areas of greatest need. Several LEAs receive sufficient funds to employ teams of specialist teachers and bilingual teaching assistants. Others either buy in specialist support from other authorities or use the money to pay for staff time in schools. One or two authorities 'devolve' their LEA MEAG allocation to schools. Some LEAs also manage to access other external funding sources to support projects targeted at raising achievement but the demand for support seriously outstrips supply.

2.6.2 Models of support provision in the field of EAL

In endeavouring to meet the needs of minority ethnic additional language learners and in utilising EMAG/MEAG funding in both England and Wales, one of the biggest areas of debate is over which model of support provision to adopt. During the past four decades, various models or orientations have been adopted in the provision of support for ESL/EAL (see Davison in Mohan, Leung and Davison, 2001: 59 and Leung, 2003: 4-6 for detailed overviews). Broadly speaking, the models are characterised by three interlinked elements: the **location** of provision, the **orientation** or balance between subject content and language, and the type of **methodology**.

The main debate about **location** has centred around whether or not to withdraw children from mainstream classrooms to teach them separately. Withdrawal allows language support teachers to focus more specifically on the individual or small groups of children and gives them greater control over the subject matter and language used.

However, since the Calderdale Report (CRE, 1986) deemed segregated teaching to be discriminatory, mainstream integration with in-class language support has been promoted by many as the model of best practice (Bourne, 1989; Bourne and McPake, 1991; Clegg, 1996). Often, in-class support takes the form of 'at the elbow' assistance, with teachers or bilingual assistants rephrasing and explaining things that pupils do not understand or helping them construct appropriate language to meet the demands of a lesson. At times though, particularly with beginners, this has become a kind of withdrawal in the classroom where a child or group of children are involved in a social interaction with the support teacher that is largely separate from the learning activities of the rest of the class.

The argument about the **orientation** of subject content and language in teaching has been strongly influenced by theories of language and learning and by the choice of teaching location. A traditional view of language as an abstract rule-based system suggests that language can be taught intensively as a subject by focusing on groups of words, graded grammatical structures and sentence patterns that exemplify the rules of syntax. This approach has been used for many years in foreign language teaching but it can only be done effectively where the choice of language focus takes priority over subject matter. In withdrawal, greater control over the language focus can be exerted by the teacher.

The theory that learners can acquire an additional language by being immersed in the target language has added support to the practice of mainstream integration. However, in mainstream classrooms, where lessons are driven by national curriculum subject learning goals, the language focus is much more difficult to control, or to adapt to the level of the learners. The language demands of mainstream class lessons arise out of the learning activities based on the subject matter rather than from a pre-chosen set of language items. They are often unpredictable. The language used by class teachers and expected of pupils is often pitched at the majority of the class with assumptions about their linguistic capabilities based on native-speaker norms (Harklau, 1994). This can result in a tension between the teaching of subject 'content' and the teaching of 'language'. Teachers have also observed that many older additional language learners become 'submersed' rather than 'immersed' in a language that they do not understand, which can result in demotivation and lack of learning. As a result, most of the work on EAL pedagogy over the last two decades has aimed to find ways of integrating subject content and language learning without compromising either.

The debate about **methodology** is closely linked to both location and language-content orientation. Since the evolution of Communicative Language Teaching many additional language teachers have concentrated on trying to create language-rich environments where communication is a significant part of the lesson, whether in withdrawal or in class.

For mainstream integration, child-centred methodologies and Krashen and Terrell's (1983) Natural Approach have shaped approaches by promoting collaborative, interactional learning where 'natural' communication between first and additional

language learners can take place. Clegg (1996) even suggests that the mainstream classroom is the ideal location for additional language development if the methodology can be made appropriate. In trying to achieve this, specialist language teachers have often had to challenge traditional transmissional approaches used by class teachers, particularly in secondary schools, but this entails their involvement in both planning and delivery. For this reason, partnership teaching has been advocated as the best practice model for teachers (Bourne and McPake, 1991).

However, partnership teaching has often been frustrated by limited time for liaison and joint planning between mainstream and specialist teachers, particularly in secondary schools. This will remain a problem unless timetabled space is created for planning.

It has also been hindered by the need for widespread peripatetic support and by a general marginalisation of 'additional language support'. According to Creese (2004: 200), 'fully fledged cooperative relationships' are rare. In-class support work is not often seen as 'real teaching' (Creese, 2004: 193) and is subordinated beneath subject teaching agendas.

In the worse case scenario the curriculum support role played by the EAL teachers becomes part of the picture of deficit, not because what the EAL teacher is doing is intrinsically unhelpful but because there are other educational discourses and agendas more dominant in classroom life. (Creese, 2004: 191).

In some cases, the subordination of additional language support beneath subject teaching agendas has redirected support teachers' attention towards supporting pupils in gaining access to curriculum content (Leung, 2001) through simplifying or circumventing linguistic challenges, using undemanding language and non-linguistic means of communication rather than extending and refining pupils' English language resources in an explicit way.

In recent years, much greater emphasis has been placed on the encouragement of bilingual development within the classroom, encouraging pupils to use their first languages for learning, often supported by bilingual teaching assistants or specialist teachers. As a result, bilingual support has ceased to be merely a means of facilitating transition into English, which was its perceived role for many years under Section 11, to becoming a means to developing pupils' English, their first language and their cognitive and academic skills.

2.6.3 Models of support in Wales

In Wales, many pupils are dispersed widely in small numbers, so peripatetic support, where specialist EAL teachers visit several schools in a week, has become common practice. In these situations, temporary withdrawal from the mainstream class for intensive language-focused teaching has been quite widespread. This kind of model is less than ideal but is largely a result of the inadequate ratio of language specialist teachers and teaching assistants to EAL pupils. Recognition of this is leading some local authorities to try and use their resources more efficiently by focusing on training mainstream class and subject teachers rather than providing a teacher to spend a relatively short time with a pupil, either in class or in withdrawal.

Where numbers of pupils in a school are significant enough to base specialist staff there for longer periods of time, they usually engage in more in-class support. Often, this support is provided at the elbow of individuals in mainstream classes but in some authorities, experienced staff members manage to develop successful partnership teaching relationships.

Despite prevailing recommendations that best practice should promote full mainstream integration and collaborative partnership teaching, some secondary schools in south Wales have operated classes for new and recent arrivals where they can be taught on-site but separately from mainstream classes until they are deemed sufficiently proficient in English to be transferred to a full mainstream timetable. This model is considered as acceptable by some education professionals in Wales because withdrawal and separate language units are recommended as good practice for the teaching of Welsh in some LEAs¹⁵.

In the past, bilingual teaching assistants have worked mainly in primary schools but in recent years, increasing numbers have begun to work in secondary schools at KS3, sometimes in partnership with EAL specialists, at other times, working closely with subject specialist teachers.

¹⁵ In parts of Wales, both **withdrawal** for intensive **Welsh** language tuition and **immersion** in mainstream Welsh-medium classes are used for pupils whose first language is not Welsh. Following similar models for French in Canada, the Welsh Language Board supports separate Language Units for Welsh Second Language learners where they are taught an intensive Welsh language course before being immersed in Welsh-medium or bilingual Welsh-English schools. This provision may be accessed by minority and majority ethnic learners but is questioned by some within the EAL field who have resisted segregated teaching for many years.

As mentioned in section 2.6.2 above, in withdrawal, language support teachers can exercise greater control over the language focus which can shift the orientation of planned work towards 'language' in a more traditional English Language Teaching approach focusing on grammar and vocabulary. However, this can result in pupils missing out on important curriculum subject learning taking place in the mainstream classroom.

In most mainstreamed in-class models of support, the orientation is towards planning interactive and collaborative learning approaches to supporting curriculum subject learning goals whilst encouraging language use. The emphasis on subject priorities can sometimes result in a weaker focus on particular forms of language as a goal of learning.

One of the key issues raised by this set of circumstances is the variability of opportunities to plan constructively in advance for a language focus that will meet at least some of the demands of a lesson. Peripatetic and part-time EAL teachers or bilingual assistants who spend only part of their week in a school, and those who work in large secondary schools with little time to plan with subject teachers, find it difficult to gain more than a brief overview of an upcoming lesson's topic and its main objectives. For subject specialist teachers who think in terms of subject learning goals, subject content knowledge to be learned and subject skills to be developed, focusing on language for EAL development may not appear as significant a concern as their subject priorities.

There would appear to be a need to clarify how language specialist and mainstream subject teachers can plan in advance, often from limited information, which language resources they can include in a lesson to promote EAL development appropriate to the subject learning goals and to the needs of individual pupils.

2.7 Planning for EAL development in the curriculum

In sections 2.2 – 2.6 of this chapter, I have identified a number of issues which all point to a need for mainstream subject and language specialist teachers alike to plan effectively for rapid or ‘accelerated’ progression in EAL development.

EAL pupils need to develop English language resources that will allow them to achieve their own personal academic potential through learning in the curriculum.

They need to move towards parity with their peers and approach comparable levels of educational outcome by the time they leave school, so they can compete for Further and Higher Education places and for jobs. The way the assessment system is structured in Wales, success will depend upon their ability to use English for academic purposes.

The national curriculum provides the statutory framework for planning which determines the subject-based goals of teaching and learning at KS3. In lessons where elements of **subject content** are the priority goals, the language needed to fulfil them will be **driven** by the subject content and the activities chosen to teach it. In lessons where **skills** are prioritised as the goals of learning, the skills still have to be developed through subject content. Even where activities are designed specifically to develop the skills, subject content will operate as a central driver of language choice. If EAL pupils are to achieve these goals and develop the English language resources they need for doing so at the same time, both aspects need to be planned for. They cannot simply be left to chance.

The variety of circumstances and models of support provided for EAL pupils in Wales means that there is variability in the extent to which teachers can incorporate a clear focus on language for EAL pupils in their subject-based planning. In withdrawal-type situations, where language support specialists can exercise control over the forms of language, EAL pupils must not be denied their equal entitlement to learn the curriculum content. In mainstreamed subject lessons, EAL pupils should not be denied the opportunity to progressively develop their English language resources whilst learning curriculum content. The focus of planned teaching for EAL pupils must include some aspect of English language resources that the pupils have not yet developed and

must include activities that create opportunities to use those language resources in the service of curriculum goals.

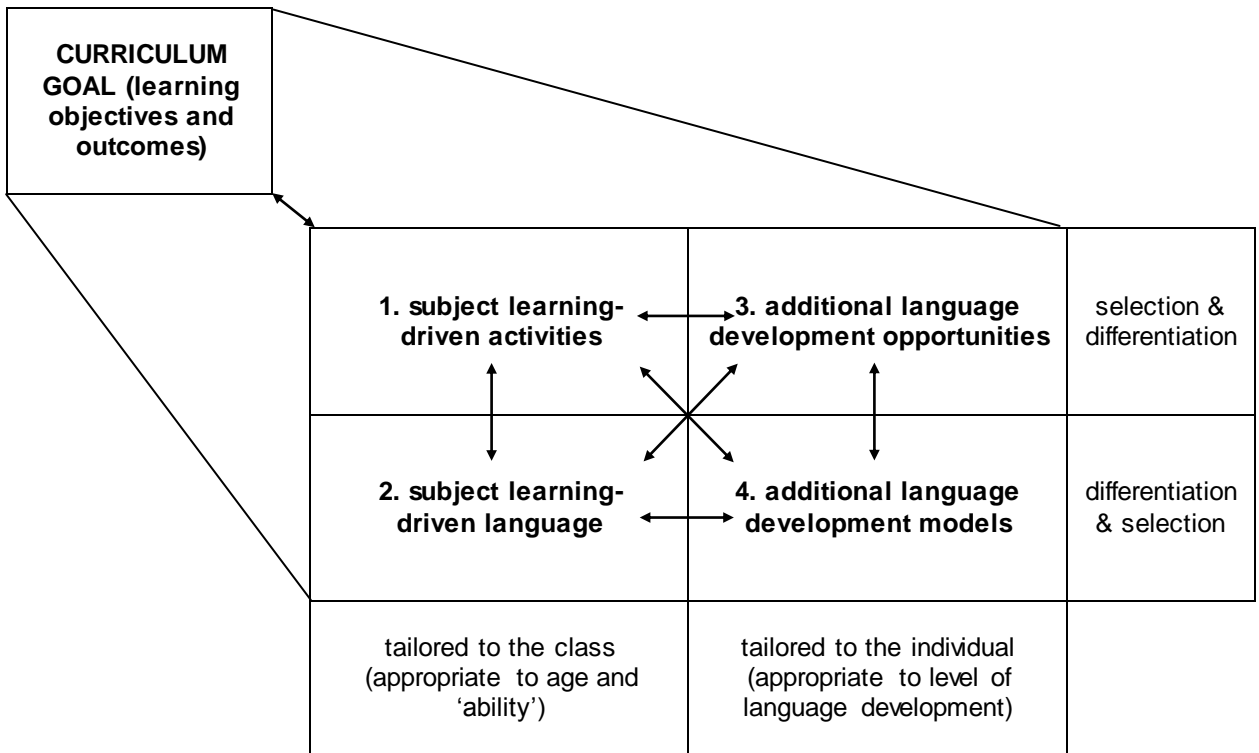
From a language support specialist's perspective, identifying which language resources are needed to meet the subject learning goals of a lesson is hindered by inconsistency in the amount of information they can obtain in advance. For mainstream subject teachers, identifying which language to use as a focus for EAL development may be hindered by a lack of knowledge of the needs of the individual pupil and by a lack of expertise in structuring, modelling and scaffolding language for the purposes of learning.

As Pauline Gibbons (2002: 121) expresses it: in order for teachers to plan language development effectively, they need to identify what the language demands of the curriculum are and match them to the language resources and needs of the learners.

2.7.1 4-way model of negotiation for planning additional language development

To address this need, I propose a model to inform planning (Fig. 2.2) which illustrates a process of 'negotiation' between four different elements of a lesson. All four elements must be directed towards the achievement of the overarching curriculum goal, its learning objectives and outcomes.

Fig 2.2. 4-way model of negotiation to plan integrated language models



When planning lessons at KS3, teachers select and differentiate subject-learning activities appropriate to the age and ‘ability’ level of the class to help them achieve the relevant objectives and outcomes of the lesson (Box 1). The activities are ‘driven’ by the goals of the subject learning. Most conventional subject-oriented lesson planning will focus on Box 1 as the means to achieve the curriculum goals. Language-aware planning will incorporate a focus on ‘subject learning-driven language’ (Box 2), sometimes also tailored to the age and ability of the class, perhaps differentiated for groups of pupils of varying ability or Special Educational Needs to ensure their comprehension and to encourage their use of appropriate subject-specific vocabulary.

In order to promote progressive language development for EAL pupils, a **further strand** is needed at the planning stage (Boxes 3 & 4). In addressing this strand, there are two matters that teachers need to consider:

- 1) Teachers cannot assume that EAL pupils in the class will have sufficient English language resources to meet the demands of the learning activities (in Box 1), even those which are differentiated by ‘ability’. The language and the activities used (Boxes 1 & 2) may need to be tailored to the individual.
- 2) To avoid EAL pupils merely being provided with simplified language (or even simplified learning goals) to ensure their understanding, language models need

to be selected which will both satisfy the demands of the subject-learning goals; **and** extend the pupil's language resources.

Within the range of potential **activities** that could be used to achieve the learning goals, teachers need to select some which promote **both** subject learning (Box 1) and provide opportunities for additional language development (Box 3). Differentiation may be needed to tailor the selected activities to the needs of individual EAL pupils, not just ability or SEN groupings.

Differentiation of the subject-driven **language** (Box 2) can yield a range of potential language resources that may be selected and tailored to the language development level of individual learners (Box 4).

To make sure that the subject-learning activities provide opportunities for additional language development, and that the language models chosen satisfy the subject-driven language demands and learning activities, **negotiation** of these four elements needs to take place **at the planning stage**.

2.7.2 Negotiation and the relationship between subject and EAL discourses

I have used the word 'negotiation' because each element needs to interact with the others to modify and arrive at the intended outcome. In practice, where subject and language specialists work together, there will be an actual process of verbal negotiation where the teachers work out how to design the activities and select the language models. Where a single teacher of either specialism is planning alone, they will have to engage in a process of 'internal negotiation' by thinking through the interactions between the elements.

Arkoudis (2003) notes that teachers bring their own ideologies and ways of thinking to bear on their planning and implementation of the curriculum (Arkoudis, 2003: 164). She refers to research (Arkoudis, 2003: 162, 163) highlighting that subject disciplines and departments in secondary schools shape teachers' identities and their working practices. They act as significant sites for the development of professional **discourses** that create shared and distinctive social worlds or 'subcultures' relating to the subject

discipline. She describes these discourses as 'different dialects' within the teaching world which hold 'epistemological authority' (Arkoudis, 2003: 164). They are like different ways of talking about what is important in education. They impact on decision-making about lesson content and lesson activities.

Often, epistemological assumptions about the status and role of curriculum subjects have the effect of subordinating the discourses and priorities of EAL beneath those of the mainstream curriculum and subject specialisms. In Wales (as in the Australian State of Victoria where Arkoudis' research has been carried out), where the official curriculum prescribes clearly defined knowledge and content for each subject, subject teachers see themselves very much as teachers of subject content knowledge, rather than as teachers of language (Huang and Morgan, 2003; Arkoudis, 2003; Creese, 2004). One of the consequences of this is that the dominant pedagogy in many secondary subject classrooms is designed to support **transmission** of the subject knowledge (Creese, 2004: 192, 193). Implicit in this transmissional framework is a conception in which language is just the **medium** through which established knowledge is **communicated** between the teacher and the pupil. In this conception, language may be viewed as a general cross-curricular skill, separated from subject content, where it is merely a means to an end rather than a goal of learning in itself¹⁶.

As a result of this view, some teachers may find it difficult to comprehend that language development and subject learning **need** to be developed together in an integrated way and indeed that they **can** be. The situation to be avoided is where EAL concerns are subordinated beneath subject teaching agendas to the extent that EAL support is reduced to merely helping pupils gain access to curriculum content (Leung, 2001) often by simplifying or circumventing linguistic challenges, using undemanding language and non-linguistic means of communication; rather than deliberately seeking to extend, expand and refine pupils' English language resources in an explicit way.

One of the purposes of the 4-way planning model outlined above (Fig. 2.2) is to illustrate how both subject learning and EAL development need to be accorded **equal status** at the planning stage to make sure the needs of EAL pupils are fully met. Over

¹⁶ Consequently, the goals of language development described in official guidance on language and literacy across the curriculum tend to be largely generic across the subject disciplines, underpinned by a view that 'once learned' it can be transferred and 'mapped onto' different subject areas. This is not a view adhered to in this thesis and is examined in detail in Chapter 4.

time, negotiation between language specialists and subject specialists should result in an increase in shared expertise for both parties.

2.7.3 The role of the teacher as ‘interpreter’ of socio-cultural appropriacy

The role of the teacher in deliberately planning a language focus for a subject lesson places them in a position where they have to make choices about what forms of language are appropriate to meet the demands of the context. They make the choices ‘on behalf of’ the EAL pupil who is less able to do so for themselves; either because they have not yet ‘learned the words’ required to meet the demands of the curriculum context or because they do not know ‘how to choose and combine’ the words and structures of English that are most appropriate to the context. The teacher acts as a kind of ‘intermediary’ between the pupil and the socio-cultural context with which they are less familiar. The teacher is effectively ‘interpreting’ which language is appropriate to the context in order to help the pupil to learn what is appropriate (Mercer, 1995; 2000).

A language focus may be introduced by building it into the planned design of learning activities so that pupils can encounter and be guided into using a particular language pattern or grammatical structure in the course of an activity. In more open, discursive or interactive activities, teachers may use oral scaffolding to present, model or guide pupils towards using forms of language appropriate to the task. Although such activities can give rise to less predictable linguistic interactions, often initiated by pupils, teachers can still benefit from having a clear idea of what kinds of language form pupils need to work towards using, as this can inform the teachers’ responses and shape the way they guide the dialogue (see Gibbons, 2002).

Although pupils’ own engagement with the learning process will inevitably influence the interactions, the language use and the outcomes of learning; adopting an ‘interpretive’, ‘intermediary’ role places the teacher in a position of authority with a degree of control over pupils’ language use and learning. They are more than just a facilitator of learning. Cope and Kalantzis (1993b: 79) explain that, from a social constructivist perspective, this role is essential.

“There is an inevitable asymmetry in the relationship of teacher and student” ...
“The teacher is in a position of knowledge – a position of social

authoritativeness” ... “the teacher must help recontextualise and construct contexts actively in the mind [of the student]” (Cope and Kalantzis, 1993: 79).

Making appropriate choices for the particular context and purpose of curriculum learning requires familiarity with the relevant discourses of the subject, which have developed through a process of socio-cultural convention, as Arkoudis has noted. This point re-emphasises the need to bring together subject and language teaching expertise so that choices of language models can both conform to (or at least lead towards) the discourse patterns of the subject discipline **and** be differentiated in a way that ensures language development for the EAL pupil appropriate to their level of English language resources.

2.7.4 ‘Predicting’ language models as a focus for learning

In order for a teacher to choose particular forms of language to act as ‘models’ in teaching and learning activities **in advance of** the actual lesson requires ‘**prediction**’. The teacher needs to predict or anticipate with a degree of accuracy what possible linguistic alternatives are likely to be needed to fulfil the learning objectives of the forthcoming lesson. Without this, the planning negotiation will not produce a particular language focus integrated with whatever learning activities are designed.

Teachers will usually try to do this ‘intuitively’, drawing on their own personal subject and language knowledge, rather than in a more analytical way – by drawing on applied linguistics for instance. Without the insights of linguistic analysis, for many EAL teachers the subject content-driven language that occurs in the classroom often appears to be ‘unpredictable’. Lack of detailed information obtained prior to a lesson makes precise anticipation very difficult. Consciously organising any progressive development of EAL pupils’ English language resources consequently becomes quite problematic. There is a danger that teachers’ advance language choices may be so driven by the subject-content that they do not take adequate account of the target EAL pupils’ current language resources; and that models are chosen just to ‘make sense’ of the subject content, rather than to make sense of the content **and** extend the pupils’ language repertoire in a progressively expanding way. The choice of only **one** model, one way of expressing the subject content, can restrict the potential for further language development.

2.7.5 Differentiating language models

The latter points above illustrate the need to **differentiate** predicted language models, both to the target EAL pupils' levels of English language resources and in order to promote further development of those resources. Therefore, teachers have to find some flexibility within the expression of language to identify a number of substitutable, alternative options for each learner to benefit from. These alternatives must meet the demands of the curriculum goals at the same time as being matched to the needs and resources of the individual learner.

2.8 Summary conclusion

In this chapter I have outlined the education context in Wales, in which EAL development work in the curriculum takes place. I have identified that there is a clear need for targeted support at KS3 where EAL pupils of various minority ethnic backgrounds do not make sufficient progress to catch up with their peers in terms of English language proficiency or curriculum attainment.

I have discussed the way the national curriculum provides a statutory framework for subject-based education in Wales, which shapes the contexts of learning and directs planning. Whilst EAL pupils benefit from entitlements to a broad and balanced curriculum, and to teaching which takes into account their need for language development, they are also placed at a disadvantage by some of the demands of the curriculum.

I have given an account of the variety of education provision offered to EAL pupils in Wales, illustrating a number of factors that point to a need for a more effective approach to planning EAL development. These factors include inadequate ratios of specialist staff to pupils; difficulties in arranging joint planning in peripatetic support and in busy secondary schools; and different agendas within subject discourses which can subordinate EAL concerns beneath subject learning concerns.

I have proposed an illustrative model to assist the process of planning integrated subject learning and language development, and I have indicated the need for teachers to 'predict', in advance, language which can be modelled for pupils in lessons to help them meet the demands of the curriculum and develop their English.

In order to do so, teachers need to develop an understanding of the relationship between Context and Text as it relates to the purposes of language use in the curriculum. They need to gather information which can lead them from the general context of the curriculum and its learning goals, to a specific range of alternative language resources that can be selected, differentiated and used to construct language models for pupils.

CHAPTER 3

Research Methods

CHAPTER 3

Research Methods

3.1 Introduction

In the previous chapter, I concluded that there was a need for teachers to plan more effectively for EAL development in the curriculum at KS3 by using contextual information to lead them from the goals of the curriculum towards selecting appropriate, differentiated language models for EAL pupils.

For this study, in order to try and identify some of the roles and **purposes** of language relating to KS3 curriculum **goals**, I have chosen to analyse one key source of information: the **published subject orders for KS3 of the National Curriculum in Wales (2000)**. Following Mohan's (1986) suggestion that planning for integrated language and content learning should be informed by an examination of subject curricula "across the whole curriculum" (Mohan, 1986: 7 & 91), I have chosen to analyse a corpus drawn from the text of ten KS3 curriculum subject orders.

The orders are the statutory basis for planning all schemes of work and lessons in maintained secondary schools in Wales. They contain the central government's specifications of what teachers should teach and what pupils should be given opportunities to learn. All teachers are expected to use the specifications to inform their long, medium and short-term planning. Many of the written statements comprising the Programmes of Study and Attainment Target Level Descriptions set out the expected learning objectives and assessment outcomes for pupils at KS3 which constitute the overarching goals of the National Curriculum in Wales. The goals are defined in terms of educational behaviour within subject-specific situations. Examining the wording of these goals can reveal many of the purposes for which language may be used to achieve them.

In this study, the text of the national curriculum subject orders is used to form a corpus of language data for analysis using computer-assisted methods. The corpus analysis is primarily concerned with the construction of a database containing all instances of distinct learning objectives and assessment outcomes found within the text of the

orders, which can then be interrogated to identify the roles and purposes of language in relation to each one. Computer-assisted analysis allows data to be compared across and between subjects, it allows patterns and trends in data to be identified and it enables an overview to be built up of how language use is presented in the orders.

It is important to note that the analysis for this study is **not** a conventional Systemic Functional Linguistic analysis of text carried out by marking up lexicogrammatical or semantic constituents with SFL category labels but is rather an attempt to ‘unpick’ or ‘deconstruct’ the text of the orders to identify discrete curriculum goals and then interpret the purposes of language use indicated within them. The goals and language purposes are used to inform and illustrate points in the discussion in chapter 4¹⁷ to explore the relationship between Context and Text put forward by Halliday (1973; 1978; Halliday and Hasan, 1989) which proposes that the choices we make about language are determined by the contexts and purposes for which it used. Halliday’s proposition is explored in chapter 4 by working from the general Context to the specific Text, from a broad curriculum overview to particular language resources, using the information gleaned from the corpus analysis to identify situational variables that can be realised in register variables that can be realised in choices of language form.

This approach contrasts with that of contemporary ethnographic linguistics research, much of which analyses samples of recorded instances of language used by pupils and teachers in the micro-events of classroom interaction. Such micro-events are usually studied with consideration of immediate contextual factors that are contingent on the event, working from Text to Context and back again in interpersonal exchanges. The findings of such studies can provide detailed insights into the nature of linguistic interactions which would complement the findings of this study but adopting a similar approach to address the aims of this thesis would have been impossible to accommodate within its scope¹⁸. Therefore, the corpus chosen consists of the text of the national curriculum orders as a key source of contextual information with a direct impact on **planning across the curriculum**, rather than a selection of sample texts of interactional language with a more restricted range of application.

¹⁷ Note that some examples of discrete curriculum goals and extracts of the original NC text are used to illustrate some of the **linguistic characteristics** of the orders and to illustrate different **points of linguistic analysis**, including SFL constituency, which are discussed in this chapter and in Chapter 4, such as those in Sections 4.2.3.1 & 4.2.3.2. These should not be confused with the examples used purely to illustrate the **purposes** of language use in the curriculum, as in Sections 4.3 – 4.5.

¹⁸ See also sections 1.4, 1.5 and 1.6.5 on the choice of approach.

In this chapter, I explain the **methods** adopted in examining the purposes of language use that are indicated in the written statements of the statutory national curriculum orders, with a brief discussion of the methods' theoretical origins. The research methods follow three broad approaches to analysing and manipulating text: computer-assisted analysis of corpora; semantic analysis of lexical items and approaches to writing educational objectives.

In section 3.2, I will outline the structure and contents of the original corpus text of the statutory national curriculum orders for Wales (2000) and describe the rationale for the selection of texts analysed in the study.

In section 3.3, I will discuss the methods and techniques drawn from **computer-assisted analysis of corpora** developed by Scott (1997, 2006) within the field of corpus linguistics using his Wordsmith software (OUP, 1998 and 2003) to assist in selecting and transforming the original source text of the curriculum orders.

In section 3.4, I will explain how standard applied linguistics methods for the **semantic analysis of lexical items** (Cruse, 2004) are used to identify the expected pupil behaviours indicated by specific words in the orders, taking account of more functional considerations of the curriculum goal as a text-complete communicative event (Scott and Thompson, 2001).

In section 3.5, I will discuss **approaches to writing educational objectives and classifying behavioural domains** which have been adapted in this study to structure and classify curriculum goals. I will also engage in some theoretical discussion about the classifications. Bloom et al's (1956) and Reece and Walker's (1997) approaches to writing educational objectives and classifying domains are adapted in defining a structure for, and categorising, the curriculum goals modelled in the database.

In section 3.6, I will describe some of the general textual characteristics of the orders observed during the processes of analysis, referring to surface linguistic features and stylistic choices which make identifying curriculum goals more problematic.

In section 3.7, I will define the standardised format chosen for isolating curriculum goals and in section 3.8, I will summarise the chapter content and draw conclusions.

3.2 The original corpus text of the statutory national curriculum orders for Wales (2000)

Each of the national curriculum subject orders for Wales (2000) includes a Foreword, a section on Common Requirements, Programmes of Study (PoS) including a Focus Statement, and Attainment Target Level Descriptions (AT).

3.2.1 Rationale behind the selection of texts for the corpus

The Foreword contains explanatory text about the nature and purpose of the orders. It does not detail any curriculum goals for pupils to achieve so it has been omitted from the corpus. The section on Common Requirements contains two parts. The first is instruction on making appropriate provision to ensure curriculum access for all pupils. This includes reference to pupils with special educational needs and those whose first language is not English or Welsh. This part of the Common Requirements does not indicate any specific curriculum goals so it too has been omitted from the corpus. The second part, however, details cross-curricular dimensions of the Curriculum Cymreig, Communication Skills, Mathematical Skills, Information Technology Skills, Problem-Solving Skills, Creative Skills and Personal and Social Education, which do contain curriculum goals. This part of the Common Requirements has been included in the corpus.

3.2.2 Rationale for the choice of ten subjects

The database used as the basis of the analyses in this thesis is derived from the text of ten national curriculum subject orders from the National Curriculum in Wales 2000: English, Mathematics, Science, Geography, History, Design Technology, Information Technology, Art, Music and Physical Education, incorporating the PoS (including Focus Statements) and the AT Levels 1-6, for each subject. The Common Requirements, which apply to all subjects, are also included in the corpus and are used for some comparative analyses. The orders for Welsh and Modern Foreign Languages have been omitted as they do not indicate English language demands, which are the focus of the thesis.

The choice of ten subjects, rather than a smaller selection of subjects or the English order alone, has been made to address the overall theme of the thesis indicated in the title; that of characterising the language demands of the curriculum. Broad coverage is also needed to address the more specific research questions which seek to identify the purposes that language serves in the curriculum as a whole; and how the character of language use in the curriculum is shaped by its purposes of use.

In endeavouring to assist teachers' planning across the curriculum, the thesis also aims to identify features of the subject discourse metalanguages across the curriculum, so that the information from this study is relevant and comprehensible to KS3 teachers working in all of the subject disciplines. To analyse just one or only a small selection of subjects would overlook key curriculum goals and terms which are characteristic of particular subjects.

3.2.3 Rationale for the inclusion of the Programmes of Study

The PoS for each subject “set out what pupils should be taught” (ACCAC, 2000a: 2). They contain the statutory requirements of what teachers should teach and therefore form the basis of all planning from which schemes of work are derived. Within the text of the PoS lies much of the subject content and many of the learning objectives expected to be used by teachers in planning their teaching of subject lessons. The subject PoS therefore contain many curriculum goals which pupils are expected to achieve.

3.2.4 Rationale for the inclusion of the Attainment Target Level Descriptions 1-6

The Attainment Target Level Descriptions (AT) are prefaced by a small section outlining their purpose and how they should be used by teachers for assessment purposes. This section has been omitted from the corpus as it does not contain specific demands placed upon pupils. This section is followed by the Level Descriptions, Levels 1-8 plus a level indicating ‘Exceptional Performance’.

The AT Level Descriptions “describe the types and range of performance that pupils working at a particular level should characteristically demonstrate” (ACCAC, 2000a: 12). These descriptions form the basis of formal and teacher assessment and clearly indicate goals for pupil achievement prescribed by the statutory curriculum. If pupils are unable to meet the demands of the target levels contained in the ATLD, they are assessed as not having met the curriculum goals and their performance is judged to be at a lower level.

Only levels 1-6 have been included in the corpus. The rationale for this choice is as follows. Although EAL pupils of differing academic abilities and of differing personal, social and educational backgrounds may require support throughout their formal education, Level 5 is the target expected level for all pupils by the end of KS3, within the range 3-7. The majority of all pupils attain between levels 4-6. Any pupil attaining Level 6 across all subjects, including English, would be demonstrating performance which more than satisfactorily meets the expected requirements of the KS3 curriculum. Although individual EAL pupils may not yet have developed English language resources sufficient to fully realise their potential, they would be performing above the national average and would be well placed to move into KS4 courses.

EAL pupils performing below Level 6 at KS3 are more likely to need directly planned, targeted language support from teachers to extend, expand and refine their English language resources. New or recent arrivals to the country and those with English language resources which only allow them to demonstrate performance between levels 1 and 4 certainly need support to develop their English and meet the language and learning demands of most KS3 lessons.

Whether or not Level 6 is a reasonable or challenging level of attainment for a particular individual¹⁹, any pupil who is enabled to meet the language demands of the curriculum up to Level 6 in KS3, across the curriculum, should be well-placed to perform on a par with their peers and realise their own personal academic potential moving into KS4.

¹⁹ Pupils who are potentially capable of performing at Level 7 or 8 may also be hindered from doing so by lack of capacity in their English language resources. Such pupils are also likely to benefit from specific attention to extend and refine their English language resources in order for them to achieve their full academic potential and gain the highest grades possible in formal examinations at the end of KS4.

For these reasons, inclusion in the corpus has been restricted to levels 1-6 where pupils are most likely to need structured planning for language development to achieve the goals of the KS3 curriculum.

So the selected sections of text outlined above, drawn from the national curriculum subject orders, formed the basis of the corpus which was then constructed as a database and analysed using a range of methods.

3.3 Computer-assisted analysis of corpora

To assist in the construction and analysis of the database of text derived from the national curriculum orders, I used the text analysis software package Wordsmith Tools.

3.3.1 Principles of transformation and selection

The basis of computer-assisted corpus analysis is that insights which are not evident from a linear reading of text can be gained by applying two principles: Transformation and Selection (Scott and Tribble, 2006:12). In this study, Transformation was used to take the original text of the orders and transform it first into a single Wordlist, then into the form of a structured database table, and subsequently into sets of wordlists in order to glean insights and discern patterns in the various curriculum goals. Selection was used initially to choose the parts of the orders which are most relevant to the purpose and subsequently to focus attention on the curriculum goals which indicate the roles and purposes of linguistic behaviour in the curriculum.

3.3.2 Terms used in referring to the elements of 'Wordlist' tables

In the lists of words produced by the 'Wordlist' software, each distinct 'Word' is described as a 'type' in the statistics data table (Table 3.1) and is listed once as the headword in a row of quantitative data in the wordlist table (Table 3.2). Each 'instance' or 'occurrence' of the headword in the source text is counted as a 'token' in the statistics data table (Table 3.1). The 'Frequency' of occurrence (number of tokens) is recorded numerically in a column adjacent to the headword in the wordlist (Table 3.2).

Table 3.1 Extract of Statistics data table in 'Wordlist' showing types and tokens

tokens used for word list	4,016
types (distinct words)	405

Table 3.2 Extract of Word, Frequency, % and Text columns in ‘Wordlist’

	Word	Freq.	%	Texts
1	USE	371	9.24	1
2	UNDERSTAND	149	3.71	1
3	WORK	103	2.56	1
4	KNOW	102	2.54	1
5	DEVELOP	94	2.34	1
6	DESCRIBE	78	1.94	1

Rather than using Wordlist’s terms: ‘types’ and ‘tokens’, in this section I have adopted the terms ‘headword’ and ‘occurrence’. However, in chapter 4, the ‘headwords’ are referred to as the ‘behaviour verbs’ because their role in curriculum goals is to indicate what pupils are expected to **do** in relation to an element of subject content²⁰. The term ‘instance’ is used to refer to each instance of a distinct curriculum goal that occurs in the database.

3.3.3 Sorting words by alphabetical order and frequency

Wordlists can be sorted on a number of bases including alphabetical and frequency order. Both are used to assist in quickly identifying headwords and to determine patterns of frequency. In the later stages of the database analysis, the sort facilities of Microsoft Word and Microsoft Excel were also used.

3.3.4 One-word or cluster lists

‘Wordlist’ software can produce wordlist ‘clusters’ of more than one word, but for the purposes of this study only one-word lists were used to focus on the headwords that indicate the pupil behaviour component of each curriculum goal. When examining collocation for some headwords in this study the ‘clusters’ facility was used to count frequencies of collocation.

²⁰ The term ‘behaviour verb’, as used in the thesis, is not related to Halliday’s classification of ‘behavioural process’ verbs, which are a specific sub-classification of process types. In this study the phrase is used as a general ‘catch-all’ term for all process meanings used in the NC orders to indicate any kind of behaviour expected of pupils.

3.3.5 Mark-up – tagging

‘Wordlist’ allows text to be analysed by tags. Tags are notations added to the source text to allow selection and grouping of particular types of words. In this study, verb forms <V> and non-verb <NV> forms indicating pupil behaviours were tagged in the source text to create restricted wordlists by removing ‘unwanted’ words.

3.3.6 Frequencies of occurrence

In large corpora, without tagged selection, the highest frequency words tend to be prepositions, determiners, pronouns and conjunctions (Scott and Tribble, 2006: 23). In this study, the words tagged and selected were all transformed into **root verb forms** so the frequency of occurrence of different **types of behaviour** indicated by them could be compared with one another rather than with other types of syntactic category. The comparison is semantic rather than syntactic for the purposes of determining the relative significance of words used to indicate pupil behaviour and the consistency of different parts of the orders.

3.3.7 Detailed Consistency Lists

‘Wordlist’ has the facility to compare the consistency of different texts with one another in Detailed Consistency Lists. The frequencies of occurrence of each headword are recorded as an overall ‘Total’; as the number of ‘Texts’ they occur in; as totals in separate columns for each source text with a highlighted indication (**bold** in Table 3.3, red in Wordlist) of which text they occur in most frequently (Table 3.3)

Table 3.3 Detailed Consistency List example

	Word	Total	Texts	EN	MA	SC	DT	IT	GE	HI	AR	MU	PE
1	USE	371	10	46	125	80	29	26	14	17	15	8	11
2	UNDERSTAND	147	10	10	56	28	9	4	13	10	7	3	7
3	WORK	103	10	3	15	23	8	7	3	5	23	7	9
4	KNOW	99	10	7	16	37	6	3	8	12	3	1	6
5	DEVELOP	86	10	22	17	6	15	1	2	2	8	7	6
6	DESCRIBE	78	9	4	9	34	0	1	11	9	2	3	5

Detailed Consistency Lists have been used to compare different categorisations of headwords and different parts of the orders.

3.3.8 Collocation

Collocation refers to the co-occurrence of words. Where a word co-occurs with another word more or less frequently than one would expect (Scott and Tribble, 2006: 33) or in comparison with others, this may indicate a pattern of significance. The patterns may shed light on the stylistic or semantic features of the text. In this study, collocation is used to identify semantic characteristics of some of the headwords used to indicate pupil behaviours and to match up behaviours with their element of subject content which is the focus of the activity. One of the problems with collocation is 'collocation span' (Scott, 1997: 235): words that are linked semantically may be separated from one another syntactically e.g.

*“They **experiment** practically and imaginatively **with a variety of methods**” (Ar ATL5)
(My bold emphasis).*

In this example, the activity focus '*with a variety of methods*' and the behavioural verb '*experiment*' are separated by the phrase '*practically and imaginatively*'. In order to determine this semantic collocation the settings of Wordlist would have to be set to take account of a span of at least 55 characters on each side. This is likely to produce an extensive concordance, and Wordlist has no way of distinguishing semantic relations on its own. Fairclough (2003: 6) observes that quantitative collocational analysis using text analysis software is restricted in value because it needs to be complemented by "more intensive and detailed qualitative analysis".

So, instead of using 'Wordlist' for this purpose, collocations are identified through reading, interpreting and manipulating the text in the database transported into Microsoft Word. The term 'collocational range' is used to refer to the number of different activity foci of each headword.

3.3.9 Lemmas

In 'Wordlist', lemmas are headwords which can be grouped with other words which have associated meanings. The lemma facility in Wordsmith Tools allows large wordlists to be reduced in size and frequencies of occurrence of all lemmatised items to be calculated. This facility is used in this study to match all instances of curriculum

goals which indicate similar types of behaviour even though they are indicated by different verb and non-verb forms e.g.

comment -> comments,commenting,commented,commentary

3.4 Conventional approaches to semantic analysis of lexical items

The methods adopted in this study for semantic analysis focus primarily on lexical items and their collocates within the structure of the curriculum goal as a text-complete communicative event. One of the aims is to define a reduced list of terms which indicate the **purposes of language use** in the curriculum. As Cruse (2004:12) explains:

“All semanticians are to some extent looking for regularities and system in the way meanings behave, as this leads to maximally economical descriptions”
(Cruse 2004 : 12)

However, the field of lexical semantics is not a precise science. Scott and Thompson (2001: 5) and Cruse (2004: 128) describe the boundaries of semantic categorisation as inherently ‘fuzzy’. Each word accumulates semantic properties from its various uses in different contexts and interpreting these properties is subjective.

From a sociocultural point of view, words do not have ‘context-independent’ meanings, but Scott and Thompson (2001:13) explain that language users build up an ‘intuitive sense’ of the meanings associated with words and how words are used as a result of many different repeated experiences of recurrent collocations. In this respect, accumulated meanings may be considered ‘conventionally assigned’ to words in particular discourse contexts. This does not imply that the semantics are then fixed, but they are, at least temporarily, conventionally established. Any analysis of instances of language use may reveal new insights into variations of meaning or the ‘semantic properties’ of words.

3.4.1 Subjective semantic judgements

In this study, semantic judgements about the headwords and their collocates are based on subjective interpretations of the relationship between lexical items and the types of expected pupil behaviour they indicate. In my interpretations I draw on my experience as a native-English speaker, an educationalist and a language teacher. The criteria used for making judgements are defined in the detailed description of the research methods in Appendix D.

3.4.2 Derivational morphology

The main framework for lexical transformation in this study uses derivational morphology to transform all inflectional and derivational morphemes **into a root verb** form which indicates a pupil behaviour e.g. DESCRIBE -> DESCRIBES, DESCRIBED, DESCRIBING, DESCRIPTION, DESCRIPTIONS.

3.4.3 Semantic specificity

Semantic specificity is used in this study to mean the extent to which a headword is clearly associated with a particular **type** of meaning (Cruse, 2004 : 49). In most cases, it is a measure of the extent to which the conventionally assigned meanings of a headword are closely associated with **linguistic** or other **types** of behaviour e.g. *EXPLAIN* is used to refer specifically to **linguistic** behaviours.

3.4.4 Polysemic variation

Polysemic variation is used to define the range of different meanings a word has in different contexts (Cruse, 2004: 107). In this study, the headwords are analysed for the range of meanings they carry in different contexts in the orders to evaluate the extent to which they indicate linguistic behaviour and to assess how useful they may be as part of a reduced list e.g. *'FORM letters'* and *'FORM different types of paragraph'* are both linguistic behaviours, but *'FORM materials'* refers to a physical action and *'FORM new ideas'* is primarily cognitive.

3.4.5 Reduction

Reduction is the process of reducing a wide range of words into a more limited basic set of words "out of whose meanings all other meanings could be constructed" (Cruse 2004: 95). This principle is applied in the reduction of the list of headwords to a more manageable list which defines the purposes of language use in the curriculum. Two criteria are used when grouping the headwords: 'synonymy' and 'hyponymy'. These

are moderated by two parameters of 'necessity' and 'sufficiency' but due to the inherent 'fuzziness' of semantics, absolute precision is unobtainable.

3.4.6 Synonymy

Synonymy is used in this study to describe the extent to which headwords can be grouped together because they share similar meanings and indicate similar kinds of behaviour e.g. *AMEND, ADJUST, ADAPT, ALTER*.

3.4.7 Hyponymy

Hyponymy is used in this study to describe the way headwords can be grouped together under a superordinate headword (one whose meaning is at a higher level of semantic generality than the others and beneath which the others can be grouped) e.g. grouping *APPRAISE, ASSESS, GIVE FEEDBACK* and *JUDGE* beneath *EVALUATE*. Hyponymy is the converse of hypernymy.

3.4.8 Hypernymic generality

Hypernymic generality is used in this study to describe the level of generality at which a headword can act as a superordinate to other headwords when reducing the extensive list to a more manageable one e.g. whether or not *CALCULATE* can act as a superordinate for *ADD, SUBTRACT, MULTIPLY* and *DIVIDE*.

3.4.9 Necessity and sufficiency

These two parameters are applied when grouping words with synonyms or beneath hypernyms to determine the extent to which the **necessary** meaning of a headword is shared with others and whether the shared meaning is **sufficient** to justify the grouping.

3.4.10 Foregrounding and backgrounding

Foregrounding is the choice of putting a word in a more prominent semantic position than another in a text (Cruse, 2004: 56). The **semantic** ‘position’ is modelled in choices of **syntactic** position and category. In most learning objectives, the intended behaviour is foregrounded in the verb directly following the subject e.g.

*“They **identify** organs of different plants” (Sc AT2 L4)*

However, in other instances, intended behaviours are backgrounded, for example by their realisation as nominalisations or by being positioned in a subordinate clause.

*“Pupils’ writing often engages and sustains the reader’s interest, showing some **adaptation** of style and register to different forms” (En AT3 L6)*

3.5 Approaches to writing educational objectives and classifying domains

The approaches to writing educational objectives and classifying domains are drawn from Bloom et al's (1956) model and Reece and Walker's (1997) overview of models including Gronlund's (1970 in Reece and Walker, 1997). These are standardised models, used widely, derived from the field of education psychology²¹.

They are used for two purposes. The first is to define a standardised format for the curriculum goal which can be used in the database. The second is to provide a framework for classifying the curriculum goals in a way that will provide insights into the **linguistic** behaviours and enable them to be isolated more easily from other '**non-linguistic**' behaviours.

However, the classifications are highly debatable, particularly in the light of prevailing theories of language and cognition in the field of EAL, and the models require some adaptation, so it is relevant to devote a little time to some theoretical discussion.

3.5.1 Classifying domains or types of behaviour

In Bloom et al's (1956) and Gronlund's (1970 in Reece and Walker, 1997) taxonomy, educational objectives are arranged in three behavioural domains: cognitive, affective and psychomotor. Reece and Walker (1997: 263) state:

"The main criterion that we use in selecting the domain in which the objective belongs is the *primary behaviour* called for: if it relates primarily to 'knowing' about the subject, it is cognitive; if it relates primarily to physical 'skill behaviour', it is psychomotor; and if it relates primarily to 'feelings' or 'attitudes', it is affective."

This tripartite domain classification does not provide much assistance in identifying linguistic behaviours, which are not distinguished clearly by any of the three domains. For the purposes of this thesis, the approach of dividing learning behaviours into different domains or '*types*' and categorising them on the basis of 'primary' behaviour has been adapted to help identify curriculum goals which specifically require language to fulfil them. Instead of Bloom's three domains, I have adopted four main domains

²¹ For a concise overview and critique see Spencer (1991). There is insufficient space in this thesis to discuss theories of cognitive behavioural management and learning theory so in this section I merely discuss the difficulties encountered with the models in relation to this study.

that relate more practically to the types of behaviour that pupils are expected to engage in to meet curriculum learning demands. These four types of behaviour are **cognitive, linguistic, physical** and **graphic** and were classified in the database using the letters C, L, P and G respectively. A fifth type, defined as '**affective**' behaviours, was used to classify instances where other behaviours were qualified in **the way they were demonstrated** e.g.

*“They usually listen **carefully** and respond with increasing **appropriateness** to what others say” (En AT2 L2)*

Reece and Walker's single criterion also needs to be qualified. When writing about Gronlund's taxonomy, Reece and Walker (1997: 263) themselves note that “few objectives are purely cognitive, psychomotor or affective”. The same is true of the demands in the national curriculum orders and the four types of behaviour chosen for this categorisation, particularly the cognitive and linguistic categories e.g. *EVALUATE*. Swain (in Lantolf, 2000: 103) observes that such linguistic behaviour “can be considered simultaneously as cognitive activity and its product”. Therefore any attempts at strict classification of this sort are decidedly 'Cartesian' and artificial in nature (McCarthy, 2001).

Nevertheless, the approach is adopted in this part of the study **in order to facilitate the practical goal** of identifying the 'purposes of language use' as they are expressed in the wording of the orders. To moderate this, consideration of 'secondary' classification is made in the methods detailed in Appendix D.

3.6 General features of the text of the national curriculum orders

In this section, I will describe some of the general textual characteristics of the orders, revealed during the process of analysis, referring to surface linguistic features and stylistic choices which make identifying curriculum goals more problematic.

The move away from the more discrete criterion-referenced approach of the first (1989) version of the national curriculum towards a more general interpretive approach in the 1995 and 2000 versions was primarily carried out through reducing and reorganizing the existing text containing the educational objectives of the curriculum. Many of the original objectives were retained but reworded.

Reece and Walker (1997) describe an educational objective in general terms as “a mixture of a *student behaviour* together with an element of *subject content*” (Reece and Walker, 1997: 248). In order to identify them specifically, the individual objectives which constitute the goals of learning need to be isolated from within the general text.

There are several features of the text of the 2000 orders that make the identification of language and learning demands problematic. Some difficulties arise from the respective purposes of the PoS and ATLD, influenced by the traditional perspective of teaching and learning which lies behind them i.e. that teachers should teach children a body of knowledge which is considered necessary for them to contribute positively to society; and that teachers are figures of authority who make judgements about whether or not pupils have managed to achieve the prescribed goals. Linked to this is the ideologically driven choice of a content-focused curriculum which manifests itself in the omission of explicit indicators of pupil behaviour from some parts of the PoS. Other difficulties arise from the techniques used to reduce the physical size of the orders, creating semantically dense sentences and paragraphs. Syntactic choices about foregrounding and backgrounding of expected pupil behaviours also make identification of curriculum goals more problematic.

3.6.1 General structure of the orders

In each subject PoS, the Focus Statement contains a summary overview of the coverage expected for the subject area in each key stage. In some subjects such as Design Technology (DT), History or Geography, this is complemented by some specific detail relating to topics and themes to be covered in the subject area e.g.

“Pupils should be taught about three countries:

- *Wales*
- *one country from the European Union other than those in the United Kingdom*
- *one less economically developed country.*

Pupils should be taught about the following themes: Earthquakes or Volcanoes; Rivers or Coasts; Weather and Climate; Ecosystems; Population; Settlement; Economic Activity; Environmental Issues; Resource Issues; and Global Environmental Change. Thematic work should be set within the context of actual places and involve work at a variety of scales.”

(Ge PoS)

These are followed by more detailed bulleted lists of aspects of content to be covered in sub-topics, often listed under sub-headings e.g.

“Weather and Climate

- *the differences between weather and climate*
- *the components and links in the water cycle*
- *how and why aspects of weather and climate vary from place to place”*

(Ge PoS)

Most bulleted lists of curriculum goals are prefaced with the phrase *“Pupils should be taught:”* (ACCAC, 2000a: 10) or *“Pupils should be given opportunities to:”* (ACCAC, 2000a: 10). The Focus Statement, complementary information and bulleted lists in the PoS all contain curriculum goals although, as in the example above, they do not always contain a verb to indicate any expected pupil behaviour. This is almost certainly an example of how socio-political choices about the content-focused nature of the curriculum and the respective purposes of the PoS and ATLD have been realised in the style and structure of the language used.

In the Attainment Target Level Descriptions, several curriculum goals are frequently combined in a single complex sentence. Several such sentences are then amalgamated in paragraphs which describe the types of performance expected at each level e.g.

“Pupils use resources provided and their own observations to respond to questions about places. They recognize and make observations about physical and human features of specific places. They express their views on features of the environment of a locality that they find attractive or unattractive.” (Ge PoS)

3.6.2 Semantic density in the text

The apparent reduction in curriculum demands in the 1995 and 2000 revisions of the original 1989 curriculum was, at least in part, simply the consequence of a change in the use of language. Some of the sections of text, particularly the paragraphs in the Attainment Target Level Descriptions, are highly compressed collections of multiple and embedded clauses, making considerable use of ellipsis and lists of items rather than simple clauses or discrete sentences for individual curriculum goals. In many instances, the result is extremely semantically dense text e.g.

“They suggest lines of enquiry, and identify and evaluate historical sources which they use critically to reach and support conclusions.” (Hi AT L6)

The combining of two, three and sometimes more verbs (my **bold** emphasis) in a single sentence is common e.g.

“Pupils should be taught: ...

*1. to **apply** their scientific knowledge, understanding and skills to **design** strategies, **solve** problems and **offer** explanations, **relating** scientific ideas to the information about them, e.g. **using** a database of elements to **identify** those which are metallic, when **designing** a circuit for **investigating** electromagnets, when **designing** an experiment to **compare** the energy released by different foods.” (Sc 1 PoS)*

3.6.3 Ellipsis

Ellipsis is often used to further reduce the amount of text whilst retaining the essential meaning of the sentences:

*“They demonstrate knowledge of some of the main events, people and changes [**which have been**] drawn from the appropriate programme of study.” (Hi AT L3)*

*“They make drawings and [**they**] use other methods [**of creating art**] selectively to explore, interpret and record their ideas and feelings from observation, experience and imagination.” (Ar AT L5)*

3.6.4 Anaphoric reference

On several occasions, particularly in the Level Descriptions but also occasionally in the Programmes of Study, anaphoric reference is used, linking pronouns such as ‘these’, ‘this’ and ‘it’ to substantial pieces of text in previous clauses or sentences e.g.:

3.6.4.1 'These'

"Pupils should be taught: ...

- 11. that non-metallic elements vary widely in their **physical properties**, that many are **gases at room temperature**, and that most are **poor thermal and electrical conductors***
- 12. to use **these** properties to classify elements as metals or non-metals"* (Sc 3 PoS)

3.6.4.2 'This'

*"Pupils' work shows **knowledge and understanding of aspects of the history of Wales and Britain and other areas of content drawn from the Key Stage 2 or Key Stage 3 Programme of Study**. They use **this** to describe the characteristic features of past societies and periods and to identify changes within and across periods."* (Hi AT L4)

3.6.4.3 'It'

*"When studying places and environments, pupils should be given opportunities to: ... identify **the evidence required** and collect, record and present **it**, e.g. obtain and record **statistical evidence about countries**, and present **it** in the form of maps and graphs with a commentary"* (Ge PoS)

3.6.5 Verb forms used as indicators of expected pupil behaviours

In the text of the orders, some curriculum goals are obvious even when expressed in complex sentences comprising multiple demands because of the clear use of a verb as the 'head' of each demand. The expected behaviour is modelled in a third person present tense verb form to concord with the subject 'pupils' or 'they' earlier in the text, and an element of subject content or an activity focus is included e.g.

*"When studying places and environments, pupils should be given opportunities to:
2. **identify the evidence required and collect, record and present it**, e.g. **obtain and record statistical evidence about countries**, and **present it** in the form of maps and graphs with a commentary"* (Ge PoS)

Some goals are indicated by verbs in the present tense with a continuous or perfect aspect e.g.

*"They understand the need for care in **framing** questions when **collecting, accessing and interrogating** information"* (IT AT L4)

*"Through relevant comments and questions, they show **they have listened** carefully."*
(En AT1 L3)

These latter goals are sometimes less obvious because they have been backgrounded (Cruse, 2004: 56) by their aspect and position in the sentence.

Some goals are indicated by verbs used in passive constructions e.g.

“show their understanding of chronology by their increasing awareness that the past can be divided into different periods of time” (Hi ATL3)

“synthesise information drawn from different texts, e.g. ICT-based sources and printed articles” (En 2 PoS)

In the History example above, the goal foregrounded (Cruse, 2004: 56) in the clause: *‘show their understanding of chronology’*, lacks specificity (Cruse, 2004: 49) in terms of behaviour and requires the clarification of the activity focus contained in the subordinate clauses. *‘Show understanding’* is a general objective which requires exemplification in a more specific objective. However, *‘increasing awareness’* is an internal, unobservable behaviour which can only be demonstrated through an observable physical, graphic or linguistic activity in which pupils *‘divide the past into different periods of time’*. So although the passive construction and subordinated position of the act of *‘dividing the past’* serve to background it in the sentence, it is still an essential component and needs to be considered as a goal which pupils are expected to achieve.

In the English example, the goal foregrounded in the verb *‘synthesise’* is dependent upon the backgrounded goal for pupils’ to *‘draw information from different texts’*. Fulfilment of this second goal is dependent on the pupils’ ability to access the information in the texts. For EAL pupils, this may be more difficult if their English language resources and skills are insufficiently developed and therefore this also needs to be considered as a significant goal.

There are several examples of verb phrases in the original text of the orders e.g. *‘give estimates’*, *‘make calculations’* or *‘draw comparisons’* where the verb form of the derivational morpheme also occurs elsewhere in the orders e.g. as *‘estimate’*, *‘calculate’* or *‘compare’*. Both realisations are essentially synonymous, indicating the same kind of behaviour, so for analytical and comparative purposes, they need to be represented in a single form of words²².

²² The Wordsmith Tools software was set to identify single words as the basic unit of analysis, so in cases such as this, the single root verb form is preferable to the verb phrase.

3.6.6 Non-verb forms used as indicators of expected pupil behaviours

Other pupil behaviours in the text of the orders are not indicated by inflectional verb forms. These are less obvious than those indicated by a verb and may be overlooked during the planning process but may be no less significant as goals pupils will have to achieve. Some are indicated by nominalisations (e.g. *descriptions*), gerunds (e.g. *swimming*), present participial adjectives (e.g. *checking* in ‘*a variety of checking strategies*’), past participial adjectives (e.g. *linked* in ‘*a series of linked actions*’) and adverbs (e.g. *selectively* in ‘*use other methods selectively*’).

Many of these non-verb forms could be construed as simply providing additional clarification of the subject content or activity focus in the complement or adjunct of a curriculum goal clause headed by the verb e.g.

“*They produce a short series of linked actions.*” (PE AT L2)

However, in the example above, ‘*produce*’ is a general verb which indicates only one dimension of the objective. The more specific word ‘*linked*’ indicates that the full objective is not merely for pupils to ‘*produce a short series of actions*’ but to ‘*link*’ those actions. Both are goals although one is more general and the other more specific.

From a practical point of view, many of the outcomes or behaviours indicated by the head verb cannot be fulfilled without carrying out the behaviours indicated by the non-verb forms. For example, in the following sentence, the foregrounded goal is indicated by the verb ‘*record*’ but in order for pupils to ‘*record*’, they must first ‘*observe*’ and ‘*measure*’ something, as indicated by the nominalisations ‘*observations*’ and ‘*measurements*’ so, in fact, three distinct behaviours are required:

“*They record observations and measurements systematically*” (Sc AT L5)

The behaviours backgrounded as nominalisations are at least **implied**, and at most **essential** as additional demands needed to fulfil the requirement to ‘*record*’. Nominalisation is one of the linguistic characteristics of the orders utilised to produce more condensed text.

For these reasons, non-verb forms which could be considered as derivational morphemes, and which have a strong semantic association with expected pupil behaviours, need to be considered for inclusion in the database and isolated from within the general flow of text.

3.6.7 Absence of stated pupil behaviours in parts of the Programmes of Study

In the Programmes of Study of the English, Geography and Science orders in particular, elements of curriculum content are listed without any clear indications of the behaviours pupils should engage in when interacting with the content.

In the Geography PoS there is a section on what pupils should be taught which does not include any pupil behaviours e.g.

“Pupils should be taught:

- *how conflicting demands on the environment arise*
- *how and why attempts are made to plan and manage environments, and their effects*
(Ge PoS)

How pupils are expected to engage with these issues is not clarified.

In the Science PoS, particularly in ‘Life Processes and Living Things’, the focus of what pupils should be taught is on facts and subject content so very few pupil behaviours are referred to e.g.

“Pupils should be taught:

adaptation, competition and conservation

- *how some organisms are adapted to survive daily and seasonal changes in their habitats, e.g. light intensity, temperature*
- *about factors affecting the size of populations, including predation and competition for resources”* (Sc PoS)

How pupils are expected to demonstrate their knowledge and understanding of this content is not made clear.

In the PE PoS, there are sections prescribing which activities and sports pupils should be taught e.g.

“Pupils should be taught:

1. *a variety of team and individual games, working from small-sided and modified versions to the recognised form, including:*
 - *an invasion game, e.g. netball, basketball, rugby, hockey, lacrosse or soccer*
 - *a striking/fielding game, e.g. cricket, rounders or softball*
 - *a net/wall racket game, e.g. tennis, badminton or volleyball”* (PE PoS)

It has to be assumed that pupils will have to participate in playing the games listed, rather than just be ‘taught’ what they are, but it is not explicitly stated in the text.

These sections are balanced by others in the PoS where behaviours are clearly indicated, but in planning schemes of work and lessons, it is necessary for teachers to

extrapolate from other parts of the orders which behaviours pupils ought to engage in when interacting with such content²³. These sections certainly appear to reflect a more traditional conception of 'what pupils should be taught', rather than a view of education as an integrated teaching and learning process in which pupils are actively engaged as learners. Even if these sections merely reflect an assumption that teachers as professionals will know what kind of methodologies to adopt in encouraging interactive learning, they still portray a very content-focused view of the curriculum.

3.6.8 Summary conclusion

All of the features of the text of the orders described above make isolating specific curriculum learning and language goals problematic. Identifying the purposes of language use in the curriculum requires more than a simple selection of all third person or root verb forms.

These features also suggest that there is potential for some goals to be overlooked in planning because they are backgrounded. If many of these backgrounded goals are linguistic in nature this could have consequences for language planning across the curriculum generally, particularly if subject teachers choose more foregrounded subject goals as the focus of lessons. If as Gibbons (2002), Arkoudis (2003) and Creese (2005) suggest, subject teachers plan for subject teaching rather than language teaching, it is possible that they will 'look for' or 'notice' the planning goals most closely associated with their own epistemologies, particularly if they are also foregrounded linguistically in the text.

Clearly, in order to create some consistency between the various wordings of curriculum goals for comparative purposes, a consistent standardised format is needed.

²³ These sections of the text contain much of the 'meaning' content of the orders.

3.7 Defining a standardised format for isolating curriculum demands

As the description of some of the features of the orders illustrates, the national curriculum subject orders for Wales (2000) do not follow a single standardised format for stating curriculum goals. Rather they include a range of different kinds of general and specific teaching and learning objectives: product and process objectives, competencies, expected learning outcomes and pupil behaviours which are expressed in various linguistic realisations. In the preparation stage of the database for the corpus analysis, all such instances were considered as potential 'curriculum goals'. However, in order for any statistical comparisons to be carried out, a consistent format is required for their expression. Reece and Walker's (1997) overview lists a number of different models and approaches to writing learning objectives and provides examples of some possible linguistic models.

3.7.1 Types of educational objective

With Bloom et al (1956), Reece and Walker (1997) stress that the process of constructing learning objectives "relies upon the specification of the *verb*" (Reece and Walker, 1997: 259).

3.7.1.1 Product objectives

They note that specific *product* objectives are written "using a verb which specifies *observable behaviour*" (Reece and Walker, 1997 : 255) such as 'write', 'classify' or 'draw', and which, according to Gronlund (1970 cited in Reece and Walker, 1997 : 255) are most appropriate for defining learning outcomes for *assessment* purposes. There are many examples of specific product objectives in both the PoS and the ATLD of the National Curriculum orders e.g.

"write poetry" (En 3 PoS)

"classify substances as solids, liquids and gases" (Sc AT1 L4)

"draw common 2-D shapes" (Ma AT3 L4)

There are also goals in both the PoS and the AT that use verbs such as 'learn', 'know' or 'understand' which describe outcomes that are not observable e.g.

“learn about: discourse structure: the structure of whole texts; paragraph structure ...”
(En 3 PoS)
“know the factors that promote quality and effectiveness” (PE ATL6)
“understand open and closed loop control systems” (DT PoS)

In order to observe a pupil's fulfilment of these objectives it is necessary for them to demonstrate some additional form of observable behaviour, but in themselves these 'unobservable' objectives are still goals that pupils need to achieve if they are to succeed within the curriculum. Gronlund (1970 cited in Reece and Walker, 1997: 255) regards objectives such as these as **general** objectives and suggests that they are more appropriate for defining **teaching**. However, this represents something of a transmission model of education and overlooks the fact that for every teaching goal there is an implied learning goal. In a neo-Vygotskian model (Mercer, 1994) teaching-and-learning form an integrated process. In order for the outcome of the 'teaching' objective to be achieved, pupils need to 'participate' or engage in particular learning behaviours in response to the desired objective. Associated with Activity Theory (Luria, 1976; Leontiev, 1978) these learning behaviours are the goal-directed actions motivated by the socio-culturally constructed need to achieve within the school classroom (Lantolf, 2000: 8, 9). The statutory requirements, placed on teachers to 'teach', translate through the planning process into demands placed upon pupils to achieve curriculum goals.

3.7.1.2 Process objectives

In addition to the product objectives, there are examples of process objectives in the orders such as:

“pursue a particular line of enquiry” (Ma 1 PoS)
“rehearse and direct others” (Mu PoS)

3.7.1.3 Competences

There are also examples of competences such as:

“write with fluency and, when required, speed” (En 3 PoS)
“demonstrate fluency, attention to detail and, where appropriate, responsiveness to others in singing” (Mu AT L6)

3.7.1.4 Mager’s model of product objectives

There are also examples of objectives which contain the three elements of Mager’s model (Reece and Walker, 1997: 267): the behaviour or performance (what), the conditions under which the behaviour occurs (how) and the criteria of acceptable performance (how well). However, these examples rarely adhere to this sequence e.g.

“communicate their findings [what] clearly and concisely [how well] using mathematical language and notation [how]” (Ma Foc);

and they are often found in complex sentences with multiple demands e.g.

“make sound decisions [what], selecting appropriate skills and strategies [what or how] and applying these [what] effectively and safely [how well] in challenging situations identified in the Key Stage 3 Programme of Study [how]” (PE AT L6)

Curriculum goals worded in this way require a certain amount of ‘deconstruction’ or reorganisation of the text to identify each goal more discretely.

3.7.2 A standardised format for the ‘curriculum goal

The most appropriate format for the basic structure of a ‘curriculum goal’, which can accommodate these different types of objective and learning behaviours in their various linguistic realisations, would seem to be the general model (Figure 6.1) suggested by Reece and Walker of “a *student behaviour*” modelled by a verb, “with an element of *subject content*” or activity focus modelled by the complement and/or adjuncts (Reece and Walker, 1997 : 248).

Figure 3.1 Structure adopted for modelling curriculum goals in the database

Behaviour	Subject content or activity focus
Verb	Complement and/or adjuncts

This basic clause structure, with its given Subject (the pupils), may be considered as a text-complete communicative event (Scott and Thomson, 2001), which can be considered within itself for the purposes of semantic analysis. Using this structure, the separation of the verb as the ‘headword’ from its complements and adjuncts will allow comparative analysis of the headwords used in different parts of the orders. In order to ensure consistency in the comparison of headwords, all inflectional verb forms and derivational non-verb forms need to be modified into a root-verb form. This is discussed in more detail in Appendix D.

3.8 The phases and stages of database construction and data analysis

The preparation, construction and analysis of data from the corpus of national curriculum texts was carried out in two phases, each with several stages. These are described in detail in Appendix D: The phases and stages of database construction and data analysis.

Phase 1 is the preparation of the database derived from the corpus of selected national curriculum texts. It contains 3 stages. Stage 1 is the process of constructing the database table. Stage 2 is the process of refining the database through analysis and manipulation of the textual content of the curriculum goals. Stage 3 is the process of classifying the curriculum goals against different semantic criteria.

Phase 2 is the analysis and comparison of data derived from the database. It contains 2 stages. Stage 1 is the comparison of various statistics based on the headwords contained in the database using the software Wordsmith. Stage 2 is a process of reduction, using relations of synonymy and hyponymy to group the headwords and form a more manageable list of verbs which can be considered as the defining the 'linguistic behaviours of the curriculum for use in integrated curriculum goals'.

3.9 Summary conclusion

In this chapter, I have provided an overview of the approaches to computer-assisted analysis of text, semantic analysis and modelling of educational objectives drawn on in this thesis.

Examination of the 'texturing' of the national curriculum orders has revealed that socio-political pressures, theoretical perspectives on teaching and learning, subject-specific discourses and assumptions about learners are all evident in the structural and linguistic choices made by the curriculum authors. In the interests of reducing prescription and encouraging professional interpretation, some of these choices appear to have obscured some of the curriculum goals, including the language demands that are likely to be placed on EAL pupils in the KS3 learning context.

If teachers are to begin to understand all the purposes for which language is used as indicated in the curriculum, and if they are to identify the language demands arising from curriculum goals, they may have to interrogate or 'deconstruct' the wording of the national curriculum goals and of any learning objectives and assessment outcomes designed for particular lessons. It would certainly be beneficial for teachers to develop an understanding of how the words used to indicate expected pupil behaviours can be drawn out and foregrounded in goals to identify linguistic behaviour; and how verbs that indicate linguistic behaviour combine with elements of subject content to construct goals that give rise to quite different kinds of language use.

This is the main topic of the next chapter.

CHAPTER 4

Making Sense of Language Use in a Subject-Based Curriculum: from Subject Discourses and Curriculum Goals to Language Models

CHAPTER 4

Making Sense of Language Use in a Subject-Based Curriculum: from Subject Discourses and Curriculum Goals to Language Models

4.1 Introduction

In chapter 2, I outlined the need for EAL pupils at KS3 in Wales to continually extend, expand and refine their language resources so they can achieve across the curriculum. I pointed out that, in order for this to happen, teachers need to plan constructively to create opportunities for additional language development in learning activities and to select and differentiate forms of language that can be modelled for pupils. Both the language models and activities in which they are used must be coherent with subject learning activities and subject-driven language, all directed towards the achievement of curriculum goals.

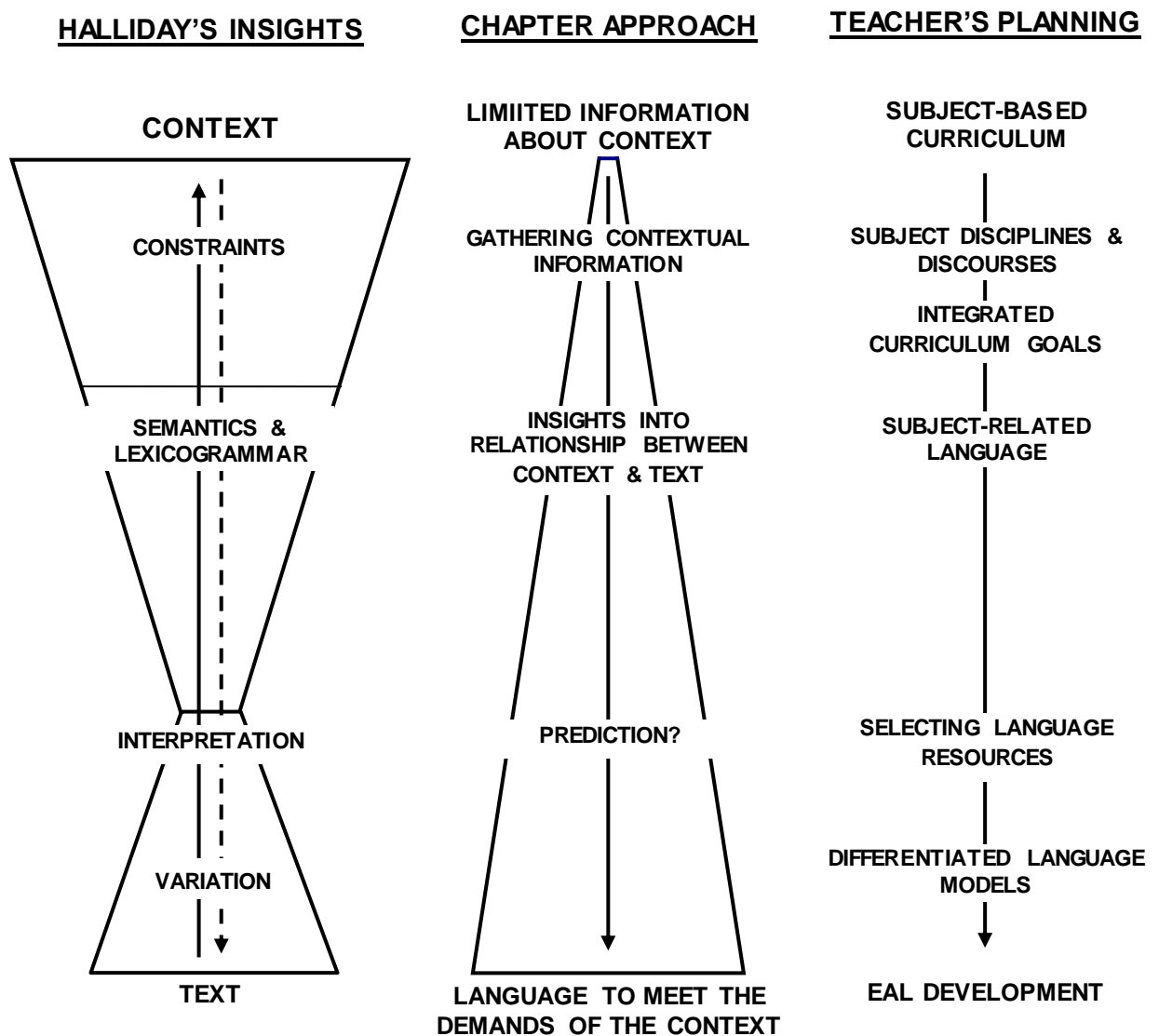
For teachers to plan effectively and choose appropriate language to model for EAL pupils at KS3, it would be beneficial for them to develop an understanding of the discourses of curriculum subjects in terms of: the purposes for which language is used in each subject; the kinds of meanings that are typically constructed in each subject; and the potential that exists for choosing alternative wordings to realise the meanings and fulfil the purposes.

In chapter 3, I described the rationale, and outlined the methods used, for the construction and analysis of a database of curriculum goals, designed to identify the roles and purposes of language use indicated within the statutory orders. The findings of analyses are used to inform and illustrate the forthcoming discussion.

In this chapter, I explore Halliday's proposition that there is a 'predictive' or determinative relationship between Context and Text, applying it to the situation of teacher planning for EAL development in the curriculum. I will discuss how, at the planning stage, teachers may move from knowledge of subject discourses, through curriculum goals to constructing differentiated language models for promoting EAL development in subject lessons.

The chapter traces one continuous argument, working from Context to Text, illustrating how contextual information about national curriculum subject disciplines and their goals can be interpreted, in the light of Halliday's insights, as **constraints** which narrow the range of potential choices of language form. The teacher's role in selecting appropriate linguistic resources is presented as a matter of 'predictive' socio-cultural interpretation; and Halliday's insights into **variation** in the relationship between social function, semantics and lexicogrammar are then related to the differentiation of language models (Fig. 4.1).

Fig. 4.1 How teachers' planning can be informed by Hallidayan insights into Constraints and Variation in language



In section 4.2, I will outline Halliday's insights into the relationship between Context and Text that inform the subsequent discussion, explaining a selection of the features of language which facilitate the relationship between contextual constraint and language choice.

In section 4.2.3, under 'Constraints', I will consider the way Halliday proposes that **clause structure** 'models' or 'construes' human experience of the world; how **collocations** and **patterns** of usage develop within similar contexts; and how people's familiarity with language use in other contexts creates a kind of '**intertextuality**', an associative relationship between different texts. These constraints lead to a certain level of **predictability** about language use linked to context which suggests the possibility of teachers 'predicting', at the planning stage, some of the language needed to achieve curriculum goals in subject lessons.

The process of applying this principle of predictability to planning EAL development in the KS3 national curriculum is addressed from section 4.2 through to 4.7.

In section 4.3, I will begin the discussion on planning by looking at curriculum subjects as 'contexts' with specific discourses and illustrate some of the features that characterise them.

In section 4.4, I will explore curriculum goals as an aspect of contextual constraint and as a source of information for narrowing the range of language resources needed, making reference to some of the difficulties of identifying the roles and purposes of language in the wording of curriculum goals.

In section 4.5, I will explain how, using some of the information discussed in sections 4.3 and 4.4, it may be possible to construct integrated language and learning goals from the overarching curriculum goals.

In section 4.6, I will outline Halliday's insights into the relationship between social function, semantics and lexicogrammar, discussing his three linguistic metafunctions: **Ideational**, **Interpersonal** and **Textual**, in which language construes three different types of meaning. I will examine Halliday's explanation of how the constraints of Context can be related to these three different types of meaning through the register

variables of **Field**, **Tenor** and **Mode**, which operate together to determine language choices that are realised in wordings. I will suggest that this relationship can inform the 'prediction' of language resources for use in constructing language models.

In section 4.7, I will apply Halliday's insights to show how meaning may be derived from the curriculum goal, to provide information about language resources and further narrow the range of choice. I will look specifically at what linguistic information can be derived from the behaviour verbs and from the elements of subject content in integrated curriculum goals, discussing their interaction with one another.

In section 4.8, I will talk about the 'interpretation gap' which exists between the inherent predictability and unpredictability of language, which is filled by the teacher in their role as a socio-cultural interpreter and an intermediary of language choice for EAL pupils, whose more limited English language resources and intertextual frameworks render them less capable of selecting appropriate language for academic purposes.

In section 4.9, under 'Variation', I will consider the following of Halliday's propositions: that meaning is created in language through systems of choice which operate on **paradigmatic** and **syntagmatic** axes, allowing substitution and rearrangement of words to modify meaning; that the flexibility which exists within the system of meaning-construction in language results in **agnation**, where different forms of language can realise closely related meanings through **synonymy**, **hyponymy** and **meronymy**; and that the constituent units of grammar can shift their rank creating **grammatical metaphor** so, for example, clauses expressing Processes can become Participants through **nominalisation**. These features of variation in language illustrate how different wordings may be used to express the same or similar meanings, creating the potential for teachers to construct and adapt language models for EAL pupils at different levels of development. They also offer some insight into the ways EAL pupils need to extend, expand and refine their language resources to construct more extended or nuanced meanings appropriate to the demands of the curriculum.

In section 4.10, I will apply Halliday's insights into variation in language to the need for teachers to select and differentiate their language models to the learning activities and needs of individual EAL pupils.

In section 4.11, I will provide an example of language models selected for use in a particular type of lesson activity using predictive information that relates the purposes of language use to subject content meanings and lexicogrammatical realisations.

In section 4.12, I will summarise the content of the chapter.

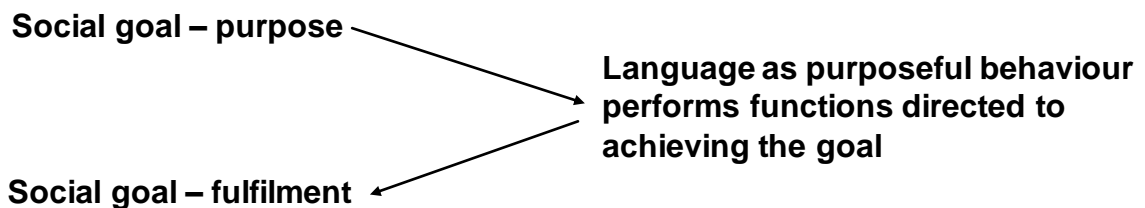
4.2 The relationship between Context and Text: a Hallidayan view

4.2.1 Language as a functional resource for achieving social goals

Halliday proposes that there is a **determinative relationship** between the **Context** in which language is used and the choice of wordings (the ‘**Text**’) used in that Context (Halliday, 1973, 1978, 1994; Halliday and Hasan, 1989). This relationship exists because language has evolved to perform social functions in facilitating aspects of human survival and experience (Halliday, 1973; 1978).

Language use is one of the most prevalent types of **behaviour** we engage in to achieve our personal and social goals (Halliday, 1973: 48). The majority of our goals are **purposefully motivated** (Leontiev, 1981: 21); there is a reason for doing them, so language use can be described as a type of “purposeful behaviour” (Egins, 2004: 4) (Fig. 4.2).

Fig. 4.2 Language is used to achieve purposefully motivated social goals



We use language in order to do things or to get things done in a wide variety of situations. In doing so, language performs a broad range of **social functions**. Halliday (1973; 1978; 1985; 1994), Gerot and Wignell (1994), Bloor and Bloor (1995) and Egins (2004) use the term ‘functional’ in the sense of ‘social function’ to explain some of the specific ways in which language is used to serve social **purposes**. For instance, Halliday offers the following examples of functions of language which he describes as socio-personal:

“We use language to approve and disapprove; to express belief, opinion, doubt; to include in the social group, or exclude from it; to ask and answer; to express personal feelings; to achieve intimacy; to greet, chat up, take leave of; in all these and many other ways” (Halliday, 1973: 41).

In defining the purposes of different types of genre text, Gerot and Wignell refer to the ‘social function’ of *Recounts* as “To retell events for the purpose of informing or entertaining” (Gerot and Wignell, 1994: 194) or of a *News Item* as “To inform readers,

listeners or viewers about events of the day which are considered newsworthy or important” (Gerot and Wignell, 1994: 200).

These examples of social function illustrate what language ‘**can do**’ as a type of social behaviour - what Halliday calls “a form of behaviour *potential*” (Halliday, 1973: 51). As a type of human behaviour, language has the **potential** to enable us to **do** many different things. It is a ‘**functional resource**’ which, along with other types of behaviour, we draw upon to fulfil particular purposes and achieve goals in different social contexts including the academic contexts of education.

Gaining an understanding of how language may be used to perform social and academic functions entails an examination of **how language is used** in different contexts and **how language is structured for use** (Eggins, 2004: 3). Halliday describes a functional approach to language in the following terms:

“A functional approach to language means, first of all, investigating how language is used: trying to find out what are the purposes that language serves for us, and how we are able to achieve purposes through speaking and listening, reading and writing. But it also means more than this. It means seeking to explain the nature of language in functional terms: seeing whether language itself has been shaped by use, and if so, in what ways – how the form of language has been determined by the functions it has evolved to serve.”
(Halliday, 1973: 7)

To pursue a functional approach to planning language development in the KS3 national curriculum context, the following research questions therefore need to be addressed:

- 1. What are the purposes that language serves in the curriculum?**
- 2. How is the character of language in the curriculum shaped and determined by what pupils are expected to use it for?**

Halliday provides insights into the features of language which facilitate the relationship between Context and Text, and these provide a useful basis for addressing the research questions.

4.2.2 Features of language facilitating the relationship between Context and Text

For the purposes of this thesis, I have selected those insights from Halliday's analyses of language that I consider most relevant to the topic of planning EAL development in the curriculum and divided them into two categories: **Constraints** and **Variation**.

4.2.3 Constraints

Halliday suggests that the cultural and situational contexts of language use narrow the range of options for choice from within the vast potential of choices that exist in the language system as a whole. What is going on in a situation, who is involved, and the role that language is playing in any social activities all act as 'constraints' upon language choice. The social functions that language performs in social activities, in particular cultural and situational contexts, determine the 'pattern of varieties', 'register range' and 'linguistic repertoire' of communities and individuals who use language in those contexts (Halliday, 1973: 22). There are 'repetitive patterns' and 'characteristics' of language which occur in 'typical' situational contexts and may be considered as significant 'patterns of social behaviour' (Halliday, 1973: 49).

This constraining or determinative relationship operates through the structure of the grammar as it realises particular kinds of meaning through processes of social interaction and language learning between individuals and within communities.

4.2.3.1 How clause structure models human experience

a) Participants, Processes and Circumstances

The basic structures of grammar 'model' or 'construe' human experience of reality (Halliday, 1994; 2004b). In the real world, there are events that involve **Participants**: people, other living things, objects and phenomena. There are **Processes**, which are what happens or what the Participants do. And there are **Circumstances**, in which the Processes take place.

In the grammar of English, **Participants** are represented as nouns, noun groups or complexes. **Processes** are represented as verbs, verb groups or complexes. **Circumstances** are represented as adverbs, adverbial groups, prepositional phrases and their complexes.

Just as the Participants in the real world have relationships to one another, to the Processes they are involved in and to their Circumstances, so the relationships between the representative elements in the grammar are reflected in the organisation of clauses and clause complexes. In this way, clauses and clause complexes 'model' real world events and realise relationships in the lexicogrammar.

The following clauses drawn from the national curriculum PE, English and Music orders illustrate how different words or groups of words realise 'what is going on' in the real world; which semantic roles each constituent is playing in representing reality; and how they are labelled as grammatical constituents.

<i>Pupils</i>	<i>carry</i>	<i>apparatus</i>	<i>safely.</i>
who?	does?	what?	how?
Participant: Actor	Process: Material	Participant: Goal	Circumstance: Manner
noun	verb	noun	adverb

<i>Pupils</i>	<i>talk</i>	<i>confidently</i>	<i>in different contexts.</i>
who?	says?	how?	where?
Participant: Sayer	Process: Verbal	Circumstance: Manner	Circumstance: Location
noun	verb	adverb	prepositional phrase

<i>Pupils</i>	<i>clap</i>	<i>a steady beat</i>	<i>in time</i>	<i>with others.</i>
who?	does?	what?	how?	with whom?
Participant: Behaver	Process: Behavioural	Participant: Range	Circumstance: Manner	Circumstance: Accompaniment
noun	verb	noun group	prepositional phrase	prepositional phrase

More extended relationships which enhance the meaning being expressed can be realised in clause complexes, often linked by conjunctions, as illustrated by the following sentences from the Art, DT and Music orders.

<i>clause 1</i>			<i>clause 2</i>	
<i>They</i>	<i>control</i>	<i>a range of materials, tools and techniques</i>		<i>to achieve a variety of outcomes.</i>
who?	does?	what?		for what purpose?
Participant: Actor	Process: Material	Participant: Range		Relation: Cause: Purpose

<i>clause 1</i>			<i>clause 2</i>	
<i>They</i>	<i>use</i>	<i>appropriate tools and equipment</i>	<i>when</i>	<i>working with a range of materials.</i>
who?	does?	what?		when?
Participant: Actor	Process: Material	Participant: Range		Relation: Circumstance: Time

<i>clause 1</i>			<i>clause 2</i>	
<i>They</i>	<i>control</i>	<i>their breathing</i>	<i>in order</i>	<i>to enhance their performance.</i>
who?	does?	what?		why? what for?
Participant: Behaver	Process: Behavioural	Participant: Range		Relation: Cause: Purpose/Result

The facility of language to structure and organise our experience in this way enables us to make sense of the real world and all the things that happen around us. In this way, the aspect of context concerned with ‘what is going on’ has a clear determinative relationship with the structure of the text. Knowing what is going on enables us to ‘anticipate’ and choose language appropriate to represent it, **if** we have the internalised linguistic resources to draw upon. EAL pupils, who are in the process of developing their linguistic resources in English, may be less able to represent what is going on than other pupils in their class and therefore need the appropriate language to be modelled for them so they can learn it and begin to use it themselves.

This representative function of language also allows us to move from talking about our immediate, contextualised experiences to representing experiences which are not necessarily ‘present’ in the real world context at the time the language is being used (Halliday, 2003: 395). So we can talk or write about events that took place 2000 years ago; those which are currently taking place in different parts of the world; or those we imagine **could** happen, ‘representing’ them in language.

This representative facility also enables us to move beyond simply modelling **real world** experiences, to model, structure and organise more **abstract, conceptual relationships**, such as those in the following examples drawn from the national curriculum orders:

- *the relationship between force, area and pressure (Sc 4 PoS);*
- *the quantitative relationship between speed, distance and time (Sc 4 PoS);*
- *that the forces of compression, tension, torsion and shear, produce different effects (DT PoS).*

The example below illustrates how abstract concepts are represented as Participants in an event, with an Actor, a Material process and a Goal, modelled by a clause in which the concepts (*friction* and *speed*) are represented as nouns and the relationship between them is represented as a verb (*reduces*) as if they were real world Participants.

<i>Friction</i>	<i>reduces</i>	<i>speed.</i>
what?	does what?	to what?
Participant: Actor	Process: Material	Participant: Goal
noun	verb	noun

In the next example, the concepts are represented in a clause complex where 'pressure', 'force' and 'area' are Participants represented as nouns, with their relationships represented as a verb and a verb group. In Halliday's terminology, the semantic roles are labelled as the Token (What is being defined: *pressure*) and the Value (what defines it: *force divided by area*).

<i>clause 1</i>		<i>clause 2</i>		
<i>Pressure</i>	<i>equals</i>	<i>force</i>	<i>divided by</i>	<i>area.</i>
what?	is defined by?	what?	affected by?	what?
Participant: Token	Process: Intensive	Participant: Value		
abstract noun	verb	abstract noun	verb group	abstract noun

Academic or educational language is characterised by this facility, where events, phenomena and ideas experienced or developed by others can be constructed in language as 'information' which can be 'reconstructed' with pupils in a classroom. Once internalised, pupils can use their own language resources to analyse and manipulate that information and convey their own knowledge, understanding and ideas about what they have learned. This can enable them to fulfil curriculum goals such as:

- *describe abstract ideas such as electric current being a flow of charge, the sum of several forces determining changes in the direction or the speed of movement of an object, or wind and waves being energy resources available for use (Sc AT4 L6);*

- *interpret their findings, question plausibility and recognise that poor quality information yields unreliable results* (IT AT L4);
- *know that some events, people and changes have been interpreted in different ways and suggest possible reasons for this* (Hi AT L5).

b) Active and Passive

Such relationships between Participants can be modelled in clauses in a way that foregrounds the Actor (the Active) or in a way that foregrounds the Goal (the Passive).

In the following example, the '*current in the coil of an electromagnet*' is the Actor, it is '*doing the producing*'. In the clause, it is placed **before** the verb and the Goal, foregrounding its '**active**' role.

i. Active

<i>... a current in a coil</i>	<i>produces</i>	<i>a magnetic field pattern.</i>
what?	does what?	resulting in what?
Participant: Actor	Process: Material	Participant: Goal
noun group	verb	noun group

In the following two examples, the **Goals** are placed before the verb and the Actor, which means the '**passive**' Participant in the clause is foregrounded.

ii. Passive

<i>... the field pattern</i>	<i>[is] produced by</i>	<i>a bar magnet.</i>
what has resulted?	from what by?	what?
Participant: Goal	Process: Material	Participant: Actor
noun group	verb group	noun group

<i>... some materials</i>	<i>are changed by</i>	<i>heating ...</i>
what?	acted on by?	what?
Participant: Goal	Process: Material	Participant: Actor
noun group	verb group	nominalised process

In the grammar, the change of order between the Participants has to be signalled somehow to avoid confusion. This is done by changing the verb to a verb group involving the auxiliary verb *be* – *is/are*, followed by the main Process verb *produces/changes* in a modified past participle form *produced/changed*, followed with the

preposition *by*. If the verb was kept the same e.g. * *the field pattern produces a bar magnet*, the relationship would be completely different. So the structure of the 'passive voice' has been developed to ensure the meaning of the relationship still makes sense.

In the second example, the Process: *'heating'*, has been turned into a noun (nominalised) so it can act as a Participant and the real world Actor (the person doing the heating) can be left out of the clause altogether.

Both of these features are characteristic of educational language use and are examples of structural language resources that EAL pupils need to learn if they are to appropriately meet academic language demands in the KS3 classroom.

c) Tense

One final example of how grammar models or represents human experience of reality is that of Tense. In order to convey the information that something has happened in a particular time, the grammar modifies the verb. The following examples illustrate how different verb constructions represent just some of the different kinds of time conceptualised in English.

The present progressive tense, formed with the *auxiliary verb 'be' followed by the main verb -ing present participle*, represents things that are happening now and are ongoing.

- "*They **are beginning to** select, organise and communicate items of information about the past*" (Hi AT L2)

The past tense, formed by the *main verb with an -ed ending*,

- "*... justify how they **arrived** at a conclusion*" (Ma 1 PoS)

or, in irregular verbs, in a modified form e.g. *eat – ate, speak – spoke*, represents things that happened in the past and finished at some time in the past.

The future tense, formed by a range of possible *modal auxiliary verbs such as 'will, shall, might, could ...'* or the verb phrase *'am/is/are going to'* followed by the infinitive form of the main verb, represents things that haven't happened yet but are going to happen, or might happen in the future.

- “*Pupils plan what they **are going to make***” (DT AT L4)

Time is conceptualised differently in different languages and EAL pupils may have difficulty grasping both the nuances of meaning and the complexities of construction in some of the more complex tenses of English e.g.

- *‘We would have been going to Cardiff, had it not been for the weather turning bad’.*

The ability to represent time in different ways is essential for EAL pupils to learn if they are to meet demands of the curriculum such as:

- *“Consider how and why some historical events, people and changes have been interpreted differently” (Hi PoS)*

4.2.3.2 Collocation and patterning in Text

When language is used to represent similar relationships between similar things in similar circumstances, patterns emerge where words are used together in recurrent phrases, groups and clauses. For example, formulae and equations are often conventionalised in similar patterns of wording because they express similar semantic relationships e.g.

- *Pressure equals force divided by area.*
- *Speed equals distance divided by time.*
- *Current equals voltage divided by resistance.*
- *Shear stress equals force divided by cross-sectional area.*

Because the relationships in these formulae are so constrained, there is only a limited number of ways to express them that would be considered appropriate or ‘correct’ in their typical contexts of use, so a similar form of wording is frequently used. The co-occurrence of these words in these precise sequences is **highly likely within** the typical contexts where such calculations are needed, where there is a **social purpose** for calculating *the relationship between force, area and pressure*, for example. Although each of the words in the formulae could be used independently in other contexts, their co-occurrence in these precise sequences is **highly unlikely outside** of the contexts of their respective fields or subject areas. By contrast, the collocation of *‘divided’ + ‘by’* may be found more frequently in other contexts where the action or process of *‘dividing’* takes place, particularly in the mathematics classroom.

Frequent collocations may constitute semantic or stylistic features of a text or **discourse** (Scott and Tribble, 2006: 33), characterising the use of language in a particular context, and examples may be found in most texts including the KS3 national curriculum orders. For example:

- In 22 occurrences of the word '*awareness*' in the orders, it is followed by '*of*' 15 times.
- In 11 occurrences of the word '*based*', all 11 are followed by '*on*'.
- Of 179 occurrences of the word '*appropriate*', 40 are preceded by '*where*'; 33 by '*use/using*' and 15 by '*making/make*'.
- Of 103 occurrences of '*between*', there are 20 '*differences between*'; 17 '*link/s between*'; 17 '*relationship/s between*' and 8 '*similarities and differences between*'.

Sometimes words co-occur in close proximity, but not adjacent, to one another e.g.

- *different kinds of writing* (English)
- *different historical interpretations of events* (History)
- *different types and classifications of economic activity* (Geography)

The degree of syntactic separation of such semantically linked words is described as 'collocation span' (Scott, 1997: 235). Although the words may be separated syntactically, their close collocation constitutes a pattern which language users become familiar with as appropriate for expressing the relationship between different things.

Sometimes, meanings which could be expressed in several alternative wordings are expressed using the same recurrent phrase throughout a text or series of texts. Whilst there is a degree of semantic constraint determining the language choice, flexibility in the language system allows different patterns to be chosen reflecting stylistic choices of the authors. These patterns often act as a form of cohesion within the text as a whole.

All of the following examples from the KS3 national curriculum orders occur around the word '*which*'.

In Art, Music and PE, the same phrase is used several times to link a description of one type of activity with lists of more specific skills that follow:

- *experiment with materials, images and ideas during which pupils should be given opportunities to experience a wide range of techniques ...* (Art)
- *produce finished compositions during which pupils should be given opportunities to select and combine sounds from a wide variety of vocal, instrumental and electronic sources ...* (Music)

- *apply the techniques and skills specific to the activity undertaken **during which pupils should be given opportunities to take responsibility for self, others and the environment** ... (PE)*

In the DT order, there are two distinctive patterns involving **'which'**. The first is a stylistic variation for conveying a similar meaning to the examples above but, instead of providing a specific description of the activity, the authors use the generic term **'tasks'**; and instead of using the preposition **'during'** the authors choose **'in'** and replace **'pupils should be given opportunities to'** with **'they'**.

- ***tasks in which they investigate and evaluate familiar products***
- ***tasks in which they develop and practise particular skills and knowledge***
- ***tasks in which they design and make products***

In the next examples, the phrase **'which take into account'** precedes a list of factors that pupils need to bring to bear on their work to develop specific DT skills.

- *understanding of the form and function of familiar products **which take into account appearance, safety, reliability and the users' end purposes***
- *develop realistic intentions, **which take into account the working characteristics of materials and components***
- *make judgements about the use of materials and techniques **which take into account cost, aesthetic, physical and working characteristics.***

One of the most common collocations of **'which'** is in the phrase **'... way/ways in which ...'** frequently followed within a close collocational span by a passive construction, commonly constructed with the modal auxiliary verb **'can'**. This relationship is found in several subject orders indicating a pattern that is not specific to a particular subject discourse or author's style, although it occurs more frequently in Science.

- *assess the relative merits of **different ways in which environmental issues are tackled** (Geography)*
- *identify some of **the different ways in which the past is represented** (History)*
- *understand how some properties of materials depend on **the way in which their constituent atoms are combined** (Science)*
- *respond practically and imaginatively to **the ways in which ideas and feelings are conveyed** (Art)*
- *show understanding of **the ways in which meaning and information are conveyed in a range of texts** (English)*
- *consider **the ways in which scientific ideas are affected** by the social, political and historical context (Science)*
- *develop their understanding that **the ways in which organisms function are related to the structure of cells** (Science)*
- *aware of **the ways in which ICT tools and information sources can help them in their work** (IT)*
- *looking critically at some of **the ways in which representations of data can be misleading** (Maths)*
- *there are a number of **ways in which energy can be stored** (Science)*
- *experience **ways in which algebra can be used to model real-life situations and solve problems** (Maths)*

- about *the ways in which* living things and the environment of Wales *can be protected* (Science)
- describe *ways in which* places *are linked* through movements of goods and people (Geography)
- identify *ways in which* an animal *is suited* to its environment (Science)
- describe *ways in which* some materials *are changed* by heating or cooling (Science)

This kind of patterning happens particularly in contexts where similar meanings are being constructed repeatedly; where language users interact with one another and choose common ways of using and combining words to respond to the functional purposes and demands of the context.

Such patterns are part of the repertoire of linguistic resources which users draw upon when they take meaning from what other people say or write and when they make meaning using language themselves.

In the curriculum, certain collocations and patterns may be typically associated with particular subject discourses and EAL learners will need assistance in learning them if they are to build up their own linguistic repertoire to help them achieve well within the subject curriculum.

4.2.3.3 Intertextuality

Language users who are familiar with a context develop a sense of ‘what goes together with what’ and that certain words ‘go together’ more frequently than others. When people interact in particular contexts, they learn from one another’s uses of language. Within such ‘communities’ of language users, even though there is space for individual variation and creativity, ‘typical’ uses of language tend to develop which characterise the discourse of the community and the cultural and situational contexts in which they interact.

Familiarity with the uses of language in a variety of cultural and situational contexts allows users to build up knowledge of expected patterns, which they bring to bear on any language use they encounter or produce in future and in other contexts (Schleppegrell and Colombi, 2002: 2). In this way, a person’s experience of previously produced ‘texts’ becomes part of the ‘context’ of any new text they encounter or produce. Halliday calls this **intertextuality** (Halliday and Hasan, 1989: 47).

Many EAL pupils are at a disadvantage compared to other pupils who have previously encountered more language, used for a range of purposes in a variety of contexts. EAL pupils may lack the necessary familiarity, and their intertextual resources will consequently be more limited, making it more difficult for them to choose appropriate wordings to meet the demands they face in the curriculum and other social contexts.

In secondary school, subject teachers have considerable familiarity with the features of discourse in their subject area and will have developed ways of expressing meanings in language that they will come to expect of pupils. Pupils, of all linguistic backgrounds, need to be schooled in these uses of language if they are to reproduce them or incorporate them within their own work, particularly for the purposes of assessment. EAL pupils whose intertextual framework of reference is weaker will need specific support and modelling of appropriate language in order to overcome the disadvantage they face.

At KS3, language support teachers who work across subject areas also need to become familiar with subject-specific discourses and uses of language, otherwise they may choose models for pupils which are not considered 'appropriate' or even 'correct' expressions of certain subject meanings to fulfil subject learning purposes. This highlights the importance of joint planning to share expertise when subject and language specialist teachers work together in partnership.

4.2.3.4 Predictability

The features of language discussed above create a kind of '**predictability**' in language, allowing language users to anticipate which words or wordings are likely to occur and to make language choices of their own which will be considered appropriate to the situation (Halliday and Hasan, 1989: 28).

This identification of purpose and sub-conscious modelling of context enables users to locate the language use within a framework of probabilities, to 'predict' what meanings are being constructed and what wordings may be used.

"There is no situation in which the meanings are not to a certain extent prescribed for us. There is always some feature of which we can say, 'This is typically associated with this or that use of language'. Even the most informal

spontaneous conversation has its strategies and styles of meaning. We are never selecting with complete freedom from all the resources of our linguistic system. If we were, there would be no communication; we understand each other only because we are able to make predictions, subconscious guesses, about what the other person is going to say” (Halliday and Hasan, 1989: 40).

Knowledge of the cultural, situational and linguistic context and an understanding of the flow of meaning being constructed with language allows us to predict what is likely to come next and therefore what people say or write next does not come as a constant surprise but makes sense within a framework of understanding that we have internalised.

“Because of the close link between text and context, readers and listeners make predictions; they read and listen, with expectations for what is coming next. When someone is reading or listening in order to learn, the ability to predict in this way takes on a particular importance, as without it the whole process is slowed down. The whole point of a passage may be missed if the reader or listener does not bring to it appropriate assumptions derived from the context of situation.” (Halliday and Hasan, 1989: 46)

This is the situation for EAL pupils who have not yet developed sufficient linguistic resources and familiarity with their uses in the various contexts of curriculum subject learning.

“Much of the work of learning a foreign language consists in learning to make the right predictions. If the student coming into school with a first language other than English finds difficulty in using English to learn with, this is likely to be in part because he has not yet learnt to **expect** in English – to use context in a predictive way.” (Halliday and Hasan, 1989: 46)

For that reason, teachers need to act as **intermediaries** for EAL pupils making the predictions from context for them, anticipating what language will be needed to fulfil the demands facing pupils in subject lessons and modelling it for them.

Although this can be done in an ad hoc fashion during lessons, with the teacher responding to linguistic demands as and when they arise, support for additional language development is far more likely to be productive if it is planned. At the planning stage, teachers need to ask themselves the questions:

- **What are the purposes that language is going to serve in the lesson?**
- **How is the language shaped and determined by these purposes?**

By identifying some of the main contextual constraints acting upon language choice in subject discourses, teachers can use the relationship between Context and Text to narrow the range of options in the semantics and lexicogrammar and help them

anticipate, 'predict' and select appropriate language that could be incorporated and modelled in subject learning activities. This predictive process is one of 'narrowing' down the choices from the general to the specific.

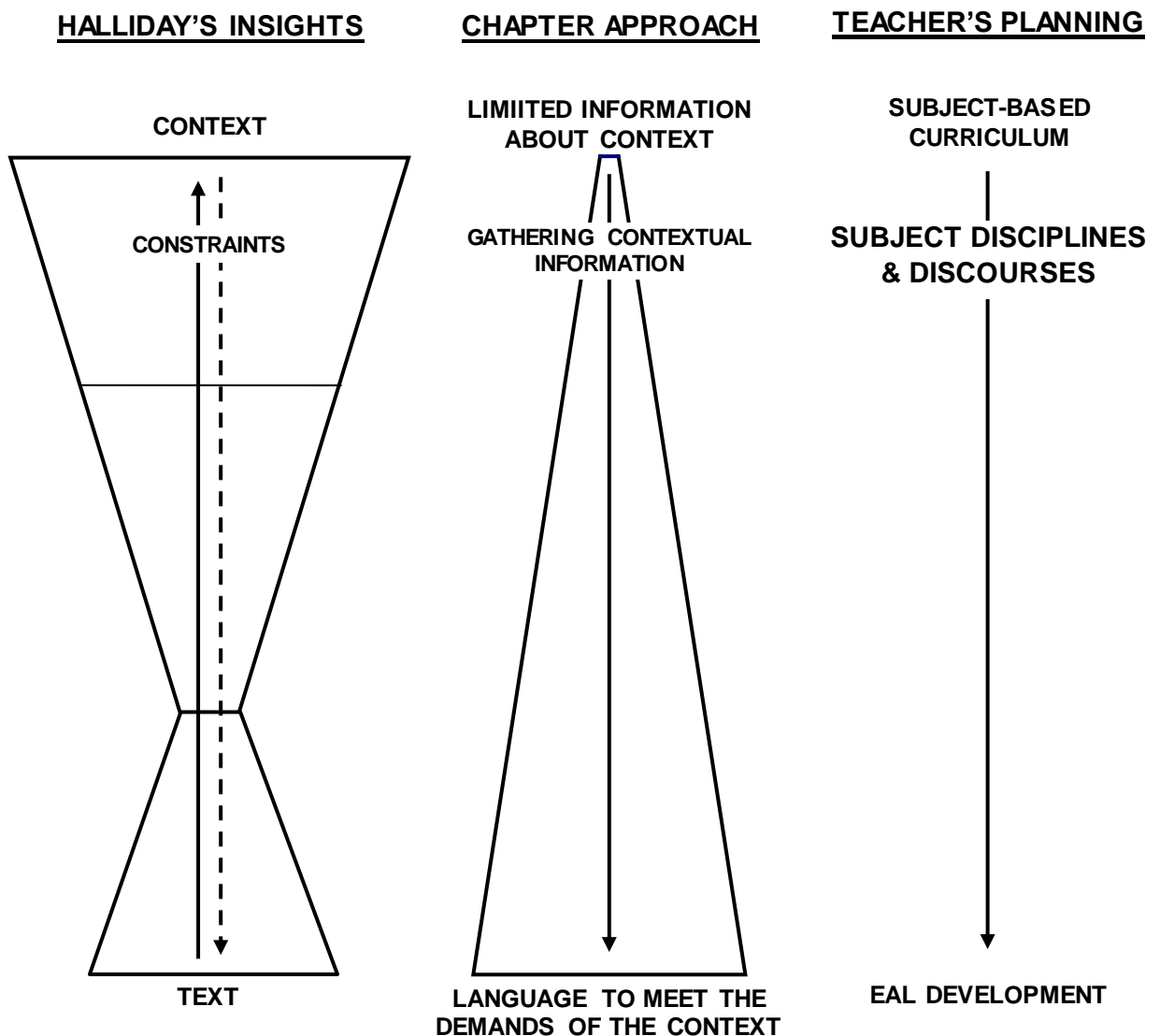
Having a general overview of the purposes for which language is used in the curriculum is useful for teachers, particularly language support teachers who support pupils in different subjects across the curriculum, because it enables them to view the language development opportunities of individual lessons in relation to other opportunities that arise elsewhere. This can help them to organise and diversify the language support offered to pupils through medium-term and long-term planning.

4.3 Curriculum subject disciplines as 'contexts' with specific discourses

4.3.1 Introduction

In this section, I will begin to discuss some of the ways that teachers can identify information about the purposes of language use in the curriculum **from the subject context**, starting with an examination of the general framework of curriculum subject disciplines and their discourses (Fig. 4.3).

Fig. 4.3 Subject disciplines and discourses as contextual constraints



4.3.2 Education as a social process

Education is essentially a social process, or a set of social processes, oriented to teaching, learning and assessment (Halliday and Hasan, 1989; Cope and Kalantzis,

1993b; Christie and Martin, 2000). Formal education takes place within the fairly constrained social environments of education institutions and the language used in these contexts is shaped by the social environment and its goals.

“... the words that are exchanged in these contexts get their meaning from activities in which they are embedded, which again are social activities with social agencies and goals” (Halliday and Hasan, 1989: 5).

In school systems where there is a centrally determined national curriculum, such as Wales, the curriculum orders provide a statutory framework for creating the contexts, goals and activities for teaching and learning, prescribing areas of knowledge to be learned and skills to be developed. Language is used in the curriculum to facilitate these ends.

Halliday's (1973: 22, 49) proposition, that the purposes of language use (its social functions) determine the varieties, registers and language repertoire of communities in typical situational contexts, can be applied to the particular contexts of KS3 national curriculum subjects in Wales. It is useful to think of each subject area in terms of a 'community of practice' (Lave and Wenger, 1991), as a discipline in which people belonging to the same community behave in particular ways, do particular things and develop particular discourses. The discourse of each subject community is characterised by the purposes for which language is used, the meanings that language is used to realise, and the 'typical' patterns of wording which have developed within the discourse community (Christie and Unsworth, 2000: 3).

At secondary school, pupils begin to be 'socialised' into the discourse communities of subject area disciplines (Schleppegrell and Colombi, 2002: 7), developing an understanding of the subject-matter, interests, values and meanings constructed within them²⁴. They undergo a form of 'apprenticeship' (Cope and Kalantzis, 1993a; Mercer, 1995) where they are learning how to 'do' science, 'do' mathematics, 'do' geography etc. using the language appropriate to each discipline (Halliday, 2004b; Schleppegrell and Colombi, 2002).

²⁴ Whilst some may suggest that such socialisation in schooling is a form of 'enforced cultural assimilationism', Cope and Kalantzis (1993) point out that, if presented in a curriculum and ethos that values diversity and promotes inclusion, such an approach is empowering rather than disempowering because it equips pupils with the resources to both achieve within and to challenge inequities resulting from the dominant norms of social convention. Becoming expert users of language in a wide range of discourses can enable pupils to go on and access positions of power and authority which allow them to enact change.

This apprenticeship goes beyond merely learning a body of subject knowledge, towards learning how to behave as a scientist, mathematician or geographer behaves, doing the kinds of things that people in those educational and professional communities do, and learning how to use language as they would use language. The kinds of behaviour and the practices engaged in differ between curriculum subjects as well as the informational subject 'content' knowledge to be learned, and both act as constraints upon language choice.

Understanding the scope of these behaviours and practices can help inform teachers of the roles language plays and the purposes for which language may be used in each subject. Understanding something of the general 'character' of each subject discipline can help teachers define a framework of expectation; anticipating that there are certain purposes for which language is likely to be used more in Art, for example, than in Information Technology, or in Science etc. Such a framework can provide an overview for planning to ensure that EAL pupils gain experience of using language for a wide range of different purposes necessary for achieving across the curriculum - promoting greater 'functional diversification' of their English language resources.

4.3.3 Characterising the subject disciplines in terms of what pupils are expected to do – behaviours and practices

To illustrate some of the similarities and differences between curriculum subjects in their scope of behaviours and practices, I will draw on the findings of the corpus analysis carried out for this study. Something of the general 'character' of each subject discipline is revealed in the words of the orders used to indicate what kinds of behaviour pupils are expected to engage in, in relation to subject content. In educational objectives, the behavioural element is usually indicated by a verb complemented by an element of subject content as a complement or adjunct (Reece and Walker, 1997: 248) but in many cases in the orders, 'Process' meanings are realised in different grammatical constituents such as nominalisations. To aid collation of data and comparison between subjects, all words in the corpus used to indicate pupil behaviours were transformed into a root verb form e.g. *DEVISE*, *COMPARE*, *NAME*, *MODIFY*, *ADAPT*, *SHAPE*.

During the process of corpus construction and analysis, several features of the verbs emerged which make defining the purposes of language use in the curriculum more problematic. They include:

- the level of semantic specificity of the verbs which can be represented as a cline from general to specific;
- the semantic relationships between verbs, most of which are relations of synonymy and hyponymy;
- differences in collocational range and polysemic variation between verbs.

These are discussed briefly here before moving on to compare the occurrences and uses of the verbs in the ten subject orders.

4.3.3.1 A cline of semantic specificity

Firstly, there is considerable difference in the level of semantic specificity of each verb as it relates to behaviour. In terms of their conventionally assigned meanings, the verbs exist along a cline between poles of generality and specificity (Fig. 4.4).

Fig. 4.4 Cline of semantic specificity

GENERAL

USE WORK
DEVELOP BUILD ON
KNOW UNDERSTAND
RECOGNISE INCREASE
VARY DIFFERENTIATE
IMAGINE REVISE
COMPARE SELECT
MEASURE JUMP
EVALUATE DISTIL
MULTIPLY CUT
TWIST LABEL
SING CLAP
SPECIFIC

4.3.3.2 Semantically general verbs

Several of the verbs used most frequently across the curriculum, such as *USE*, *KNOW*, *WORK*, *RECOGNISE*, *UNDERSTAND*, *DEVELOP*, *BUILD ON*, *INCREASE*, *VARY* are semantically 'vague' (Cruse, 2004: 49) in relation to behaviour or practices.

For example, *USE* is the most frequent verb in the orders, occurring 371 times, in all ten subjects, and accounting for 9.2% of all the words indicating pupil behaviours. It is the most commonly used word indicating pupil behaviour in English, Mathematics, Science, Geography, History and Information Technology. Its basic conventionally assigned meaning is simply to 'employ something for some purpose or put something into action or service'. Because the meaning of the verb *USE* is quite vague, it requires its complement to clarify the **type** of behaviour expected and to identify precisely **what is to be used**. Sometimes, the behaviour indicated is linguistic e.g.

- *USE standard English vocabulary and grammar* (En 3 PoS)

but often it is cognitive, physical or graphic in nature e.g.

- *USE mental strategies to find methods for adding and subtracting numbers with at least two digits* (Ma AT2 L3)
- *USE games equipment and gymnastic apparatus* (PE AT L2)
- *USE formal drawing methods to communicate their intentions* (DT AT L6)

4.3.3.3 More semantically specific verbs

Further along the cline, other verbs are more semantically specific e.g. *COMPARE*, *DIFFERENTIATE*, *EVALUATE*, *IMAGINE*, *MEASURE*, *REVISE*, *SELECT*.

Even further along the cline, some verbs are much more semantically specific with a substantial amount of the behavioural meaning clearly deducible from the verb e.g. *CLAP*, *CUT*, *DISTIL*, *MULTIPLY*, *JUMP*, *LABEL*, *SING*, *TWIST*.

A general principle is that the more specific the meaning of the verb, the more likely it is to identify a distinctive practice in the discipline (Scott and Tribble, 2006). More semantically specific verbs also tend to be used less frequently because the behaviour indicated is so specific.

The practices indicated by the verbs and the elements of subject content provide useful information about some of the language that is likely to be needed, directly associated with the meanings of the verbs (See section 4.7).

4.3.3.4 Synonymy and hyponymy in relation to behaviour verbs

Some verbs are quite close **synonyms** e.g. *ADAPT*, *ADJUST*, *ALTER*, *AMEND*, *CHANGE*, *MODIFY*. Although these words may be interchangeable in certain contexts, in other contexts they have more discrete meanings and are more typical in some discourses compared to others e.g.

- *AMEND* is used only in IT referring to pupils *AMENDING* information and ideas;
- *ADJUST* is used only in English referring to pupils *ADJUSTING* their language to suit the circumstances and audiences.
- *ADAPT* is used in English to refer to pupils *ADAPTING* their talk, writing, presentation, style and register to different contexts, circumstances, audiences, readers and listener; and in PE it is used to refer to pupils *ADAPTING* their responses to physical demands; their performances to work with and support others; and previously learned tactics, techniques and skills to apply them to new situations.
- *ALTER* is used in Science to refer to pupils *ALTERING* electric current or the pitch and loudness of a sound; and in DT to *ALTER* the characteristics of materials.
- *MODIFY* is used in English, DT, IT, Art and PE to indicate a variety of different behaviours, as is *CHANGE* in Art, IT, Science and Music.

All of these verbs could be considered **hyponyms** of the more general verb *CHANGE* but authors' preferences and nuances of meaning determine different choices when referring to practices in each subject discipline. They also reveal something of the discourses of the subjects themselves. Certain words are 'typical' features of the subject discourse. Teachers need to become familiar with any distinctive uses of verbs to refer to certain types of subject behaviour in order to accurately identify different purposes for which language may be used. They may also need to explain these uses to EAL pupils so they can follow teacher instructions and lesson objectives, and develop their own understanding of the subject discourses (Cope and Kalantzis, 1993b: 67).

4.3.3.5 Collocational range and polysemic variation in relation to behaviour verbs

There are a number of verbs in the national curriculum which have many different **collocates** e.g. *RECORD* is collocated with the following:

In Art: *experience*
 ideas
 imagination
 information
 observations

	<i>feelings</i>
	<i>images</i>
	<i>perceptions</i>
In Geography:	<i>accurately</i>
	<i>evidence</i>
In History:	<i>information</i>
	<i>knowledge</i>
	<i>understanding</i>
In Music:	<i>music</i>
	<i>work-in-progress</i>
	<i>finished compositions</i>
In Mathematics:	<i>results</i>
	<i>data</i>
In Science:	<i>observations</i>
	<i>measurements</i>
	<i>data</i>
	<i>results</i>

So, *RECORD* would be considered to have a fairly broad **collocational range**.

By contrast, in all of its occurrences, *ACCESS* is only collocated with *information*.

Sometimes, different collocations may occur with a similar meaning being constructed in the verb e.g. *RECALL*, meaning 'bring to mind from memory for a present purpose':

- *RECALL facts* in Mathematics
- *RECALL information* in History
- *RECALL sections of music* in Music

On other occasions, the combination of the verb with its collocates constructs a different meaning in the verb. Thus the verb is used in different contexts with slightly different meanings e.g. *FIND*:

- *FIND information using alphabetical order* in English, meaning 'locate';
- *FIND circumferences* in Mathematics, meaning 'calculate or work out';
- *FIND answers* in History, meaning 'get information to satisfy a specific question';
- *FIND things out* in Science, meaning 'discover through experimentation'.

The property of a word having a **range** of different meanings associated with it is described as **polysemic variation**. So *FIND* has a broader **polysemic range of variation** than *RECALL* in the curriculum orders.

Increasing the polysemic range of words in EAL pupils' vocabulary is part of the process of language development and is crucially important for them if they are to comprehend and use words in different contexts across the KS3 curriculum. This is an aspect of language development which would benefit from conscious planning.

However, from a planning point of view it can make **identifying the role of language** in a particular curriculum goal more problematic. Even verbs which are clearly associated with linguistic behaviour have polysemic variation within the range of behaviour. For example, *EVALUATE* has two distinct meanings in the curriculum. The first is ‘to consider something and make judgements about its value, usefulness, quality, relevance’ etc. such as:

- *EVALUATE historical sources and identify those which are useful to answer specific questions* (Hi AT L5)
- *EVALUATE their work as it develops, bearing in mind their original intentions* (DT AT L4)

The second is ‘to calculate a numerical value for a mathematical expression’:

- *use the facilities of a calculator to plan a calculation and EVALUATE expressions* (Ma 2 PoS)

When considering which language models to plan for, teachers would benefit from understanding the distinction between the two kinds of *EVALUATING*.

4.3.4 Developing an overview of the subject disciplines and expected pupil behaviours

I will now consider the character of the different disciplines by comparing some of the verbs used to indicate pupil behaviours in each subject order, using findings from the corpus database analysis.

The aim of this comparison is to provide a general overview of the kind of practices and behaviours in which language will be embedded in each subject area. The overview provides a general framework for teachers to narrow the range of behavioural options from a very general notion of ‘academic language use’ to more subject-specific behavioural options and uses of language. The overview also reveals many of the verbs which are likely to be used in teacher instructions or lesson objectives directing pupils what to do. They are therefore important words for EAL pupils to learn. Teachers may need to make their meanings clear to ensure pupils can participate fully in activities without misunderstanding instructions.

Rather than listing every instance of a curriculum goal contained in the corpus database, I have chosen the more manageable approach of considering the verbs

independently of the subject content elements before considering selected examples where they are both combined.

4.3.4.1 Comparing the subjects

The national curriculum corpus database analysis reveals a total of 405 distinct verbs, including those derived from their morphemes, which are used to indicate expected pupil behaviours in curriculum goals.

a) Verbs shared between subjects

There are 210 different verbs used to indicate pupil behaviours which occur within at least two different subject orders. Of these, only 11 occur in all ten subject orders. There is a trend in the behaviour verbs of the orders, in which the more semantically general verbs are shared between a greater number of subjects and the more semantically specific verbs are shared between fewer subjects and have fewer total occurrences (Table 4.1). This trend illustrates increased specialisation in the subject disciplines and their discourses.

Table 4.1 Trend in specialisation indicated by subject behaviour verbs

Word	Total	Texts	Subjects									
			EN	MA	SC	DT	IT	GE	HI	AR	MU	PE
USE	371	10	EN	MA	SC	DT	IT	GE	HI	AR	MU	PE
UNDERSTAND	147	10	EN	MA	SC	DT	IT	GE	HI	AR	MU	PE
DEVELOP	86	10	EN	MA	SC	DT	IT	GE	HI	AR	MU	PE
EXPLORE	32	8	EN	MA	SC	DT	IT			AR	MU	PE
INTERPRET	41	8	EN	MA	SC		IT	GE	HI	AR		PE
PRODUCE	31	8	EN	MA	SC	DT	IT		HI		MU	PE
EXPLAIN	55	6	EN	MA	SC			GE	HI			PE
ASK QUESTIONS	20	6	EN	MA		DT	IT	GE	HI			
RECORD	25	6		MA	SC			GE	HI	AR	MU	
MODEL	24	4		MA	SC	DT	IT					
TEST	11	4		MA	SC	DT	IT					
PROCESS	6	4		MA	SC	DT	IT					
SWITCH	5	2			SC	DT						
HEAT	2	2			SC	DT						
BEND	2	2			SC	DT						

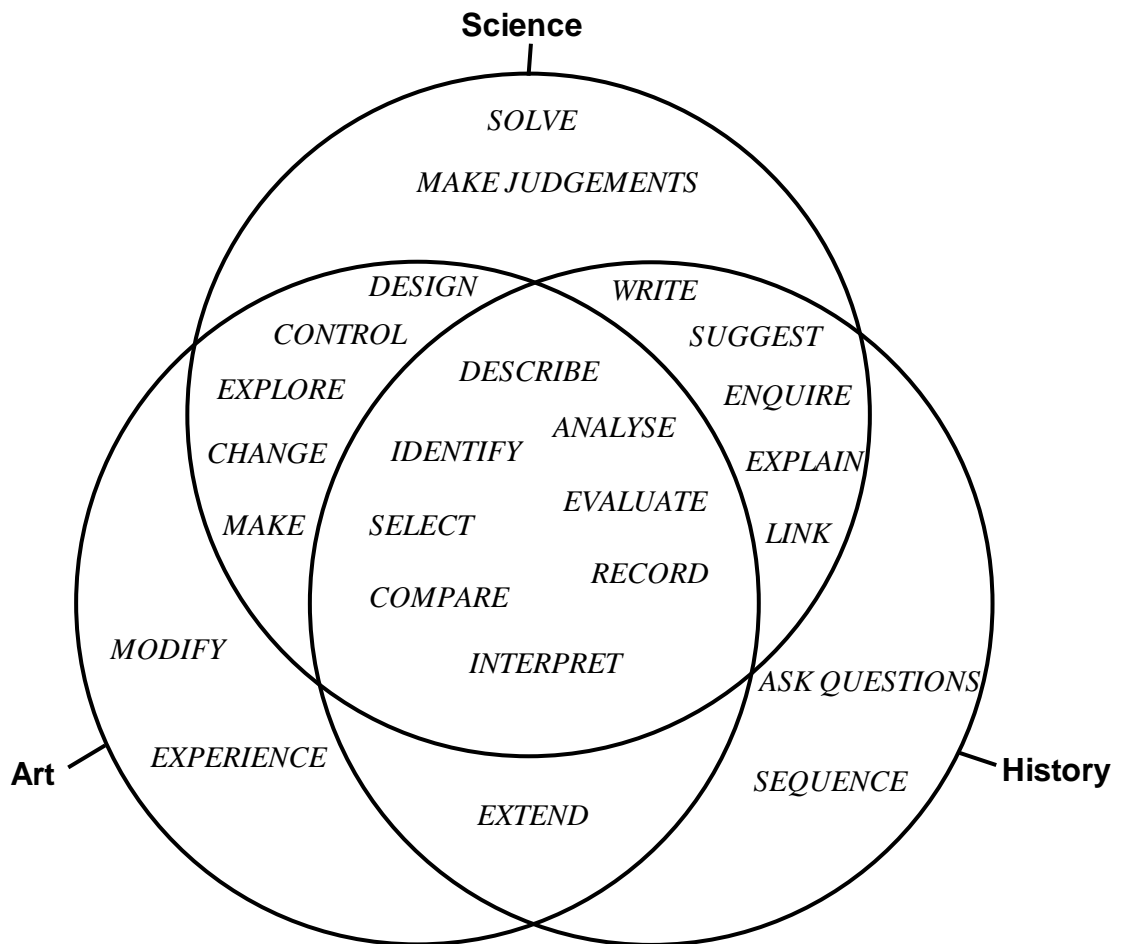
In Table 4.2, we find a number of **general** verbs shared in common between IT and Geography: *USE, UNDERSTAND, WORK, KNOW, DEVELOP, SHOW AWARENESS, THINK, CONSIDER* etc. The more semantically **specific** verbs indicate subject **skills which are shared** between the two subject disciplines such as: *ANALYSE, INTERPRET, FIND, INVESTIGATE, ENQUIRE, COLLECT, DESCRIBE, EVALUATE, COMPARE, ASK QUESTIONS, SOLVE, COMMUNICATE, PRESENT* etc. Several of these suggest linguistic behaviour which will be expected in both subjects to meet curriculum goals.

Table 4.2 Comparison of behaviour verbs shared between IT and Geography

IT & Geography		
<i>USE</i>	<i>COMMUNICATE</i>	<i>ASK QUESTIONS</i>
<i>UNDERSTAND</i>	<i>DESCRIBE</i>	<i>COLLECT</i>
<i>WORK</i>	<i>ANALYSE</i>	<i>SOLVE</i>
<i>KNOW</i>	<i>INTERPRET</i>	<i>DECIDE</i>
<i>DEVELOP</i>	<i>FIND</i>	<i>ENQUIRE</i>
<i>VARY</i>	<i>SHOW AWARENESS</i>	<i>CLASSIFY</i>
<i>RECOGNISE</i>	<i>THINK</i>	<i>ASSOCIATE</i>
<i>SELECT</i>	<i>CONSIDER</i>	<i>OBTAIN</i>
<i>EVALUATE</i>	<i>PRESENT</i>	<i>HANDLE</i>
<i>COMPARE</i>	<i>SUGGEST</i>	<i>ACCESS</i>
<i>BUILD ON</i>	<i>INVESTIGATE</i>	

In the following comparison of Science, Art and History (Fig.4.5), if we compare the more semantically specific verbs we can begin to see how the **shared behaviours** indicate similarities in the practices between subjects.

Fig 4.5 Comparison of behaviour verbs in Science, History and Art



Although these verbs on their own, without a subject content element, only hint at the distinctiveness of the practices and discourses of each subject area, they do reveal interesting insights. For example, the fact that *DESIGNING*, *MAKING*, *EXPLORING* and *CHANGING* are shared between Art and Science but not with History reveals something of the more creative nature of those subjects. Those shared between History and Science reveal the importance to both subjects of *ENQUIRY*, *EXPLANATION*, *LINKING* pieces of information and of *WRITING* things down, which may be less significant in Art.

b) Verbs showing the distinctiveness of each subject

Of the 405 different verbs derived from the corpus, a total of 195 (48%) across all subjects occur in **only one** subject order and 123 (63%) of these occur only **once** in each order. In English, 78/133 (58.6%) of the verbs do not occur in any other order. In Maths, 85/168 (50.6%) are unique to the subject and in Science 94/143 (65.7%) are

found only in the Science order. Similar trends are found in most other subjects. This clearly indicates a specialisation of behaviours and practices and the language used to define them in each area of study, suggesting that they are also characteristic of the subject discourse.

Table 4.3 shows a comparison of verbs which are **not shared** between IT and Geography. In both subjects, there are some semantically general verbs such as *INCREASE*, *EXPERIENCE*, *SHOW*, and *RESPOND* but there are several with more specific meanings that indicate distinctiveness between the disciplines such as *PRODUCE*, *CREATE*, *CONSTRUCT*, *DESIGN*, *MODEL*, *SORT*, *ASSEMBLE* and *SIMULATE* in IT; and *EXPLAIN*, *LINK*, *REASON*, *DIFFERENTIATE*, *JUDGE*, *MEASURE*, *SKETCH* and *LOCATE* in Geography. This information provides a general idea of the kind of pupil behaviours likely to be prioritised in these subjects and of some of the purposes language will be used to serve.

Table 4.3 Comparison of behaviour verbs not shared between IT and Geography

IT only		Geography only	
<i>INCREASE</i>	<i>GENERATE</i>	<i>ACQUIRE</i>	<i>INFORM</i>
<i>EXPLORE</i>	<i>TEST</i>	<i>RESPOND</i>	<i>EXPRESS</i>
<i>PRODUCE</i>	<i>PROCESS</i>	<i>RELATE</i>	<i>OBSERVE</i>
<i>IMPROVE</i>	<i>GATHER</i>	<i>PLAN</i>	<i>MAKE</i>
<i>EXPERIENCE</i>	<i>PREDICT</i>	<i>EXTEND</i>	<i>APPRECIATE</i>
<i>DISCUSS</i>	<i>SORT</i>	<i>SHOW</i>	<i>STUDY</i>
<i>CHOOSE</i>	<i>SEARCH</i>	<i>SEQUENCE</i>	<i>MEASURE</i>
<i>DEMONSTRATE</i>	<i>CHECK</i>	<i>IDENTIFY</i>	<i>DRAW CONCLUSIONS</i>
<i>CREATE</i>	<i>RETRIEVE</i>	<i>DRAW ON</i>	<i>CONTEXTUALISE</i>
<i>ORGANISE</i>	<i>IMAGINE</i>	<i>DIFFERENTIATE</i>	<i>SKETCH</i>
<i>CHANGE</i>	<i>PREPARE</i>	<i>EXPLAIN</i>	<i>COMMENT ON</i>
<i>COMBINE</i>	<i>FULFIL</i>	<i>LINK</i>	<i>PERCEIVE</i>
<i>MODIFY</i>	<i>ASSEMBLE</i>	<i>REASON</i>	<i>CONNECT</i>
<i>CONSTRUCT</i>	<i>SIMULATE</i>	<i>UNDERTAKE</i>	<i>EXAMINE</i>
<i>REFINE</i>	<i>STORE</i>	<i>RECORD</i>	<i>LOCATE</i>
<i>DESIGN</i>	<i>HYPOTHESISE</i>	<i>JUDGE</i>	<i>WIDEN</i>
<i>FOLLOW</i>	<i>ASSESS</i>	<i>ESTABLISH</i>	<i>SET</i>
<i>MODEL</i>		<i>WRITE</i>	<i>OFFER</i>

c) Overview of ten curriculum subjects

In the following pages, I provide an overview of the ten curriculum subjects to build a general picture of the kind of behaviours that distinguish each discipline and to

illustrate where opportunities may lie for developing EAL pupils' language resources in each subject. The overview has been produced by combining:

- the verbs which only occur in each subject order;
- the verbs which are shared with other subjects but occur most frequently in one particular order;
- the most frequently used verbs in each subject order;

i. English

In the English subject, verbs indicating pupil behaviour which are particularly distinctive to the subject are directed towards:

- specific aspects of language skills such as: *SPELL, PUNCTUATE, DEMARCATÉ, PROOFREAD, REDRAFT, STRUCTURE*;
- the general interpretation or communication of meaning such as: *DEDUCE, EXTRACT, RETRIEVE, COLLATE, REFLECT ON, ARTICULATE, PORTRAY, CONVEY, INFORM*;
- participation in activities with others such as: *PARTICIPATE, CONTRIBUTE, ROLEPLAY, DEBATE, DISCUSS*;
- interpersonal communicative skills: *DIRECT (drama performance), PERSUADE, NARRATE, REPORT*;
- cognitive & conceptual engagement with subject matter: *ANALYSE, CHOOSE, DISTINGUISH, SUMMARISE, COMMENT ON, JUDGE, ORGANISE, SYNTHESISE*.

The ten highest frequency verbs are:

- *USE, WRITE, READ, DEVELOP, STRUCTURE, TALK, VARY, RESPOND, SPEAK and LISTEN*.

USE, DEVELOP and VARY are highly general verbs, from which it is difficult to discern much behavioural meaning without their collocated elements of subject content. *STRUCTURE* is slightly more specific in that it can be interpreted in relation to 'language structure', but it needs clarification from its collocates to define it as signalling linguistic behaviour. The others clearly indicate behaviours specifically related to language use.

Several of these behaviour verbs reveal aspects of the nature of the English subject discipline and its practices, even **without reference to the subject matter** of language and literature study to which they are directed, because the linguistic nature of the behaviour indicated is located in the meaning of the lexis.

Perhaps obviously, because it is the English subject, the patterns of behaviour indicate considerable demands placed on EAL pupils' language resources, particularly in terms

of comprehension and manipulation of language. But they also suggest that several opportunities for developing **specific language skills** could be **planned for** as part of an organised approach to extending, expanding and refining EAL pupils' language resources.

The crucial point concerning EAL pupils and the English subject is that language 'skills' cannot be developed without **knowing the words or their meanings** which are being drawn upon to develop the skills. For example, paragraphs cannot be 'structured' without constructing a meaningful sequence of clauses to form a paragraph. There is little value in being able to spell a word if its meaning is not known. Inferring and deducing meaning from a written text cannot be done without understanding of the words that make up the text.

Therefore, although opportunities may exist for language development to be explicitly addressed in English, for EAL pupils, **understanding** of words and wordings must be emphasised alongside any skills where language knowledge may ordinarily be assumed for other pupils who are proficient in English.

ii. Mathematics

In Mathematics, distinctive verbs indicating pupil behaviour are directed towards:

- specific mathematical operations and skills such as: *ADD, SUBTRACT, MULTIPLY, DIVIDE, COUNT, ROTATE, ROUND, CONVERT, CALCULATE, APPROXIMATE, SEQUENCE, ORDER*;
- problem-solving: *ASK QUESTIONS, SEARCH, EXPLORE, SELECT, EXPERIMENT, EXAMINE, COMPARE, DEVISE, SOLVE, BREAK DOWN, OVERCOME*;
- general higher order thinking about mathematical principles to be applied to maths problems: *GENERALISE, THEORISE, THINK, REASON, APPRECIATE, ASSOCIATE, INTERPRET, MANIPULATE*;
- more specific interpretation, testing and proof of mathematical methods, arguments and explanations: *DERIVE, INFER, CONJECTURE, HYPOTHESISE, BASE, ARGUE, CONSOLIDATE, CONFIRM, VALIDATE, JUSTIFY, EVALUATE*;
- presenting mathematical information: *REPRESENT, COMMUNICATE, ILLUSTRATE, DRAW, VISUALISE*.

The ten highest frequency verbs are:

- *USE, UNDERSTAND, SOLVE, CALCULATE, INTERPRET, MEASURE, FIND, DEVELOP, REPRESENT* and *KNOW*.

As in English, some are semantically quite general but the emphasis on *CALCULATING*, *MEASURING*, *INTERPRETING*, *FINDING* (answers) and *SOLVING* (problems) clearly illustrate features of the discipline. Although not amongst the ten highest frequencies, *EXPLAIN* occurs as often as *MULTIPLY* and is a significant form of linguistic behaviour.

The purposes for which language is used in Mathematics will relate to these kinds of behaviour. Opportunities for planning EAL development are more likely to arise linked to these subject purposes. In terms of clause construction, very specific patterns of language choice will be needed for *ADDING*, *SUBTRACTING*, *MULTIPLYING* and *DIVIDING*, *CALCULATING* and *SOLVING* (equations) to represent the highly constrained relationships in such operations. Other purposes indicated by the verbs *EXPLAIN*, *CONJECTURE*, *HYPOTHESISE*, *ARGUE*, *JUSTIFY*, *EVALUATE* and *COMPARE* also provide opportunities for language development using and linking clauses.

iii. Science

In Science, distinctive verbs indicating pupil behaviour are directed towards:

- quite specific scientific activities and skills such as: *SEPARATE*, *DISTIL*, *EVAPORATE*, *CONDENSE*, *DISPLACE*, *SWITCH*, *TRANSFER*, *PLOT*, *QUANTIFY*;
- investigation and experimentation: *INVESTIGATE*, *ENQUIRE*, *DECIDE*, *PLAN*, *DIFFERENTIATE*, *PREDICT*, *TRY*, *TEST*;
- bringing about and examining change: *CHANGE*, *ALTER*;
- creative thinking expressed in language: *PROPOSE*, *SUGGEST*, *PUT FORWARD*;
- cognitive interpretive skills which may need to be expressed linguistically to demonstrate performance: *CONSIDER*, *RECOGNISE*, *RELATE*, *LINK*, *DETERMINE*, *OBSERVE*, *IDENTIFY*, *CLASSIFY*, *SORT*, *GROUP*;
- communication of observations, evidence and findings: *DESCRIBE*, *EXPLAIN*, *PRESENT*, *DEMONSTRATE*, *DRAW CONCLUSIONS*.

The ten highest frequency verbs are:

- *USE*, *KNOW*, *DESCRIBE*, *UNDERSTAND*, *CHANGE*, *OBSERVE*, *WORK*, *EXPLAIN*, *RECOGNISE* and *INVESTIGATE*. As with English and Mathematics, several of the highest frequency verbs indicate distinctive features of the discipline: *INVESTIGATE*, *OBSERVE*, *DESCRIBE*, *EXPLAIN* and *CHANGE*. These types of behaviour are accorded priority in Science for the discovery and communication of evidence.

Several of the more semantically specific verbs such as *SEPARATE*, *DISTIL*, *EVAPORATE* and *CONDENSE* indicate processes which would need to be modelled in sequences of clauses to be adequately described or explained. Processes involving

several steps or stages can provide opportunities for extending pupils' construction of meaning by building and linking sequences of clauses and clause complexes.

iv. Design Technology

In Design Technology, distinctive verbs indicating pupil behaviour are directed towards:

- specific activities involved in designing and making products such as *CUT, SHEAR, COMPRESS, SHAPE, FINISH, INTERCONNECT, LABEL, SKETCH*;
- general designing and making purposes: *DESIGN, SPECIFY, MANUFACTURE, ASSEMBLE, MAKE, PRODUCE, GENERATE, REARRANGE*;
- responding to or endeavouring to meet design briefs: *ATTEMPT, MEET, TAKE INTO ACCOUNT, ENSURE, ACHIEVE*;
- formulating opinions and evaluating products: *GIVE FEEDBACK, EXPRESS LIKES and DISLIKES*.

The ten highest frequency verbs are:

- *DESIGN, USE, MAKE, DEVELOP, PRODUCE, UNDERSTAND, WORK, KNOW, EVALUATE* and *VARY*. Of these, the key verbs indicating the character of the discipline are: *DESIGN, MAKE, PRODUCE* and *EVALUATE*.

There is a strong focus on practical work in this subject which could offer considerable opportunities for oral language modelling. Apprenticeship into practical DT skills could be supported by 'apprenticeship' into the discourse by encouraging appropriate language use. There are also clear opportunities for developing the language of *EVALUATING* and *EXPRESSING* opinions which could be done orally or in writing.

v. Information Technology

In Information Technology, distinctive verbs indicating pupil behaviour are directed towards:

- quite specific activities relating to information processing and the use of computers such as: *ENTER, ACCESS, PROCESS, SAVE, STORE*;
- engaging with information to analyse and modify it in some way: *FRAME (questions), INTERROGATE, DETECT, AMEND, ADD TO, MODEL, SIMULATE*;
- representing and presenting information to others: *PREPARE, INTEGRATE, DISPLAY, SHARE, EXCHANGE*;
- the need for IT to serve particular social purposes: *FULFIL*;
- evaluating the use of IT: *ASSESS*.

The ten highest frequency verbs are:

- *USE, MODEL, WORK, INCREASE, COMMUNICATE, SHOW AWARENESS, EXPLORE, PRESENT, SIMULATE and UNDERSTAND.*

MODEL and *SIMULATE* illustrate the 'virtual' function of IT. *PRESENT* and *COMMUNICATE* illustrate the communicative function of IT. In IT, the focus on *ACCESSING* and *ENTERING* information indicates clear language demands which could provide opportunities for language development along with the opportunities to *SHARE information* with others. These can be made more accessible by the highly interactive and visual nature of IT-based work, which could provide additional semiotic support for language development. The emphasis on *MODELLING* places certain demands on pupils to generate their own imaginative language use, projecting their ideas of what IT could be used to represent. EAL pupils may need particular linguistic support to do this effectively. The need to *FRAME* questions will allow modelling of specific structural clause patterns for *QUESTIONING*. Similar to DT, there are opportunities for developing language for *ASSESSING*.

vi. Geography

In Geography, distinctive verbs indicating pupil behaviour are directed towards:

- specific activities related to geography skills such as: *SURVEY, LOG, ANNOTATE, LOCATE, SET (a country within its global context);*
- investigating and finding information to answer geographical questions: *UNDERTAKE (geographical enquiry and fieldwork), ADDRESS, ASCERTAIN;*
- providing personal explanations for what they find: *OFFER (ideas, explanations and reasons).*

The ten highest frequency verbs are:

- *USE, UNDERSTAND, DESCRIBE, STUDY, KNOW, INVESTIGATE, IDENTIFY, EXPLAIN, SELECT and RECOGNISE.*

STUDY and *INVESTIGATE* indicate the importance of researching relevant information about the physical and human world in order to *DESCRIBE* and *EXPLAIN* its features and processes, *SELECTING* the appropriate skills to find information and answers. *IDENTIFY* and *RECOGNISE*, along with *ASCERTAIN* indicate the significance of being able to find out and discern what is relevant from the complexity of a 'geographical' world.

Geography provides opportunities for structured language work relating to the procedures of *SURVEYING*, *fieldwork* and *enquiry*. These activities require specific questions to be *ADDRESSED*, data to be *LOGGED* and findings *EXPLAINED*. The practical focus of Geography on studying the real world means there will be plenty of opportunity to provide semiotic support to 'hook' language onto. The need for pupils to *EXPLAIN*, should provide structured opportunities for clause and genre level language modelling.

vii. History

In History, very few verbs are unique to the subject and there is only a handful with the highest frequency of all the subjects. Nevertheless, they do offer some indications of the character of History as a discipline by indicating pupil behaviour which is directed towards:

- gleaning historical information from sources: *STUDY, ACQUIRE*;
- developing an understanding of history and the relationships between people, events and developments: *PLACE (in a chronological framework), CONNECT, CONTRAST*;
- communicating their understanding of history: *ANSWER, RECOUNT, DEPLOY (relevant information to produce structured work)*.

The ten highest frequency verbs are:

- *USE, STUDY, KNOW, UNDERSTAND, DESCRIBE, INTERPRET, SELECT, SHOW AWARENESS, COMMUNICATE and EXPLAIN*.

In these verbs, the emphasis on developing knowledge, understanding and awareness of History is evident, as is the importance placed on *COMMUNICATING, DESCRIBING, INTERPRETING* and *EXPLAINING*. The high frequency of *STUDY, INTERPRET, DESCRIBE, EXPLAIN* and *COMMUNICATE* reflects the dependence on language in learning about, reconstructing and representing History.

EAL pupils' English language resources need to be well developed to meet these demands, particularly when accessing written language that is no longer contemporary. However, this dependence on language in the subject also means there are likely to be many opportunities for planning constructively for language development to fulfil the purposes of such subject demands.

viii. Art

In Art, distinctive verbs indicating pupil behaviour are directed towards:

- perception and sources of inspiration as stimuli for creating art: *PERCEIVE, EXPERIENCE, FEEL, REMEMBER* (recall from memory), *INDICATE* (awareness of other art);
- generating creative ideas and actual artwork: *IMAGINE, INITIATE, IMPLEMENT, RECORD, REALISE* (bring into being);
- evaluating and improving work: *REVIEW, MODIFY, ENRICH, SUPPORT*.

The ten highest frequency verbs are:

- *WORK, USE, EXPERIENCE, RECORD, DEVELOP, EXPLORE, OBSERVE, IMAGINE, FEEL* and *UNDERSTAND*.

The emphasis in the Art subject is very strongly on personal expression. EAL pupils will not be able to express their own creative ideas linguistically without the resources to do so but Art as a practical subject with lots of personal engagement provides considerable opportunities for vocabulary extension through describing what the pupils *PERCEIVE, FEEL, REMEMBER* etc. Opportunities exist for oral work surrounding the practical creation of artwork and there will be opportunities for using language for *REVIEW* and to suggest modifications.

ix. Music

In Music, distinctive verbs indicating pupil behaviour are directed towards:

- practical musical activities, often involving the body as well as the voice: *IMITATE, CLAP, TAP, BREATHE, BEAT, PHRASE, LIMIT*;
- cognitive, interpretive skills: *DISCRIMINATE* (within musical elements), *INTERNALISE, DISTRIBUTE* (sounds);
- collaboration with others: *MAINTAIN, ACCOMPANY*;
- vocal and musical performance and creativity: *SING, PLAY, COMPOSE, IMPROVISE, ARRANGE*;
- appraising and improving work: *REHEARSE, APPRAISE, REVISE, ENHANCE, EXPAND*.

The ten highest frequency verbs are:

- *SING, COMPOSE, PERFORM, VARY, USE, PLAY, DEVELOP, WORK, INCREASE* and *MAINTAIN*.

SING, PLAY, COMPOSE and *PERFORM* clearly indicate some of the characterising features of Music as a discipline but *INCREASE* and *MAINTAIN* are also significant, along with *SUSTAIN* which also occurs in the order, because they emphasise the

importance of extending pupils' skill in *PLAYING* or *SINGING* and in prolonging performances. Interpretive skills, when expressed linguistically for assessment purposes will need to use specialist vocabulary relating to the musical elements combined with some quite subtle meaning construction to discriminate between the differences in pieces of music. These offer opportunities for vocabulary extension at least, with potential for clause construction too. The two areas with perhaps the greatest potential are the opportunities to collaborate with others focused on particular creative tasks; and work on *APPRAISING* and *ENHANCING* work, for which particular linguistic constructions will be needed.

x. Physical Education

In Physical Education, there are a substantial number of verbs which do not occur in any other subject. Distinctive verbs indicating pupil behaviour are directed towards:

- specific physical actions, games and sports: *EXERCISE, DANCE, WARM UP, TRAVEL, TRAIN, SWIM, JUMP, EXECUTE, COOL DOWN, WALK, SWING, STRIKE, STEP, STAND, SPRINT, SIT, RUN, ROLL, RESUSCITATE, SURVIVE, ORIENTEER, LIFT, FIELD, CYCLE, CLIMB, CARRY, TENSE, BALANCE,*
- general indications of participation in activities with others: *PERFORM, COMPETE, PRACTISE, TAKE PART, COLLABORATE, RECIPROCATE.*
- developing a sense of responsible behaviour: *TAKE RESPONSIBILITY, TAKE OUT, PUT AWAY, PREVENT, AVOID, CONTROL, ADOPT, WEAR, APPLY*
- improvement and development of PE skills: *VALUE, PROMOTE, IMPROVE, REFINE, CLARIFY, DECREASE, MONITOR.*

The ten highest frequency verbs are:

- *PERFORM, EXERCISE, INCREASE, IMPROVE, USE, APPLY, DANCE, WORK, VARY* and *UNDERSTAND.*

Many sports and games activities are very constrained linguistic contexts. They operate on the basis of limited rules and types of action. Therefore, there are several quite specific registers with tightly structured language which EAL pupils will have modelled for them by others and by the teacher in context e.g. '*shoot*', '*pass*', '*catch it*', '*you're offside*', '*keep in time*', '*work together*' etc. There is plenty of semiotic support available from the context which can assist language development. There may also be opportunities to plan for affective language relating to *responsibility* and *improvement*. A lot of vocabulary relates to the large number of different behaviours, actions, physical characteristics and body parts indicated above. For EAL pupils at KS3, preparatory or follow up work for PE lessons can be a valuable asset. If EAL pupils wish to pursue the

subject at GCSE, the language demands suddenly become much harder as the practical activities are translated into theory and the study of anatomy and physiology. Therefore, it would not be inappropriate to start complementary written work with pupils at KS3, relating to their practical lessons.

d) Conclusions drawn from the analysis of behaviour verbs

The overview provided above is just one of several possible ways of interpreting and representing the general 'character' of the disciplines that have a bearing on language use, but this kind of general outline can inform teachers seeking to organise their planning of EAL development across the curriculum. It reveals that the characteristic features of each discipline and the kinds of learning behaviour pupils are likely to engage in differ between subjects in many respects. Consequently, the language needed to meet these behavioural demands is also likely to differ.

The overview also illustrates, in general terms, where some of the opportunities for language development may lie, linked to the particular purposes of learning in each subject area; and it shows that there is potential for similar types of language use to be reinforced between subject areas. It also begins to reveal some of the lexical choices of the curriculum authors, reflecting the discourses of different 'communities of practice' related to each subject. Many of the behaviour verbs and their derivational morphemes are likely to be used as part of teachers' instructional language and their meaning will need to be understood by EAL pupils.

All of these points indicate the clear need for 'functional diversification' of EAL pupils' English language resources; resources that allow them to use language for a wide range of purposes across the curriculum.

e) Elements of subject content

The verbs listed above describe the general scope of behavioural constraints acting upon language choice in subject disciplines. In learning objectives and assessment outcomes the verbs are almost always combined with an **element of subject content**.

The corpus analysis of the national curriculum orders found that the 405 different verbs were used in 4016 different curriculum goals indicating that the verbs were collocated with a wide range of subject content elements.

Collating these and considering them separately from the behaviour verbs also offers insights into the nature of each subject discipline and some of the purposes language will be used to serve. For comparison, I will consider just two, Art and History.

i. Art

In Art, behaviour verbs are collocated, in a variety of combinations, with the following categories of subject content element:

The methods, techniques, tools and elements used in the creative processes of making art:

- *approaches*
- *methods*
- *investigations*
- *skills*
- *techniques*
- *tools*
- *materials*
- *scales*
- *elements of art, craft and design*
- *language of art*
- *visual qualities*
- *processes of making – the use of materials, tools and techniques*
- *ways in which ideas and feelings are conveyed*
- *ways artists work*
- *their own work and the work of others*

External sources of ideas and inspiration:

- *reference material*
- *resources*
- *information*
- *themes*
- *media*
- *images*
- *artefacts*

Internal, personal sources of ideas and inspiration

- *feelings*
- *opinions*

- *ideas*
- *imagination*
- *memories*
- *experiences*
- *observations*
- *knowledge*
- *understanding*
- *thoughts*
- *intentions*
- *perceptions*
- *purposes*

Evaluation, modification and development to improve final results

- *meaning*
- *similarities*
- *differences*
- *connections*
- *cultural influences*
- *development*
- *need to review*
- *need to modify*
- *need to make changes to their work*
- *outcomes*
- *results*

Personal development of the pupil in relation to art

- *ability*
- *awareness*
- *confidence*
- *independence*

ii. History

In History, behaviour verbs are collocated, in a variety of combinations, with the following categories of subject content element:

General aspects of study:

- *history of Wales and Britain and other areas*
- *historical topics*
- *aspects of their own lives*
- *aspects of past times*
- *aspects of the early modern world (1500-1760)*
- *aspects of medieval society (1000-1500)*
- *political, economic, social and cultural features of periods of history*
- *cultural, economic, environmental, historical and linguistic characteristics of Wales*
- *historical issues*

Specific 'real world' aspects of study:

- *buildings*
- *people*
- *situations*
- *events*
- *local community*
- *societies*
- *episodes from stories and from the past*

Conceptual aspects of study:

- *developments*
- *changes*
- *causes*
- *consequences*
- *impacts*
- *reasons*
- *similarities*
- *differences*
- *significance*
- *values*
- *interpretations of ways the past is represented*
- *why people in the past acted as they did*
- *why some events people and changes have been interpreted in different ways*

Sources pupils need to draw upon to learn about the past:

- *sources*
- *statistics*
- *numerical data*
- *artefacts*
- *objects*
- *documents*
- *sites*
- *music*
- *oral accounts*
- *visual sources*
- *ICT*

The division and representation of time:

- *distinction between present and past*
- *periods of time*
- *passing of time*
- *the past*
- *change over time*
- *chronology*
- *present and past in other people's lives*
- *present and past in their own lives*
- *representations of the past*

Language use, writing conventions and communicating historical information:

- *questions*

- *answers*
- *conclusions*
- *dates*
- *terms*
- *vocabulary*
- *examples*
- *writing*
- *conventions*
- *ways they organise and communicate historical information*
- *extended writing*
- *visual and oral presentations*
- *uses of ICT*

Personal knowledge and skills development:

- *knowledge*
- *understanding*
- *skills*
- *ideas*
- *awareness*
- *sense of chronology*
- *accuracy*
- *independence*
- *enquiry*
- *work*
- *information*
- *interpretations*

The lists of subject content elements above illustrate something of the character of the respective disciplines of Art and History. The contrast between them is evident. Each element of subject content gives rise to a range of language which EAL pupils will need to *INTERPRET*, *UNDERSTAND*, *TALK* or *WRITE* about. Schleppegrell, Achugar and Oteíza (2004: 68) note that History, in particular, has considerable linguistic demands, many of which are not made sufficiently clear to pupils, which they believe creates problems for pupils understanding and engaging with the work.

As pupils move from one subject to another in their weekly timetable, the subject content and related language will vary. Although some language will be shared between subjects, much will be unique. Both the subject vocabulary and discourse specific patterns will need to be learned in order for pupils to achieve well in each subject. Teachers therefore need to assist EAL pupils in continually extending and expanding their language resources to meet the demands placed on them.

As with the verbs discussed previously, these elements of subject content act as constraints on language choice. They narrow the range of possible options from all those available in the language as a whole. Teachers can use this information to help them clarify the purposes for which language may be used in particular subjects and consequently help them start to narrow the selection of potential wordings needed to fulfil the purposes²⁵.

4.3.5 Summary and conclusion

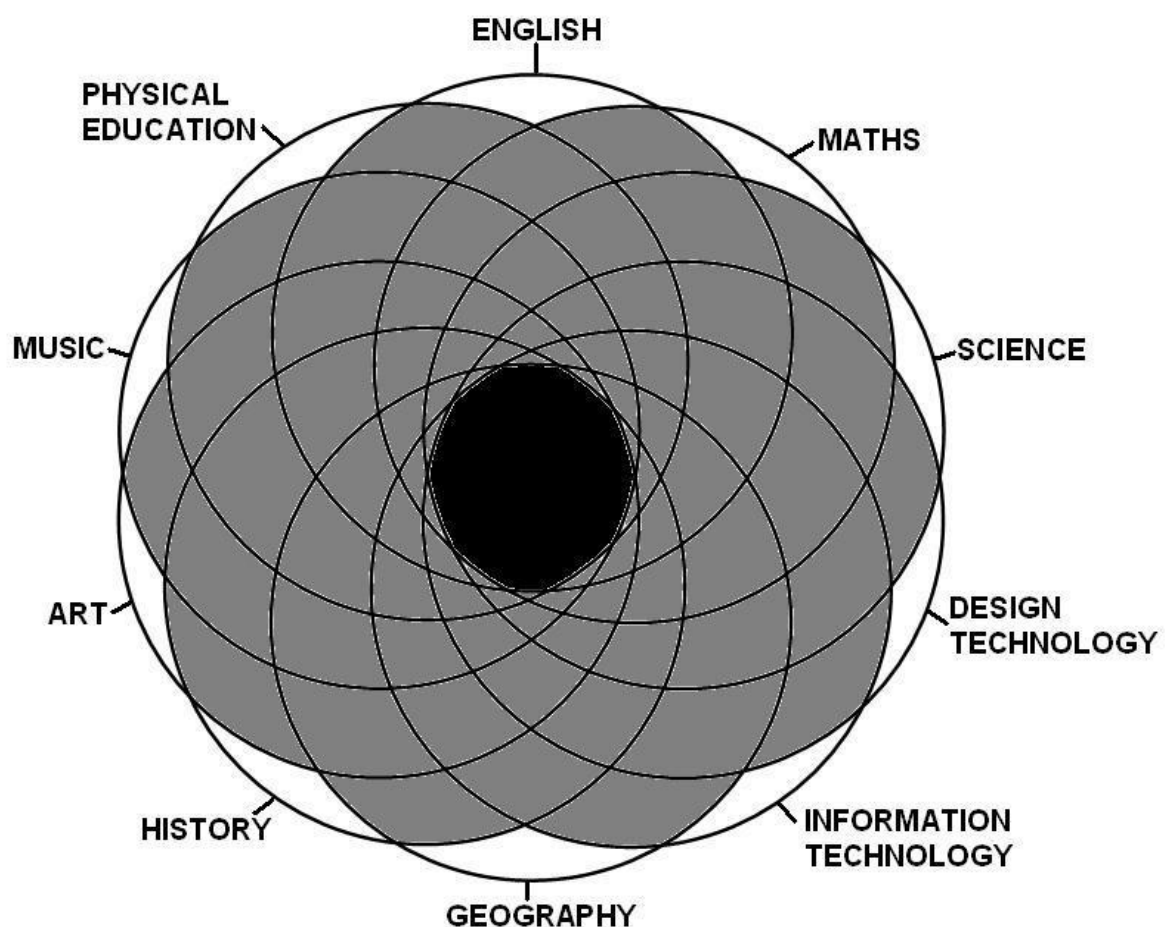
Although some of the expected pupil behaviours and elements of subject content described above indicate types of activity which are not essentially linguistic, the majority of activities give rise to particular types of language use directed towards their fulfilment. In other words, these variable aspects of the Context act as constraints on language use. Pupils will not be able to use just any language they choose to achieve the learning goals. Only certain uses of language will appropriately meet the subject demands. This constraining relationship between the Context and Text means that each subject discipline develops its own form of discourse, its 'own language', which requires certain kinds of linguistic resources in order for pupils to be able to fulfil the particular goals of each discipline. The uses of language form part of the 'doing' of each subject (Schleppegrell, Achugar and Oteíza, 2004: 68).

However, although we may talk in general terms about a 'language of design technology', a 'language of science' or a 'language of history' (Halliday, 2004b; Schleppegrell and Colombi, 2002) it would be inaccurate to say that the language of each subject is completely different from every other. Language as a semiotic system uses a limited number of words and grammatical structures to fulfil a very large number of purposes. These limited 'raw materials' must be drawn upon to fulfil purposes in a wide variety of subject contexts across the curriculum. They can only do so by being selected and combined **in different ways** to make new meanings (Halliday, 1973: 50).

²⁵ A further analysis of a selection of behaviour verbs collocated with specific elements of subject content: *data*, *materials* and *questions*, is included in Appendix E, which reveals more of the similarities and differences between the disciplines, their discourses, and the purposes of language use.

The occurrence of common types of behaviour and similar elements of subject content across the curriculum suggests that some language resources will be 'shared' between all subject areas, others will be shared only between some subjects and certain resources will be specific to a particular subject discourse. The diversity of language resources needed to achieve across the curriculum, and the ways they may be shared between subjects, can be represented in a stylised way by a set of overlapping circles²⁶ (Fig. 4.6)

Fig. 4.6 Overlapping language resources in subject discourses



Each 'subject circle' represents the scope of linguistic resources needed in each subject area. Each circle encapsulates the many different purposes, meanings and wordings that are likely to occur, for which language will be needed as a functional resource. This illustrates the kind of diversification of linguistic resources EAL pupils need in their language development.

²⁶ The diagram is highly stylised. In a more accurate representation the circles would be different shapes and the overlaps between subjects would be less uniform. The boundaries would also be 'fuzzy' rather than clear-cut as there is always potential for patterns of language use developed in one field to be used in another. However, the principle of the concept would remain the same. Some language resources are common to all subject areas, some are shared only between certain subjects, and some are distinctive.

In the centre of the diagram are the linguistic resources which are most general or common to all subjects. At the edges are the linguistic resources that are least shared, and perhaps only found in a particular subject area discourse – this could include technical or specialised subject vocabulary but also typical collocations and patterns that have been developed to realise particular meanings or relationships within a field of discourse. In between are the many overlaps where linguistic resources may be shared between some subject area discourses but not others. For example, similarities in the discourses of Science and Mathematics may result in similar wordings occurring in both fields which rarely if ever occur in the arts.

Cumulatively, the subject circles represent the linguistic resources needed to achieve goals across the whole curriculum. If teachers are to plan in a more systematic way to extend, expand and refine EAL pupils' language resources to fulfil the purposes of learning in the national curriculum, they must ensure that pupils receive all the necessary support for an ever-increasing 'functional diversification' of their language resources - exploring and expanding the range of linguistic resources as they are used within each 'circle' of subject discourse and across the curriculum.

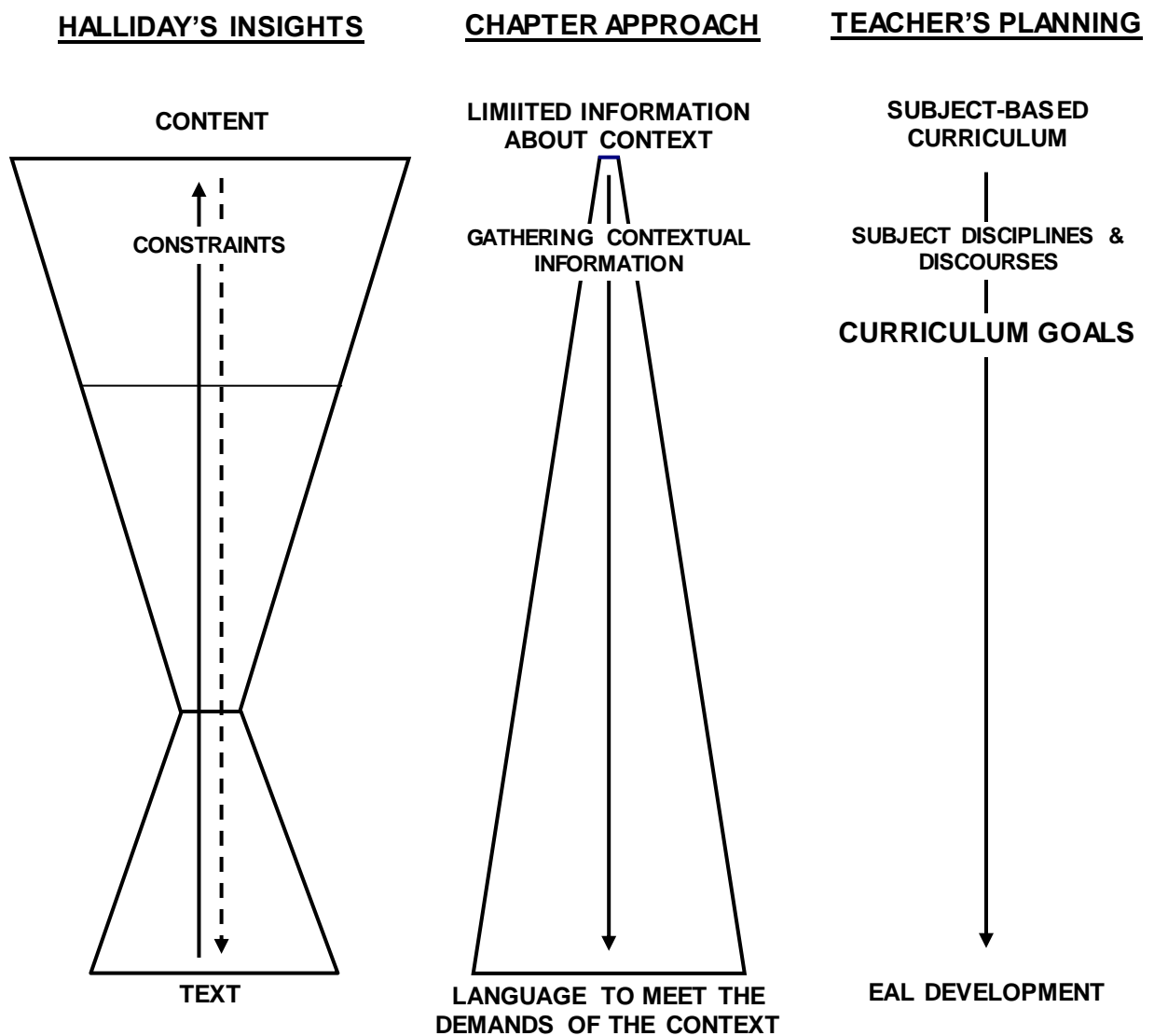
It is not enough for pupils simply **to be involved in** different learning activities where language has the potential to fulfil particular functions. They need **to learn** which language is **appropriate for each purpose** in its context.

The more familiar teachers become with these disciplines, the purposes for which language is used within them, and their discourses, the more their own internalised contextual framework will be refined, allowing them to plan more effectively for EAL development across the curriculum.

4.4 Curriculum goals as 'contextual' constraints

Having provided an overview of expected pupil behaviours and learning practices in the subject disciplines, representing a general contextual framework of constraints acting upon language choice, in this section I will continue to narrow the focus by looking specifically at a range of **curriculum goals** within subject disciplines where the behaviour verb and subject content element are combined.

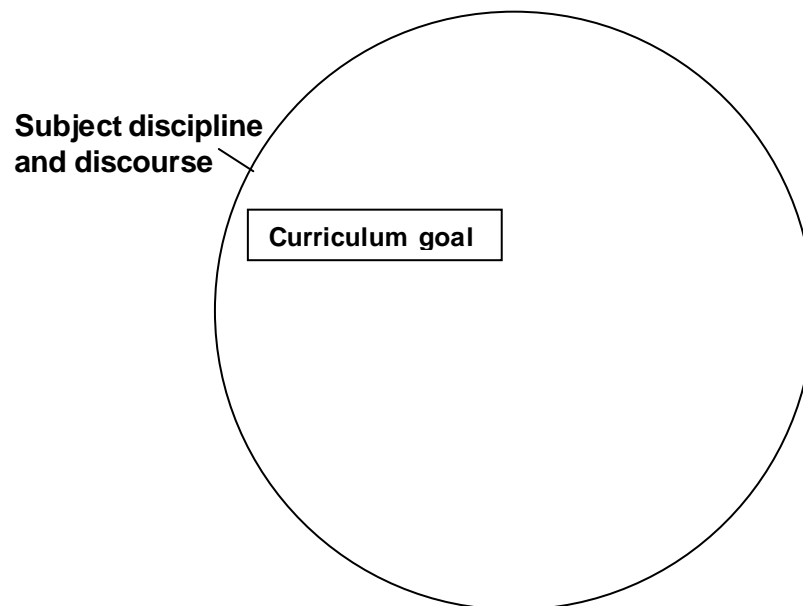
Fig. 4.7 Curriculum goals as 'contextual' constraints



In this section, I am illustrating the point at the planning stage when teachers consider the statutory goals of the curriculum, using them to inform their own construction of learning objectives and outcomes for particular lessons or sequences of lessons. This is the time at which teachers need to consider the role of language and its purposes for learning relating to the curriculum goal.

To extend the analogy of the subject circle, every curriculum goal is located within the context of a subject discipline and its discourse, which determine the general purposes of learning (Fig. 4.8). The curriculum goal narrows the focus further and provides additional information to inform language choice.

Fig 4.8 Planning to meet curriculum goals within subject disciplines



4.4.1 Planning in the subject-based curriculum

In statutory education in Wales, the curriculum goals prescribed in the national curriculum orders are subject-based. Because of this, the learning objectives and assessment outcomes are written as **subject learning** goals.

From the perspective of this thesis, the **purposes of language use** are defined by the **kinds of behaviour** pupils are expected to engage in, combined with the **subject-related focus** of that behaviour. Pupils always have **to do something - in relation to something**, and it is the combination of the two that constitutes the goals of the curriculum.

4.4.2 Difficulties teachers may encounter when deriving information about language use from subject-based curriculum goals

Teachers endeavouring to support EAL development within the subject-based curriculum have often found difficulty in identifying the role language plays, and the purposes for which it is used, in the service of subject learning goals. This is partly due to the subject-oriented nature of the goals themselves, and partly due to the ways in which the goals are worded. In this section, I will explain some of the difficulties, illustrating them with examples drawn from the corpus analysis of the national curriculum orders.

4.4.2.1 Subject-based curriculum goals

At KS3, most curriculum goals are oriented towards the development of pupils' subject knowledge, understanding and skills and specify what pupils are expected to **learn** or **do**. For example:

- *RECOGNISE that the country is set within a broader global context and how it is interdependent with other countries (Ge PoS);*
- *PLAY an instrumental part using a limited range of notes (Mu AT L3);*
- *USE formal drawing methods to communicate their intentions (DT AT L6);*
- *ANSWER questions about the past by making simple observations from historical sources (Hi AT L2).*

Many curriculum goals follow the format of Reece and Walker's (1997: 263) description of educational objectives where a **primary behaviour**, which pupils are expected to engage in, is usually indicated by a verb, coupled with an **element of subject content**, indicated by a complement or adjunct, at which the behaviour is directed to achieve a specific goal (Fig. 4.9).

Fig. 4.9 Model of educational objective

primary behaviour	element of subject content
<i>INTERPRET</i>	<i>the display on a calculator</i>
VERB	COMPLEMENT and/or ADJUNCT

However, not all of the learning objectives and outcomes in the orders follow this format and many do not give a clear indication of the role language is expected to play in achieving the prescribed curriculum goals.

To identify the **purposes of language use** in lessons, teachers need to be clear about:

- what is being indicated in the wording of learning objectives and outcomes;
- how linguistic behaviour is indicated;
- how their wording affects the foregrounding or backgrounding of linguistic behaviour; and
- what relationship language has to the types of behaviour which are not primarily linguistic.

4.4.3 Curriculum goals describe several different ‘types’ of expected behaviour, of which language use is one

Language use is just one of several different types of behaviour we use (Halliday, 1973: 51; Halliday and Matthiessen, 1999: 610; Leontiev, 1981: 22), and which pupils need to use for learning in the curriculum. Pupils engage with curriculum content in non-linguistic as well as linguistic ways. One way to understand the distinction between the behaviour types is to consider them in terms of the kind of ‘resources’ pupils need to deploy to achieve the goals.

Some behaviour verbs indicate use of the body or parts of the body and involve pupils using primarily **physical** resources to carry out a practical task such as:

- *PRODUCE a series of actions in gymnastics or a simple dance* (PE AT L3) using their body;
- *CUT materials* (DT AT L3) using their hands and arms to manipulate tools.

Some indicate use of the mind and involve primarily mental or **cognitive** resources to actively think about something, such as:

- *REFLECT ON the meaning and clarity of individual sentences* (En 3 PoS);
- *THINK about the quality and plausibility of information* (IT POS).

Some indicate non-linguistic communication and use primarily **graphic** communicative resources such as:

- *SKETCH graphs* (Ma 2 PoS); or
- *MAKE drawings* (Art AT L5).

And some indicate the use of language and involve primarily **linguistic** resources, such as:

- *TALK about the connections between their own work and the work of others* (Art AT L1); or
- *SUGGEST reasons for some of their observations and judgements about places* (Ge AT L3).

A fifth type, which could be defined as ‘**affective**’ behaviours, is occasionally used to qualify ‘how’ the other types of behaviour are being demonstrated e.g.

- *READ a range of texts **fluently and accurately*** (En AT2 L3);
- *EXPLORE different activities with increasing **confidence*** (PE AT L2);
- *DISCUSS their ideas and feelings **imaginatively*** (Art AT L4);
- *MANIPULATE simple tools **safely*** (DT AT L2);
- *SHOW increasing **sensitivity** when WORKING collaboratively* (PE AT L6).

Halliday and Matthiessen (1999) identify forms of non-linguistic behaviour which involve visual, auditory and tactile perception; and other forms of non-linguistic meaning-making behaviour such as the construction of “charts, maps, diagrams and the like” (Halliday and Matthiessen, 1999: 606). They also distinguish between internal and external behaviours in relation to the construction of knowledge by locating ‘thinking’ as a private phenomenon “within the individual” (Halliday and Matthiessen, 1999: x), in contrast to external expressions of language which are observable as instances of language use in social interaction. Although ‘cognition’ and language are intimately bound up with one another in their conception of meaning-construction, they acknowledge a distinction between what takes place ‘in the brain’ and what is ‘manifested externally’ as language in speech and writing.

Because curriculum goals describe a range of non-linguistic as well as linguistic types of behaviour, this can make it difficult to discern a role for language.

4.4.4 Language use is *not* essential to achieve every curriculum goal

The examples above illustrate that language is **not actually essential** to achieve every curriculum goal. Pupils do not **have to** use language to achieve **every** curriculum goal:

- *RECORD their ideas and feelings through drawing* (Art AT L3);
- *ILLUSTRATE alternative ideas using models* (DT AT L4);
- *CLAP or TAP a steady beat in time with others* (Music AT L1);
- *BALANCE on a variety of small and large body parts* (PE PoS);
- *SEPARATE mixtures into their constituents using distillation and chromatography* (Sc 3 PoS).

Each of these goals could be achieved without any speaking, reading or writing on the part of the pupil; and there is no indication in the stated goal that language use should be involved²⁷.

In these situations, teachers planning for language development need to ask questions about the role that language **might** play in activities directed to achieving these goals.

4.4.5 Language plays an *essential* role in achieving some curriculum goals

By contrast, other curriculum goals clearly indicate that linguistic behaviour is essential. To achieve these goals, pupils **must** use linguistic resources. For example, if a pupil is required to:

- *DISCUSS* their ideas and feelings imaginatively in Art (Art AT L5);
- *SUGGEST* ideas for making things in Design Technology (DT AT L2);
- *DIRECT* others in maintaining a steady beat in Music (Music PoS);
- *NAME* the body parts they were balancing on in PE (PE AT L1);
- *EXPLAIN* differences between the properties of different materials they have separated in Science (Science AT3 L4);

then language use is clearly **essential** to fulfilling the goal. In these examples, the **foregrounded** type of behaviour required to achieve the goals is **linguistic**. Pupils **have to** make use of linguistic resources in order to achieve them. These goals are both linguistic and directed towards subject learning and clearly indicate the purposes language will be used to perform.

4.4.6 Some curriculum goals are oriented towards *one primary type* of behaviour

To achieve certain curriculum goals, pupils may engage in only **one primary type** of behaviour which uses one main type of resource. For example, in *READING aloud* (En AT2 L1) a poem from a book, pupils will rely almost entirely on linguistic resources. In this case, language use alone achieves the goal. Other goals, such as those described

²⁷ This is not to say that language, particularly listening, will not be used at some point in the activities designed to fulfil the goal, but there is no indication in the wording that it will, and it is theoretically possible that the goal itself, once understood, could be fulfilled without any language use, thereby limiting the opportunities for language development.

in 4.4.4 above, may be oriented towards a primary behaviour which is physical, graphic or cognitive rather than linguistic.

4.4.7 Some curriculum goals require *several types of behaviour* to be achieved

In other activities, pupils will combine different types of behaviour and integrate different resources to achieve a prescribed goal. For example, to:

- *INVESTIGATE the displacement reactions that take place between metals and solutions of salts of other metals (Sc 3 PoS),*

pupils may use **physical** resources to *HANDLE* the salts, metals and equipment, **linguistic** resources to *DESCRIBE* or *RECORD* their observations and results, and **cognitive** resources to *INTERPRET* the observed reactions and work out the chemical equations.

4.4.8 Language plays a *contributory* role in conjunction with other types of behaviour

In activities such as the one described above, language use may be “just one of the steps towards the satisfaction of the motive, towards the attainment of the final goal of the activity” (Leontiev, 1981: 22). It may form only a part of an activity which is largely non-verbal. In this case, language plays a **contributory role** as part of the process of achieving the overall goal but, within that process, it has an identifiable function to perform. When considering such objectives and outcomes at the planning stage, teachers need to identify and foreground the **contributory** function language will perform.

4.4.9 Language plays a *complementary* role in relation to other types of behaviour

In school, even in activities where language use is not specified as essential, much of what pupils do ‘around’ the main learning activity depends upon reading, writing, speaking and listening. Language is used to initiate and guide activities in the form of instructions from a teacher, textbook or worksheet, to modify behaviour during

activities as peers collaborate in social interactions or to ask for and receive clarification from a teacher. In these respects, language ‘**surrounds**’ many learning activities whether it is specified as essential to their fulfilment or not. This is likely to be the case in relation to those goals which do not indicate a need for any linguistic behaviour such as those suggested above in 4.4.4 and 4.4.7.

4.4.10 Language is used to assess and evaluate what pupils do

Crucially, because what pupils **do** needs to be observed, marked or assessed by teachers, language is employed to **demonstrate, express** or **explain** what pupils **know, understand** and **do** relating to other types of behaviour (Schlepppegrell, Achugar and Oteíza, 2004: 68). So cognitive activities such as:

- *THINK ABOUT the quality and plausibility of information* (IT PoS);
- *CONSIDER the properties of materials* (DT PoS),

need to be **expressed linguistically** to demonstrate that pupils have fulfilled them.

Physical activities such as:

- *COMPOSE dances* (PE PoS);
- *CHANGE the direction or the speed of movement of an object* (Sc AT4 L6),

may need to be *DESCRIBED* or *EXPLAINED* using language to demonstrate to the teacher what has been done and why.

Graphic activities such as:

- *CONSTRUCT bar charts and pictograms* (Maths AT4 L3);
- *FORM simple graphs by plotting points* (Sc AT1 L4),

may need to be accompanied by language use such as *LABELLING* axes and legends, or by providing a commentary to *EXPLAIN* in words the data which has been presented in graphic form. In such cases, language plays a **complementary role** which may not be specified explicitly in the goal, or necessarily always be essential **for its fulfilment**, but which is **required to demonstrate** pupils’ knowledge and understanding for the purposes of formative or summative assessment.

So it is likely that opportunities for language use and, potentially, opportunities for language development can be identified ‘**surrounding**’ learning activities where no requirement for language use is apparent, as well as those where it is central. In these

situations, teachers need to ask what complementary role language could play and define integrated language and learning goals to specify the purposes of language use.

4.4.11 The wording of curriculum goals

The wording of the prescribed goals of teaching, learning and assessment in the original text of the national curriculum orders sometimes makes it more difficult to identify a clear role or purpose for language use. The difficulties encountered in the construction of the corpus analysis database illustrate some of the problems teachers will face when trying to plan for language development work in a lesson where the objectives and outcomes are subject-driven and subject-based learning is prioritised over an explicit focus on language.

4.4.11.1 Linguistic behaviour may be backgrounded

Sometimes, linguistic behaviour is '**backgrounded**' in the subject content element by its syntactic position e.g.

- "*Pupils should be given opportunities to: ...obtain and record statistical evidence about countries, and present it in the form of maps and graphs with a commentary*" (Ge PoS).

In the above example, the *commentary* is the most linguistically demanding of the activities described but it is placed at the end where it has least semantic significance (Cruse, 2004: 56). Syntactic priority has been given to the skills considered to be more 'geographical' in nature: obtaining and recording statistics and presenting them in the form of maps or graphs.

4.4.11.2 Specific linguistic behaviours are 'concealed' within holonyms

In some goals, the use of verbs such as *SURVEY* or *INVESTIGATE* may 'conceal' a range of language purposes because of their holonymic²⁸ status. As used in the

²⁸ Holonyms refer to the whole of which meronyms are a part. In the case of *SURVEY* and *INVESTIGATE*, the behaviours of *PLANNING*, *HYPOTHESISING*, *RECORDING*, *EXPLAINING* etc. will form part of the whole, more general activity. In this respect, they may be considered as meronyms concealed within the holonym.

curriculum, both verbs encapsulate a range of different behaviours, several of which are likely to be linguistic. For example, there are several purposes for which language is needed in planning and carrying out investigations including *WRITING a concise plan, HYPOTHESISING, PREDICTING, FOLLOWING written procedural instructions, MEASURING, RECORDING observations, EXPLAINING, DRAWING CONCLUSIONS and EVALUATING*, but they are implicit in the meaning of the culturally determined procedure of scientific investigation, rather than being explicitly stated. To choose appropriate language to model for pupils, general categories of activity like *SURVEY* or *INVESTIGATE* need to be broken down into more specific components and the purposes of language more clearly identified²⁹.

4.4.11.3 Cognitive outcomes do not make linguistic behaviour explicit

Other goals may use verbs which prioritise **cognitive outcomes** that do not explicitly indicate linguistic behaviour. However, to achieve the outcome, pupils will need to ‘access’ information or derive meaning from subject content presented to them e.g.:

- *“They should be taught to understand how changes affect people's lives, their attitudes and values, including their own.” (Ge PoS)*
- *“They know how to monitor a range of short-term effects on the cardiovascular system and show some understanding of the value of exercise to social and psychological well-being.” (PE AT L5)*

In the following example, the wording is so general that no indication is given of what pupils will need to do to reach the desired outcome.

- *“Pupils should be taught: ... to be aware of current developments in materials technology.” (DT PoS)*

Wordings such as these are unhelpful for identifying the purposes of language use. They highlight subject content but not linguistic behaviour. Teachers will need to interrogate subject-based curriculum goals worded in such general terms to better identify the role language may play.

²⁹ This approach has been developed by Genre Theorists who examine culturally determined genre texts and identify their stages and phases, defined in terms of language purposes. (See Christie and Martin, 2000 & Martin and Rose, 2008)

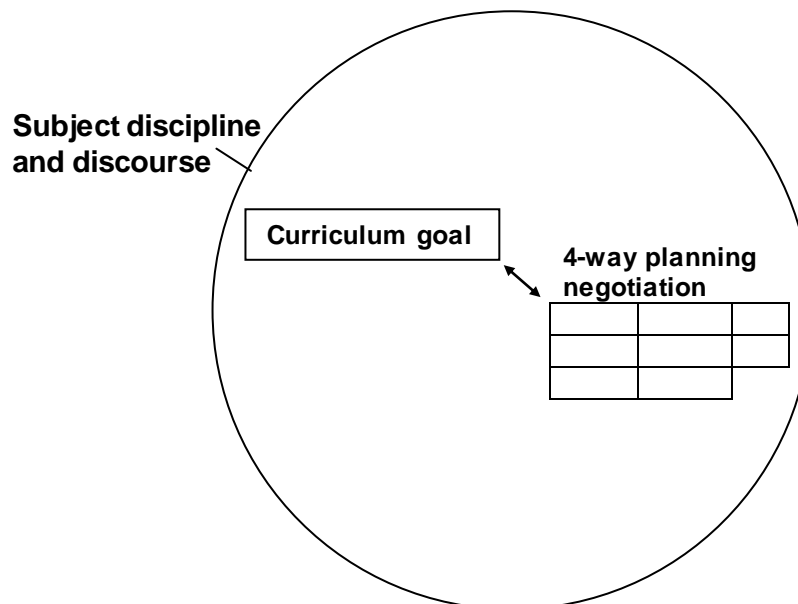
4.4.12 Summary and conclusion

All of the examples discussed above illustrate how, within the boundaries of subject disciplines and their discourses, some specific information can be derived from learning objectives and outcomes about the role of language and the purposes it serves in subject lessons.

However, because of the range of behaviours involved in learning; the priority accorded to 'subject knowledge and skills' as distinct from 'subject language and its uses'; and the nature of the wording of many objectives and outcomes; identifying the role and purposes of language is not always straightforward.

At the planning stage, teachers need to ask questions about or 'interrogate' the curriculum goals prescribed for subject learning as part of a process of negotiation as illustrated in Chapter 2, where subject learning-driven activities, subject learning-driven language, additional language development opportunities and additional language development models are considered together in relation to the overall curriculum goal (Fig. 4.10).

Fig. 4.10 Negotiating the role and purposes of language in relation to curriculum goals



If language use is likely to be **essential** to achieving the goal, the linguistic behaviour and its purpose need to be **foregrounded** and made explicit. Teachers can ask the question:

“What kind of activities can we construct to ensure the essential role of language is foregrounded?”

If language use is likely to play a **contributory** role as part of the activities needed to achieve an overall curriculum goal, the contributory purpose of language needs to be **clearly identified**. Teachers can ask the question:

“What role does language play and what purpose is its use fulfilling in helping to achieve the overall curriculum goal?”

If language use is likely to play a **complementary** role to other types of behaviour directed towards achieving the overall curriculum goal, the complementary purpose of the linguistic behaviour needs to be **clearly identified**. Teachers can ask questions such as:

“How might pupils use language whilst engaging in these activities?”

“What purposes can be defined for the language use surrounding these activities?”

If language appears not to have any apparent role to play in the learning activities directed towards achieving a particular subject goal, the teacher should consider whether a role can be **created**, and whether a specific purpose for language use can be **built into** the structure of the lesson, not in a ‘contrived’ way but coherent with the subject learning goals.

“What role can be created for language and what purpose/s will it serve in relation to the learning activities and the overall curriculum goal?”

In order to **clearly identify** and **foreground** the role and purpose of language it would benefit teachers to define **integrated language and learning goals as lesson objectives** using a format which includes a linguistic behaviour defined in a verb followed by an element of subject content to which the behaviour is directed.

4.5 Turning curriculum learning goals into integrated language and learning goals

In the previous section, I identified the main roles and a variety of purposes that language is used for in the service of curriculum goals. I concluded that in order to foreground language at the planning stage, teachers need to define integrated language and learning goals for each lesson which are explicit about the purposes of language in relation to subject learning. A format that includes a linguistic behaviour verb combined with an element of subject content seems to offer the greatest potential for doing this and the substance of such a goal can be arrived at by asking questions such as:

- 1) What is the curriculum subject learning goal? What do we want pupils to **do** in this lesson?**
- 2) What role does language play in relation to this goal? Is language use essential, contributory or complementary?**
- 3) What are the purposes language can fulfil in relation to this goal?**
- 4) How can we word this as an integrated language and learning goal?**

In this section, I will address these questions by considering potential verbs which could be used to clearly indicate linguistic behaviour and then illustrating how overarching curriculum goals may be 'turned into' or realised by more specific integrated language and learning goals.

4.5.1 Deriving a list of 'language-specific' verbs from within the curriculum

In order to define a suitable list of verbs, several criteria need to be met. The verbs need to:

- indicate linguistic behaviour in their primary polysemes;
- relate directly to curriculum purposes of language use;
- satisfy the contributory or complementary roles language plays in relation to other learning behaviours;
- have the capacity to be coupled with elements of subject content;
- be familiar and accessible to teachers.

As a set, the verbs need to cover the breadth of potential purposes of language use across the curriculum, taking account of variations in discourse preference in each subject discipline and, at the same time, the list needs to be brief enough to be

manageable. Rather than selecting a list of verbs from a literacy-based or applied linguistics source outside of the curriculum, or from within the English language subject order only, the source that meets these criteria most satisfactorily is the national curriculum itself³⁰.

4.5.2 Verbs used to refer to linguistic behaviour in the curriculum

Of the 405 different verbs defined in the corpus analysis database, only 262 were used to indicate linguistic behaviour in curriculum goals (Appendix F). The linguistic behaviour was indicated **either** through the meaning of the verb e.g. *WRITE*, *EXPLAIN* **or**, where the verb was semantically general or had a broad polysemic range e.g. *DEVELOP*, *FIND*, it was indicated in the elements of subject content e.g. *FIND information using alphabetical order*.

4.5.3 Verbs with strong semantic associations with linguistic behaviour

In the current curriculum, where most lessons are driven by subject learning goals, the subject content element is rarely negotiable. If the lesson topic is *Computer Aided Manufacture* in DT, this cannot be changed to something else simply to accommodate the need to promote language development for EAL pupils.

Because the range of elements of subject content in curriculum goals is so diverse and because they may not contain any information indicating linguistic **behaviour**, wherever possible, that role must be carried by the verb.

Of the 262 verbs identified, only a proportion have strong associations with linguistic behaviour e.g. *DESCRIBE*, *COMPARE*, *EXPLAIN*, *LABEL*, *INFORM*, *PERSUADE*, *RECOUNT*, *COMMENT*, *DISCUSS*, *DEBATE*, *ARGUE*, *NAME*, *JUDGE*, *SUGGEST* etc. Several occur a number of times and across subjects e.g. *COMPARE* is found in all ten subjects, *DESCRIBE* in nine, *SUGGEST* in seven, *INFORM* and *EXPLAIN* in six, *JUDGE* or *MAKE JUDGEMENTS* in five.

³⁰ Deriving the list of verbs from the prescribed planning framework of the orders may not provide comprehensive coverage of all the kinds of linguistic behaviour EAL pupils need to develop for their social and academic lives but it is likely to reveal many of those most relevant to the demands of the curriculum.

However, there are other verbs which are semantically specific to linguistic behaviour but do not occur frequently or across several subject orders e.g. *HYPOTHESE*, *PREDICT*, *ILLUSTRATE*, *SPECIFY*, *DIRECT*, *INSTRUCT*. Whilst these verbs may not occur as frequently, they still need to be included in the set to cater for occasions when they are relevant to the demands of particular lessons.

Several verbs are close synonyms such as *EVALUATE*, *APPRAISE*, *ASSESS*, *GIVE FEEDBACK*. In order to accommodate discourse preferences for particular synonyms and different nuances of meaning within a list of manageable length, it seems sensible to group synonyms together and use one, more commonly-used verb as a superordinate (See Appendix F) e.g.

Grouped categories	Verbs indicating linguistic behaviour
<i>EVALUATE</i>	<i>EVALUATE</i>
	<i>APPRAISE</i>
	<i>ASSESS</i>
	<i>GIVE FEEDBACK</i>

This allows the teacher to use the more manageable list of grouped categories as a reference whilst retaining the option to use more particular verb choices appropriate to the goal.

4.5.4 Interrogating curriculum goals to construct integrated language and learning goals

A list of verbs such as this can be modified and adapted through use as teachers become more familiar with the terms and their relevance to the demands of the curriculum when coupled with elements of subject content. It may be added to with other verbs if it becomes clear that certain behaviours, not indicated in the curriculum orders, are required in subject lessons. The list can act as a reminder of the ‘functional diversification’ needed for language development across the full range of curriculum purposes and therefore can inform long-term planning. Perhaps most usefully, it can be used to interrogate curriculum goals to construct integrated language and learning goals by asking questions such as:

- *Is language going to be used to COMPARE anything in the lesson?*
- *Can we include an activity where pupils use language to EVALUATE ...?*

4.5.5 Combining behaviour verbs with elements of subject content

The corpus analysis of the curriculum orders reveals that many goals are worded in generalised terms, using **categories** of subject content, rather than listing many specific elements of subject content. Lesson objectives are usually more specific but are still, to some extent, generalisations because they act as a brief summary for a larger expanse of activity and language use. Integrated language and learning goals are also likely to operate at a level of generalisation in that they will not specify every item of language to be used. However, for them to be helpful in clarifying language use, they must be fairly specific in defining the intended behaviours. The more specific the verb and the element of subject content are, the closer we can move towards defining the actual language needed.

This process of combining language-specific verbs with elements of subject content should take place at the planning stage as part of a negotiation about activities directed to achieving the overarching curriculum goal (see section 2.7). As the purposes of language use are likely to vary according to each activity this could result in several integrated goals for a single lesson. Language models need not be defined for every goal but the greater the opportunity for language use is, the greater the opportunity will be to actively model and scaffold language to extend, expand and refine pupils' language resources.

4.5.6 Examples of integrated language and learning goals

To illustrate how integrated goals can be constructed I will provide some examples based on general curriculum goals drawn from the national curriculum orders.

In this first example, the general curriculum goal already clearly indicates the need for linguistic behaviour.

- *COMPARE differing views on local issues as presented by the media or in publicity leaflets (Ge PoS)*

Language use is **essential** to fulfil this goal and activities should be chosen to ensure that pupils have opportunities to *COMPARE different views*. This curriculum goal provides a context for using language. The choices of **what** language to use are constrained by its demands.

In the second example, the overarching curriculum goal indicates a **cognitive outcome**.

- *DEVELOP a reliable perception of distance and location, over a widening range of scales (Ge PoS)*

There is no clear indication of how language needs to be used **as a behaviour** in relation to this goal. To create an opportunity for language development, the teacher should consider designing activities to create a **contributory** role for language. By engaging in a process of 'negotiation' about possible activities to promote subject learning and language development, the teacher could create a set of integrated language and learning goals linked to practical collaborative activities based around *LOCATING places, ASKING about, ESTIMATING, MEASURING & RECORDING distances and COMPARING estimates and measurements*; e.g.:

- *LOCATE a number of different places in:*
 - a) their local community*
 - b) their town, city, regional area*
 - c) Wales*
 - d) the UK*
 - e) Europe*
 - f) other parts of the world.*
- *ASK their partner to ESTIMATE how far away the places are from each other.*
- *RECORD their estimates in a table.*
- *Swop roles and ESTIMATE the distance of their partner's choices.*
- *MEASURE the distances using maps with different scales.*
- *RECORD their measurements in the table.*
- *COMPARE the estimates with the measurements and TELL their partner how close or far away their estimates were from the actual measurements.*

In the third example, the overarching curriculum goal indicates the need for pupils to use **graphic** resources but again there is no indicated requirement for language use.

- *DRAW common 2-D shapes in different orientations on grids (Ma AT3 L4)*

Opportunities for language development could be created through activity design as indicated by these integrated goals:

- *NAME the shapes.*
- *COUNT the number of sides and vertices of each shape.*
- *PREDICT the angles of turn to produce different orientations.*
- *MEASURE the angles of turn.*
- *DESCRIBE what happens to a shape if it is turned by 45°, 90° and 180°.*

In the fourth example, the overarching goal indicates behaviours that use **physical** resources.

- *MANIPULATE simple tools safely and ASSEMBLE and JOIN materials in a variety of ways. (DT AT L2)*

There is no indication that pupils have to use language to achieve this goal. In this situation, language use will be **complementary**. Most language use is likely to be spoken, to complement rather than detract from the practical activity, but some written activities could be designed to reinforce language that has been scaffolded in speech.

- *DESCRIBE the purpose or function of the tool.*
- *EXPLAIN how the tool is used.*
- *IDENTIFY the possible dangers of working with the tools.*
- *SUGGEST ways of assembling materials for a particular purpose.*
- *DEVISE instructions for how to join the materials in different ways.*
- *EVALUATE their work.*

4.5.7 Summary conclusion

Identifying the role and purposes of language in the service of curriculum goals requires the use of verbs which have **strong semantic associations with linguistic behaviour**. These can be combined with elements of subject content derived from the overarching curriculum goals of lessons through a process of 'negotiation' about learning activities and language development opportunities.

Integrated language and learning goals can clarify the purposes of language in lessons where its role is not immediately clear. If teachers are to plan additional language development in a considered and systematic way, and be more efficient and productive in their use of time, they need to construct integrated language and learning goals for every lesson. Both the verb and the element of subject content in an integrated goal act together to define the purposes of language use and they constrain the range of language choice needed for the purposes. However, they do not provide teachers with the **actual wordings** needed to fulfil the goals, nor consequently which wordings need to be modelled for EAL pupils who have insufficient language resources for the task.

In order to choose the actual words, grammatical structures, collocations and patterns of combination to construct clauses and clause complexes that fulfil the purpose, teachers need more information – **a different kind of information** – and this is where we have to return to Halliday's insights about the relationship between lexicogrammar and semantics.

4.6 From curriculum goals to lexicogrammar via semantics

Up to this point in the chapter I have focused primarily on defining the purposes of language use in the sense of 'social functions' - what pupils are expected to use language to **do** as a 'behavioural resource' in response to the demands of the statutory national curriculum for Wales at KS3.

Using information and findings from the corpus analysis of the national curriculum orders, I have sought to provide an overview of the general character of each subject discipline, pointing out how similarities and differences between the disciplines and their discourses influence the purposes for which language is used within them, and how the variety of behaviours and practices in each subject act as constraints on language choice.

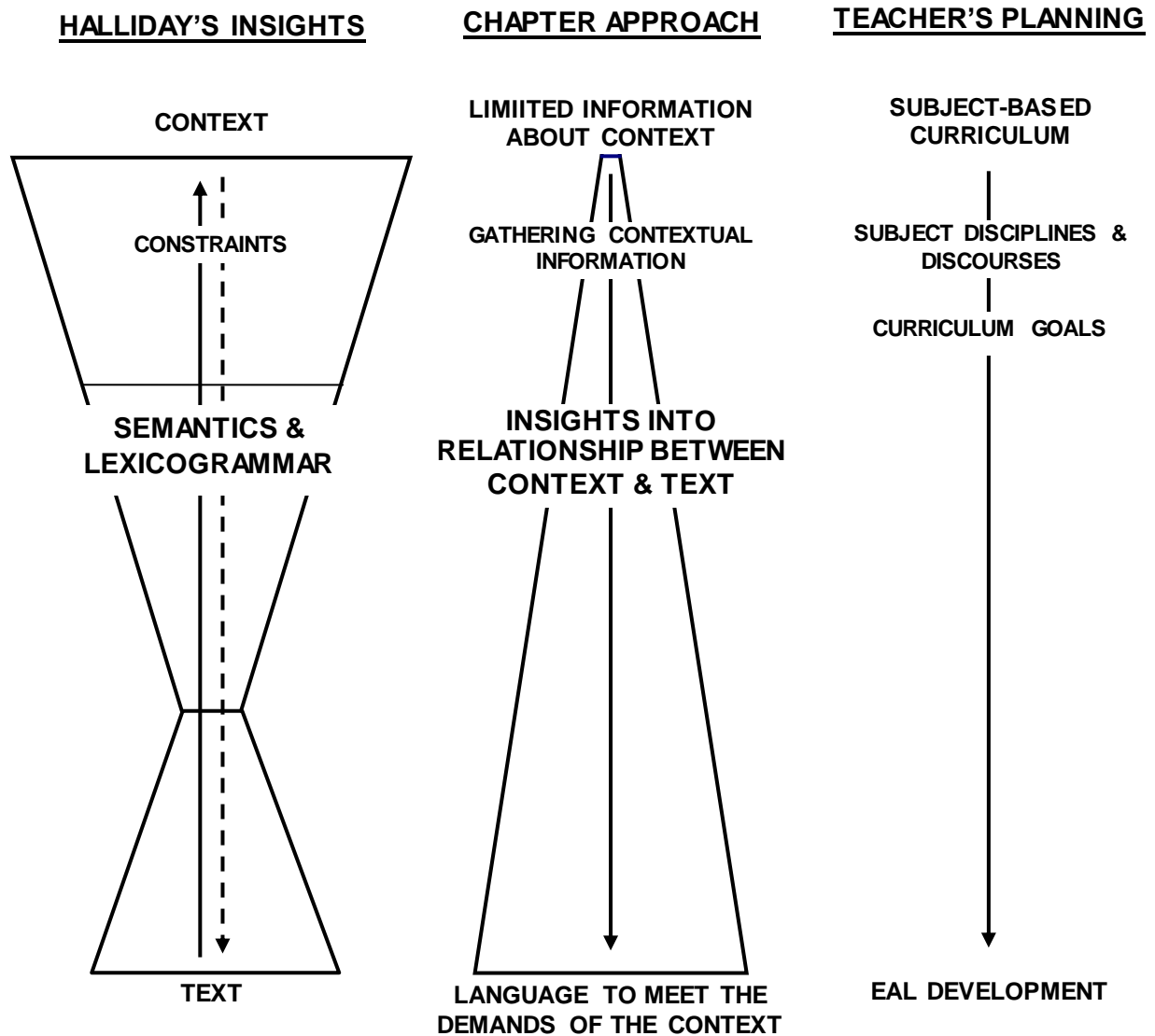
I have discussed the roles and purposes of language use indicated in the wording of specific curriculum goals within the discourses, which further constrain language choices.

And I have suggested that additional language development can be planned more productively by constructing integrated language and learning goals for every lesson which explicitly foreground the purposes of language use in relation to subject content learning activities.

In order to move on towards determining actual wordings which may be chosen as language models for EAL pupils in lessons, we need to examine Halliday's insights into the relationship between social function, semantics and lexicogrammar (Fig. 4.11), specifically addressing the question:

- **How is the language shaped and determined by these purposes?**

Fig. 4.11 Examining semantics to get closer to lexicogrammar



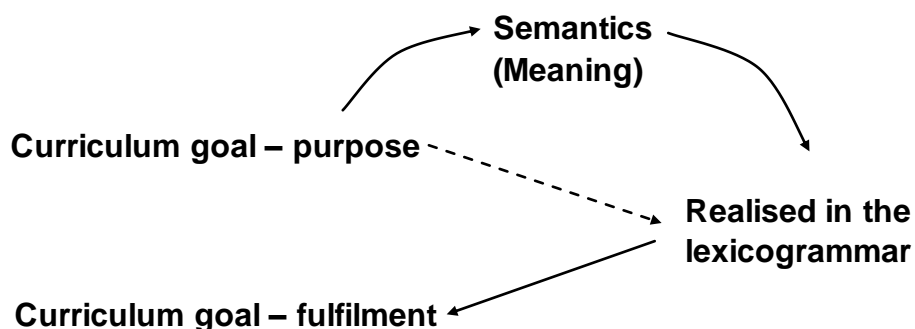
4.6.1 Language as a resource for creating meanings

I have established that in every situation where language is used, it fulfils a social activity of some sort directed towards a goal (Halliday, 1973, 1978; Gerot and Wignell, 1994: 11; Eggins, 2004: 56). It does this by operating as a semiotic system – a system for ‘making and understanding meaning’ (Halliday, 2004a: 5). The constraints of the context determine the **kinds of meaning** that need to be constructed to achieve the goal and **the meanings shape the choices** made about which words to use and how to put them together.

So, in order to get from the **purposes** of language use indicated in curriculum goals to the actual wordings needed to fulfil those purposes, which are realised in the

lexicogrammar and may be constructed as **language models**, we need to go **via semantics** (Fig 4.12).

Fig. 4.12 From curriculum goals to lexicogrammar via semantics



The behavioural potential of language as a resource is dependent upon its capacity to realise meanings. The lexical and grammatical forms of language “serve to realise options in meaning, which in turn realise options in behaviour that are interpretable in terms of a social theory” (Halliday, 1973: 52). In other words, the reason we are able to **do** things, or get things done, with language is because language **realises meanings** in the lexis and grammar. Language assists us in achieving our goals because it enables us to **create meanings** and **exchange meanings** with others using words (Halliday 2007: 274; Eggins 2004: 3).

The purposes of language use in the curriculum illustrated in the previous sections, describe some of the ‘behaviour potential’ of language in the processes of education, but the **‘intermediate’** step through semantics is needed to convert the behaviour potential of language into meaning and then into language. Halliday describes it as the concept of what we ‘can mean’ with language.

“The potential of language is a meaning potential. This meaning potential is the linguistic realisation of the behaviour potential: ‘can mean’ is ‘can do’ when translated into language. The meaning potential is in turn realised in the language system as lexico-grammatical potential, which is what the speaker ‘can say’ (Halliday, 1973: 51).

Halliday also applies this to language education in a way that explains how language is a resource for learning:

“In all language education, the learner has to build up a resource. It is a resource of a particular kind: a resource for creating meaning. I call it a “meaning potential” ... “What the learner has to do is to construe (that is, construct in the mind) a linguistic **system**. That is what is meant by “language as system”: it is like stored up energy. It is a language, or some specific aspect of a language, like the language of science, in the form of a potential, a

resource that you draw on in reading and writing and speaking and listening – and a resource that you use for learning with.” (Halliday, 2007: 274.)

4.6.2 Halliday’s three metafunctions: Ideational, Interpersonal and Textual

Halliday’s insight into how the relationship between Context and Text is realised through semantics requires us to move away from the more easily understood concept of the ‘social function’ of language use to “a more general and ... a more abstract view of the nature of linguistic function” (Halliday, 1973: 8). Instead of equating the term ‘function’ solely with ‘use’ and trying to match every social function with every form of language used to realise it, Halliday generalises the functions of language into three broad semantic ‘**metafunctions**’ related to different ‘types of meaning’: the **ideational**, **interpersonal** and **textual** metafunctions.

The **ideational** metafunction is that in which language construes our experience of the world and ourselves, what Halliday calls the “the world of actions, relations, participants and circumstances” (Halliday, 2004a: 206) - how we use language to make meaning out of and represent reality (as illustrated in section 4.2.3.1). The **interpersonal** metafunction is about enacting relationships between people – how we interpret and exchange meanings with others to achieve interpersonal goals. The **textual** metafunction is about the facility of language to structure and organise meanings in a flow of spoken or written discourse. The textual metafunction facilitates the realisation of the other two metafunctions (Halliday, 2004a: 29, 30).

“... of all the *uses* we make of language (which are limitless and changing), language is designed to fulfil three main functions: a function for relating experience, a function for creating inter-personal relationships, and a function for organizing information” (Eggins, 2004: 110, 111).

4.6.3 Register variables of Field, Tenor and Mode

These metafunctions operate at the interface of language and the ‘real world’ context of its use, so the situational variables of the social activity: what is being talked or written about; who is involved in the activity and the relationships between them; whether the language is spoken or written and whether it is being used to reflect on something or to make something happen; all contribute to making the situation what it

is (Halliday and Hasan, 1989; Gerot and Wignell, 1994: 11). Each of these contextual variables is realised in the semantics through the register variables of Field, Tenor and Mode respectively.

So the **Field** refers to 'what is going on': the topic or nature of a social activity and its subject matter (Gerot and Wignell, 1994: 11; Eggins, 2004: 9). Meanings relating to the Field will be realised in choices of words or wordings associated with the subject matter. For example, if the social activity is a game of football, then vocabulary and expressions directly related to the topic of 'football' and to the events taking place in the game will feature highly in the language that is used.

The **Tenor** refers to the social relationships between those taking part, relations of status or power, degree of like, dislike or neutrality and the frequency, duration and intimacy of social contact (Gerot and Wignell, 1994: 11; Eggins 2004: 9). In a football game, players are likely to make different choices about the language they use when communicating with their team-mates than when they are communicating with members of the opposing team because of their differing team **affiliations** and levels of **familiarity**. The referee and other officials have a distinct, authoritative, and supposedly impartial, **status** which will directly impact on the language they use, and which players use towards them, distinguishing it from that used between the players. The language choices of each will reflect their differing **relationships, attitudes** and **affiliations**. Consequently, the Tenor of the verbal interactions that take place during the game between the various participants will vary as they 'exchange meanings' with one another.

The **Mode** refers to how language is being used; whether the channel of communication is spoken or written, which affects the amount of 'feedback', and whether language is being used as a mode of action or reflection (Gerot and Wignell, 1994: 11; Eggins, 2004: 9). During a football game, other than the referee making notes about bookings, penalties etc., the 'channel' of the language use will be **spoken** and there is potential for immediate **feedback** in the form of verbal or physical reactions. The 'interpersonal distance' between the language users is very small (Martin, 1984 in Eggins, 2004: 90-93). Language will be used to **accompany** the physical action, to make things happen, to encourage players to behave in particular ways. In this mode, language becomes part of the social process of the game. It is

'language as action'. As a consequence of being part of the action and interaction, the language will have immediate, meaningful *coherence* with its situational context and this will affect the choices of wording. Many meanings will be apparent from the participants' immediate perception of events so they will not need to be stated as explicitly in words.

By contrast, a sports reporter creating an account of the game for a newspaper will use **writing to reflect on** the action that has taken place, in retrospect. It is **'language as reflection'**. There will be **no immediate feedback** and language will constitute the entire social process of writing the report, rather than just being a contributory part of the activity. The writing will need to make lots of explicit references to the events (or themes) of the game to cohere with the meanings of the 'real world' situational context which is no longer present – it is at an 'experiential' distance. In order to communicate effectively to readers, and bridge the 'interpersonal' distance, the writing will also need to have *coherence* within itself (the linguistic context) as a meaningful descriptive text because no other situational sources of meaning may be available for the reader to refer to. Continuity between the **themes**, and between what information has already been **given** and what is **new**, needs to be established through the writing.

In each case, even though the same football game is the focus of the language use, differences in context and purpose associated with the Mode will result in different choices of wording.

Halliday suggests that all the meanings constructed in language fall into one or other of the three categories of register variable, Field, Tenor and Mode, and each type of meaning "is related in a predictable, systematic way to each situational variable" (Eggins, 2004: 111). All three influence the choices we make about which words or wordings to use and all three are realised simultaneously in almost every instance of language (Halliday and Hasan, 1989: 23). The way these three variables combine to shape language choice for particular purposes in different cultural and situational contexts gives rise to different 'registers'.

Halliday (1978, 2004a: 27) describes a register as a 'functional variety of language' related to a particular social context and he describes it in terms of 'probabilities'

(Halliday, 2004a: 27); patterns associated within a given type of context or type of situation.

“A register ... can be defined as a configuration of meanings that are typically associated with a particular situational configuration of field, mode, and tenor. But since it is a configuration of meanings, a register must also, of course, include the expressions, the lexico-grammatical and phonological features, that typically accompany or REALISE these meanings.” (Halliday and Hasan, 1989: 38, 39)

Or as Gordon Wells puts it:

“Register thus accounts for the probabilistic relationship between particular situation-types and the meaning choices most likely to be realized in the texts that are constructed in relation to them.” (Wells, 1994: 49)

Because register varies according to situation, any information about situational or register variables found in the wording of curriculum learning goals should help teachers to clarify the roles and purposes of language use. It should help them to narrow the range of possible options in meaning and consequently narrow the range of probable wordings that may be used to achieve the goals.

The curriculum goals in the text of the national curriculum orders contain information about register variation but there is seldom an equal balance in information relating to all three variables. This is at least partly due to the strong subject content-driven focus of the curriculum, which emphasises Field, and makes it more difficult for teachers to accurately identify register variation from unmodified curriculum goals.

4.6.4 The balance of register variables in curriculum learning goals

In the context of the goals of curriculum learning, the Field relates to the subject content or topic of the lesson that the pupils need to understand, speak or write about; the Tenor relates to the roles, relationships and attitudes adopted when language is being used for curriculum purposes (e.g. pupil-teacher, pupil-pupil, pupil-textbook author or other ‘enacted’ roles and perspectives); and the Mode relates to the written or spoken nature of the language use, and the way it is structured or organised to coherently convey the meanings required to fulfil the curriculum goals in the context of different learning activities. The extent to which language is required to enact experience or to reflect on it varies largely according to the behaviours involved in the activity.

Descriptive contextual information relating to at least one of the three variables is always present in the wording of the statutory goals of the national curriculum, but information about all three is rarely made explicit in a single goal.

4.6.4.1 Variation in Field

In a content-driven curriculum, information relating to Field is almost always evident in learning goals although, in the national curriculum orders, it is often generalised to some extent at the level of themes, topics or categories e.g.

- *“Pupils’ work shows knowledge and understanding of aspects of the history of Wales and Britain and other areas of content drawn from the Key Stage 2 or Key Stage 3 Programme of Study” (Hi AT L4)*
- *“They describe some of the main events, people and changes.” (Hi AT L4)*
- *“They use a range of materials, tools and techniques to achieve different outcomes...” (Ar AT L3)*
- *“...listen attentively to an increasingly broad range of music in order to recognise and describe its distinctive characteristics” (Mu PoS)*

Some subject orders, Mathematics in particular, include more specific elements of subject content e.g.

- *“Pupils count sets of objects reliably, and use mental recall of addition and subtraction facts to 10.” (Ma AT2 L2)*
- *“...find perimeters, areas and volumes of common shapes, including circles and cylinders, by counting and dissection methods, progressing to the derivation and use of standard formulae” (Ma 3 PoS)*
- *“...select and calculate or estimate appropriate measures of spread, including the range and interquartile range applied to discrete, grouped and continuous data” (Ma 4 PoS)*

Several subject orders include specific elements of subject content to exemplify more general statements:

- *“Pupils use their knowledge and understanding to link cause and effect in simple explanations of physical phenomena, such as a bulb not lighting because of a break or switch in an electrical circuit” (Sc AT4 L3)*
- *“...locate places studied and places that are frequently in the news, e.g. locate the capital cities of countries within the EU” (Ge PoS)*
- *“... taking part in a sustained event compared with one of a more explosive nature, e.g. 1,500 metres compared with a 100-metre sprint” (PE PoS)*

It is clear from these examples alone that there is considerable variation in Field across the curriculum. The ‘ideational’ meanings constructed in language vary both between and within subjects. The variation arises from the nature of the distinctive

subject disciplines, the ‘knowledge’ each discipline addresses and the discourses that develop within them. (See also section 4.3.4.)

Although this variation is clearly evident from analysis of the goals in the national curriculum orders, the ‘high level’ nature of the orders themselves means they are not exhaustive in their detail of subject content. In the most recent version of the National Curriculum in Wales, released in 2008, the orders have been made even less prescriptive about the Range of subject content, leaving teachers to use their own professional judgement to choose which specific elements of subject content to teach, when devising their own lesson objectives and outcomes.

Although individual lesson objectives and outcomes are likely to be more specific than those prescribed in the orders, for the sake of brevity even these may be indicative and generalised. This means that, at the planning stage, teachers may have to interrogate the overarching lesson goals to determine more detailed and specific information about Field and incorporate it within their planning for language resources, asking ‘Which objects?’, ‘Which shapes?’, ‘Which data?’, ‘Which phenomena?’, ‘Which techniques?’ etc. This is essential if teachers are to move closer to ‘predicting’ the actual wording required to support EAL pupils.

4.6.4.2 Variation in Tenor

Aspects of Tenor are not always explicitly stated in curriculum goals and consequently variation is less evident than for Field. Some Tenor variation is illustrated in curriculum goals where pupils are expected to adopt a different, more responsible, or more authoritative relationship in an activity or towards their peers, a teacher or another audience. For example:

- *CONSTRUCT persuasive arguments* (En 1 PoS);
- *PARTICIPATE in a wide range of drama activities, including roleplay* (En 1 PoS);
- *MAKE CONTRIBUTIONS and ASK QUESTIONS that are responsive to others' ideas and views* (En AT1 L4);
- *ADAPT their presentation to different audiences* (En 1 PoS);
- *DIRECT others [in performing music or singing]* (Mu PoS);
- *ANALYSE music critically* (Mu PoS);
- *DEVISE instructions for a computer to generate and transform shapes and paths* (Ma AT3 L6);
- *LOOK critically at some of the ways in which representations of data can be misleading* (Ma 4 PoS);

- ***CONTROL the risks to themselves and others*** when using a range of apparatus and equipment (Sc 1 PoS) and (DT PoS);
- ***TAKE RESPONSIBILITY*** for the planning and execution of safe exercises (PE AT L6).

Adopting behaviours such as: being *persuasive* or *critical*, *taking responsibility* and *directing* or *instructing* others varies the Tenor of the language choices that pupils need to make.

Some level of ‘attitudinal variation’ is indicated in a number of goals which state that pupils should communicate their own personal views and feelings. For example:

- *EXPRESS their views on features of the environment of a locality that they find attractive or unattractive* (Ge AT L1)
- *TALK about what they like or dislike about what they have made* (DT AT L2)
- *DESCRIBE their ideas and feelings imaginatively* (Art AT L5)

In addition to these, the most common behaviour across the curriculum indicating the need for Tenor variation is that of ‘evaluation’, where pupils are expected to: *EVALUATE activities, energy resources, evidence, forms of presentation, ideas, information, interpretations, media, methods, models, music, outcomes, principles, products, results, solutions, sources, systems, texts, their own and other people’s work*. Occasionally, the types of meaning or general criteria against which the target subject matter should be evaluated are indicated in the wording of the goal e.g.:

- *EVALUATE results critically by relating them to the initial question or problem* (Ma 4 PoS)
- *EVALUATE their products in use against the design specification* (DT AT L6)
- *EVALUATE historical sources and identify those which are useful to answer specific questions* (Hi AT L5).

However, in many cases the type of judgement or appraisal expected in the evaluation is not made clear. For example:

- *EVALUATE a range of historical sources and interpretations* (Hi PoS)
- *EVALUATE their work to produce finished compositions* (Mu PoS)
- *EVALUATE the statistical evidence about countries* (Ge PoS)
- *EVALUATE how information is presented* (En 2 PoS)

In these examples, it is not apparent whether the evaluation should relate to: *suitability to purpose, usefulness, consistency, accuracy, validity, morality, degree of success or failure, personal preference* or any other criterion. These are the types of ‘interpersonal meanings’ that will most affect linguistic choice, and the degree of subjectivity or objectivity expected will determine the extent of personal opinion in any evaluation, so

teachers need to interrogate goals such as these when planning by asking ‘In which terms ... ?’, or ‘Against which criteria should the evaluation should be made?’.

For many other types of behaviour indicated in curriculum goals, the attitudinal bias appears to be a fairly ‘neutral’ representation of factual information. For example:

- *RECORD their knowledge and understanding with increasing independence (Hi PoS)*
- *DESCRIBE how people can both improve and damage the environment (Ge AT L4)*
- *SUMMARISE a range of information from different sources (En AT2 L6)*
- *DISCRIMINATE within musical elements and recognise the main characteristics of a variety of music (Mu AT L5)*
- *DIFFERENTIATE between whole-body activities that help to reduce body fat and conditioning exercises that improve muscle tone (PE PoS)*
- *IDENTIFY those elements which are metallic, when designing a circuit for investigating electromagnets (Sc 1 PoS)*
- *PRESENT information and results in a clear and organised way (Ma 1 PoS)*

In these, and many other curriculum goals, the Tenor appears to be ‘assumed’ rather than made explicit in the wording. The predominant focus is on pupils clearly demonstrating their factual knowledge of subject content. The wording affords little room for varying interpersonal roles and attitudes beyond the scope of the status relationship of a ‘pupil as apprentice learner’ producing work to be assessed by a ‘teacher as knowledgeable authority’. The emphasis is on the relatively impersonal representation of clear, factually accurate information, typical of academic registers. This places distinct demands upon EAL pupils to develop and use academic registers for which they may not have the relevant linguistic resources, and with which they will need support.

Such an emphasis may also support transmissional modes of delivery, which are quite common in secondary schools (Creese, 2004: 192, 193), and these can restrict the range of Tenor variation that pupils are exposed to, thereby limiting the potential for them to develop linguistic resources for more varied roles, relationships and attitudes. In such situations, to ensure that EAL pupils’ language resources relating to Tenor are continually being extended, expanded and refined, opportunities for variation will have to be deliberately introduced by teachers in their design of learning activities and selection of language models, negotiated in the kind of process outlined in chapter 2, section 2.7.

4.6.4.3 Variation in Mode

Aspects of Mode are found most frequently indicated in the English subject order but several references to aspects of Mode and Mode variation are found in other subjects as well. The following examples make reference to the channel of language use and certain features of formal structure or textual organisation:

- *TALK in a range of contexts, including those that are more formal* (En 1 PoS)
- *STRUCTURE their talk clearly* (En 1 PoS)
- *ADAPT their talk to suit the circumstances* (En 1 PoS)
- *WRITE for a variety of purposes and develop their own distinctive and original styles* (En 3 PoS)
- *SHOW some adaptation of style and register to different forms, including using an impersonal style* (En AT3 L6)
- *CONVEY meaning clearly in a range of forms for different readers, using a more formal style where appropriate* (En AT3 L5)
- *TALK about what they are going to make or have made* (DT AT L1)
- *TALK about what they and others have done* (PE AT L2)
- *DISCUSS the wider impact of ICT on society* (IT AT L6)
- *COMMUNICATE ideas in different forms, such as text ...* (IT AT L2)
- *DISCUSS their work using familiar mathematical language* (Ma AT1 L1)
- *WRITE to explain and inform the methods they use* (Ma AT1 L5)
- *WRITE reports of their work in a logical order using a wide range of scientific vocabulary and terms* (Sc 3 PoS)
- *WRITE to present their findings* (Ge AT L5)
- *COMMUNICATE in extended writing with increasing independence* (Hi PoS)

Other than in examples such as these, which are comparatively few in the curriculum as a whole, information relating to the Mode tends to be ‘subordinated beneath’ the perceived concerns of subject-based learning or is simply ‘left unsaid’. For example, there are several statements in the orders, including the following, which describe pupils’ need to ‘show what they know’ but with no indication of ‘how language should be used’ (the Mode) to do so.

- *“They demonstrate knowledge of the factors that promote quality and effectiveness”* (PE AT L6)
- *“Pupils ... indicate an awareness of the methods and purposes of the work of artists, craftworkers and designers”* (Ar AT L3)
- *“They express views on attractive and unattractive features of the environment of a locality”* (Ge AT L2)
- *“They ... identify differences between cells, such as differences in structure between simple animal and plant cells”* (Sc AT 2 L6)

There is no indication of whether the channel should be **spoken** or **written**, or whether the demonstration of knowledge and views should be carried out within an immediate situational context as a form of **action** such as: *‘pointing out features whilst walking through a locality on a geography fieldtrip’*; or at a **reflective** distance such as:

'evaluating the quality of a sequence of dance moves performed by others earlier in a PE lesson'. These are primarily matters of methodology or activity design which, in the curriculum specifications, are left to be determined by teachers.

There are not many statements in the curriculum orders where it is absolutely clear from the wording to what extent language should be used in the mode of 'action' or 'reflection' but some information may be **deduced** from the description of expected learning behaviours in subject goals. For example, the following wordings indicate requirements for pupils to interact with others, provide feedback or respond to material in context; suggesting that language may be used more as a form of action e.g.:

- *"They show increasing sensitivity when working collaboratively to improve performance"* (PE AT L6)
- *"They work with others to create compositions which have a simple musical shape, revising their ideas where necessary"* (Mu AT L3)
- *"Pupils respond to suggestions, put forward their own ideas and, with help, decide how to carry out their enquiries"* (Sc AT1 L3)
- *"They ask and respond appropriately to questions including 'What would happen if...?'"* (Ma AT1 L1)
- *"Pupils talk about matters of immediate interest. They listen to others and usually respond appropriately."* (En AT1 L1)

By contrast, the following goals suggest more considered displays of knowledge, requiring more structured explanations with multiple reference points, suggesting that language may be used more as a form of reflection:

- *"Pupils should be taught to: explain and justify how they arrived at a conclusion or solution to a problem"* (Ma 1 PoS)
- *"They offer reasons for some of their observations and judgements about places"* (Ge AT L3)
- *"Pupils should be taught to: select, recall and organise historical information with increasing independence and accuracy"* (Hi PoS)
- *"... reflect on the writer's presentation of ideas, the motivation and behaviour of characters, the development of plot and the overall impact of a text"* (En 3 PoS)
- *"... refine work, using information from a range of sources, and demonstrating a clear sense of audience and purpose in their presentation."* (IT AT L6)
- *"Pupils should be taught: to consider the properties of materials and to relate these to the ways they are used and worked"* (DT PoS)

Where language use is just one of several behaviours **contributing** to the achievement of a curriculum goal, or where it may be used to **complement** the enactment of non-linguistic behaviours specified in a goal (See also 4.4.3 – 4.4.10), it is more likely to accompany the social process as part of the action, e.g.:

- *"When designing and making, pupils ask questions and suggest ideas for making things based on their observations of familiar products"* (DT AT L2)

- “When carrying out investigations they recognise the need for fair tests, describing, or showing in the way they perform their task, how to vary one factor while keeping others the same” (Sc AT1 L4)
- “When working with 3-D and 2-D shapes, pupils use everyday language to describe properties and positions” (Ma AT3 L1)
- “Pupils should be taught to exercise safely and appreciate the value of regular exercise” (PE PoS)
- “Pupils try different approaches and find ways of overcoming difficulties that arise when they are solving problems” (Ma AT1 L2)
- “...use appropriate tools and equipment when working with a range of materials, paying attention to quality of finish and function” (DT AT L4).

In some cases, the specification of channel as spoken or written can suggest where the language use could be placed along a continuum from action to reflection. For instance, an activity such as *DISCUSS the wider impact of ICT on society* is likely to be closer to action than reflection compared to an activity such as *WRITE reports of their work in a logical order using a wide range of scientific vocabulary and terms*. In *oral discussion*, language is used to provoke reaction and counter-reaction from those involved. Coherence is maintained with the immediate interpersonal context in ways that ensure the discussion develops as an ongoing exchange. By contrast, in *writing a logical report*, there is a much greater need for coherence to be created *within* the text, making explicit reference to the actions that are being recounted to ensure it will communicate meaningfully across a greater interpersonal distance when there is no opportunity for feedback or clarification, for example when the teacher reads and marks the report later.

However, in educational registers, the relationship between speech and action, writing and reflection, represented as ‘typical’ in the mode continuum (Eggins, 2004: 92, 93), is complicated by the varied combinations of interpersonal and experiential distance. For instance, in a discussion, there is face-to-face, spoken engagement with potential for immediate feedback, but the social activity is primarily constituted of language use, and if the topic under discussion has a strong academic, subject-based focus, such as “*the social, economic, ethical and moral issues raised by ICT*” (IT PoS), it is likely to involve pupils reflecting on their experience of objects, phenomena and abstract ideas outside of the immediate context of the classroom. Consequently, whilst some of the discussion will be characterised by typical features of speech, the main substance of the information exchanged will have to be made more explicit, particularly if the information being presented is **new** to many of the discussants. Conversely, activities where pupils have to carry out a task where speech is written down, such as “...

develop their ability to write scripts and dialogue” (En 3 PoS), will require them to manipulate the typical conventions in a different way.

The interactions of different aspects of the Mode, and their relation to the other metafunctional meanings, clearly have a significant impact on language choice. The demands of the subject-based curriculum emphasise the need for the development of academic registers in **both speech and writing**. Pupils’ language use is expected to develop to become more reflective, explicit, decontextualised and logically organised in order to meet the increasing cognitive and linguistic demands of the curriculum at KS3.

It is, therefore, important that teachers seeking to develop integrated content and language learning for EAL pupils think consciously about how the demands of curriculum goals are realised in Mode variation, and plan ways of guiding EAL pupils towards language use which can appropriately meet the differing demands. Where the prescribed curriculum goals do not make aspects of Mode clear, at the planning stage, teachers need to consider how they can enable EAL pupils to extend and expand their linguistic resources for realising different registers including those considered most appropriate to the purposes of academic language use.

4.6.4.4 Academic register is expected for assessment purposes

For the purposes of assessment and evaluation, pupils are expected to demonstrate their knowledge and understanding for teachers and examination markers using language that will be considered most appropriate to the ‘registers of education’.

This expectation constrains both the Tenor and the Mode. As noted in section 4.6.4.2, the relationship is one of a subordinate pupil producing work for a superior authority figure who expects language to be characterised by the features of academic discourse to communicate meaning clearly and ‘accurately’. The channel in assessment at KS3 is usually writing although some formal and much informal assessment may take place through speech. However, even this speech is expected to utilise the features of academic subject discourses in order to be validated as acceptable or appropriate (Cope and Kalantzis, 1993a; Schleppegrell and Colombi,

2002). So the demands of exchanging information for assessment purposes constrain language choice to particular registers.

EAL pupils will need support to develop such academic language **during lessons** if they are to demonstrate their potential **during assessments** in the registers considered appropriate and acceptable to teachers and assessors who evaluate their work³¹. To meet this need, teachers' should consider using scaffolded interactions to model language that will help pupils move beyond the informal, spoken registers of everyday conversation to those which are more formal and more characteristic of written language - more 'written-like speech' (Gibbons, 2002: 40-50); those which allow them to represent information and ideas independently in a way that does not depend upon the present context or upon verbal feedback and interaction.

4.6.4.5 Variation of Field, Tenor and Mode in learning activities

In the previous few sub-sections, I have pointed out that the frequent backgrounding or omission, from the prescribed goals of the curriculum, of descriptive information about aspects of Tenor and Mode has the effect of making their possible impact on language choice less visible to teachers when planning. Field is given a high priority because the national curriculum in Wales emphasises the development of a body of subject knowledge, which pupils are expected to **represent**, to display their own understanding; although even the wording of information about Field is often quite general and requires further interrogation. In order to clarify and foreground register variables during planning, the kind of negotiation outlined in section 2.7 will need to take account of how **register variation** may be realised in the **learning activities** designed to meet the overarching curriculum goal, and how it may impact on EAL pupils.

As EAL pupils at KS3 follow their weekly timetable, the Field will **vary** from subject to subject **across the curriculum**, but **within each lesson** the general subject content chosen as the topic will **remain relatively constant**.

³¹ There is an ethical argument about whether or not the linguistic demands of assessment should be so constrained, particularly as they disadvantage EAL pupils who may understand subject knowledge but be unable to express it adequately in English to gain grades which reflect their actual 'ability'. However, the focus of this thesis is to illustrate what is needed within the current curriculum and assessment framework rather than to challenge its validity.

For example, if the topic in a History lesson is 'Henry VIII's dissolution of the monasteries', it will not change half-way through the lesson to become 'The impact of the Industrial Revolution on the south Wales valleys'. In other words, the language choices arising from the subject-content Field will be constrained by the topic. There will be monks and soldiers, monasteries being ransacked, walls being knocked down, religious artefacts being taken, but there will not be any miners digging coal, or iron and steelworks being built, or railways being laid.

However, the Mode of language use within the lesson will depend upon the type of learning activity used. For example, in one activity, pupils could be instructed to write a formal historical report, written for the teacher to mark, drawing on information from several different sources about the dissolution of the monasteries. The language choices will be expected to present meanings as objective and factual, including a lot of 'intratextual' reference and conjunction to ensure a coherent account is constructed in full sentences and paragraphs.

In another activity, pupils could be asked to work collaboratively, discussing how to produce an illustrated tourist information poster, following a visit to a monastery which had suffered from the dissolution. In this activity, some language will be directed towards the actions of producing the poster. Reflective references to information gleaned on the visit will be linked to references of how the information may be represented. There may be some discussion of 'tourist needs' and conventions of conveying tourist information. This will introduce some additional Field language relating to 'tourism' and 'poster-making' which will be combined with or linked to the subject-content Field information. Written information on the poster may be presented in abbreviated note-form with visual support rather than in an extended account.

The differences in Mode between the two activities will have a direct impact on some of the language choices.

In a different activity, the Tenor could be deliberately modified by getting pupils to place themselves in the position of characters from the past, such as the monks or soldiers or the King himself, and represent their differing points of view, their thoughts and feelings about the dissolution. Although the actual relationship in the classroom context would remain pupil-pupil or pupil-teacher, the different role being 'acted out'

would impact on the language choices. The attitudes of the 'characters' would be realised in different biases and perspectives, which could even be presented as comments on events as if they were happening in the present.

Therefore, within the restricted scope of a subject content topic, which contributes the core linguistic resources about the substance of what pupils need to listen to, read, speak or write about, the Tenor and Mode can deliberately be modified to bring about different kinds of language use. The choice of Tenor and Mode will contribute particular linguistic resources that enable pupils to enact different interpersonal relationships and organise their language in a structured flow of meaning appropriate to the purpose. Their respective functions and interactions may also introduce additional Field-specific language³². Such variation is a significant consideration for planning EAL development because of the different types of metafunctional meaning that each register variable realises and the ways they interact with one another. In order to expand their register range, EAL pupils need a variety of opportunities to do so.

So, although there must always be an emphasis on leading pupils towards more academic registers of language use linked to the purposes of curriculum goals, activities also need to reflect a diverse range of roles, relationships and attitudes, and modes of speaking and writing, action and reflection. The teachers' choice of learning activities needs to create opportunities for EAL pupils to diversify their linguistic resources for a wider range of registers than those indicated in the wording of the national curriculum orders.

³² Each curriculum goal and each activity directed to achieving it constitutes an even more constrained context of situation which has its own configuration of register variables and therefore will have a different linguistic realisation (Halliday and Hasan, 1989: 46).

4.6.5 The realisation of semantics in the lexicogrammar

Having followed Halliday's route from the purposes of language use into the semantics of register variables, we now need to get from the semantics to the lexicogrammar, from meaning to wording. In this sub-section, I will select some of Halliday's insights to answer the following question:

Which linguistic resources are used to realise the register variables?

and will comment on their relative usefulness for teachers planning EAL development in the curriculum.

4.6.5.1 Realising Ideational meanings

In section 4.2.3.1, I briefly outlined the way in which the structure of language represents and models people's experience of the 'real world'. Ideational meanings are those associated with things, ideas, experiences and logical relations (Gerot and Wignell, 1994: 22; Bloor and Bloor, 1995: 9; Halliday, 2004a: 170). They are realised in the register variable of Field as Participants, Processes and Circumstances in the system of TRANSITIVITY. In the lexicogrammar, they are realised in the forms of nouns or noun groups, verbs or verb groups and adverbs or adverbial groups and prepositional phrases, respectively.

<i>The reaction</i>	<i>quickly</i>	<i>produces</i>	<i>bubbles of gas.</i>
Participant: Actor	Circumstance: Manner	Process: Material	Participant: Scope
noun group	adverb	verb	noun group

They are the meanings that 'most clearly define' the grammatical constituents (Halliday, 2004a: 328). Using this insight, teachers can begin to gather linguistic resources directly related to the Field of 'what's going on' by drawing on their personal knowledge of the subject, discussing with other subject specialist teachers or by consulting relevant textbooks and teaching resources.

For example, the following curriculum goal would be addressed in a Science lesson initially through a practical experiment.

- *DESCRIBE similarities between some chemical reactions, such as the reactions of acids with metals (Sc AT3 L6)*

The Field-specific linguistic resources likely to be used for the experiment are:

Participants: Who/what?: Common - (*dilute*) acid, hydrochloric acid, sulphuric acid, metal, piece/s of metal, copper (strip), lead (strip), tin (strip), iron (filings), zinc (granules), aluminium (turnings), magnesium (ribbon), calcium (granules), sodium, potassium, beaker, test-tube/s, test-tube rack, bubbles, gas, hydrogen, wooden splint, stopper. **Abstract** - temperature, heat, (chemical/exothermic) reaction.

Processes: What is/happens/does what?: measure, put, put on, put in, pour, react, produce/make, appear/form, bubble, heat up/get warmer/become hotter, give out, feel, increase/rise, light, burn, remove/take off, pop, explode.

Circumstances: Where?: in, on, into, from; **with what?:** with; **when?:** as soon as/straightaway, after a while/few seconds/moments; **how fast?:** very quickly/slowly; **how many?:** a few, some, a lot of.

In order to achieve the end goal of *DESCRIBING similarities*, during the experiment pupils will need to *RECORD their observations and results*, probably in a table. This activity gives rise to additional potential Field-specific language such as:

Participants: sheet/book, table, row, column, box/cell, heading.

Processes: write/write down/note/record.

Circumstances: at the top, underneath/below, next to.

After the experiment is over, pupils will need to *READ and COMPARE their observations and results to IDENTIFY* and then *DESCRIBE the similarities between the chemical reactions of acids with metals* thereby achieving the end goal. This will require further language resources:

Participants: (*the pupil/s*) I/we.

Processes: is/was, are/were, did/n't.

Circumstances: how? the same as, similar to, as fast as, at the same rate.

(BBC, 2009; docbrown, 2009).

These words and phrases are the 'raw materials' or 'building blocks' (Halliday, 2004a: 328) from which clauses are built. They are the basic resources that EAL pupils need to construct meaning linguistically during lesson activities and, if they do not yet understand their meanings or know how to combine them to make the most appropriate sequences of meanings, teachers will need to provide some form of modelling and scaffolded assistance to help the pupils construct clauses from them.

As tools for gathering and 'predicting' linguistic resources, the three main categories of Participants, Processes and Circumstances are fairly accessible. With a little explanation, they should be fairly easily understood by most teachers. However, Halliday's sub-categories of Participant Roles, Process Types and Circumstantial

Elements are less accessible and he acknowledges that the boundaries between some of them are 'fuzzy' (Halliday, 2004a: 172, 210, 248-251). Terms such as Senser, Token, Carrier, Material, Behavioural, Relational and Mental are not readily comprehensible without fairly in-depth knowledge of Systemic Functional Linguistics. Although some educationalists use them with secondary school pupils for the analysis of meaning in texts (Schleppegrell, Achugar and Oteiza, 2004) they are less effective as predictive categories from Context to Text. Whereas Participants, Processes and Circumstances can be elicited by asking questions like: 'who or what?', '...is doing what?', '...to what?', 'how/when/where/why/with what?' (see also 4.7.5.1); identifying which Participants are 'Sensers' or 'Tokens', for example, or which Processes are 'Behavioural' or 'Relational', cannot easily be elicited by asking questions such as: 'Which Participant is going to be the Token?' or 'Is the Process going to be a Behavioural or Relational Process?'. These questions are more concerned with extrapolating from specific Text constituents to general semantic categories for analytical purposes, rather than drawing on subject content knowledge to identify relevant language choices, working from Context to Text.

4.6.5.2 Realising Interpersonal meanings

Interpersonal meanings are those associated with roles and relationships, feelings, attitudes and judgements. They are concerned with exchanging meaning with others (Gerot and Wignell, 1994: 22-26; Bloor and Bloor, 1995: 9; Halliday, 2004a: 130, 608-613). They are realised in the register variable of Tenor in the MOOD system as the Mood and the Residue. This categorisation is not as accessible as that of Field and is less capable of defining all grammatical constituents. It is more concerned with continuous forms of expression and has less determinate boundaries (Halliday, 2004a: 61). In the lexicogrammar, the Mood is realised in the forms of the Subject of the clause and a Finite element, sometimes qualified by an Adjunct. The Residue is realised in a Predicator, and/or Complements, sometimes qualified by Adjuncts (Egins, 2004, 151-165; Gerot and Wignell, 1994: 36).

<i>The reaction</i>	<i>quickly</i>	<i>produces</i>	<i>bubbles of gas.</i>
Subject	Adjunct: Circumstance	Finite	Predicator
Mood			Residue

The Subject and Finite form the constituent of the clause that can be “tossed back and forth” (Halliday, 2004a: 111) or built upon in an interpersonal exchange of information. For example, a brief spoken exchange making observations about the metals and acids experiment could proceed in the following way:

- *‘The reaction produces heat.’*
- *‘No, it [the reaction] doesn’t [produce]. It [the reaction] makes [synonym of produces] bubbles of gas.’*
- *‘Yeah, it makes [produces] bubbles and produces heat.’*

The Mood element is the main part that is picked up and carried on during the ongoing exchange of meaning. With all verbs apart from *be* and *have*, the Finite verb can be replaced by the Finite *do/does/did*, in a mood tag e.g. *‘No, it doesn’t.’*

The element and constituent categories used in the MOOD system are terms with very specific meanings in the field of applied linguistics but which are largely inaccessible to any teacher not familiar with the metalanguage of functional grammar. At the planning stage, ‘Who or what is being talked or written about’ and ‘what they are doing/what is happening’ are more easily identified in advance through a consideration of Participants, Processes and Circumstances in the TRANSITIVITY system than trying, for example, to identify the Mood element by asking, ‘What are the likely Subjects and Finites going to be?’

Nevertheless, there are specific lexicogrammatical resources associated with Tenor, particularly with the Mood element, that are potentially more accessible and useful for informing the construction of language models. These include: **speech functions** (statement, question, command and offer), **tense** (past, present or future), **polarity** (positive or negative) and **modality** (expressing assessment and attitude). Teachers may be able to relate these to information about interpersonal meanings found in the wording of curriculum goals and use them to identify lexicogrammatical resources appropriate to the purpose.

a) Speech functions

Some social functions are closely associated with particular grammatical structures in what Halliday calls their 'unmarked' forms, such as:

- 'offering' with 'modulated interrogatives' e.g. *'Shall I light the splint?'*
- 'commanding' or 'instructing' with 'imperatives' e.g. *'Put the stopper in the test-tube.'*;
- 'stating' with 'declaratives' e.g. *'The reaction produces bubbles of gas.'*; and
- 'asking questions' being closely associated with 'interrogative' structures e.g. *'Does the zinc react with the acid?'*;
(Eggins, 2004: 145-148; Halliday, 2004a: 108-110; Gerot and Wignell, 1994:23)

Halliday defines these four basic types of move as 'speech functions', although they are also used in writing. Offers and commands are used to **give** or **demand goods-&-services**; statements and questions are used to **give** or **demand information** (Halliday, 2004a: 107). Typically, these four types of move form the basis of initiations in interpersonal interactions.

In response to these initiations, there are also some typical patterns of positive response which constitute 'acceptance', 'compliance/undertaking', 'acknowledgement', and 'answer'; or negative response which constitute 'rejection', 'refusal', 'contradiction' and 'disclaimer'. These too have some typical realisations in the lexicogrammar although there can be considerable variation, in which the typical structures of one speech function are used to fulfil another depending on the context and the precise meanings being expressed (Halliday, 2004a: 107, 108; Eggins, 2004: 147, 148).

The exchange of goods-&-services using offers and commands (which Halliday, 2004a: 111, calls **proposals**) is closely associated with language use in the mode of action – trying to obtain things we want, telling other people to do things for us, giving things to others and offering to do things for them – using words to make things happen in our social relationships. It is common for pupils to use language for these purposes during collaborative learning. For example, in Gibbons' (2002: 43-44) account of pupils' language use whilst **doing** an experiment with magnets, several of the utterances perform the functions of suggestions, requests, commands or instructions, aimed at provoking some form of action:

- *'try ... the other way'*
- *'like that'*
- *'north pole facing down'*
- *'let's show the others'*
- *'yeah ... like this ...look'*

- 'can I try that?'
- 'turn it on the other .. this side like that ... turn it that way'

These kinds of function, and their associated modulated imperative and interrogative structural patterns³³, are likely to be needed to enact at least some of the behaviour to achieve curriculum goals such as:

- *DEVISE instructions for a computer to generate and transform shapes and paths* (Ma AT3 L6);
- *DIRECT others [in performing music or singing]* (Mu PoS);
- *CONTROL the risks to themselves and others when using a range of apparatus and equipment* (Sc 1 PoS) and (DT PoS);
- *TAKE RESPONSIBILITY for the planning and execution of safe exercises* (PE AT L6).
- *OFFER their own ideas of how to find things out* (Sc AT1 L2)
- *SUGGEST ideas for making things based on their observations of familiar products* (DT AT L2)

By contrast, the exchange of information using statements and questions can be a purely linguistic matter. According to Halliday (2004a: 110), "In statements and questions, language itself is the commodity that is being exchanged", language is "used for the purpose of exchanging language".

So, whilst exchanging goods-&-services is generally aimed at achieving non-linguistic goals, exchanging information is generally aimed at achieving the goal of a linguistic response by constructing a **proposition**. As Halliday explains:

"When language is used to exchange information, the clause takes on the form of a proposition. It becomes something that can be argued about – that can be affirmed or denied, and also doubted, contradicted, insisted on, accepted with reservation, qualified, tempered, regretted and so on." (Halliday, 2004a: 110).

Halliday asserts that "propositions have a clearly defined grammar" (Halliday, 2004a: 110, see also 111 & 115) based on the structure of declaratives and interrogatives, which can be expanded or projected to vary and increase the kind of information being provided or sought³⁴. Therefore, there is a general correlation between the propositional functions of language and their lexicogrammatical realisations in English.

"(a) the order Subject before Finite realizes 'declarative';
 (b) the order Finite before Subject realizes 'yes/no interrogative';
 (c) in a 'WH- interrogative' the order is: (i) Subject before Finite if the WH-element is the Subject; (ii) Finite before Subject otherwise." (Halliday, 2004a: 115)

³³ Note that ellipsis conceals some of the grammatical structure e.g. '[Try putting the magnet] like that'.

³⁴ See Halliday, 2004a: 395-485, and 626-635, for a detailed and extensive examination of expansion and projection in clause complexes for both propositions and proposals.

For example:

- (a) *'Zinc [Subject] reacts [Finite] with acid'*
- (b) *'Does [Finite] the zinc [Subject] react with the acid?'; 'Is [Finite] the test-tube [Subject] getting warmer?'; 'Has [Finite] the reaction [Subject] produced hydrogen gas?' or in the mood tag 'The zinc reacted with the acid, didn't [Finite] it [Subject]?'*
- (c)(i) *'Which (metal) [Subject] reacted [Finite] the fastest?'*
- (c)(ii) *'What sound does [Finite] the burning hydrogen gas [Subject] make?'; 'How quickly did [Finite] the zinc [Subject] react with the acid?'*

This patterning is significant for the goals of curriculum content learning because factual information and subject-based 'knowledge' is typically presented or elicited in propositions: statements declaring that 'This is the way things are.' 'This is what it does/has.' 'This is what happened.'; or questions seeking to determine 'Is this the way things are?' 'Is this what it does/has?' 'Is this what happened?'. Although propositions can be used to provoke action, they are likely to be closely associated in the curriculum with the purposes of reflection because they are about communicating information that pupils have thought about, considered or recognised during their learning. For example, in Gibbons' (2002: 48-49) account of pupils' language use when **reporting** on their experiment and presenting their findings, the text consists entirely of declarative statements, combined in a projected complex of clauses:

"I found it very interesting that when you stuck at least 8 paddle pop sticks in a piece of polystyrene, and then put a magnet with the North and South pole in the oval and put another magnet with the north and south pole on top, the magnet on the bottom will repel the magnet on the top and the magnet on the top would look like it is floating in the air." (Gibbons, 2002: 49)

Speech functions such as stating, reporting, observing, identifying, describing, explaining are likely to make quite extensive use of declarative clause patterns to achieve curriculum goals such as:

- *"...make general statements of their own, based on the available evidence..." (Ma AT1 L4)*
- *IDENTIFY key features, themes and characters (En AT2 L5)*
- *DESCRIBE how people can both improve and damage the environment (Ge AT L4)*
- *EXPLAIN some of the causes and consequences of the main events and changes (Hi AT L4)*
- *SUMMARISE a range of information from different sources (En AT2 L6)*
- *REPORT their work orally and in writing in a logical order using a wide range of scientific vocabulary, terms, symbols, and conventions (Sc 1 PoS)*

In order for EAL pupils to use language to achieve such goals at KS3 in ways that extend, expand and refine their linguistic resources towards more academic registers, they will need to become familiar with the kind of structural patterns that are typically

associated with the respective 'speech functions' in curriculum subject discourses and learn to manipulate them according to the context, purpose and meanings. The more sophisticated pupils' functional range of linguistic resources becomes, and the more their intertextual framework develops, the more they will be able to utilise different patterns, extending and adapting their language use to construct a wider range of meanings and perform a broader range of different social functions.

Teachers planning to assist EAL pupils in this process could use information from the curriculum goals to deduce which 'speech functions' are likely to be needed and, depending on the level of the target pupils' English language development, could select patterns which model: some typical structural associations for proposals or propositions; more expanded or projected clause complex structures; or more sophisticated, and perhaps 'untypical', patterns which allow a greater variety of lexicogrammatical realisations of meaning.

b) Tense

Tense has already been discussed briefly in section 4.2.3.1 c), illustrating how language is used to represent our experience of time. Within the Mood element, the primary tense locates what is being spoken or written about in relation to the time of the language event itself (Halliday, 2004a: 116).

So, for example, in:

'Did the magnesium react with the acid?' and 'The magnesium reacted really quickly.'

the Finite elements in 'Did' and 'reacted' indicate the relationship between the language event and the **past** result of the experiment which has now finished.

In:

'Does the magnesium react with the acid?' and 'The magnesium reacts really quickly.'

the Finite elements in 'Does' and 'reacts' indicate the relationship between the language event and the '**permanently present**' property of magnesium that has been found; i.e. magnesium **always** reacts with this acid, in relation to any **present** time.

In a situation where a pupil who doesn't know this fact is about to drop the magnesium strip into a test-tube of acid and asks another pupil who does know:

'Will the magnesium react with the acid?',

they could reply as a statement of fact (rather than a modal prediction):

'Yes, it will.'

In these instances, the Finite element 'will' indicates the relationship between the language event and the **future** real world event of the reaction.

So the Finite element realises the **primary past, present or future** temporal relationship, but the formal structure of secondary tenses in English extends beyond the Finite element to include auxiliary verbs and lexical verbs in verb groups which allow more complex temporal relationships to be expressed (what Halliday, 2004a: 121, 122 defines as the 'Predicator'). For example:

'It's been bubbling for ages.'

indicates an event which is present in relation to the speech event, using the Finite of the verb 'have' ('s = has), but which began at some point in the past, indicated by the past participle of the auxiliary verb 'be' (been), and which is a process that has been continuing 'progressively', indicated by a lexical verb + ing (bubbling).

All of the secondary tenses are constructed using fixed orders of combination (Halliday, 2004a: 336) of Finite, auxiliary and/or lexical verbs which have to be learned as grammaticalised patterns of meaning (See Halliday, 2004a: 340-348 for a comprehensive list and discussion).

Clearly, as all propositional clauses have a tense, learning their forms and patterns is essential for EAL pupils. If they do not learn the various constructions of the primary and secondary tenses, they will be unable to use them effectively to accurately express different, more complex and subtle, temporal relations in English, such as may be required to meet the demands of curriculum goals such as:

- *"describe what they and others have done in order that it might be improved"* (PE AT L3)
- *"predict the effects of changing the rules and data of a model"* (IT PoS)
- *"describe in words the rule for the next term or nth term of a sequence where the rule is linear"* (Ma AT2 L6)
- *"recognise that a number of factors may have to be considered when phenomena, such as the relative brightness of planets and stars, are explained"* (Sc AT4 L6)

- “*show their understanding of chronology by their increasing awareness that the past can be divided into different periods of time and their recognition of some of the similarities and differences between these periods*” (Hi AT L3)
- “*make conjectures and hypotheses, designing methods to test them*” (Ma 1 PoS)
- “*use knowledge about some reversible and irreversible changes to make simple predictions about whether other changes are reversible or not*” (Sc AT3 L4)

When planning clause level models of language for EAL pupils, it is essential that teachers select tenses appropriate to the demands of the goals and purposes of subject-specific language use and, over time, aim to extend the range and depth of nuance of the tenses that EAL pupils are able to use.

c) Polarity

Polarity is the aspect of the MOOD system of Tenor which allows people to express affirmative or negative meanings (Bloor and Bloor, 1994: 46; Halliday, 2004a: 116). Lexicalised in the word *not*, negative polarity modifies speech functions by using the grammatical resources of the Finite element linked with *not* or *n't* e.g.

- ‘*The lead didn't react with the acid.*’
- ‘*Hydrogen gas wasn't produced.*’
- ‘*The test-tube hasn't become warmer.*’
- ‘*Copper won't react with hydrochloric acid.*’

Polarity can also be lexicalised with the negative meaning located in prefix morphemes such as:

- im- : impossible;
- un- : unreactive;
- in- : inconclusive;
- non- : non-flammable.

EAL pupils need to extend their vocabulary and understanding of such meanings if they are to expand their range of linguistic resources for expressing negation, and be able to use a variety of language when working to achieve goals requiring some contrast or choices of polarity, such as:

- *IDENTIFY measurements and observations that do not fit the main pattern or trend shown.* (Sc AT L6)
- *USE properties to classify elements as metals or non-metals* (Sc 3 PoS)
- *CONSIDER the benefits and drawbacks of scientific and technological developments* (Sc 2 PoS)
- *LOOK critically at some of the ways in which representations of data can be misleading* (Ma 4 PoS)

- *TALK* about familiar products, particularly what they like or dislike about them (DT AT L1)
- *EXPRESS* views on attractive and unattractive features of the environment of a locality (Ge AT L2)
- *COMPARE* differing views on local issues as presented by the media or in publicity leaflets (Ge PoS)
- *CONTRAST* their own work and that of other artists, craftworkers and designers (Ar 3 PoS)
- *DISTINGUISH* between fact and opinion, bias and objectivity (En 2 PoS)
- *EVALUATE* live and recorded music, including their own compositions and performances (Mu PoS)

d) Modality

Modality is the aspect of the MOOD system that expresses meanings of ‘probability’ and ‘usuality’ (in propositions), ‘obligation’ and ‘inclination’ (in proposals). Modality also projects a wide range of attitudinal meanings (Halliday, 2004a: 147-150, 606-625).

In the Finite element, these meanings are realised as modal verbs:

will, would, can, could, shall, should, ought to, may, might, must, need, have.

For example:

- ‘*Tin and aluminium **might** react with the acid after a long time.*’ (probability = I think it is possible)
- *Sodium and potassium **will** explode if you put them in acid.*’ (usuality = strong, they always do)
- ‘*You **ought to** write that in the table*’ (obligation = You should be recording the results)
- ‘***Should** we try the calcium next?*’ (inclination = I am inclined to, what about you?)

Modal adjuncts of various kinds can be used in the clause to express a wide range of attitudinal meanings such as:

perhaps, probably, certainly, surprisingly, fortunately, honestly, actually, generally, roughly;

or by adjectives such as:

right, wrong, clear, unexpected, predictable, irrelevant, anxious

These lexicogrammatical resources are particularly useful when using language to *EVALUATE* (See section 4.6.4.2), as they express a measure of personal perspective on ‘what is being talked about’. They can be used to assess something against a defined criterion (more objective viewpoint) e.g.:

correctly, clearly, accurately;

suitable, unjust, discordant;

or to give a more subjective affective personal opinion e.g.:

wonderfully, hopefully, sadly;
interesting, boring, distressing.

They can also be used to qualify assessments to show greater subtlety of meaning e.g.:

totally, almost, quite, nearly, scarcely, hardly.

Such resources can be used to modify and refine the meanings being constructed and are essential for EAL pupils to learn if they are to move towards more nuanced or 'delicate' expressions of assessment or judgement. Even in a task such as *DESCRIBING the similarities between the chemical reactions of acids with metals*, these resources could be valuable e.g.

- *'Magnesium and calcium **definitely** reacted quickly.'*
- *'Copper is **probably** next to lead in the reactivity series.'*
- *'The iron and tin **hardly** reacted, at all.'*

4.6.5.3 Realising Textual meanings

Textual meanings are those associated with the relationship of the text to the real world or to itself in its internal organisation. They are concerned with constructing messages which 'hold together' as pieces of text and which are connected to other pieces of text before and afterwards. They make reference to meanings both within and outside of the text itself. They help to order and prioritise the information being communicated in a message by linking pieces of information to each other and by according degrees of prominence to different constituents (Gerot and Wignell, 1994: 102, 103; Eggins, 2004: 298; Halliday, 2004a: 61). Textual meanings help to structure a message enabling the Ideational and Interpersonal meanings to cohere with the linguistic and situational context. They are realised in the register variable of Mode in the THEME-RHEME system as Theme and Rheme which represent areas of prominence at the beginning or ending of a clause, and Given and New which represent information that is already known, and that which is not yet known.

In general terms, the Theme is 'what the clause is going to be about' – its 'topic', and the Rheme is everything else in the clause that is being said 'about the topic' (Eggins, 2004: 299; Gerot and Wignell, 1994: 103). The Theme is the part of the clause that

ends with the first Field constituent: Participant, Process or Circumstance; such as *Acids* in the clause *Acids react with metals*. The Rheme is *reacts with metals*.

However, the topical Theme can be preceded by other Textual Themes such as *Actually, Likewise* or *To sum up*, which make explicit semantic links with the surrounding text; or by Interpersonal Themes such as *Surely, Honestly* or *Strictly speaking* which project the user's particular angle on, or point of departure for, the message (Halliday, 2004a: 81-83).

Because the Textual resources of language facilitate the realisation of the other two types of meaning, they usually have to be interpreted with reference to them. In the example below, the Theme refers to the first Field constituent in the clause which, in this case, is the noun group Participant - *The reaction*. In the same way that *chemical reactions* is part of the general **topic** of the lesson goal, *the reaction* is now the specific **topical Theme** of this clause. It is what the clause is going to be about.

The reaction is also the piece of information that is Given. It is understood that a *chemical reaction* is taking place but the New information gives detail about the **consequences** of *the reaction*.

<i>The reaction</i>	<i>quickly produces bubbles of gas.</i>
Topical	
Theme	Rheme
Given	New

In the above example, the Theme and Rheme coincide with the Given and New but this is not always the case. If expressed using a passive construction, the Participant constituent of the New information (*bubbles of gas*), becomes the topical Theme, and the Given information (*the reaction*) now forms part of the Rheme.

<i>Bubbles of gas</i>	<i>are quickly produced by the reaction.</i>
Topical	
Theme	Rheme
New	Given

Information about Textual meanings is most useful when considering how to construct more extended texts, linking the topic of several clauses, sentences and paragraphs

together like a thread. These threads form patterns of meaning throughout a text, building on one another e.g.

<i>The reaction</i>	<i>quickly produces bubbles of gas.</i>
Topical	
Theme	Rheme
Given	New



<i>The gas</i>	<i>is called hydrogen.</i>
Topical	
Theme	Rheme
Given	New

Teachers can use this ‘thread’ principle when sequencing questions to elicit information from EAL pupils or when modelling full clause sentences for writing to help them to link information in a coherent sequence. For example:

- *What does the reaction produce? or The reaction produces bubbles of gas.*
- *What is the gas called? or The gas is called hydrogen.*
- *What happens to hydrogen when you light it? or Hydrogen explodes when you light it.*

Like the Interpersonal metafunction, Textual meanings are associated with some specific lexicogrammatical resources which are useful for teachers to draw upon to assist in the construction of language models. The most significant are to do with **reference**, **substitution**, **conjunction** and **lexical cohesion**. Using these insights, teachers can begin to gather linguistic resources related to the Mode which could be incorporated in language models.

a) Reference

Most reference involves replacing a named Participant with a pronoun such as:

he, she, it, we, they, him, her, his, your, their, this, that, these, those etc. (Bloor and Bloor, 1995: 94-96)

In this example, the *Hydrogen* from the first clause is replaced by *It* in the second.

Hydrogen *is flammable. It explodes when lit.*

Reference in language can point backwards (anaphoric) or forwards (cataphoric) in the text itself (endophoric) or outwards (exophoric) to something in the real world external to the text (Bloor and Bloor, 1995: 94-96).

Reference is used in almost every text that extends beyond one clause and shares a Theme e.g.

<i>The reaction</i>	<i>produced bubbles of gas.</i>
Theme	Rheme



<i>It</i>	<i>also produced heat.</i>
Theme	Rheme

or where an element of the Rheme is ‘picked up’ as the Theme of a subsequent clause e.g.:

<i>The reaction</i>	<i>produced a gas.</i>
Theme	Rheme



<i>It</i>	<i>is called hydrogen.</i>
Theme	Rheme

Using reference correctly in written text is essential for ‘making sense’. If it is not clear who or what is being referred to, the meaning can begin to break down e.g.

**‘Magnesium and calcium reacted quickly with the acid. It produced bubbles of gas.’*

For EAL pupils, learning how to use the complexities of referencing in English appropriately can be difficult because their first language may have different referencing conventions (for example with gendered nouns), and they may need quite extensive modelling and practice to learn how it operates with different grammatical patterns in English.

Pronoun reference is used in both speech and writing but, in spoken language as action, it may be used instead of actually ‘naming’ participants explicitly because direct reference can be made to objects, phenomena, processes and circumstances in the real world context. In writing or in more considered reflective spoken accounts, the referents may need to be made more explicit because less real world contextual reference is available. This is evident in the two extracts from Gibbons (2002: 43, 44 & 49), quoted in section 4.6.5.2. a) above, where the spoken interaction during the experiment includes several uses of *‘it’*, *‘this’* and *‘that’* directed at things the pupils are handling; whereas the written reflective account uses nouns, noun groups and full clauses to refer to the things and actions involved in the earlier experiment: *‘magnet’*, *‘magnet on the top’*, *‘...put a magnet with the North and South pole in the oval...’*.

b) Substitution

Substitution is similar to reference and may also be used to 'replace' single words, groups and whole clauses, but it is less about linking a thread of meaning as it is about abbreviating the text and avoiding repetition (Bloor and Bloor, 1995: 96, 97). It is sometimes considered to be a kind of 'ellipsis' in which some words are omitted or 'substituted' with a shorter linguistic sequence. Substitution can also be used to give greater prominence to certain parts of a text by 'reducing' the semantic significance of others, or omitting them altogether. For example, instead of listing the names of every metal, they can be substituted by other words:

*'Of the metals tested, **one** reacted very quickly, **some** reacted more slowly and **others** didn't react at all.'*

Consequently, greater textual prominence is accorded to the type of reaction than to the metals themselves.

Substitution is often used in spoken language as action together with pronoun referencing, for example:

'this one', 'that one', 'the others';

but both substitution and reference are also essential linguistic resources for the development of more condensed and efficient academic language use, where pieces of information extending over several words or clauses can be substituted, or referred to in a much more abbreviated form, to link them with another piece of information e.g.:

*'The chemical reactions between hydrochloric acid and reactive metals are exothermic, which means **they** give out heat.'*

or in these examples taken from the text of the national curriculum orders:

- *"recognise situations where probabilities can be based on equally likely outcomes, and **others** where estimates must be based on experimental evidence"* (Ma 4 PoS)
- *"...analyse the characteristic features of the periods, situations and societies studied and the diversity of experience within each **one**"* (Hi PoS)
- *"...process and analyse information for a specific purpose, e.g. in using a database of information about the elements, or in evaluating different energy resources, using ICT to **do so** on some occasions"* (Sc 1 PoS)

c) Conjunction

Conjunction is a Textual resource which allows meanings to be linked, bound together or to continue on (Halliday, 2004a: 358). Conjunctions represent relations between one

bit of a text and another. Common conjunctions like *and* and *but* respectively realise ‘additive’ and ‘contrastive/adversative’ meanings e.g.:

‘*Zinc **and** Magnesium react with hydrochloric acid.*’

‘*Calcium reacts **but** copper doesn’t.*’

There are many conjunctions used to realise different kinds of meaning and those which distinguish between closely related meanings. Some are single words but many consist of groups of words. For example: *similarly* realises a ‘comparative’ meaning whereas *next* realises a ‘sequential temporal’ meaning. *As a result*, *on account of this* and *for that purpose* all realise ‘causal’ meanings but the first represents ‘a result’, the second ‘a reason’ and the third ‘a purpose’ (Halliday, 2004a: 541).

In order to expand the range of relational meanings that pupils can use to link information in texts, teachers need to plan to extend EAL pupils’ range of conjunctions by modelling **related alternatives** instead of relying upon a few commonly used conjunctions which may adequately perform the function but perhaps carry less nuance e.g. instead of relying upon *but*, teachers should seek to model alternatives such as *yet*, *however*, *on the other hand*, *by contrast*.

Some conjunctions may also be more appropriate for speech than for writing such as dismissive conjunctions like: *in any case*, *anyway* or *leaving that aside* (Halliday, 2004a: 541). Others are more typically characteristic of writing such as: *nevertheless*, *moreover* or *to illustrate*. Mode information about the purpose of language use and its channel can be used to assist teachers in choosing those conjunctions which are most appropriate. For example, in planned procedural sequences of activities such as the following:

- “*outline a plan for the investigation, making use of their knowledge and understanding of the context in planning the procedure*” (Sc 1 PoS)
- “*plan what they are going to make and how they are going to make it*” (DT ATL4)

temporal conjunctions like *first*, *then*, *next*, *after that*, *finally* may be used to signify sequential progression through a procedure. In spoken mode, these may be combined with future tense declarative clauses with personal pronoun as Subject: *First, I’m going to ... then I’ll ...* . The same pattern could be used in writing but it may seem more appropriate to use imperatives to list the steps as instructions: *First, set up the ...; Then, measure the ...* . Both these and other conventionalised patterns of conjunction could be modelled for EAL pupils.

d) Lexical cohesion

Some aspects of lexical cohesion have been mentioned in section 4.2.3.2 under collocation and patterning. Lexical cohesion is less a set of particular lexicogrammatical resources used for specific functional purposes (like the other Textual resources referred to in this section) as it is about co-occurrence and recurrence of words which are related in meaning. The co-occurrence and recurrence of words in an extended text is a clear matter of choice and it is a way of constructing a coherent and cohesive flow of meaning in the text but it is often driven by Field and topical Theme. For example, over the last few pages of this thesis, the examples of language used for the acids and metals experiment are 'connected' by the recurrence of *metal*, *acid*, *gas* and their specific names, and by the verb *react* and related verb groups: *produce*, *explode*, *get warmer*, *become warmer*, *give out heat*. They establish and continue the thread of related meanings which give coherence to the text.

The impact of, and need for, cohesion in texts is why modelling and scaffolding language for EAL pupils in lessons often has to be more than just the repetition of a single pattern or structure to construct one type of clause, as in traditional ELT grammar exercises. Each clause must be made to relate to others around it in the linguistic Context (or co-text).

Understanding lexical cohesion is therefore an important part of additional language development but, of course, extended texts can only be constructed by combining several **individual** clauses and clause complexes. Each time pupils construct a new clause, they may need some support or feedback to maintain cohesion by choosing and collocating similar and related words. Sometimes, these opportunities for language development can be anticipated and planned for in advance through activity design, but many arise in an unanticipated way during lessons. The more informed a teacher is about the language likely to be needed in a lesson, the better they will be able to respond to these demands³⁵.

³⁵ The need for such one-to-one intervention also indicates something of the importance of EAL support specialists and bilingual assistant teachers who can engage frequently with EAL pupils throughout lessons and across the curriculum.

4.6.6 Summary and conclusion

In this section, I have pursued Halliday's insight that in order to get from social goals and purposes to actual wordings, we need to go via semantics.

Halliday's analyses of Ideational, Interpersonal and Textual metafunctions, their related meanings and the three register variables of Field, Tenor and Mode offer some useful insights into the kinds of information teachers need to look for at the planning stage, which can lead them towards specific lexicogrammatical resources. TRANSITIVITY, in particular, offers an accessible way of identifying the main Participants, Processes, Circumstances and their relationships that are realised in lexis and grammar. Many aspects of tense, modality, polarity, reference and conjunction are fairly easy to exemplify and are applicable across a wide range of contexts because their meanings are common and their functions have become 'grammaticalised'. They form part of the core set of lexicogrammatical resources pupils need to develop for making meaning across the curriculum.

Identifying speech functions can lead teachers to clause types which model some typical grammatical conventions for making statements, expressing factual information, asking questions, making requests, offering suggestions and giving instructions etc. Whilst most teachers will use these clause types 'intuitively' as part of their natural language use with pupils, foregrounding the structural patterns could help EAL pupils establish a clearer understanding of the relationship between function and structure which could be applied in a range of subject contexts.

Linking lexicogrammatical resources of modality and polarity to the common curriculum purpose of 'evaluation' should also be of use to teachers in trying to construct usable models and expand pupils' capacity to evaluate in more varied and nuanced ways.

Drawing attention to Themes and related lexical sets in more extended sequences of clauses could be used to help EAL pupils develop a better understanding of how to make the flow of meaning in language cohere, and could also be used to extend pupils' range of related or substitutable alternatives to increase variety in language use.

However, some aspects of Halliday’s analytical approach are less usable. Some of the constituent categories are highly specialised and form part of the discourse of Systemic Functional Linguistics. They are at some ‘distance’ from the language used in the curriculum and the typical discourses of subject teaching. For that reason, they are less likely to be accessible or helpful to most teachers for ‘predictive’ purposes.

The principle that the three types of meaning simultaneously interact to bring about a single wording is also difficult to accommodate in practical terms from a planning point of view.

<i>The reaction</i>	<i>quickly</i>	<i>produces</i>		<i>bubbles of gas.</i>
Participant: Actor	Circumstance: Manner	Process: Material		Participant: Scope
Subject	Adjunct: Circumstance	Finite	Predicator	Complement
Mood			Residue	
Topical Theme	Rheme			
Given	New			

Using SFL analyses to work ‘outwards’ **from Text**, it is possible to determine the way in which the three types of meaning are realised in each constituent of a clause or clause complex (see example above and also Halliday, 2004a: 54 and Gerot and Wignell, 1994: 129-137); but using this kind of analysis ‘predictively’ to work **from situational Context to Text** via Halliday’s semantic categories - to try and systematically anticipate wordings by specifying each type of metafunctional meaning and their mutual interrelations - would be virtually impossible:

“In actual analysis, language is so complex and the options available to the speaker/writer of any clause are so many that it is too ambitious to expect the analyst to consider all optional systems at a paradigmatic level.” (Bloor and Bloor 1995: 236)

The interactions between different metafunctional systems are highly complex and indeterminate (Halliday, 2003: 409) and, as Halliday and Hasan (1989: 40) point out, choices made about each type of meaning and their interactions are mostly **subconscious**. This degree of complexity and the abstracted nature of some semantic constituent categories make such a detailed analytical approach impracticable for teachers to use as a deliberate, **self-conscious** process for predicting and choosing language models.

Instead, what most teachers have at their disposal is their own system of linguistic resources which enables them to integrate words and grammatical structures in

sequences which they consider conventionally appropriate to the context; effectively 'bypassing' an in-depth, self-conscious analysis of possible options. Whilst this has the potential to provide an 'adequate' means of selecting language for the purposes of teaching and learning, it is one of the contentions of this thesis (see sections 1.1, 1.2 and 2.7) that sole reliance upon teachers' intuitive language choices may not be sufficient to result in language modelling which:

- adequately fulfils the subject content learning demands of the curriculum goals and
- is tailored to the approximate levels of English of the target learners and
- sufficiently extends, expands and refines pupils' English language resources to ensure continuing language development.

Teachers' capacity to do so more effectively can be developed beyond the purely intuitive through being informed by the insights from applied linguistics about: how language has been shaped by the purposes of its use; how meanings relate to the structure of language; and which lexicogrammatical resources have the potential to realise meanings and fulfil curriculum purposes. All subject and language support specialist teachers working with EAL pupils are likely to benefit from developing a professional skillset which includes high levels of expertise in both subject content knowledge and language knowledge; thereby enhancing their ability to select models which can be incorporated within a variety of learning opportunities aimed at promoting language development and content learning.

To make the process of constructing some patterned wordings in advance a more self-conscious one, and to make full use of the insights of SFL linking Context to Text via semantics, teachers will need to know where to look for the types of meanings likely to be required for curriculum purposes. In the next section, I will examine what meaning may be gleaned from the contextual information provided by integrated language and learning goals, to inform the planning process.

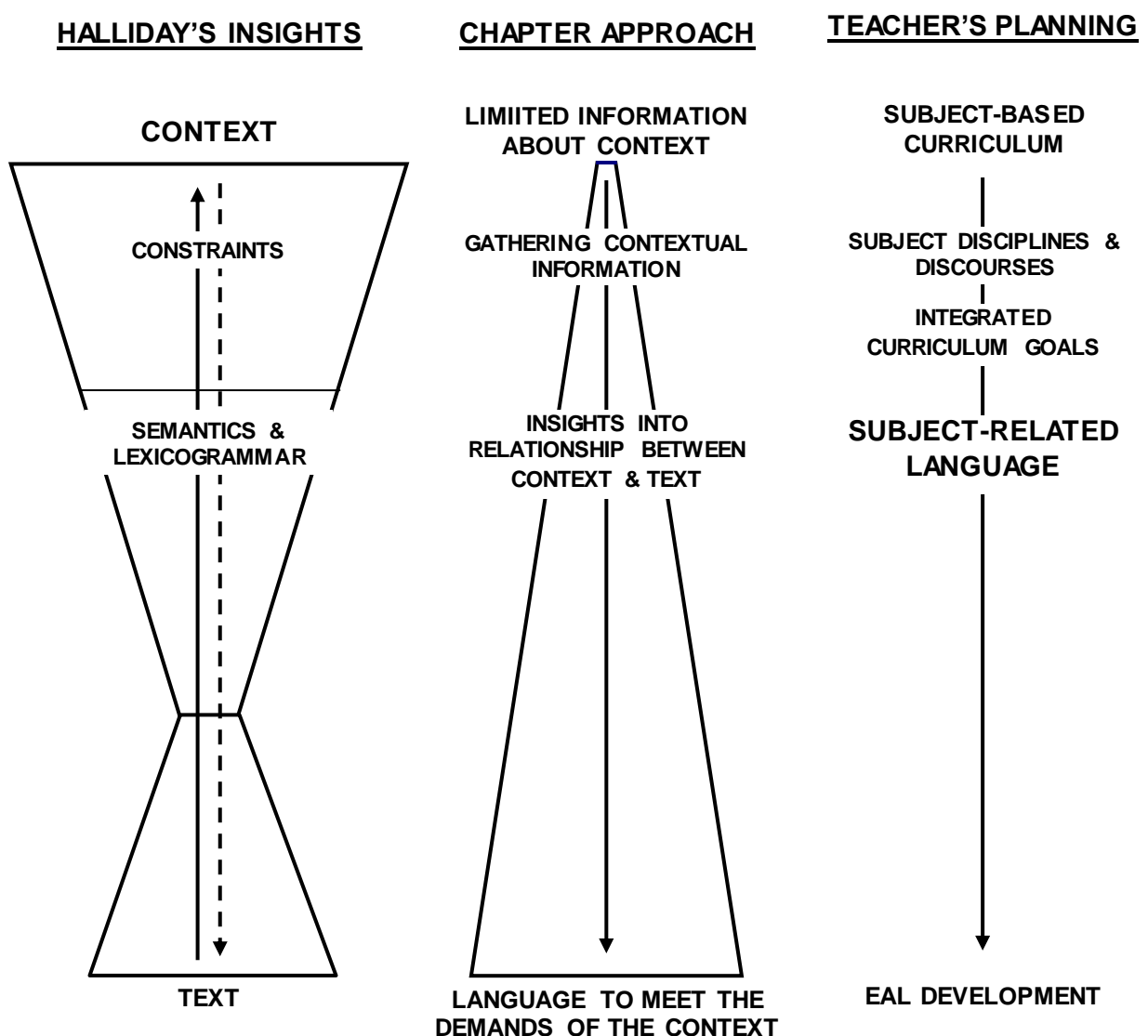
4.7 Finding meaning in integrated language and learning goals

In section 4.5, I suggested that teachers should endeavour to construct integrated language and learning goals to complement any overarching subject goals prescribed for learning. As indications of linguistic behaviour, integrated goals can be considered as describing the ‘social functions’ of language use in the curriculum. They focus attention on linguistic behaviour in learning. They constitute part of the contextual information that constrains register. But in order to get from Context to Text, as Halliday explains, we need to go through semantics and look for meaning.

“When we talk of ‘social functions of language’, we mean those contexts which are significant in that we are able to specify some of the meaning potential that is characteristically, and explainably associated with them.” (Halliday, 1973: 26)

In section 4.6, I concluded that teachers need to know where to look for meaning in order to lead them to language for modelling. In this section, I will examine where teachers can look for meaning in the wording of integrated goals.

Fig. 4.13 Looking for meaning and subject-related language



4.7.4 Finding meaning in the verb

To explore some of the meaning we can derive from certain verbs, I will consider *DESCRIBE* and *EXPLAIN* in some detail and briefly refer to some other verbs whose meanings are typically associated with patterns in the lexicogrammar.

4.7.4.1 DESCRIBE

DESCRIBE is one of the most frequent verbs used in the curriculum orders to indicate linguistic behaviour, occurring 79 times. Pupils are likely to be instructed to *DESCRIBE* things in all subject areas at some time or other but, in the orders, *DESCRIBING* is prioritised in Science, Geography, History and Mathematics, with several references also made in PE and English. A small number are found in Art, Music and IT. There are 34 references to *DESCRIBING* in Science, three times more than any other subject, suggesting that, if teachers' planning follows the priorities of the specifications, there will be many opportunities to develop EAL pupils' linguistic resources for *DESCRIBING* in Science.

Although *DESCRIBE* can be used and interpreted quite 'loosely' to mean *TALK ABOUT*, *RECOUNT* or even *EXPLAIN*, the essential meaning of *DESCRIBE* is 'to say what someone or something **is like**, to identify its **nature, appearance, attributes** or **characteristics**'.

Following this definition, to fulfil the purpose of *DESCRIBING*, pupils will need to use clauses that model **identifying** relations (what it is) and **attributive** relations (what characteristics or attributes it has). Halliday (2004a: 210) refers to these relations as Relational Processes of 'being and having'. The most common verbs for modelling these relations are *be* and *have* although a range of other verbs indicating identity, 'states of being', or attributes can also be used such as *seem, represent, become, remain, comprise, consist of, constitute, possess, contain, feature, look, sound, feel, appear* ... (Halliday, 2004a: 219-247). The range of potential verbs and those which are most appropriate for the purpose will be constrained by the element of subject content i.e. *what is being DESCRIBED*.

Although *DESCRIBING* may be worded in a number of different ways, there are six **relational clause types** which realise the semantic relationships of identifying and attributing (Halliday, 2004a: 216; Gerot and Wignell, 1994: 67). Relational clauses combine the subject and verb of the clause with noun groups (often including adjectives) or with prepositional phrases or adverbial groups (when *DESCRIBING behaviour*). The choice of nouns, adjectives, prepositions and adverbial groups will be determined by the Ideational information in the subject content element.

The six clause types can be used as the basis of language models for pupils and they may be elicited by questions such as:

- *What is it? What is it like?* (Attributive intensive)
- *What has it got? What attributes does it possess?* (Attributive possessive)
- *Where is it in relation to something else? How long/short/quick etc. is it? How does it do it? What is its behaviour like?* (Attributive circumstantial)
- *What are its defining attributes?* (Identifying intensive)
- *Whose is it? What does it belong to?* (Identifying possessive)
- *Where is it? Where does it do what it does?* (Identifying circumstantial)

These clause types and questions may be used in a wide range of subject contexts to extend, expand and refine EAL pupils' language resources for *DESCRIBING*. Different models can be selected for certain lessons as the focus of language development. Where appropriate, certain models can be re-used in other subject contexts, with appropriate changes in subject-specific lexis, to reinforce the structural patterns associated with the social function. To further extend the scope of pupils' resources for *DESCRIBING*, teachers could vary the range of verbs used to those with more 'delicate' meanings such as: *represent, signify, define, indicate, symbolise, refer to* (Eggs, 2004: 242).

4.7.4.2 EXPLAIN

EXPLAIN is prioritised as a subject skill in Science, Mathematics, Geography, History and English, with a small number of references in PE. As with *DESCRIBE*, the most frequent references are in Science, with 23, almost twice as many as any other subject, so many opportunities for developing linguistic resources for *EXPLAINING* are likely to occur there.

EXPLAIN has a range of polysemy, which means a variety of different forms of expression can be interpreted as satisfying the social goal of *EXPLAINING*, including:

- to give a clear and detailed account of something
- to justify one's behaviour or actions
- to express ideas or thoughts in a way that is easily understood
- to give reasons for something that has happened.

However, in many of its uses in the curriculum, *EXPLAIN* is distinguished from other types of social function by an expectation that pupils will go beyond merely saying what something **is like** to providing an answer to questions such as: '**How? Why? What for?**' *EXPLAINING* gives **reasons** or links events with **purposes, causes, consequences and results** e.g.

- *EXPLAIN* how choice of language and style affects implied and explicit meanings (En 2 PoS)
- *EXPLAIN* the causes and consequences of the historical events, situations and changes studied (Hi PoS)
- *EXPLAIN* reasons for the short-term effects of exercise on the body (PE AT L4)
- *EXPLAIN* why a fair test they have carried out is fair (Sc AT L3)

EXPLAINING can be thought of as a combination of statements which *IDENTIFY* or *DESCRIBE* things linked together in different ways by verbs or conjunctions using linguistic resources such as:

- *because; which is why ...; since; due to; by;*
- *bring about; cause; lead to; produce; as a result of (which); consequently; and so;*
- *for; to do x; in order to do x; so that x could/would happen; making x happen ...* (Halliday, 2004a: 278, 411-418)

The meaning of the *purpose, cause, consequence* or *result* may be expressed in a single clause **through the verb** which can be complemented by adjuncts e.g.:

- *Computer software **has revolutionised** art and design.*
- *Rats **caused** the **rapid** spread of the bubonic plague.*
- ***Increased** polar ice melt **is resulting** from rising global temperatures.*

More than one clause can be linked **using conjunctions** that indicate the relationship between two things e.g.:

- *The heart pumps faster **so** the muscles get more oxygen.*
- *17 is a prime number **because** it can only be divided by itself and 1.*
- *The power company bought the land **in order that** they could build a wind farm.*

Clauses can be **expanded into** clause complexes e.g.:

- *The author uses words like hate and despise **showing** he has strong feelings about it.*
- *Your lungs need to take in more oxygen **making** you breathe more quickly.*
- *World War II ended **when** Japan surrendered in September 1945.*

The meaning in two different sentences can be 'connected' using **cohesive conjunctions** (Halliday, 2004a: 541, 599, 600) e.g.:

- *Smoking reduces the oxygen reaching the foetus. **As a consequence**, the baby's growth is slowed down.*
- *The amount of alkali used was not the same. **Therefore**, it was not a fair test.*
- *I believe in animal rights. **For that reason**, I cannot support the badger cull.*

All of these means of expressing semantic relationships in the lexicogrammar can help to expand EAL pupils' resources for *EXPLAINING* things in more complex and academic ways.

4.7.4.3 COMPARE, INSTRUCT, PREDICT, HYPOTHESISE

Other verbs such as *COMPARE*, *INSTRUCT*, *PREDICT* and *HYPOTHESISE* are also associated with particular kinds of linguistic resources which realise their meanings.

COMPARING typically involves the use of comparative adjectives and phrases including the word *than* e.g.:

- *Van Gogh's style of painting is **more vigorous than** Monet's.*
- *Gauguin uses colours that are **stronger than** mine.*

INSTRUCTING typically involves the use of imperatives and, in a procedural sequence, will use temporal conjunctions to indicate progression e.g.:

- ***First, type** the formula =SUM(C2:G2) into the cell. **Then, press** ENTER.*

PREDICTING typically involves an expression of personal opinion linked to a future tense statement e.g.:

- ***I think** the numbers **will** increase when I change the formula in the spreadsheet.*

HYPOTHESISING typically involves conditional structures e.g.:

- ***If** we change the pH of the acid, **then** the reaction will go faster.*

These typical associations develop as part of English language users' intertextual resources. They illustrate how teachers can identify selections of potential lexicogrammatical resources for modelling at the level of the clause or clause complex, and for linking sentences constructed from clauses. Although this may not be possible for every linguistic behaviour verb, some of which refer to more general, extensive or

interactive practices³⁶, these provide an insight into the potential for deriving meaning from the behaviour verb of integrated language and learning goals³⁷.

³⁶ Linguistic behaviours operating above the level of the clause complex can be informed by Genre Theory which examines the structure and characteristic lexicogrammatical features of extended texts and interactions (See Cope and Kalantzis, 1993; Christie and Martin, 2000; Martin and Rose, 2008).

³⁷ Follow up research building on the findings of this study would benefit from a clause-level analysis of a corpus of language use associated with each of the key linguistic behaviour verbs within specific curriculum topic areas. This could reveal more collocational patterns and associations between the social functions, meanings and lexicogrammar of language used to fulfil each purpose.

4.7.5 Finding meaning in the element of subject content

To explore some of the meaning we can derive from the elements of subject content, I will use Halliday's classification of Field constituents: Participants, Processes and Circumstances to draw out specific lexis.

4.7.5.1 Topic vocabulary

General curriculum goals, and even more specific lesson objectives and integrated language and learning goals, will often use terms that define **categories** of content such as *artefacts, buildings, characters, components*, rather than very specific individual 'items'. These categories are essential vocabulary in themselves for EAL pupils to learn because they help to classify and organise things into meaningful groupings; so it is useful to identify these as Participants. However, to get to the specific items of lexis which pupils will be dealing with in lessons, the general categories will need to be interrogated or 'probed' by asking '*Which artefacts? Which buildings?*' and so on.

To make sure that they draw out more than just 'key subject terms', or a set of concrete nouns which are often the most obvious vocabulary items, teachers may find it useful to adopt Halliday's Field constituents of Participants, Processes and Circumstances, as was illustrated in the 'acids and metals experiment' earlier.

All three constituents are needed to extend pupils' language resources and to form a variety of different clause types. Clauses require at least a Participant and a Process e.g. *Plants respire*. Transitive clauses require at least two Participants and a Process e.g. *Plants need water*. Circumstances are not essential to form a clause but they add dimensions of meaning which may be required to meet the demands of a particular purpose. Many clauses use all three constituents e.g. *Plants need a lot of water in the summer*.

Identifying Participants, Processes and Circumstances within Topic vocabulary is part of the process of narrowing down the focus of contextual constraints to arrive at actual items of lexis and grammar.

Participants can be identified by asking: *Who or What is involved? Which people, objects, things or phenomena are going to be studied/talked/written about?*; or in grammar terms *Which nouns/noun groups are to be used?*.

Processes can be identified by asking: *What's happening? What are the Participants doing? Who is doing what to whom? What did X do? What happened to Y?*; or in grammar terms: *Which verbs/verb groups are to be used?* The Processes identified need to specify the action, events or relationships between Participants.

In simple terms, Circumstances can be identified by asking *When? Where? How? and Why?*; or in grammar terms *Which adverbial groups and prepositional phrases are to be used?*. However, Circumstances cover a much more specific range of meanings than these four questions suggest and to elicit the wordings needed to realise them, it is necessary to subdivide the categories even further and ask even more specific questions:

- Time – *When?*
- Frequency – *How often?*
- Duration – *How long?*
- Place – *Where? Whereabouts?*
- Distance – *How far?*
- Manner – *How?*
- Means – *By what means? What with?*
- Quality – *How?*
- Comparison – *What like? Like what?*
- Degree – *To what extent? How much?*
- Cause – *Why?*
- Reason – *Why? How?*
- Purpose – *What for?*
- Behalf – *For whom? Who for?*
- Contingency – *In case of what?*
- Conditions – *Under what conditions?*
- Conditional – *In the event of what?*
- Concessional – *Despite what?*
- Accompaniment – *What or who with? Without whom or what? Who or what else?*
- Role – *What as? As what? What into?*
- Matter – *What about?*
- Angle – *Who says? Who thinks? According to whom?*

(adapted from Halliday, 2004a: 291; Gerot and Wignell, 1994: 52, 53; Eggins, 2004: 283, 284)

Even some of these categories may be subdivided further until we reach the final limit of the semantics and we are using the desired lexis itself to elicit the nature of the Circumstance. For example:

Manner – ‘How fast? Very fast.’ ‘How well? Quite well.’ ‘How carefully? Not very carefully.’

Of course, only some of the questions listed above will be relevant to ask in relation to each lesson or learning goal. The answers to the questions should provide the teacher with a set of potential language resources to use in constructing clauses to model for EAL pupils.

4.7.5.2 Clarifying ‘Participants’

a) General v specific Participants

As noted above, in the curriculum orders and often in lesson goals, Participants may be general or specific. Examples of general category participants include:

Table 4.4 General category Participants

<i>angles</i>	Maths
<i>animals</i>	Science
<i>apparatus</i>	PE and Science
<i>artefacts</i>	Art and History
<i>body parts</i>	PE and Science
<i>books</i>	English
<i>buildings</i>	History
<i>characters</i>	English
<i>charts</i>	Science
<i>chemicals</i>	Science
<i>circuits</i>	Science
<i>cities</i>	Geography
<i>components</i>	DT, Geography and Science
<i>compositions</i>	Music
<i>coordinates</i>	Maths
<i>countries</i>	Geography
<i>dances</i>	PE
<i>data</i>	IT, Science, Maths, Geography
<i>dates</i>	History
<i>equipment</i>	DT, IT, PE, Science

Each of these categories can be linked to sets of more specific nouns/noun groups that pupils are likely to need in the classroom e.g.

- angles* – right (angle), obtuse, acute, straight-line, reflex, complete turn.
- body parts* – external: head, limbs, torso, arms, legs, hands, fingers ...
- internal: heart, lungs, kidneys, intestines, liver ...

elicited by additional questions once the Participant has been identified, all of which are variations on the general theme of *What is it like?* For example:

- *Which person, object, thing or phenomenon? - the **earlier** example; the **alleged** culprit; the **whole** book.*
- *How many persons, objects, things or phenomena? Which one is it? – the cell performs **several** functions; there is **one** habitable planet in the solar system; it's the **third** time.*
- *What is it like? What are its attributes or characteristics? – a **large, grey** mammal; a **beautiful, watercolour** painting; the **tallest** building in the world.*
- *What kind of person, thing, object or phenomenon is it? What class of thing is it? – a **goods** train; a **well-designed** product; an **endangered** species.*

The first two categories of adjective have a direct semantic link from question to answer i.e. *Which part of the book? The whole book; Which example? The earlier example.* The third and fourth class of adjectives overlap in meaning depending on the context of their use. Classifiers signify a class or sub-class of object, thing, phenomenon etc. The meaning has a sense of permanence (Halliday, 2004a: 321), whereas Epithets may refer to a sub-class or simply to an attribute, which may change. Because things have several possible attributes and characteristics, the Participants may have to be interrogated by a range of more specific questions such as:

- *What colour? – a **blue** car.*
- *What shape? – a **rectangular** box.*
- *What size? – the **smallest** child.*
- *What texture? – the **smooth** stone.*

In curriculum language, the terms **features**, **properties** and **characteristics** are most commonly used to indicate these kinds of meanings.

c) Concepts

The last point above is related to another possible group of language resources which may be missed when asking about Participants. These are abstract nouns. Common nouns are easier to identify but, as we have illustrated earlier, abstract nouns feature regularly in academic language, often referring to *concepts*. And because they are nominalisations, concepts function as Participants in clauses (See 4.2.3.1). However, semantically their associated lexis may also function as Circumstances or as *features*, *properties* and *characteristics* as indicated above. Therefore, finding a location for them within the framework of the three Field constituents is problematic.

Instead of treating *concepts* as Participants in the same sense as common ‘real world’ nouns, or as Circumstances; it may be more useful to treat them separately as general ‘semantic categories’ and draw out whatever forms of language are associated with them by asking: *Are any concepts referred to in the goal? Is there any concept information we can get meanings from?*

Many are mentioned explicitly in curriculum goals e.g.

Table 4.6 Examples of concepts in national curriculum goals

<i>shape</i>	<i>texture</i>	<i>quietness</i>
<i>size</i>	<i>shininess</i>	<i>density</i>
<i>speed</i>	<i>hardness</i>	<i>ease of flow</i>
<i>location</i>	<i>smoothness</i>	<i>passing of time</i>
<i>position</i>	<i>brightness</i>	<i>causation</i>
<i>time</i>	<i>compressibility</i>	<i>change over time</i>
<i>temperature</i>	<i>pressure</i>	<i>amount</i>
<i>distance</i>	<i>capacity</i>	<i>quantity</i>
<i>location</i>	<i>mass</i>	<i>quality</i>
<i>scale</i>	<i>volume</i>	<i>movement</i>
<i>length</i>	<i>loudness</i>	<i>firmness</i>
<i>strength</i>	<i>weakness</i>	<i>accuracy</i>

In practice, teachers will need to ensure that EAL pupils understand the meanings of these ‘abstract concepts’ by using more extensive explanation or by providing more interactive support such as video, animation, demonstration, or the presentation of several different examples from which the pupil can deduce the concept.

From the perspective of extending vocabulary resources, each concept has a **range** of words and wordings associated with them. For example *speed* has a fairly large range of associated vocabulary e.g.

- *pace, rate, velocity, momentum, tempo, haste;*
- *fast, rapid, swift, quick, speedy, slow, gradual, unhurried;*
- *travel, move, race, rush, hurry, fly, reduce, slow down, speed up, accelerate, decelerate*

These form part of the linguistic resources that need to be drawn upon when talking or writing about *speed*, although not all of these potential words or phrases will be equally appropriate for each situation. Words such as *pace, velocity, rapid, gradual, travel and accelerate* will be more appropriate than *tempo, haste, speedy, unhurried, rush* or *fly*, to the scientific context of *COMPARING the movement of different objects in terms of speed and direction*. The former are more characteristic of scientific discourse. Understanding

such discourse distinctions is therefore essential if teachers are to choose models which are appropriate to the context.

The examples discussed above illustrate how teachers can identify language resources from the element of subject content of an integrated curriculum goal using Halliday's Field constituents: Participants, Processes and Circumstances.

Combining information from both parts of a goal such as:

COMPARING the movement of different objects in terms of speed and direction

the meaning of *COMPARING* leads us to structural patterns linking declarative clauses with conjunctions, to the typical use of comparative adjectives and adverbial groups collocated with '(more/less) than' and to some forms of substitution and ellipsis to avoid repetition e.g.

Object A ... and/but/whereas ... Object B ...

Object A ... more ...-ly / ...-er than the (other) one ...

From the element of subject content, the Participants can be identified through asking 'which objects?' e.g.

wooden block, sandpaper, metal ball, ping-pong ball ...

These can be interrogated further to get at features, properties and characteristics e.g.

smooth, rough, heavy, light ...

The Processes can be identified by gathering verbs generally associated with *movement*, and specifically those associated with the objects e.g.

move, travel, go, stop, slide, run, roll ...

Further lexis and phraseology for Participants, Processes and Circumstances can be identified by interrogating the concepts *speed* and *direction*:

pace, velocity, rate, line, curve, angle ...

speed up, slow down, turn ...

fast, slowly, quick/ly, forwards, backwards, sideways, along ...

in a straight line/ curve, at an angle ...

Linked to the information from *COMPARING*, some of these are likely to be realised as comparatives collocated with *than*:

more slowly/quickly than, straighter than ...

The end result is a set of potential linguistic resources which could be drawn upon to fulfil some of the likely demands of the curriculum goal, and which could be used to construct patterned models of language incorporated in learning activities planned in advance or brought into learning activities during the lesson.

4.7.6 Summary and conclusion

In this section I have attempted to illustrate how, using information derived from both the behaviour verb and the element of subject content, it is possible to deduce a range of **potential** language resources which may be drawn upon for incorporation into learning activities as models. But although this process of 'prediction' leads us 'closer to the language', it can only take us so far. Aside from the important considerations of other implementation factors relating to the individual pupil, methodology and the interactional classroom environment, the narrowing of language choice through defining contextual constraints will rarely, if ever, lead to a point where there is only one possible clause construction to satisfy the 'social function' of a curriculum goal. This is for two main reasons.

The first is that language contains inherent **variation** so there is seldom a single 'direct correlation' from one purpose or meaning to one realisation in the lexicogrammar. (This is discussed in sections 4.9. - 4.11.)

The second is because the achievement of curriculum goals is an 'interpersonal' activity that depends upon 'intrapersonal' **interpretation** of the most appropriate combinations of words to realise meanings and fulfil the goals. Pupils responding to the demands of curriculum goals have to engage in a process of interpretation to choose their wordings, and teachers planning to support EAL pupils in this process similarly need to engage in interpretation to anticipate some of the wordings that may be needed.

I stated earlier, in section 4.6.6, that teachers' intuitive use of their own internalised system of linguistic resources could benefit from the insights of SFL to **narrow down** a range of potential lexis, structures, clause types and language patterns for self-conscious selection. At this point in the discussion, we have to turn this argument

around and state that SFL's predictive insights about the determinative relationship between Context and Text, based on analyses of a broad spectrum of 'typical' language use, have to be complemented by **teachers' interpretation** of the potential language resources, in order to apply them to **the specific socio-cultural context**.

There is effectively an '**interpretation gap**' between what potential language can be **predicted**, using applied linguistics insights, from information available at the planning stage and what needs to be **selected** from the potential alternatives that are identified. This is discussed in the next section.

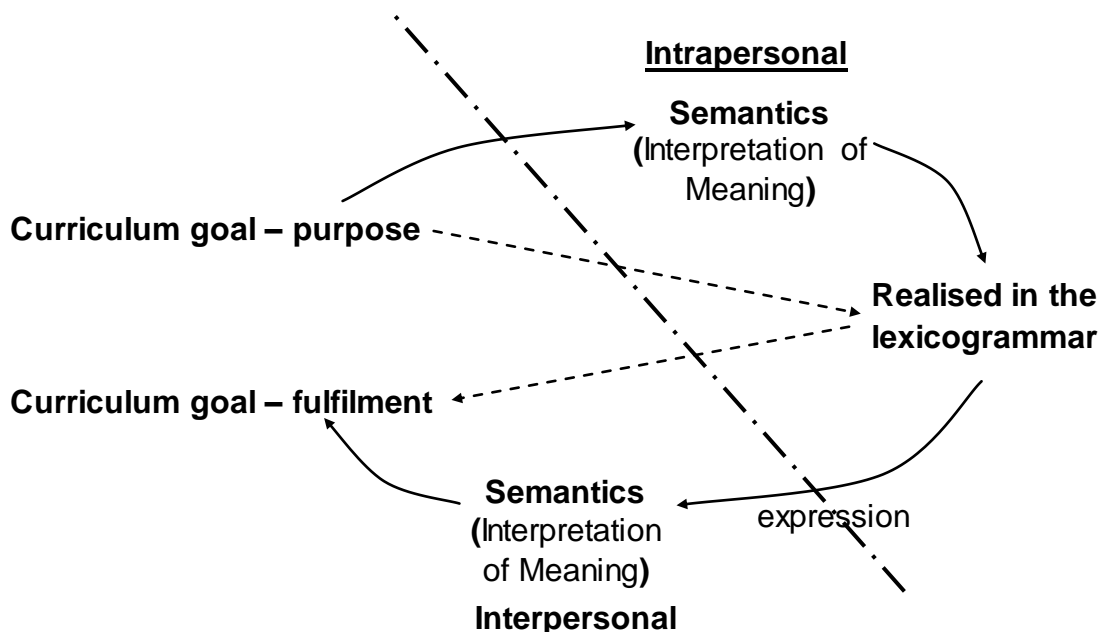
4.8 The Interpretation Gap

In section 4.7, I demonstrated how information, gleaned from the contextual constraints of curriculum goals, can be used to suggest a range of potential language resources. By drawing on insights from applied linguistics, it is possible to identify features of language characteristically associated with particular meanings which are related to the purposes of learning. This process reveals options for alternative clause structures, nouns, verbs, adverbial phrases, adjectives, cohesive and conjunctive devices.

Yet, this range of potential options does not constitute a single appropriate clause or clause complex construction to model for an individual EAL pupil for a specific purpose. If teachers are to model a particular wording for pupils to encounter in a lesson, they still have to **select** from the range of options available to them and **'put them together'** to make sense in a way that they consider is appropriate to the purpose for which the language is intended, and to the needs of the target pupils.

This is because, in all language use, there is a 'gap' between the potential language that **could be used**, and the actual language **that is used** in any given situation. This gap is filled by personal **interpretation** and **choice**.

Fig. 4.14 Intra- and Inter-personal Interpretation



Applying this, for a moment, to **any pupil** in the situation of responding to the language demands of the curriculum, Fig. 4.14 illustrates that in order for a curriculum goal to be fulfilled using language, its purpose and its adherent meanings need to be **interpreted intrapersonally** and related to the internalised language and subject knowledge resources of the pupil. The pupil then makes choices (usually subconscious) to realise their **meanings** in the **lexicogrammar** where they are constructed in clauses and **expressed** in an attempt to fulfil the goal. Whether or not the language choices actually fulfil the goal is a matter of **interpersonal** interpretation, where others (teachers, assessors and other pupils) judge the socio-cultural appropriacy, as well as the 'accuracy' in relation to the subject content, of the language choices to the intended goal.

Making appropriate choices to express subject content meanings across the curriculum at KS3 requires socio-cultural familiarity with the relevant subject discourses and a well-developed grasp of how to select and combine words in English to make a very diverse range of meanings, many of which will be new to the learner. Pupils who are proficient users of English at an 'age-appropriate' level have a substantial repertoire of **internalised** English language resources to draw upon, and a substantial intertextual framework of English within which to locate new linguistic meanings.

EAL pupils do not. Their range of options is more limited, their familiarity with the socio-cultural conventions and intertextual patterns of language use is less well-developed and so their capacity to bridge the interpretation gap is much less than their peers. This applies to both understanding and producing linguistic meanings.

To **access** meanings in language they encounter that is 'new' or unfamiliar to them, they need the meanings to be accessible through other semiotic resources, and/or through other language they are familiar with, which they can 'take meaning from' and associate with the new language.

To **express** meanings that they understand but do not have sufficient internalised English language resources or socio-cultural familiarity to produce on their own, they need models to be provided for them **externally**. They have to get the language they need 'from somewhere'; and they need it to be presented for them in the context of activities that allow them to learn it, learn through it and learn with it.

Applying these points to teacher planning, whilst there is a clear need for EAL learners to have multisensory, multimodal and collaborative learning experiences which allow them to draw upon several semiotic resources to inform their own learning and choices of wording, the teacher's responsibility is to ensure that EAL development is not simply left to the pupil to make sense of new language and content without some form of structured assistance.

At the planning stage, the role of the teacher is to consider which language resources are likely to be most appropriate to the purpose and to the pupils' levels of English resources. These language choices should form part of the negotiation to construct EAL development opportunities in planned learning activities and should also prepare the teacher for spontaneous opportunities for interactional modelling that arise during a lesson.

This role places the teacher in the position of intermediary, as an interpreter of socio-cultural appropriacy, who draws upon a wider and deeper range of information from their own internalised knowledge of language use in context (Halliday and Hasan, 1989: 49). This more knowledgeable position enables them to choose at least some forms of language 'on behalf of' the EAL pupil that are appropriate to the context and which could promote EAL development towards more academic uses, thereby 'bridging' the interpretation gap for them³⁸.

The process of interpreting and choosing appropriate words or wordings for a particular situation relates to the other reason why absolute prediction is not possible, identified in section 4.7.6. above, that language as a system contains inherent **flexibility** and **variation**. The language choices we make are selected from a number of **alternative options**, which have the **potential** to fulfil even very well-defined contextual purposes.

Several features of language facilitate variation in the expression of meaning, and whilst these features make it impossible to predict with absolute accuracy which forms

³⁸ The extent to which any individual EAL pupil actually benefits from such pre-planned choice of language modelling is ultimately dependent on many other factors relating to motivation, engagement, interpersonal relationships, capacity for independent learning and many others which cannot be discussed here but it is a contention of this thesis that the role of the learner as an agent in the learning process does not negate the need for effective teacher planning to promote EAL development, one feature of which should be clear modelling of language form.

of language will be used in a particular situation without interpretive choice, they can be regarded as an asset for differentiating language models and for extending EAL pupils' language resources. These features are explored in the following section by drawing on a few of Halliday's insights on variation in language.

4.9 Halliday's insights into variation in language choice

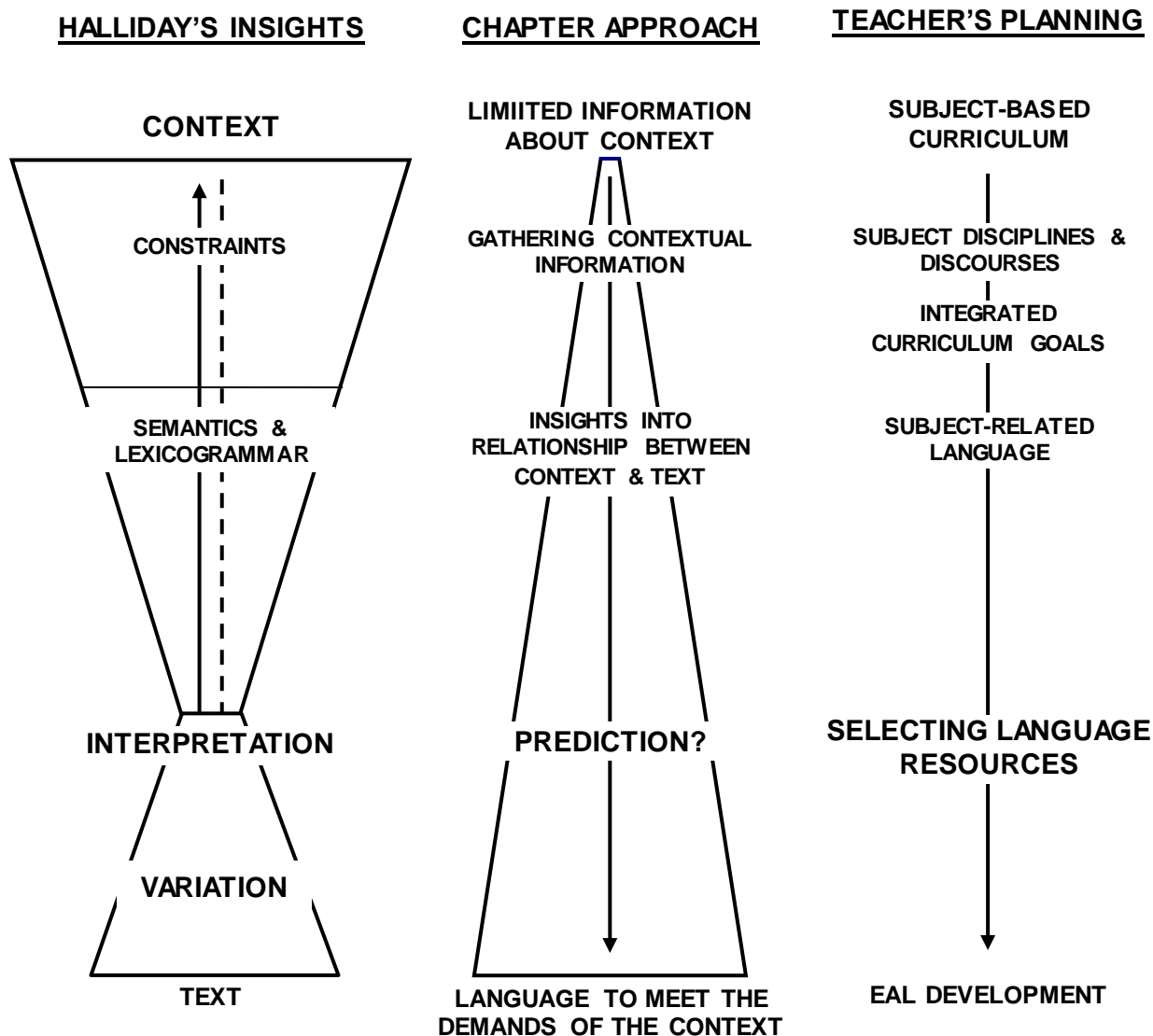
In the earlier sections of this chapter, I outlined some of the features of language, that Halliday identifies, which make it 'predictable'. I have explained that there is a constraining relationship between the Context and the language that we use, which shapes the actual wordings we choose. I have applied this principle to the situation of teachers trying to plan language development support for EAL pupils in the curriculum. I have considered how teachers can narrow the range of potential language options available for modelling by:

- examining the contextual constraints of subject disciplines;
- defining the purposes for which language is used in the service of curriculum goals;
- interrogating the information available in curriculum goals to create integrated language and learning goals;
- identifying meaning in the behaviour verbs and elements of subject content in curriculum goals;
- drawing upon insights from applied linguistics to identify lexis, structures, clause types, and patterns which may be used to form language models.

In section 4.8, I concluded that any further level of 'prediction' from Context to Text is rendered impossible because of the capacity for variation in English and because choices need to be made by using interpretation.

In this section, I will examine a few of Halliday's insights into variation and choice, which could be useful as tools for constructing differentiated language models for EAL pupils.

Fig. 4.15 Variation and ‘predicting’ language models



4.9.1 Language as a system contains variability

In this thesis, I have referred to Halliday's view that language is a form of behaviour potential; a resource with which we 'can do' things in our personal and social lives. Despite this, there is seldom a direct one-to-one correlation between the words we use and what we can achieve using those words. Situations where a single form of wording always correlates with a particular social function are rare and tend only to occur in very tightly constrained contexts, where restricted or 'closed' registers of language are used (Halliday and Hasan, 1989: 39) such as card games like Bridge, or in the International Language of the Air where pilots and air traffic controllers communicate using set phrases. In most registers, the contextual parameters and the correlation between Context and Text are much less constrained.

4.9.2 The same wording can perform different social functions

Bloor and Bloor (1995: 8) give the example of the words ‘*Good afternoon*’, used when meeting a friend during that time of day. In this context, the wording performs the social function of **greeting**. However, if a teacher sarcastically uses the same wording to address a pupil arriving late for a class in the morning, it functions more as a **reprimand** than as a simple greeting. In each situation, the same wording performs a different social function which is understood by those familiar with the language and its various contextualised uses.

In the curriculum context the wording ‘*It is very windy*’ could be used to fulfil a range of different functions, for example, to:

- **JUSTIFY** the decision *to locate a wind farm within a National Park* (Ge PoS);
- **EXPLAIN** why few trees grow on the Welsh moors, when *WORKING on ways in which different habitats support different plants and animals* (Sc 2 PoS);
- **MAKE OBSERVATIONS** about physical features of specific places (Ge AT L1);
- **DESCRIBE** settings in fiction writing (En 3 PoS);
- **EXPRESS** their views on features of the environment of a locality that they find attractive or unattractive (Ge AT L1).

This is because in each context the same wording is interpreted as ‘meaning’ something slightly different related to its purpose.

4.9.3 Different wordings can fulfil the same social function

To elaborate on Bloor and Bloor’s example, the social function of ‘**greeting**’ can be expressed in a wide variety of ways such as: ‘*Hi*’, ‘*Hello*’, ‘*A’right*’, ‘*How’re you doing?*’ etc. These are all conventionalised uses, interpreted as appropriate greetings in most informal social contexts in Wales.

In more constrained contexts, such as the example of the formula given earlier in section 4.2.3.1, in situations where the goal is to *CALCULATE the relationship between force, area and pressure*, the wording ‘*Pressure equals force divided by area*’ is likely to occur quite frequently. This is partly because it has been conventionalised in use but also because the wording so concisely expresses the semantic relationships between the concepts – it performs the social function very well. Despite these constraints, however, the following examples illustrate that there is still potential for variation:

- **Pressure** (symbol: P) is the force per unit area applied in a direction perpendicular to the surface of an object. (<http://en.wikipedia.org/wiki/Pressure>)
- **Pressure** is the ratio of force applied per area covered. (<http://physics.info/pressure/>)
- **pressure** (symbol: p) is defined as the magnitude of the normal force divided by the area over which the normal force acts. (<http://engineering.wikia.com/wiki/Pressure>)

In each example, the fundamental meaning of *the relationship between force, area and pressure* is the same and each could be used to meet the demands of the social goal. They illustrate the fact that, broadly speaking, we can ‘say the same thing in different ways’ - we can use different wordings to express very similar meanings (Halliday, 1994: 342).

In interactional situations where initiation, response and feedback can allow for progressive modification of language forms, the principle of variation becomes quite powerful as a teaching resource. It allows the teacher to ‘scaffold’ pupils’ language use towards forms of expression they would not have used previously, by saying something in one way using language that pupils understand, then introducing ‘new’ language and ‘saying it in another way’ and then by extending and refining the construction to say it in yet another way which is closer to the type of academic language use characteristic of the discourse.

When planning language-based learning activities, variation allows differentiation and extension of language use through activity type. For example, in addressing the following goal:

- *DESCRIBE materials they observe in terms of these properties, such as texture or appearance (Sc AT3 L1)*

along with varying the kinds of semiotic support, teachers could vary the linguistic demands of the activity to require a single word response, a phrase, a clause, a clause complex, a series of sentences or a piece of extended writing such as a Descriptive Report genre text, e.g.:

1) Match these words with the rocks to describe their properties:
rough, smooth, fine-grained, coarse-grained, shiny, dull, grey, brown...

2) Fill in the missing words.

Basalt is a Granite is a

3) *Slate is a smooth, dull, grey rock.* Describe what marble is like.

.....

4) Describe the appearance and texture of sandstone.

.....

5) Use a Descriptive Report writing frame to write a description of the texture and appearance of three different types of rock.

4.9.4 The correlation between social function, meaning and wording is one of variation

Halliday explains that the capacity of language to accommodate variation is a consequence of its evolution as a form of behaviour in the service of human interactions and their social goals. It allows a limited number of words and grammatical structures to be used to create an indefinite number of meanings which can be used to fulfil a vast number of social functions.

“The only way of construing the incredibly complex interactions between human beings and their environment – let alone between one human being and another – is to evolve a system that is highly elastic: that has a great deal of ‘play’ in it, that celebrates indeterminacy, and that is optimally functional as a whole even if none of its parts ever seems to be entirely optimal when taken by itself.”
(Halliday, 2004b: 11)

The elasticity of the system means there are many potential **options** from which to choose. The lexical and grammatical forms of language “serve to realise options in meaning, which in turn realise options in behaviour that are interpretable in terms of a social theory” (Halliday, 1973: 52).

The process of constructing meaning in language is therefore one of **choice**; choosing from all the potential alternatives that exist within the scope of language, those which are considered appropriate to fulfil a specific purpose in a particular context.

4.9.5 Two axes of language choice to realise meaning - paradigmatic and syntagmatic

Halliday (2004a: 22) defines two axes on which language choice operates: the paradigmatic and the syntagmatic. The paradigmatic is the 'vertical' axis concerned with choosing alternatives "in what *could go instead of what*" – the differentiation and substitution of alternative wordings at points along the flow of language. The syntagmatic is the 'horizontal' axis concerned with ordering "patterns, or regularities, in what *goes together with what*" – the combination of words and their positioning in the flow of language – what is traditionally referred to as 'syntax'.

Underlying both is the question of 'which is the most appropriate choice' for the context, purpose and meaning? At the point when we make our choices about which words to use and in what order to combine them, the range of possibilities has already been constrained by the contextual factors in the social environment.

4.9.5.1 Paradigmatic choice

So, in the following example, the general context of the social environment is the **school**, the more particular context is a **KS3 Geography lesson**, the general topic is **Rivers**, the more specific topic is "*the processes responsible for the development of rivers*" (Ge PoS); the integrated language and learning goal of the activity is to '**DESCRIBE and EXPLAIN the processes of river erosion, transportation and deposition**'. These processes are sequences of events which need to be modelled in a progressive way through a sequence of clauses and clause complexes.

The pupil has just described rain falling on hills and mountains. At this point, they need to describe what happens after the rain has fallen (Table 4.7).

Table. 4.7 Substitution table illustrating paradigmatic choice in a sentence

	water	tumbles				tributaries.
	precipitation	rushes	swiftly	down the hillside		streams.
	rain	runs	quickly	downhill	via	rills.
The	surface water	flows	rapidly	down the slopes	in	channels.
	rainwater	moves	hurriedly	downwards	through	rivulets.
	liquid	pours	hastily	down		brooks.
	fluid	surges				burns.

Each choice needs to be made in relation to the others and there is a general unfolding of meaning from the Theme to the Rheme.

In the context of this topic, words like *water*, *precipitation* and *rain* have already been used. In other subject lessons, the words *liquid* and *fluid* have also been used so these are familiar to the pupil. They form part of the internalised linguistic resources of the pupil relating to *water*, which they can draw upon to make meaning. So there is a range of potential alternatives that could be used but the question is 'which is most appropriate?'.

At KS3 there is an expectation that language use needs to start conforming to the characteristics of subject discourses. Certain words are considered more appropriate - more precise in the nuances of their meaning - than others. In this case, *fluid* and *liquid* do not 'belong' in this discourse. They would not be considered as conventionally appropriate as some of the other words. *Water* could be used but it is general, it is used across discourses. *Rain* is also general and it has just been used in describing the event prior to this one, but *rain* describes water that **is falling** from the clouds. At this point in the process, the water is **no longer falling**. *Precipitation* is quite discourse-specific but, similar to rain, refers to substances which **fall** rather than which **flow along the ground**. *Rainwater* and *surface water* are found in other discourses but are typical in Geography. They are virtually interchangeable in this context although their nuances of meaning differ. *Rainwater* refers back to the preceding meaning of the *rain which has fallen*, which would provide a cohesive link and it also signifies that the *rain drops* have now **accumulated** into *water*. *Surface water* refers to the present where it is assumed that the water has fallen and what is important now is that it is **on the surface** of the ground. So of all the possible options, although *rainwater* and *water* would satisfactorily convey the general meaning, *surface water* seems the most appropriate choice to make.

At each point along the clause, choices have been made. Some alternatives may be considered more appropriate than others. Some may be considered interchangeable. It depends upon which meaning the user wishes to convey in this context and which are the most conventional in the discourse.

4.9.5.2 Syntagmatic choice

The examples below show how different choices can be made about the syntagmatic realisation of meaning.

1 – *The surface water flows rapidly down the slopes in channels.*

2 – *Down the slopes in channels the surface water rapidly flows.*

3 - * *The slopes flows channels surface water down in the rapidly.*

Examples 1 and 2 conform to the conventions of English grammar. The relationships between the Participants, Processes and Circumstances are all clear from the word orders. In example 3, they are not and because it does not convey its intended meaning in conventionally established terms, it is not considered grammatical.

Although examples 1 and 2 are both grammatical, only the first is likely to be considered as appropriate for the purpose of this Geography description. The second word order is more characteristic of the discourse of creative writing or poetry.

However, to those familiar with the discourses, '*surface water*' and perhaps '*channels*' might seem out of place in a piece of creative writing, as if they 'belong' in a different discourse. Whereas, in example 4 below, the paradigmatic choices with the same syntax might seem more appropriate for the discourse of creative writing.

4 – *Down the hillside in streams the water swiftly tumbles.*

This is, of course, subjective and depends upon each person's familiarity with 'typical' discourse uses and upon their own personal preferences but, within the curriculum, there is an expectation for pupils' language use to conform to discourse patterns. So, neither examples 2 or 4 would be considered as appropriate as example 1 for fulfilling the purpose of the Geography task.

5 – *Rainwater flows down slopes and quickly makes channels. At first the channels are small. They are called rills. These join together to make bigger rills. Finally a stream is formed.*

Example 5 (Shears, no date) expresses essentially the same meaning as example 1 but some different paradigmatic and syntagmatic choices have been made, distinguishing between two related events in conjoined clauses. This has the effect of emphasising the role of the **rainwater** as Actor in **making** the channels. The text then goes on to extend the meanings through providing additional subject content detail and specialist vocabulary.

The paradigmatic and syntagmatic choices inter-relate to construct what is considered to be the most appropriate wording to express the user's intended meaning (Halliday and Matthiessen, 1999: 13, 14). When speaking or writing, we make choices along both axes at the same time to construct what we consider to be the most appropriate way of 'saying what we mean': to carry on from what has already been said; to say the most appropriate thing at any point in the flow of meaning; and to lead onto what we are going to say next, to extend the flow; what Eggins (2004: 30) calls 'sequential implicativeness'. In order to do so effectively and appropriately in a variety of situations requires well-developed language resources on which to draw. The richer our repertoire of language resources, the more potential choices we have at our disposal and the more 'delicately' and appropriately we can express our intended meanings.

4.9.5.3 Application of this insight to meeting EAL pupils' needs

All of the wordings and meanings discussed above have been conventionally developed **intertextually**, through communities of users in different contexts choosing words for different purposes. Their repeated use in certain contexts has refined the meanings. Those familiar with the discourses of those contexts will understand their nuances and socio-cultural appropriateness to the context.

EAL pupils, however, are still learning the words, their meanings and the socio-cultural contexts and purposes for which they are considered appropriate. The role of the teacher is therefore to assist the pupil in making appropriate choices that will enable them to build up an understanding of all three dimensions: the 'raw materials' of the words, the meanings they express in various contexts, and which words or combinations are considered appropriate to each context.

One way of doing this is to provide pupils with alternative syntagmatic and paradigmatic choices (rather than a single clause model), incorporated as part of a scaffolded learning activity to lead the pupil towards making the most appropriate choices for the purpose. Teachers can choose to model language simply, 'in pieces' or more extensively.

When choosing models for EAL learners, teachers might need to begin with constructions that may not be the **most** appropriate or delicate but which can lead progressively towards them through the accumulation of their resource repertoire. Some meanings expressed in certain ways through language cannot be easily understood without first having learnt other forms of wording, e.g. abstract concepts need to be established in terms of concrete realities first. For example, developing an understanding of the concept of acceleration needs to happen through observing real objects moving at speeds which increase over time. To learn the conceptual meaning and appropriate use of the word 'acceleration', the pupil might first have to encounter language dealing with speed and time e.g. *'How fast is it going?'*, *'It was travelling faster at the end than it was at the start.'* *'Over time, its velocity increased.'*

4.9.6 Synonymy, hyponymy and meronymy

The next feature of language facilitating variation that I will consider concerns three types of relation in meaning: Synonymy, hyponymy and meronymy.

These play a role in lexical cohesion mentioned earlier and are discussed specifically in relation to cohesion by Halliday and Hasan (1976: 285) and Halliday (2004a: 570-578). Here though, I want to consider them in relation to teacher planning as paradigmatic sets (Halliday, 2004a: 40) which can be used as a means for **extending EAL pupils' vocabulary range** and for **refining understanding**.

4.9.6.1 Extending vocabulary range

Synonyms are words which share identity at some level, their meanings are close to one another such as *sound* and *noise*; or *animal* and *creature*. Some words may have

many synonyms and these may be graded by degree e.g. *scared – petrified, terrified, afraid, frightened, fearful, worried, anxious, nervous*. Wherever there is potential for variation in EAL pupils' use of vocabulary, there is an opportunity for extending their range, but this is not simply a matter of giving pupils a thesaurus. Words have specific uses in particular contexts and only some of the potential synonyms may be considered appropriate to the discourse and purpose. The role of the teacher is to select those which would be considered appropriate.

Hyponyms are words related to each other by classification, ranging from general to specific e.g. *Living thing ... animal ... vertebrate ... mammal ... cow ... Friesian*; or related within a sub-class as co-hyponyms e.g. *tree* (hypernym) – *elm, oak, ash, maple, willow* (co-hyponyms). Wherever something being discussed in a lesson has relations of hyponymy, these opportunities could be exploited to extend vocabulary and understanding e.g. *use (tools in DT) – handle, manipulate, work with, control, employ*.

Meronyms are words related as whole – part e.g. *tree – root, trunk, branch, twig, leaf*. The latter being co-meronyms with one another, all related to the holonym *tree*. As above, the opportunity for extension could be capitalised upon so vocabulary modelled is not restricted just to a limited list of what is considered 'sufficient' to satisfy the subject content. At the planning stage, teachers could consider designing activities that promote the extension of vocabulary range e.g. *river – source, spring, rill, stream, channel, bank, bed, meander, tributary, confluence, lake, marsh, mouth, delta, estuary*.

I have noted that constraints act to restrict the range of alternatives, and the more precise the meaning required or the more restrictive the conventions of the discourse are, the fewer options there will be. But in many situations, particularly at KS3 where academic discourse is still just being developed, there will be scope for using alternative words to convey similar meanings.

As noted in section 4.7.5.1, the use of lexical sets associated with particular elements of subject content, concepts or semantic categories can assist teachers in continually moving EAL pupils on from using familiar, common words to alternatives including specialised subject terms.

4.9.6.2 Refining understanding

Rather than relying upon visual or other non-linguistic means to communicate meaning which can result in linguistic demands **being minimised**, teachers need to consider how they can **maximise the potential** for language development that exists with other means of semiotic support. Synonyms, hyponyms and meronyms can also be used as the basis of explanation for specialised terms which arise in lessons but may be unfamiliar to pupils.

For example, to return to the Geography lesson on Rivers; the terms *erosion*, *transportation* and *deposition* are all nominalisations with quite complex meanings. They will need to be taught using a sequence of images, a video, an animation or even a practical activity such as fieldwork. Relying solely on language will not be sufficient for EAL pupils. However, such non-linguistic teaching resources provide opportunities to ‘hook’ a lot of language onto meaningful content (Clegg, 1996). Rather than focusing only on the key subject terms, activities could be designed which incorporate a wider range of language such as some of the following:

- **Erosion** - *wear away, wear down, bump into, break off, break down, break up, break into, eat away, eat into, grind down;*
- **Transportation** - *carry, move, bear, bring, transfer, convey, wash along, move along, roll along, carry along, bounce along;*
- **Deposition** - *deposit, put, put down, set down, place, leave, drop, dump.*

These words and phrases may be more easily illustrated or demonstrated rather the more abstract concept but by using a variety of terms, pupils’ language resources surrounding the concept may be built up, strengthening both cognitive and linguistic associations.

4.9.7 Rank shifting and grammatical metaphor

All the sequences of meaningful language we produce are constructed by combining smaller units of meaning which are realised in the lexicogrammatical components of **morphemes, words, phrases, groups** and **clauses**. Each unit may be combined in complexes (i.e. clause complexes, group complexes, word complexes) and each unit comprises “one or more units of the rank next below” (Halliday, 2004a: 9), so clauses comprise groups and phrases; groups and phrases comprise words and words comprise morphemes. This is described as the Rank Scale (Table 4.8).

Table 4.8 Rank Scale of grammatical units

Clause
Phrase/Group
Word
Morpheme

Halliday considers this scale as the limit of structural grammatical constituency. Above this, clauses are combined using cohesive resources to form meaningful extended ‘semantic units’ or ‘texts’ but these are not grammatical constituents (Halliday and Hasan, 1976: 6,7; Halliday, 2004a: 87, 88).

One of the most significant features of language that allows its meaning potential to ‘expand indefinitely’ (Halliday, 2004a: 24; Halliday and Matthiessen, 1999: 227) is the ability of constituents to ‘shift rank’. This is a feature of what Halliday calls ‘grammatical metaphor’, when a grammatical constituent whose meaning is constructed in one role in the rank scale is transferred to another role, operating as a kind of metaphor for what you would ‘expect’ to be there. The following examples show how a clause complex can be transformed into a clause and then into a noun group.

<i>As water vapour cools,</i>	<i>it condenses into droplets of water.</i>
clause complex	
<i>The cooling of water vapour causes condensation.</i>	
clause	
<i>The condensation of water vapour ...</i>	
noun group	

<i>When water droplets form in clouds,</i>	<i>they fall to the ground as precipitation.</i>
clause complex	
<i>The formation of water droplets in clouds causes precipitation.</i>	
clause	
<i>The precipitation of water droplets...</i>	
noun group	

Both of the noun groups can also be nominalised as single words: *condensation* and *precipitation*, which can be used together in a new clause, compressing the meaning of two clause complexes into a single clause.

<i>As water vapour cools, it condenses into droplets of water. When water droplets form in clouds, they fall to the ground as precipitation.</i>
--



<i>Condensation falls as precipitation.</i>

This process is a feature of academic language use. It requires the user to know the meanings which are ‘accumulated’ in the constituents as they shift rank because they are no longer made explicit in the wording. As Halliday and Matthiessen (1999: 230, 231) note, as the shift moves ‘downwards’ in the rank scale “there is typically some loss of information”, that is, some of the detail of the meaning expressed at the higher ranks is lost from the wording at the lower ranks. However, the meaning that was expressed as a Process is retained (Halliday, 1994: 353). So although *condensation* and *precipitation* are nouns (things/Participants) they retain their ‘character’ as processes. Halliday calls nominalisation “the single most powerful resource for creating grammatical metaphor” (Halliday, 1994: 352).

4.9.7.1 Manipulating the lexicogrammar

The use of grammatical metaphor doesn’t necessarily result in the **reduction** of extended language to noun groups or single words. It can also operate by moving the various components of clause complexes around creating **agnate** or semantically related forms which have “... different mappings between the semantic and the grammatical categories” (Halliday and Matthiessen, 1999: 7). Halliday and Matthiessen provide the following examples, which could conceivably arise in a KS3 Science lesson addressing the following curriculum goal:

- “*Pupils should be taught:... that the abuse of alcohol, solvents and other drugs affects health*” (Sc 1 PoS).

“alcohol’s dulling effect on the brain
alcohol has a dulling effect on the brain
alcohol has the effect of dulling the brain
alcohol affects the brain by dulling it
the effect of alcohol is to dull the brain
the effect of alcohol is to make the brain dull
if one takes/drink alcohol it makes the brain dull
if one takes/drinks alcohol the/one’s brain becomes dull”
(Halliday and Matthiessen, 1999: 7)

Such manipulation of language demonstrates both conceptual development and linguistic development and illustrates how the two are intimately related. It demonstrates the goal of academic language development for EAL pupils – that of being able to draw upon, control and manipulate the resources of English language to make the particular meanings they want and need to make, in meeting the demands of the curriculum.

It also illustrates how teachers can choose different wordings to model very similar meanings for EAL pupils to match them to the resources of the pupil and to show them how the resources of English can be manipulated.

4.9.8 Summary conclusion

There **is** a determinative correlation between meanings and wordings (Halliday and Hasan, 1989: 47), but the lexicogrammar and the semantics it realises are not tied rigidly to one another. The correspondence is **not one-to-one**, it is **one-to-many** (Halliday, 1973: 57). There are different options we can select from to realise very similar meanings, which result in different wordings.

The correspondence between the social functions of language and the meanings we construct in language to fulfil them is **variable**. It is dependent upon **interpretation** within the socio-cultural framework of the context. We can use the same wording to perform different functions and different wordings to perform the same function because of the way in which they are interpreted.

Therefore, completely accurate prediction from Context to Text, prediction of **which** language forms **will be used** to fulfil particular goals, is not actually possible.

But it **is** possible to use the constraints of Context to predict a **range of potential alternatives** which **could be used** to fulfil particular goals. In curriculum lesson planning, teachers can narrow the range of options in language by:

- a) gathering information about the purposes and meanings of language in an upcoming lesson;
- b) by drawing on an understanding of how language works to realise those types of meaning; and
- c) drawing on socio-cultural understanding of the subject discourse to decide which options are appropriate.

Rather than being problematic for planning EAL development, the lack of absolute predictability opens up the **potential for differentiating** wordings linked to subject learning in the curriculum. The inherent variability of language allows teachers to choose a **range of alternative wordings** which can be tailored to the individual EAL pupil's current level of language resources and select those which can extend, expand and refine their resources to promote language development.

In curriculum lesson planning, teachers can vary the range of options for language modelling by:

- a)** providing pupils with different paradigmatic and syntagmatic alternatives;
- b)** linking key terms with a range of semantically associated vocabulary, synonyms, hyponyms or meronyms; and
- c)** using the principles of grammatical metaphor and rank shifting to manipulate language to express similar meanings in different ways.

Over time, by tracking language use across the curriculum, pupils may be led through a variety of different ways to create meanings at greater levels of complexity, depth or nuance to fulfil curriculum purposes.

4.10 Selection and differentiation of language models

The process outlined in this chapter, moving from the general context of the curriculum subject discourses to specific items of language, has attempted to provide an answer to the third research question:

3. What information do teachers need in order to ‘predict’ forms of language that may be used to fulfil the purposes of language use in the curriculum?

Different sections have illustrated the kinds of information teachers may draw upon, either consciously or sub-consciously, when they make selections of language to model for pupils.

To make this a more self-conscious and considered process, the findings of this study suggest that useful information can be gleaned from analysing the purposes of language use in the KS3 curriculum, and from the insights of applied linguistics.

They suggest that the intuitive choices that teachers make when selecting models of language may be complemented by a broader range of linguistic resources being made available to them.

Increased teacher awareness of the range of language resources that are needed to meet the demands of the curriculum, and of the way in which language models can be varied to meet those demands, could enhance teachers’ professional capacity to meet the needs of EAL pupils.

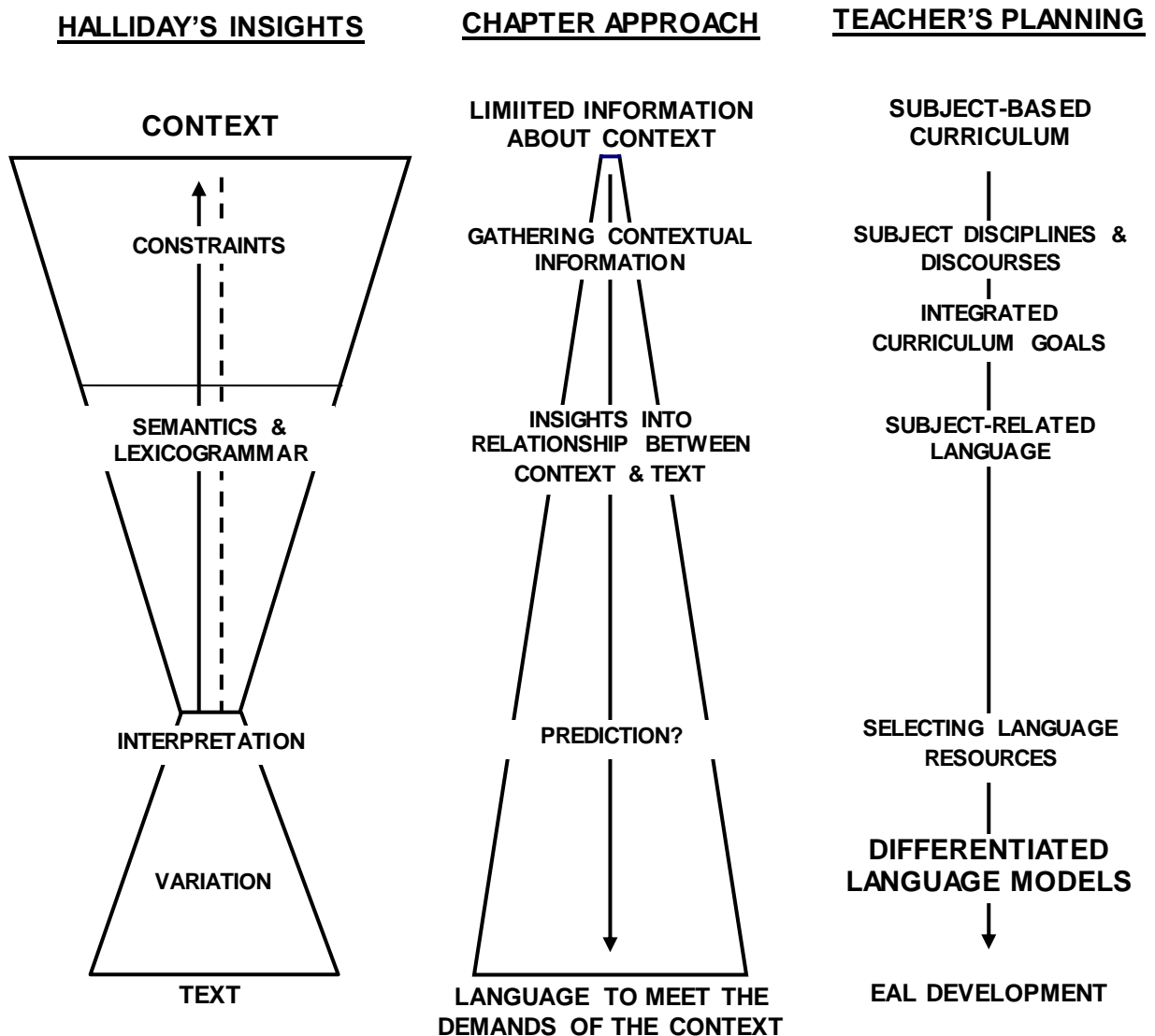
This is needed if EAL pupils are to be supported in extending, expanding and refining their language resources in a more structured or organised way that promotes development through diversification, across the curriculum.

To finish this chapter, I will briefly illustrate how a range of potential linguistic choices can enable teachers to model a variety of language for pupils and promote EAL development directly related to subject content learning.

4.11 Application to a particular lesson

In this section, I will consider the linguistic resources which may be gathered from different sources, to derive a range of possible alternatives which could be selected from and differentiated for different EAL pupils.

Fig. 4.16 Differentiating language models



Following the pattern of this chapter, in Table (4.9) I will work from the general to the specific

Table 4.9 Potential sources of language information and their associated language forms

What are the purposes of language use?	
Curriculum subject	Science
Features of subject disciplines, practices and behaviours	<ul style="list-style-type: none"> • specific scientific activities & skills; • investigation, experimentation and discovery; • bringing about and examining change; • creative thinking expressed in language; • cognitive interpretive skills; • communication of observations, evidence and findings;
Features of subject discourse	<ul style="list-style-type: none"> • lot of description and explanation; • some hypothesis and suggestion, classifying, drawing conclusions, • change, cause and effect, • specialised phenomena, processes • lot of nominalisation
General topic area	<ul style="list-style-type: none"> • Programme of Study 2 Life Processes and Living Things
Specific topic area	<ul style="list-style-type: none"> • Humans as Organisms • movement
Curriculum goals	Pupils should be taught: <ul style="list-style-type: none"> • 7. the role of the skeleton, joints and muscles in movement • 8. the principle of antagonistic muscle pairs, <i>e.g. biceps and triceps</i>
The role of language	Essential to fulfil goals. Some complementary during practical.
The purposes of language	<i>DESCRIBE the role of the skeleton, joints and muscles in movement.</i> <i>EXPLAIN the principle of antagonistic muscle pairs, e.g. biceps and triceps.</i>
How is language shaped and structured for use?	
Meaning in the verb	
What expected pupil behaviour?	<i>DESCRIBE, EXPLAIN – extend to PREDICT, HYPOTHESISE, SUGGEST</i>
Clause types	<ul style="list-style-type: none"> • Identifying/Material/Relational clauses • Cause and effect • Which clauses • If - then zero or 1st conditional
Speech functions	<ul style="list-style-type: none"> • declarative statements; possibly some questions & answers

Contd.

Contd.

Meaning in the element of subject content	
Topic Vocabulary	
Participants	
- General Participants	<i>muscles, tendons, joints, bones, flexor</i>
- Specific Participants	<i>skeleton, biceps, triceps, elbow, shoulder, arms, forearm, upper arm, radius, ulna, humerus</i>
- Concept vocabulary	<i>contraction, expansion, width, length, thickness, thinness, origin, insertion</i>
Processes	
- Identifying	<i>be/is, get/s, become/s</i>
- Material	<i>contract, expand, extend, flex, bend, stretch, relax</i>
- Relational	<i>pull up, pull on, act, move (up/down), lift, raise</i>
Circumstances	
- Features, Properties and Characteristics	<i>antagonistic, thick, thin, wide, narrow, fatter, slimmer, stretchy, in opposition to</i>
Tense	<ul style="list-style-type: none"> • present simple - factual, permanent • future - predictive • conditional - hypothetical future
Active or Passive	<i>A pulls up B; B is pulled up by A</i>
Polarity	<i>will/won't; can/can't</i>
Modality	<i>will (certainty)</i>
Synonymy	<i>contract: shorten, get/become shorter, smaller, narrower, thinner expand: lengthen, get/become bigger, fatter, wider, longer</i>
Hyponymy	<i>move: pull (up/down), lift, raise, lower, [push]</i>
Meronymy	<i>body: - limbs, muscles, arms, upper arm, forearm, hand, fingers, thumb</i>
Conjunction	<i>when, if, as, and, but, so, because, as a consequence</i>
Reference	<i>it/they</i>

As mentioned in the Introduction to this thesis, I have chosen not to focus on methodology (as 'how') for promoting EAL development but on the kind of language (the 'what') which needs to be incorporated and modelled within teaching and learning activities; the underlying principle being that pupils cannot learn words or patterns of wording without encountering them. Teaching methods and activities should aim to make them comprehensible and usable but the models themselves need to be encountered for EAL pupils to be able to learn them and develop any skills in using them. The following example suggests that interactive software can be exploited by allowing pupils to explore subject matter and manipulate language around it. In an actual software programme, the words and groups of words illustrated would be available for pupils to select, label and arrange to make different sentences related to the processes shown in the visual animation, which itself can be activated, paused, rewound or broken into segments.



The muscle	gets shorter.	The hand	goes up.
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The muscle	pulls	the hand up.
------------	-------	--------------

The biceps muscle	becomes shorter	so	the arm	goes up.
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The biceps	contracts	which	lifts up	the arm.
------------	-----------	-------	----------	----------

When	the biceps	contracts	the forearm	is raised.
------	------------	-----------	-------------	------------

Contraction of the biceps	causes	the forearm to be raised.
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The contraction of the biceps muscle,	between	its points of origin and insertion,	
causes	the ulna and radius bones	of the forearm	to be raised.



If	the triceps	shortens,	the hand	moves down.
----	-------------	-----------	----------	-------------

The triceps	contracts	when	the biceps	relaxes.
-------------	-----------	------	------------	----------

Because	the biceps	relaxes,	the forearm	lowers.
---------	------------	----------	-------------	---------

When	the triceps	contracts	the biceps	relaxes	and	the forearm	moves down.
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As	the biceps	relaxes	the arm	is lowered.
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As a consequence	of the contraction	of the triceps muscle,
between	its points of origin and insertion,	the biceps relaxes and expands,
causing	the arm	to become lowered.

4.12 Summary conclusion

In this chapter, I have explored the principle that there is a 'predictive' or 'determinative' relationship between Context and Text and applied it to the process of planning models of language to use with EAL pupils at KS3.

Insights from Hallidayan Systemic Functional Linguistics suggest that it is possible to interrogate contextual and semantic information to lead us closer to actual forms of language which can be used to fulfil particular purposes in the curriculum. The meanings construed in language are organised in terms of its lexicogrammar with the clause as its central unit. Therefore, the clause and its complexes must be an essential focus of planned EAL development work to help EAL pupils to access and express meanings, to learn and to convey their knowledge in appropriate wordings across the curriculum. As Halliday expresses it:

“What the grammar does is to construct a semiotic flow – a flow of meaning – that is analogous to the flow of events that constitutes human experience ... “grammar transforms experience into meaning”; and it is this that constitutes what we call “understanding”. To understand something is to transform it into meaning; and the outcome of this transformation is what we refer to as ‘knowing’, or in reified terms – as ‘knowledge’. Understanding, and knowing, are semiotic processes – processes of the development of meaning in the brain of every individual; and the powerhouse for such processes is grammar.”
(Halliday, 2004b: 11)

The demands and purposes of the curriculum are many and varied. The distinctions between the disciplines, in terms of both the kinds of linguistic behaviour expected and the kinds of meanings to be constructed, indicate a need for a progressive 'functional', 'semantic' and 'lexicogrammatical' diversification of language resources if EAL pupils are to meet the demands of the curriculum and develop their English language whilst learning.

The role of the teacher in planning integrated language and learning development is crucial because they act as a 'socio-cultural interpreter', an intermediary, making choices on behalf of the pupil that they would be less able or unable to make for themselves. By being presented with potential options of wording, in the context of suitable learning activities, EAL pupils can be given the opportunity to learn and use those forms of language to meet the demands of curriculum.

At the planning stage, the 'predictive' process of narrowing down the range of choice using contextual constraints will not result in a single option in the wording but rather it results in a selection of possible options within the language system that may be used to express the 'same' general meaning in different ways. This opens up the potential for teachers to differentiate the language models they use to the levels and learning needs of different pupils.

As teachers engage in a process of 'negotiation' between: subject learning activities, subject language, opportunities for additional language development and specific language models for EAL pupils, they should become more familiar with the roles and purposes of language use in the curriculum and how language is structured for use.

If this professional awareness can be refined through insights from applied linguistics about the relationship between purpose, meaning and lexicogrammar, and some form of organisation can be brought to bear on the range of language forms modelled for pupils across the KS3 curriculum, it could support EAL pupils in continually extending, expanding and refining their language resources to construct meanings and fulfil the purposes of learning.

CHAPTER 5

Conclusion

CHAPTER 5

Conclusion

5.1 Introduction

In this thesis, I have explored a 'functional approach' to planning EAL development at KS3, in order to address two clear needs.

- 1) for EAL pupils to extend, expand and refine their English language resources to meet the demands of academic language use in the curriculum; and
- 2) for teachers to plan effectively to support the integrated development of language and subject learning.

5.2 Summary of the thesis

In chapter 2, I introduced this study by describing the **education context of Wales** in which the study is set.

I outlined the **bilingual nature** of the education system and I described the **distribution and attainment data** relating to minority ethnic pupils, many of whom are learning English as an Additional Language.

I considered the way in which statutory curriculum developments in Wales have shaped planning according to a **strong subject content-based approach** and I outlined current models of support for EAL pupils.

I proposed a **model to inform the planning process**, directed towards achieving curriculum goals, and representing a 'negotiation' between four elements: subject content learning activities, subject content language, EAL development opportunities and differentiated EAL language models.

In chapter 3, I presented an overview of the research methods, drawn from the fields of corpus linguistics and lexical semantics that were used in the **computer-assisted analysis of a corpus** of selected national curriculum subject orders for Wales. I described some of the textual features of the national curriculum orders.

In chapter 4, I presented the main argument of the thesis. Based on the corpus analysis, I provided a general overview of the purposes for which language is used in each subject. This overview revealed a need for **functional diversification** of EAL pupils' English language resources. I suggested that teachers' medium-term and long-term planning would benefit from such an overview, to ensure adequate coverage of the language needed to fulfil the range of curriculum purposes, and to plan for greater diversification by progressively extending and expanding the language used for these purposes.

During my analysis of the NC orders, I discerned three roles of language in the service of curriculum goals. First, it can be **essential** to the achievement of a goal. Second, it can **contribute** to the achievement of a goal in combination with other types of behaviour. Third, it can **complement** other types of behaviour by surrounding activities directed to achieving a goal.

I stated that, where language is essential, teachers must **foreground** its importance and ensure that language-based activities and clear modelling of language are used. Where it is contributory, the purposes for which it is used need to be **clearly identified**, so language models can be selected and incorporated into learning activities. Where it is not essential but can be complementary, teachers should look to **create opportunities** for language modelling and language use.

In order to clarify and foreground the roles and purposes of language, I recommended that teachers develop **integrated subject learning and language development goals** for each lesson, based on a language-specific verb and a subject content element.

I examined the potential of using the predictive relationship between Context and Text, as defined by Halliday, to determine language models from information about contextual **constraints**.

I explained how Halliday's insights into the nature and structure of language can reveal a range of clause types, verbs, word groups, phrases, conjunctions and cohesive devices **which may be used to construct language models**.

I identified that, for EAL pupils, the teacher plays a crucial role in **interpreting the appropriate choices** of language for particular purposes; choices that the pupils themselves could not make without assistance.

I concluded that the **variation** that exists within the system of language allows for a number of different models to be constructed, which are appropriate to the meanings of the subject learning, and may be **differentiated** and tailored to the needs and resources of target EAL pupils.

5.3 Research questions

There were three research questions for this thesis:

- 1. What are the purposes that language serves in the curriculum?**
- 2. How is the character of language in the curriculum shaped and determined by what pupils are expected to use it for?**
- 3. What information do teachers need in order to ‘predict’ forms of language that may be used to fulfil the purposes of language use in the curriculum?**

1. The purposes that language serves in the curriculum have been identified by the corpus analysis and the resulting comparisons between subject disciplines, illustrated in the curriculum overview and in the many examples offered throughout the discussion. The essential, contributory and complementary roles language plays in achieving curriculum goals were identified and exemplified. A list of verbs which indicate linguistic behaviour were drawn out from the subject discourses (Appendix F). When combined with a variety of subject content elements, between and within subjects, they ‘signal’ language purposes.

2. Evidence of the way in which the character of language has been shaped by its use in the curriculum has been found in the distinctiveness of subject-based curriculum goals which indicate variation in the:

- purposes for which language is used;
- linguistic behaviours expected of pupils;
- elements of subject content to be learned;

- meanings to be construed in language;
- specific items of language associated with all of the above.

3. The information identified in this study, from analysis of the national curriculum orders and from Halliday's insights, that teachers can use to 'predict' potential forms of language for fulfilling the purposes of the curriculum includes:

- the general subject context;
- the subject topic;
- the role of language in relation to the curriculum goal;
- the kinds of behaviour pupils are expected to engage in;
- specific elements of subject content to be learned;
- the relationships between the Participants, Processes and Circumstances to be represented in language;
- an understanding of the relationship between Context and Text as realised through semantics and lexicogrammar;
- insights from applied linguistics which identify potential language resources appropriate to a particular meaning or purpose;
- familiarity with the subject knowledge, socio-cultural conventions and discourse features of curriculum subjects to interpret and select the most appropriate language choices.

5.4 Implications of the study

The principles behind the analysis and the planning framework could be applied to any curriculum context. In translation, they could be applied to the Welsh-medium curriculum. The findings suggest that detailed analysis of curricula can reveal insights into the balance of priorities and the nature of language and learning demands in different subject areas. More extensive corpus-based analyses, building on the principles of the 'functional approach' adopted in this study, could yield even more productive and practical assistance for teachers working with EAL pupils at KS3 in Wales.

5.5 Limitations of the study

There may be purposes of language use that arise within the KS3 classroom that are not accounted for in the published national curriculum orders. Consequently, the findings of this study are indicative rather than comprehensive.

The goal of characterising the language demands of the entire curriculum was constrained by what was practically achievable within the scope of the study. A more extensive linguistic study, complemented by ethnographic work, may yield a greater level of detail appropriate to the topic.

Some of the analyses carried out using the 'Sort' facilities in Microsoft Word and then creating separate wordlists for use in Wordsmith Tools could have been better achieved using alternative data analysis software like SPSS. Although this would have required an additional period of time to set all the variables, it would have saved time when carrying out the analyses.

5.6 Recommendations

This thesis points to a need for the creation of a planning framework, based on the principle of functional diversification, that will enable teachers to organise their choices of language models for EAL pupils, in order to continually extend, expand and refine their language resources across the curriculum.

The creation of such a framework calls for a large corpus of texts, produced specifically to meet the demands of curriculum goals and to represent the subject content knowledge embedded in them. Analysis of the corpus should yield patterns, collocations and high frequency lexis and structures, which are explainably associated with the purposes of language use in relation to particular subject goals. These linguistic resources should then be collated and incorporated into publications which can be made available to teachers, who can use them at the planning stage, to select and differentiate alternative language models for use with EAL pupils.

Provision should be made for timetabled planning, to ensure that teachers plan constructively for EAL development and subject learning, using the most appropriate information available to meet the pupils' needs.

Teachers planning within a skill-based approach to the curriculum should take account of the fact that language choices are driven by the meanings in subject content and that language models will need to be derived by reference to them.

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APPENDICES

APPENDIX A
All Wales 5-Stage model
Stages of English as an Additional Language Acquisition

Notes

Pupils make progress in acquiring English as an additional language in different ways and at different rates. Broad stages in this development are identified below as descriptions to be applied on a '**best-fit**' basis in a similar manner to the National Curriculum level descriptions. Progression from stage A to stage E can take up to 10 years and individuals are likely to show characteristics of more than one 'stage' at a time. A judgement is usually needed over which stage best describes an individual's language development, taking into account age, ability and length of time learning English.

Stage A – New to English

May use first language for learning and other purposes. May remain completely silent in the classroom. May be copying / repeating some words or phrases. May understand some everyday expressions in English but may have minimal or no literacy in English. **Needs a considerable amount of EAL support.**

Stage B – Early Acquisition

May follow day to day social communication in English and participate in learning activities with support. Beginning to use spoken English for social purposes. May understand simple instructions and can follow narrative / accounts with visual support. May have developed some skills in reading and writing. May have become familiar with some subject specific vocabulary. **Still needs a significant amount of EAL support to access the curriculum.**

Stage C – Developing Competence

May participate in learning activities with increasing independence. Able to express self orally in English, but structural inaccuracies are still apparent. Literacy will require ongoing support, particularly for understanding text and writing. May be able to follow abstract concepts and more complex written English. **Requires ongoing EAL support to access the curriculum fully.**

Stage D – Competent

Oral English will be developing well, enabling successful engagement in activities across the curriculum. Can read and understand a wide variety of texts. Written English may lack complexity and contain occasional evidence of errors in structure. Needs some support to access subtle nuances of meaning, to refine English usage, and to develop abstract vocabulary. **Needs some occasional EAL support to access complex curriculum material and tasks.**

Stage E – Fluent

Can operate across the curriculum to a level of competence equivalent to that of a pupil who uses English as his/her first language. Operates without EAL Support across the curriculum.

APPENDIX B

Ethnic background of pupils in Wales (2008) by Assembly constituency

Table 8: Ethnic background of pupils aged 5 and over in maintained primary, secondary and special schools, January 2007

	Total with a known category	Of those with a known category						Percentage
		White	Mixed	Asian	Black	Chinese	Other	
North Wales	97.7	97.7	1.1	0.6	0.2	0.2	0.2	
Aberconwy	99.2	97.9	1.3	0.3	0.2	0.2	0.1	
Alyn and Deeside	99.2	98.7	0.6	0.3	0.1	0.2	0.2	
Arfon	93.7	96.7	1.2	1.2	0.2	0.5	0.2	
Clwyd South	99.3	98.0	1.2	0.2	0.2	0.2	0.2	
Clwyd West	98.7	97.2	1.5	0.7	0.1	0.2	0.2	
Delyn	99.0	98.7	0.8	0.2	0.1	0.2	0.0	
Vale of Clwyd	94.8	96.9	1.3	1.0	0.2	0.3	0.3	
Wrexham	98.3	97.0	1.2	0.8	0.4	0.1	0.5	
Ynys Môn	97.2	98.1	1.2	0.3	0.1	0.2	0.1	
Mid and West Wales	96.8	98.1	0.9	0.5	0.1	0.1	0.2	
Brecon and Radnorshire	98.1	97.9	1.0	0.7	0.1	0.1	0.2	
Cardmarthen East and Dinefwr	98.0	98.4	1.1	0.2	0.0	0.1	0.1	
Cardmarthen West and South Pembrokeshire	98.5	98.1	1.2	0.4	0.1	0.1	0.1	
Ceredigion	94.7	96.7	1.5	0.7	0.2	0.3	0.6	
Dwyfor Meirionnydd	90.5	99.1	0.6	0.2	0.0	0.0	0.0	
Llanelli	96.6	97.9	0.7	1.1	0.0	0.1	0.2	
Montgomeryshire	97.7	98.6	0.8	0.3	0.1	0.1	0.2	
Presell Pembrokeshire	98.4	98.4	0.7	0.5	0.1	0.2	0.2	
South Wales West	98.5	96.2	1.3	1.5	0.3	0.2	0.6	
Aberavon	99.1	97.0	1.6	1.0	0.1	0.1	0.2	
Bridgend	99.0	97.0	1.3	0.8	0.1	0.2	0.6	
Gower	99.1	98.0	1.1	0.5	0.1	0.2	0.2	
Neath	99.0	98.0	1.1	0.5	0.1	0.2	0.1	
Ogmore	99.7	98.7	0.6	0.2	0.1	0.1	0.2	
Swansea East	99.5	95.2	1.4	1.6	0.6	0.1	1.2	
Swansea West	93.6	88.4	2.0	6.7	0.7	0.5	1.7	
South Wales Central	98.7	90.5	2.9	3.5	1.5	0.3	1.3	
Cardiff Central	98.6	77.4	5.2	10.4	2.2	0.8	4.0	
Cardiff North	98.6	88.2	3.9	3.7	1.9	0.2	2.0	
Cardiff South and Penarth	98.4	84.7	4.8	4.5	3.6	0.4	2.0	
Cardiff West	98.7	82.0	4.7	7.8	2.9	0.4	2.1	
Cynon Valley	99.4	98.3	0.6	0.6	0.2	0.2	0.1	
Pontypridd	98.7	97.5	0.9	0.7	0.2	0.4	0.2	
Rhondda	99.5	99.0	0.3	0.3	0.1	0.2	0.1	
Vale of Glamorgan	98.0	96.4	2.5	0.6	0.2	0.1	0.2	
South Wales East	98.6	96.3	1.2	1.6	0.3	0.2	0.4	
Blaenau Gwent	99.3	99.0	0.4	0.3	0.0	0.1	0.1	
Caerphilly	99.7	98.7	0.4	0.4	0.1	0.2	0.1	
Islwyn	99.7	98.6	0.6	0.3	0.1	0.3	0.1	
Merthyr Tydfil and Rhymney	97.9	98.6	0.4	0.5	0.2	0.2	0.2	
Monmouth	96.4	97.7	1.1	0.3	0.1	0.2	0.5	
Newport East	98.9	91.1	2.7	4.9	0.7	0.2	0.5	
Newport West	98.4	89.4	2.9	5.0	1.0	0.2	1.5	
Torfaen	98.7	98.3	0.9	0.4	0.1	0.1	0.1	
Wales	98.1	95.6	1.6	1.6	0.5	0.2	0.6	

Source: School Census

(WAG 2008c: 11) Statistical Bulletin SB25/2008 : *School Statistics by Assembly Constituency and Region, 2007*. Cardiff: Welsh Assembly Government

APPENDIX C

KS2 and KS3 pupil attainment by ethnic background 2006-2008

Table 6: Key Stage 2 by ethnic background, 2006-2008

Percentage of pupils achieving at least the expected level (Level 4) in teacher assessments

Ethnic background	Cohort	English	Maths	Science	CSI
		%	%	%	%
White	99,212	79.3	81.1	85.6	74.9
White - British	97,829	79.5	81.1	85.7	75.0
Traveller of Irish Heritage	46	*	*	*	*
Gypsy/Roma	122	40.2	45.1	53.3	34.4
Any other White background	1,215	71.9	82.2	83.3	69.1
Mixed	1,701	82.1	83.1	87.5	77.6
White and Black Caribbean	469	80.0	79.5	84.9	74.4
White and Black African	193	81.3	81.9	85.0	75.1
White and Asian	417	88.7	89.7	93.5	84.9
Any other Mixed background	622	79.4	81.8	86.3	75.9
Asian	1,562	74.9	77.5	82.5	69.1
Indian	297	79.1	83.8	86.5	75.1
Pakistani	518	73.2	76.1	81.7	67.0
Bangladeshi	529	74.3	73.5	80.9	66.7
Any other Asian background	218	74.8	82.1	83.0	71.6
Black	496	66.9	71.8	74.8	61.5
Caribbean	57	77.2	77.2	75.4	71.9
African	348	64.9	70.7	73.6	59.5
Any other Black background	91	68.1	72.5	79.1	62.6
Chinese or Chinese British	218	78.4	95.0	87.2	78.4
Any other ethnic group	605	68.8	81.3	80.8	66.3
Unknown	1,938	78.3	80.3	84.0	74.1
All pupils	105,732	79.2	81.0	85.5	74.7

(WAG, 2009: 13) Statistical Bulletin SB16/2009 : *Academic Achievement by Pupil Characteristics, 2005-2008*. Cardiff: Welsh Assembly Government.

Table 7: Key Stage 3 by ethnic background, 2006-2008

Percentage of pupils achieving at least the expected level (Level 5) in teacher assessments

Ethnic background	Cohort	English	Maths	Science	CSI
		%	%	%	%
White	104,104	69.0	71.7	72.9	58.6
White - British	102,528	69.1	71.7	73.0	58.7
Traveller of Irish Heritage	62	29.0	37.1	37.1	22.6
Gypsy/Roma	59	15.3	20.3	23.7	10.2
Any other White background	1,455	66.7	73.5	70.6	56.6
Mixed	1,509	68.9	72.3	73.2	58.4
White and Black Caribbean	433	64.0	65.6	67.9	50.8
White and Black African	146	65.8	67.1	66.4	53.4
White and Asian	331	77.0	81.9	83.1	70.4
Any other Mixed background	599	68.8	73.1	73.1	58.4
Asian	1,376	66.6	68.0	66.9	52.8
Indian	272	69.1	73.5	68.8	57.0
Pakistani	462	67.3	66.2	66.9	53.7
Bangladeshi	466	64.2	63.7	63.3	47.6
Any other Asian background	176	67.0	75.0	73.3	57.4
Black	478	54.8	55.0	58.4	41.0
Caribbean	67	64.2	62.7	70.1	44.8
African	333	52.6	52.6	56.5	39.0
Any other Black background	78	56.4	59.0	56.4	46.2
Chinese or Chinese British	207	72.9	92.3	82.1	69.1
Any other ethnic group	503	58.3	67.4	66.4	50.3
Unknown	2,457	66.2	67.4	69.8	56.5
All pupils	110,634	68.8	71.5	72.7	58.4

(WAG, 2009: 14) Statistical Bulletin SB16/2009 : *Academic Achievement by Pupil Characteristics, 2005-2008*. Cardiff: Welsh Assembly Government.

APPENDIX D

The phases and stages of database construction and data analysis

In this appendix, I describe in detail, the phases and stages of database construction and data analysis used in the computer-assisted corpus analysis of the National Curriculum orders for Wales (2000). This component of the study has two phases. Phase 1 is the preparation of the database derived from the corpus of selected National Curriculum texts. Phase 2 is the analysis and comparison of data derived from the database.

1. Phase 1 – Preparing the database of curriculum demands

Phase 1 contains 3 stages. Stage 1 is the process of constructing the database table. Stage 2 is the process of refining the database through analysis and manipulation of the textual content of the curriculum demands. Stage 3 is the process of classifying the curriculum demands against different semantic criteria. Each stage contains a number of individual steps which are detailed in numbered paragraphs.

1.1 Stage 1 - Constructing the database table

The following steps were taken to construct the database table.

a) Creating the source files

1. The Portable Document Files (pdf) of the National Curriculum orders for Wales were downloaded from the Qualifications, Curriculum and Assessment Authority for Wales (ACCAC) website (ACCAC, 2000a – 2000k).
2. The selected text of the orders was copied and pasted into Microsoft Word with separate files for each subject order.
3. When text is copied from pdf files, each line is broken as a paragraph break in Microsoft Word. This formatting had to be removed so that the 'word-wrap' feature in Microsoft Word could create a continuous flow of text within paragraphs. This is necessary because the default settings of the Wordsmith Tool, Wordlist, break chunks of text at paragraph breaks. Without word-wrapping, Wordlist would be unable to 'read' the text appropriately and include the relevant linguistic context for each word needed for semantic analysis.
4. Each file was saved as a plain text (txt) file because this was the format required for conversion in Wordsmith version 3 (OUP, 1998). These files are usually opened in Microsoft Notepad but can be opened in Microsoft Word.

b) Tagging the original text for verb and derivational non-verb forms

5. In order to identify curriculum demands indicated by headwords, the text of each file was tagged. As noted in the discussion above, many demands are indicated by verbs in various inflectional forms and others are indicated by derivational morphemes in nominalised, gerundial, adjectival or adverbial forms. For speed, all words which potentially indicated a curriculum demand were tagged using \ as the tag for all verb forms and # for derivational non-verb forms. These symbols do not occur as part of the original text.
6. At the end of the tagging exercise, using the 'Find and Replace' facility in Microsoft Notepad, these symbols were replaced with longer tags <V> (verb forms) and <NV> (non-verb forms) in a format recognised by Wordsmith.

c) Creating sub-files using the Splitter Tool

7. Using the Splitter Tool in Wordsmith which allows text to be split at an inserted 'end-of-text separator', sub-files were created for each subject PoS and each subject ATLD, with a separate file for the Common Requirements. Separate sub-files were also created for the three distinct AT sections of the English PoS: Oracy, Reading and Writing, and for the four distinct AT sections in both the Maths and Science PoS. Each subject ATLD file was subdivided into six separate sub-files, one for each level 1-6. The end-of-text separator used for splitting files was <[>.
8. This process resulted in the original text of the orders being divided into a total of 127 source files. The Splitter Tool processes files in batches and renames them with a numbered suffix. As these filenames would interfere with later sorting processes in Microsoft Word and Excel, each file was renamed with a filename simply indicating the origin of its text e.g. dtl3.txt = Design and Technology ATLD Level 3; ma2pos.txt = Maths AT section 2 PoS. This allows identification of the source of each individual demand identified during the analysis stage.

d) Creating Wordlists from the txt sub-files

9. Using the Wordlist Tool, with the Wordlist settings set to recognise the <V> and <NV> tags, each txt. file was converted into a Wordlist (lst) file which also needed renaming following batch processing in Wordlist.

e) Creating a lemma list using derivational morphology

10. Based on these wordlists, a 'lemma list' was created in a txt file by grouping all verb inflections and derivational morphemes that could potentially indicate a curriculum demand under a single headword in the root verb form e.g.
 - approximate -> approximates, approximating, approximated, approximations
 - balance -> balances, balancing, balanced
 - calculate -> calculates, calculating, calculated, calculation, calculations
 - describe -> describes, describing, described, description, descriptions
11. A new wordlist was created in Wordlist from all of the source files without the Wordlist settings set to recognise tags but with the lemma list loaded. The 'Match Lemmas' facility was used to join all the entries linked in the lemma list. This simplified the task of analysing the full list by shortening it and grouping all instances of matched words.
12. Any other potential entries which may have been missed during the first reading were checked in their original textual context using the Concord facility within Wordlist. Those which clearly did not indicate any kind of expected pupil behaviour or curriculum demand were deleted from the list. These included content words which were not derivational morphemes e.g. *'environment'*; structural words like prepositions, pronouns and connectives; and auxiliary verbs such as *'be'*, *'can'* and *'have'* which in themselves carried no behavioural meaning.
13. Then the lemmatised headwords were 'unmatched' and this final list of remaining headwords was selected, copied and saved as a 'match list' txt file.

f) Creating a concordance of curriculum demands

14. Using the Concord Tool with the 'match list' loaded in the 'search word' settings, and all other settings as default, a single concordance was created of all the words derived from the National Curriculum orders which indicated curriculum demands and these were sorted in alphabetical order. Using the 'Grow' facility in Concord, the textual context of each headword was expanded to a maximum of 5 lines.

g) Constructing the final database table in Microsoft Word

15. The whole text with all columns was copied to a txt. file and opened in Microsoft Word. This was to facilitate the manipulation of text which cannot be carried out in Wordsmith itself. The text was selected using 'Select All' and converted to a table using 'Convert Text to Table', using tabs as the column separator. The % column was deleted and the headings of the blank Set and Tag columns were changed to 'Headword' and 'Activity Focus'. Using 'Find and Replace' the long filepaths e.g. c:\mydocu~1\phd\2000cu~1\textfi~1\englis~2\en3pos.txt were replaced with a shorter filename e.g. en3pos.txt.
16. The table (D.1) now comprised Column 1 : N (the number of the entry in the original Wordsmith file); Column 2: Concordance (the extract of original text from the National Curriculum corpus with the target behavioural indicator near the centre); Column 3: Headword (a blank column into which the headword would be entered in a root verb form); Column 4: Activity Focus (a blank column into which selected text indicating the activity focus would be entered to act as a complement or adjunct to the headword); Column 5: Wd (the word number indicating the position of the headword in the original text file); Column 6: File (the source file from which the text extract came).

Fig. D.1. Basic database table converted from Concord to Word

N	Concordance	Headword	Activity Focus	Wd	File
1	<V>generate, <V>amend, <V>organise and <V>present ideas. They <V>use ICT to <V>save data and to <V>access <NV>stored information, <V>following straightforward lines of <NV>enquiry. They <V>use ICT-based <NV>models or <NV>simulations			18	itat13.txt

17. Three blank columns, headed 1, 2 and 3 were added to the right hand side of the table (Figure 6.3.) for three different types of classification of each entry. The column headed 3 was used to denote the verb (V) or non-verb (NV) form of the headword in its original form in the National Curriculum orders. The other two classifications are described in Stage 3.
18. The whole table was selected and the text was modified to the 'normal' setting of Times New Roman, 10 pt, left aligned. Adjustments were made to column widths both manually and using 'Cell height and width' – 'Autofit' to spread text in cells most efficiently.
19. Using 'Find and Replace', <V> and <NV> were removed from the text contained in the Concordance column. In Concord, the search words are all colour-coded and aligned in the centre with their delimited collocate text on either side. Unfortunately, when copying to txt. and importing into Microsoft Word, the colour-coding and alignment are lost although the search word is located near the centre of the text. As they are sorted by alphabetical order, it is fairly easy to identify the search word but if there is any ambiguity, the Wd. number allows cross-referencing.

Fig. D.2. Basic database table with 3 classification columns added

N	Concordance	Headword	Activity Focus	W d	File	1	2	3
1	generate, amend, organise and present ideas. They use ICT to save data and to access stored information, following straightforward lines of enquiry. They use ICT-based models or simulations			18	itatl3.txt			V

20. The database table was now prepared for the selection and refinement of the curriculum demands indicated by the text extracts in the Concordance column.

1.2 Stage 2 – Refining the database: analysing and manipulating the textual content of the curriculum demands

In this stage, grammatical and semantic analyses were used to refine each instance of a curriculum demand. The following steps were taken.

a) Manipulating the text to conform to the standardised format

1. To ensure each demand conformed to the chosen model structure of a curriculum demand, the word indicating the pupil behaviour was entered in the Headword column in its root verb form. Third-person forms needed no modification but all inflectional and derivational morphemes were changed using the principles of inflectional and derivational morphology as in the lemma list referred to earlier i.e. '*calculating*' was entered as '*calculate*', '*descriptions*' was entered as '*describe*'.
2. The activity focus associated with the headword was determined from the surrounding text in the Concordance column and entered in the Activity Focus column. Due to the stylistic features of the original text described earlier, and the modification of derivational morphemes, some reorganisation and modification of the original text was required to make each Activity Focus grammatically appropriate. Parentheses were used to indicate reorganised text (Figure D.3).

Fig. D.3. Database table with modified Headword and Activity Focus

N	Concordance	Headword	Activity Focus	W d	File	1	2	3
5	The main features of different forms of writing are used appropriately, beginning to be adapted to different readers. Sequences of sentences extend ideas logically and words are c	adapt	(the main features of different forms of writing) to different readers	22	enat3l3.txt			V

b) Evaluating the validity of each entry as an instance of a curriculum demand

3. Whilst carrying out this exercise, the validity of each entry as a curriculum demand was evaluated against 3 criteria: 1) Does the Headword clearly indicate a type of behaviour which pupils are expected to engage in to fulfil the requirements of the overall curriculum demand? 2) Does the text of the Activity Focus form a grammatically appropriate complement or adjunct to the

Headword as a text-complete unit? 3) In its modified form, does the curriculum demand accurately reflect the original meaning of the demand as indicated in the Concordance column? Where an entry did not meet criterion 1), it was deleted from the database. Exceptions to criterion 2) were those where a Headword was used intransitively, i.e. without a discernable complement or adjunct e.g. '*sing*'. These were retained in the database as instances of purely behavioural curriculum demands.

4. In cases where verb phrases occurred involving a verb and a derivational nominalisation e.g. '*draw comparisons*', there were two entries in the database, one for '*draw*', one for '*comparisons*'. A single wording was chosen, in this case '*compare*', and the duplicate entry was deleted from the database.
5. The database table now contained a list of curriculum demands in a standardised format of Headword + Activity Focus. Each row in the table contained an instance, derived from the original corpus text, of a demand placed on pupils by the requirements of the curriculum orders. In each instance, pupils are expected to '*do*' something, engage in some form of behaviour, in order to fulfil a desired learning outcome. For the purposes of this thesis, these are defined as the curriculum demands of the National Curriculum orders for Wales (2000).

1.3 Stage 3 – Classifying the curriculum demands

In this stage, the isolated curriculum demands were classified in two different categorisations through semantic interpretation. Firstly, a semantic interpretation was made of each demand to determine whether the behaviour required was primarily cognitive, linguistic, physical or graphic. This was done to make the process of identifying *language* demands from within the full list of curriculum demands more manageable. Secondly, an assessment was made of whether or not the demand indicated behaviours which were primarily about 'accessing' subject content and learning activities, or primarily about 'expressing' pupils' knowledge, understanding and skills through some form of demonstration. The following steps were taken with certain considerations.

a) Categorising demands as 'cognitive', 'linguistic', 'physical' or 'graphic'

1. The aims of this process of classification are: 1) to allow comparisons between the balance of different types of behaviour across the curriculum and within each curriculum subject, and 2) to reduce the list of demands to those which are *linguistic* in nature to facilitate more specific and detailed analysis of the *language demands* of the curriculum.

c) Categorising demands on the basis of 'primary' behaviour

2. The first criterion chosen for assigning a curriculum demand to the 'cognitive' category is that the demand indicates a *primary* behaviour that involves some form of internal cognitive activity, acquisition of knowledge, development of thought or manipulation of ideas e.g. '*consider*'.
3. The criterion for a 'linguistic' demand is that it indicates a *primary* behaviour that involves either accessing language-based information or expressing knowledge, understanding or skills in linguistic forms e.g. '*discuss*'.
4. The criterion for the 'physical' category is that it indicates a *primary* behaviour that involves some form of physical action in which pupils use their body or manipulate equipment, tools or objects to fulfil the demand e.g. '*move*'.
5. The criterion for a graphic demand is that it indicates a *primary* behaviour that involves either accessing information or expressing knowledge, understanding

and skills represented in graphic and symbolic forms of communication e.g. 'sketch'.

6. However, the headwords indicating curriculum demands operate at different levels of semantic specificity (Cruse, 2004: 49). Some are specific e.g. 'explain'. Some are general e.g. 'demonstrate'. Some indicate multiple behaviours e.g. 'investigate'. Therefore, two/three? additional criteria were added.

d) Three criteria for categorising demands

7. The category each demand was assigned to was decided on the basis of three criteria:
 - 1) Is it the primary behaviour indicated in the demand?
 - 2) Is it essential to the fulfilment of the demand?
 - 3) Is it the first behaviour required in a sequence of different types of behaviour?
8. To ensure a degree of consistency of interpretation in assessing demands against criterion 1), three additional considerations were made:
 - a) The extent to which the conventionally assigned primary polyseme (or basic meaning) of each headword in general use refers to a particular type of behaviour. This was cross-referenced with dictionary definitions (OUP, 2003).
 - b) The extent to which the range of polysemy of each headword reflects a particular type of behaviour i.e. predominantly one or another. This is cross-referenced with other occurrences of the same headword in the database and with dictionary definitions.
 - c) The extent to which a headword *and its particular collocation* in each instance indicates a particular type of behaviour.
9. In applying criteria 2) and 3) the author's personal experience of teaching in secondary KS3 subject lessons was drawn on, recalling 'scenarios' where such demands have been addressed in real classroom situations.

e) 'Secondary' behaviours

10. To ameliorate the danger of oversight resulting from the variety and range of headword uses, any demands which indicated or implied multiple types of behaviour were classified firstly by the primary behaviour on the basis of the three main criteria, and then by other potential 'secondary' behaviours e.g. 'evaluate' is judged to be a primarily cognitive behaviour but 'evaluate' can also indicate linguistic behaviour. In the school context, for cognitive evaluation to be observed, and for a teacher to know the learning outcome has been fulfilled, pupils need to demonstrate their evaluation through talking or writing about it. Therefore 'evaluate' is classified as primarily a cognitive behaviour (C) but secondarily as a linguistic behaviour (CL). These categories were entered in the column headed '2' (Figure D.4).

Fig. D.4. Database entry showing cognitive (C) and linguistic (L) classification

N	Concordance	Headword	Activity Focus	W d	File	1	2	3
2 1	ges have been interpreted differently apply their historical knowledge to analyse and evaluate interpretations. Wales In Industrial Britain, c.1760-1914 Pupils should be taught about the social, economic and	evaluate	interpretation s (of history,) (applying their historical knowledge)	47 2	3hi pos. txt		C L	V

f) Categorising demands as ‘access’ and ‘expression’

11. The aim of this process of classification is to identify which language demands are primarily about access, which are primarily about expression, and which may involve both as indicated by the headwords

g) Characteristics of demands in relation to ‘access’ and ‘expression’

12. Some headwords are specific and clearly indicate access (A) e.g. ‘listen’, ‘acquire’, ‘recognise’. Others clearly indicate expression (E) e.g. ‘speak’, ‘record’, ‘make’.

13. Some headwords are less specific but suggest that access or expression is required in order for the demand to be fulfilled e.g. ‘consider’, ‘interpret’. These examples are primarily internal ‘cognitive’ behaviours but pupils will need to engage in accessing the activity focus in order to meet the cognitive demand e.g. “interpret information” (IT PoS).

14. Some demands require both access and expression in order to be fulfilled e.g. “locate books using their knowledge of the alphabet” (English 2 ATLD Level 3). In this example, pupils have to physically find books (E) but in order to do so must read (A) the labels on the shelves and the titles, authors or library classifications.

15. Other demands require multiple behaviours involving both access and expression e.g. ‘investigate’.

h) Criteria for classifying ‘access’ and ‘expression’

16. Two main criteria were used in assigning each demand to a category:

- 1) Does the headword specifically indicate access or expression?
- 2) Does the headword indicate that access and/or expression is required to fulfil the demand?

17. Where headwords indicated that both access and expression were required, three additional considerations were made to classify the demand as AE or EA:

- a) Is access or expression the primary behaviour indicated in the demand?
- b) Is access or expression essential to the fulfilment of the demand?
- c) Is access or expression the first behaviour required to fulfil the demand?

18. The A and E categories for each demand were entered in the column headed 1 (Figure D.5).

Fig. D.5. Database entry showing access (A) and expression (E) classification

N	Concordance	Headword	Activity Focus	W d	File	1	2	3
21	ges have been interpreted differently apply their historical knowledge to analyse and evaluate interpretations. Wales In Industrial Britain, c.1760-1914 Pupils should be taught about the social, economic and	evaluate	interpretations (of history,) (applying their historical knowledge)	472	3hi pos. txt	A E	C L	V

19. The database table was now complete and prepared for the statistical analyses of headword occurrence in different parts of the curriculum.

2. Phase 2 – Analysing the database

Phase 2 contains 2 stages. Stage 1 is the comparison of various statistics based on the headwords contained in the database using the software Wordsmith. Stage 2 is a process of reduction, using relations of synonymy and hyponymy to group the headwords and form a more manageable list which can be considered as the 'functional language demands of the curriculum'. As in the description of phase 1, each stage contains a number of individual steps which are detailed in numbered paragraphs.

2.1 Stage 1 – Comparing headword statistics

In this stage, the database was sorted by different combinations of variables and separate wordlists were produced from each 'Sort' which were then compared in Detailed Consistency Lists (DCL) using 'Wordlist'.

a) Sorting the database

1. Using the 'Sort' facility in Microsoft Word, the entries in the database table were sorted using a range of variables in order to produce different wordlists.

b) Sorting using two variables

2. To produce a list of entries for each subject, with the headwords in alphabetical order, the table was sorted using: Sort by 'File' Ascending; Then by 'Headword' Ascending. To produce a list of entries for Access and Expression, with the headwords grouped in alphabetical order, the table was sorted using: Sort by '1' Ascending; Then by 'Headword' Ascending.

c) Sorting using three variables

3. To produce a list of entries for each subject, with the headwords grouped by Type of Behaviour and in alphabetical order, the table was sorted using: Sort by 'File' Ascending; Then by '2' Ascending, Then by 'Headword' Ascending.

d) Making wordlist txt. files

4. The table was sorted by different combinations of variables in order to produce lists of words which could be compared with one another. After each 'Sort', the lists of headwords were copied into plain text txt. files using 'Select', 'Copy' and 'Paste' and saved with abbreviated file names e.g. arcogall.txt = Art Subject Order, all headwords from PoS and ATLD indicating 'Cognitive' behaviours; malingallpri&sec.txt = Maths Subject Order, all headwords from PoS and ATLD indicating Primary and Secondary 'Linguistic' behaviours.

e) Making 'Wordlist' lst. files

5. Using the Wordlist Tool, each txt. file was converted into a Wordlist (lst) file.

f) Making Detailed Consistency Lists

6. Using the Wordlist Tool, combinations of lst. files were compared with one another to produce tables of statistics indicating comparative frequencies of headwords (Figure D.6)

Fig. D.6. Detailed Consistency List of (top 10) Headwords in PoS and ATLD

	Word	Total	Texts	allpos	allatld
1	USE	371	2	179	192
2	UNDERSTAND	149	2	83	66
3	WORK	103	2	54	49
4	KNOW	102	2	52	50

5	DEVELOP	94	2	71	23
6	DESCRIBE	78	2	12	66
7	VARY	72	2	36	36
8	RECOGNISE	67	2	25	42
9	EXPLAIN	55	2	17	38
10	INCREASE	51	2	26	25

g) Making Excel files and graphs from Detailed Consistency Lists

7. DCLs can be saved as Microsoft Excel files from within Wordlist. This was done for each DCL so the statistics could be used to make graphs. Selected graphs were produced following the standard procedures in Microsoft Excel.

The findings from these analyses are discussed first in the following section and are used to 'characterise' the curriculum in terms of language demands.

2.2 Stage 2 – Reducing and defining the list of 'functions'

In this stage, the primary and secondary linguistic demands of the curriculum were extracted from the database to form a master list of potential language demands. This was reduced using synonymy, hyponymy and some approximation to produce a final list of curriculum language 'functions'.

a) Constructing a masterlist of language demands

1. The database was sorted to group primary and secondary language demands. This comprised a total of 286 different headwords, listed alphabetically with 3203 distinct entries.
2. The entries were copied and pasted into a new Microsoft Word file.
3. The 'N', 'Concordance' and 'Wd' columns were deleted.
4. The remaining columns were copied into Microsoft Excel.

b) Grouping the masterlist of language demands using taxonomies

5. The list of 286 different words was too long to be of use as a list of functions and the alphabetical order of the list revealed no semantic associations between similar headwords. To begin the process of reduction, the alphabetical list of headwords was separated from the Activity Focus and compared with Gronlund's (in Reece and Walker, 1997) and Smith's (1999 in Rockett and Percival, 2002) versions of Bloom's (1956) taxonomy of educational objectives, which include illustrative verbs for each level of the hierarchy. The headwords in the masterlist were matched to those in the hierarchy.
6. Headwords which could not be matched directly with those in the taxonomy lists were added to the hierarchy levels using the principles of synonymy and hyponymy and the list was arranged in an approximate order.
7. Retaining the order of the taxonomy, the headwords were removed from the hierarchy levels and numbered in a single list from 1-286, but now each headword was adjacent to general synonyms.
8. Some of the headwords are more conventionally associated with linguistic behaviours than others e.g. '*classify*' more than '*group*'. In order for the list to be accessible and recognisable to teachers as indicating curriculum language demands, the headwords needed to be reduced to subordinate sets linked to a 'superordinate' with stronger linguistic associations, where possible, but still linked to curriculum learning demands.

c) Reducing the masterlist with reference to communicative functions

9. To achieve this, the master list was compared with a list of communicative functions drawn from four different ELT sources (Finocchiaro and Brumfit, 1983; van Ek and Trim (1991); Lock, 1996; DfES, 2001). 66 common verbs were found indicating both linguistic behaviours in the orders and communicative functions in the ELT list. These formed the basis of a new list of 'superordinate' headwords with which other, less specifically linguistic headwords could be grouped³⁹.
10. Using synonymy and hyponymy, the 286 headwords were grouped within these 66 sets and numbered accordingly. In several cases, headwords would not group 'easily' with others using the parameters of necessity and sufficiency. The semantic boundaries were 'fuzzy'. In these cases, approximations were used based on one or other polysemes of the headwords.
11. During this process a number of very low frequency headwords were dropped from the list and a small number of curriculum headwords not in the common list of 66 were added as superordinates because of their high frequency occurrence in the orders e.g. 'calculate', 'measure'.
12. With some semantic approximation, a final list of 52 'superordinate' words was selected and subordinate sets defined including 262 different headwords. (See Appendix F).
13. Differences in semantic specificity and generality between the various headwords suggest that a combination of both superordinates and subordinates would better define subject-specific language demands. I.e. when defining subject-specific demands, where a superordinate is not present in a subject order, or where a subordinate more accurately reflects usage in that subject discourse, the subordinate should be used. A balance needs to be struck between generality and specificity to be relevant and productive. A brief generic list may not adequately satisfy the need to identify the wide range of curriculum language demands.

d) Matching the headwords with their collocates

14. The reduced list of headwords was recombined with their Activity focus by sorting in Excel.
15. The main collocate of the headword in the Activity Focus was selected and entered into a new column adjacent to the headword.

e) Sorting by subject

16. The list was sorted by subject to produce subject-specific lists.

f) Sorting by Access and Expression

17. Finally, each subject-specific list was sorted by Access and Expression to separate the demands associated with these types of behaviour.

³⁹ This comparison revealed that many of the headwords in the ELT list that were absent from the curriculum list related to interpersonal, conversational language functions e.g. apologise, appeal, congratulate, deny, interrupt, praise etc. These were not associated with the language demands of the curriculum. However, these kinds of linguistic behaviours are equally likely to place demands on EAL pupils who are not familiar with them and will be required for participation in learning interactions in the classroom.

APPENDIX E

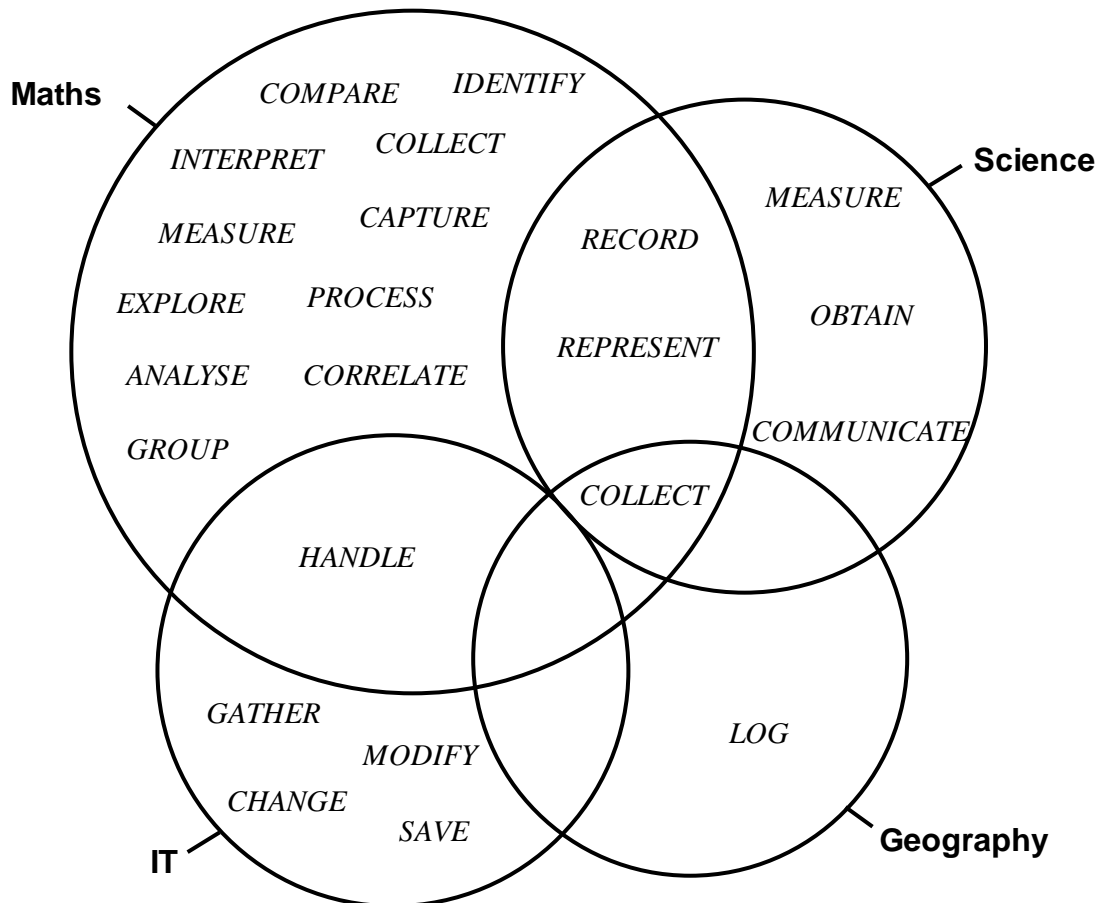
Collocations of behaviour verbs with 3 elements of subject content: *data*, *materials* and *questions*.

To further illustrate the insights that can be gained from the computer-assisted corpus analysis of the orders into the differences and similarities between the subject disciplines and their discourses, this appendix includes a comparison of the behaviour verbs collocated with 3 elements of subject content: *data*, *materials* and *questions*.

1. Data

Figure E.1 shows the distribution of behaviour verbs collocated with the word *data* in different subjects.

Fig. E.1 Distribution of behaviour verbs collocated with *data*, by subject.



Mathematics makes the most references to *data*, followed by Science, IT and Geography. The word *data* is not used in any other subject orders.

In Mathematics, pupils are expected to *IDENTIFY*, *COLLECT*, *CAPTURE*, *HANDLE*, *RECORD*, *COMPARE*, *CORRELATE*, *GROUP*, *EXPLORE*, *PROCESS*, *ANALYSE*, *INTERPRET* and *REPRESENT* *data*.. This wide-ranging set of verbs indicates the extent to which *data* plays a significant role in Mathematics and shows how pupils are expected to behave in a variety of different ways in relation to *data*, including *HANDLING* it conceptually by *EXPLORING*, *ANALYSING* and *INTERPRETING* it.

In Science, pupils are expected to *COLLECT, OBTAIN, MEASURE, RECORD, REPRESENT* and *COMMUNICATE data*. This narrower range of verbs suggests a more straightforward emphasis on *COLLECTING data, RECORDING* it accurately and *COMMUNICATING* it to others in accessible ways.

The absence of *ANALYSE* and *INTERPRET* collocated with *data* in Science does not necessarily mean that *ANALYSING* and *INTERPRETING data* are not important features of the discipline of Science in general but, at KS3, more emphasis is placed on developing accuracy in *RECORDING data* from observations *and* measurements and *PRESENTING* the *data* in appropriate ways. By contrast, *INTERPRET* is used, with a range of collocates, more in Mathematics than any other subject (24 times, almost 58.5% of all occurrences) and *ANALYSE* is used the same number of times as in English (6 times) and more than all other subjects, suggesting a higher priority being placed on these kinds of behaviour within Mathematics, compared to Science and most other subjects.

In IT, pupils are expected to *GATHER, HANDLE, MODIFY, CHANGE* and *SAVE data*. These verbs reflect an emphasis on *MANIPULATING data*

In Geography, they are expected to *COLLECT* and *LOG data*. Use of the term *LOG* is unique to Geography and, although the practice of *RECORDING* collected *data* in tables or lists of figures, for example, may be very similar in Science and Geography, a preference has been shown for *LOG*, suggesting it is a more 'typical' term in the discourse of Geography.

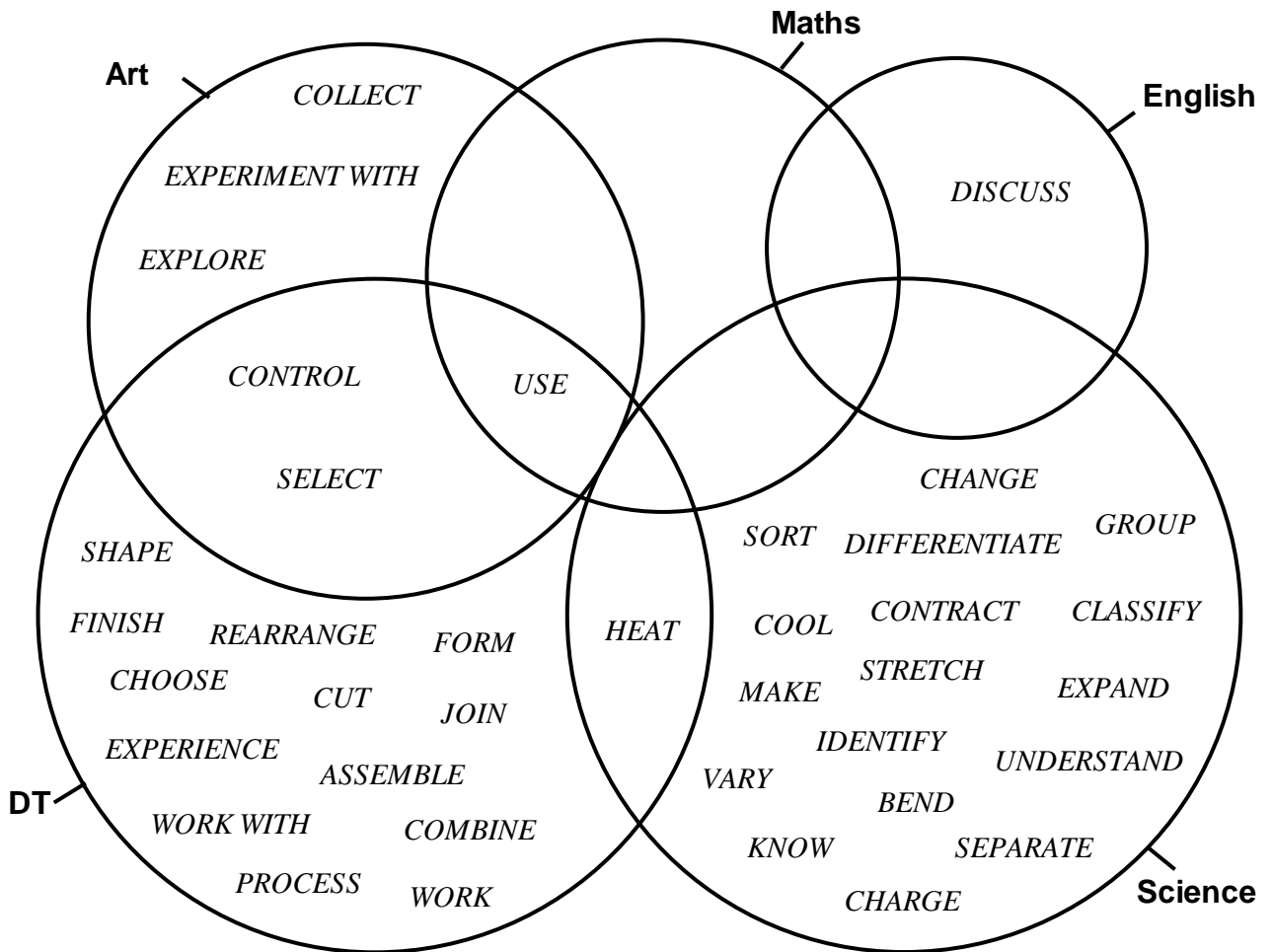
Throughout the curriculum orders, there are examples of close synonyms used in different subjects such as *COLLECT* in Mathematics, Science and Geography, *GATHER* in IT and *OBTAIN* in Science. These examples give small insights into some of the vocabulary that may be more characteristic of one subject discourse compared to another, and with which EAL pupils need to become familiar. The range of synonyms needs to be learned to extend their vocabulary, to expand the semantic range of their linguistic resources and to refine their language choices appropriate to context.

Some of the behaviours in relation to *data* suggest different semantic relationships. For example, *COMPARING* and *GROUPING data* suggest different relationships which are likely to be reflected in the choices of language used when engaging in those practices. *COMPARING* is more likely to use the 'language of comparison' whereas *GROUPING* is more likely to use the 'language of classification'. These will be realised in different choices of clause construction.

2. Materials

Figure E.2 shows the distribution of behaviour verbs collocated with the word *materials* in different subjects.

Fig. E.2 Distribution of behaviour verbs collocated with *materials*, by subject.



The word *materials* is found most in Science and DT, followed by Art, with references made in English to *DISCUSSING audio-visual materials* and in Mathematics to a range of *materials USED* for exploring *the properties of two- and three-dimensional shapes*.

In Science, the behaviour verbs indicate a clear emphasis on pupils getting to *KNOW* and *UNDERSTAND* the nature and behaviour of *materials* and their *properties* in experiments by *BENDING, STRETCHING, EXPANDING, CONTRACTING, HEATING, COOLING, CHARGING* and *SEPARATING* them. Pupils are expected to use the information gained by this experimentation to *IDENTIFY, DIFFERENTIATE, SORT, GROUP* and *CLASSIFY materials*, other characteristic features of the discipline of Science. The creative discovery and transformative dimensions of science, in which *materials* can be modified or new *materials* can be made through chemical and physical changes, are evident in the verbs *VARY, CHANGE* and *MAKE*.

In DT, *EXPERIENCING* and *WORKING WITH* different *materials* is an important part of pupils' learning, enabling them to *CHOOSE, SELECT* and *USE* the most appropriate *materials* for different product designs. *WORK* is also used in the phrase '*WORK materials*' where *WORK* acts as a hypernym or superordinate to a wide range of more

specific practices such as *CUT, FORM, SHAPE, HEAT, PROCESS, CONTROL* and *FINISH* which are also collocated with *materials* in the DT order. The verbs *JOIN, COMBINE, ASSEMBLE* and *REARRANGE* indicate the significance of using *materials* to *MAKE products* in DT. In some contexts, *JOIN, COMBINE* and *ASSEMBLE* could be considered interchangeable but the fact that they have all been used in DT with the collocate *materials* suggests that the distinctions in meaning between them are significant in the discourse. Also, the use of these words in DT but not in Science reveals some of the differences in purpose between the two subjects even though, in general terms, pupils are *WORKING WITH* materials in both. Such nuances of meaning, and distinctions between subject purposes, are important for teachers to recognize if they are to model appropriate language for pupils and induct them into the distinct subject discourses.

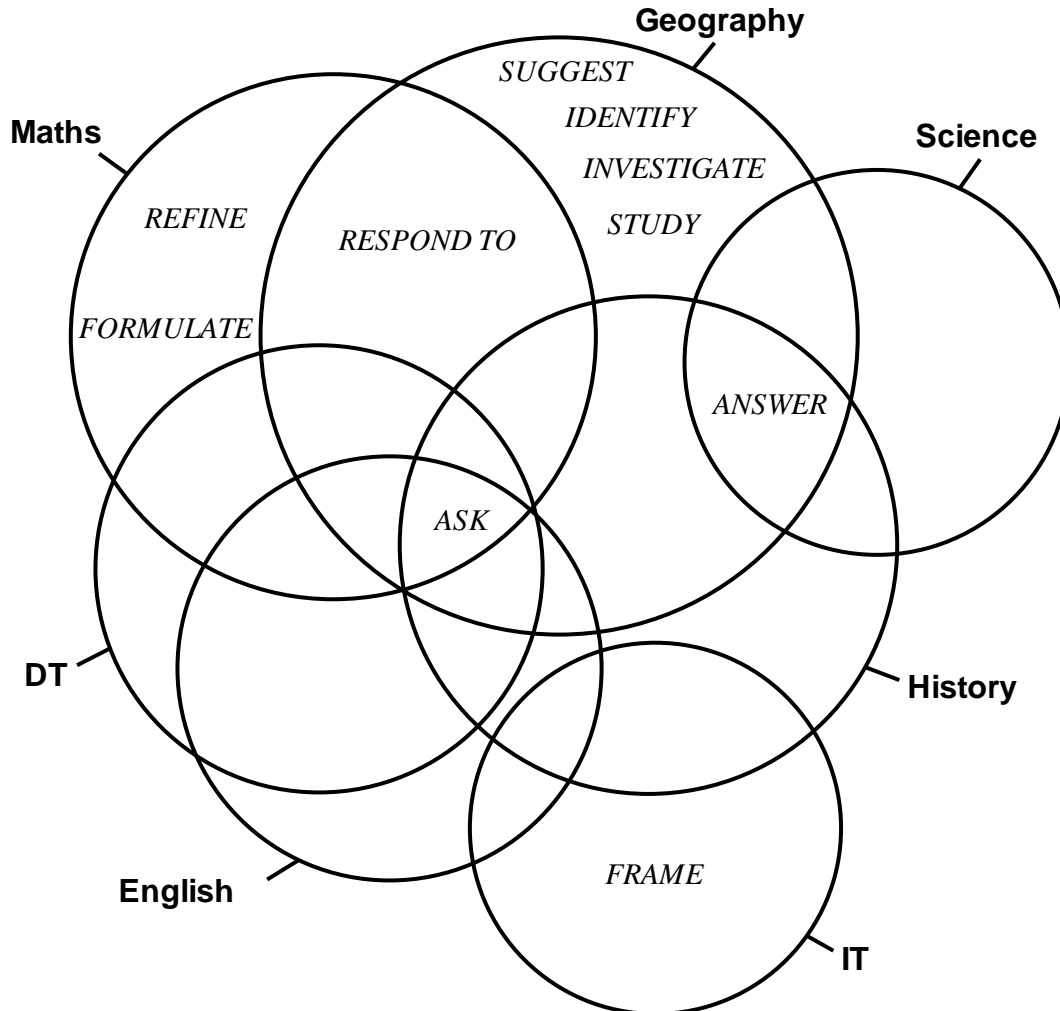
Like DT, the verbs used in the Art order emphasise the *USE* and *CONTROL* of materials, *COLLECTING* and *SELECTING* those that pupils wish to use for different creative purposes but pupils are also encouraged to *EXPERIMENT WITH* and *EXPLORE materials* imaginatively to discover their potential for creating images and artefacts. This kind of *EXPERIMENTATION* is different from that in Science, where, in fact, the word *EXPERIMENT* is not collocated with *materials* or used as a verb but as a noun indicating the more formalised conventional procedure of *CARRYING OUT* a scientific *experiment*. The emphasis on the explorative, imaginative use of *materials* related to the visual language of art, craft and design in Art differs from DT, which places greater emphasis on *WORKING* and *WORKING WITH* the most appropriate *materials* to meet a particular design brief. Although there are clear overlaps between Art and DT as creative disciplines, the level of creative expression in relation to *materials* is more constrained by design specifications in DT than it is in Art.

Many of these subject distinctions point to the fact that, although some common language relating to *materials* and their properties is very likely to be used across subject boundaries, the way it is used in relation to the different practices engaged in is likely to affect the structure and patterning of language choice in clause construction.

3. Questions

Figure E.3 shows the distribution of behaviour verbs collocated with the word *questions* in different subjects.

Fig. E.3 Distribution of behaviour verbs collocated with *questions*, by subject.



Art, PE and Music do not make reference to *questions* or *QUESTIONING* but all other subjects do. These findings do not suggest that pupils will never be expected to *ASK* or *RESPOND TO* *questions* in Art, PE and Music but it does suggest that *QUESTIONING* has not been prioritised as a significant skill in these subject disciplines, whereas it has in others. Therefore, opportunities for modelling language resources for *QUESTIONING* in formal learning activities may be fewer in these subjects.

Geography makes most references to *questions*, followed by History and Maths and then IT and English.

The verbs collocated with *questions* in Geography include *ASK*, *SUGGEST*, *IDENTIFY*, *STUDY*, *RESPOND TO*, *INVESTIGATE* and *ANSWER* *questions*. The use of the words *STUDY* and *INVESTIGATE* indicate that answering geographical questions is not always a matter of providing a briefly worded answer drawn from personal knowledge but a more indepth process involving some kind of research. The verb *SUGGEST* places an

expectation on pupils to construct their own questions relating to geographical subject matter and information.

In History, pupils are expected to *ASK* and *ANSWER questions* about history and about the sources they use to interpret history. This requires comprehension of historical texts which could provide information for shaping questions but which could also prove problematic in themselves for EAL pupils.

In Mathematics, pupils are expected to *ASK* and *RESPOND TO questions*, but they are also expected to *FORMULATE* and *REFINE questions*; neither verb is used in any other subject collocated with *questions*. Similarly, in IT the phrase *FRAME questions* is used which does not occur in any other subject. The use of these words suggests a form of discourse specialisation that EAL pupils will need to learn to extend their linguistic resources.

In English, pupils are expected to *ASK relevant questions* in order to develop ideas further and respond to others in discussion, indicating the extent of their listening and comprehension.

If *ASKING*, *STUDYING* and *RESPONDING TO questions* are characterising features of Geography, History, Maths, IT and English, it is likely that these are the curriculum areas where most opportunities for modelling question forms are likely to occur, and where teachers could plan constructively to foreground models for questions and answers.

In Science, pupils are expected to *ANSWER questions* but instead of the verb *ASK*, the semantically related words *ENQUIRE* and *enquiry* are used to indicate the more extended process of addressing particular scientific questions, usually following a set procedure or format. Scientific *enquiry* could be considered as a genre feature of the Science discourse and should provide opportunities for modelling a variety of question forms and ways of responding to them.

In DT, pupils are expected to *ASK questions about products* but they are also expected to *RESPOND TO design briefs* to *EXPLORE* and *MEET* people's particular *needs and wants*. Whilst not precisely the same as *ASKING* or *ANSWERING* direct *questions*, considering **how** to respond to particular *needs and wants*, or **what** kind of *product solutions* may address them, is likely to give rise to opportunities to form *questions*.

Questions are a clear example of how a social purpose is reflected in the structure of the language at clause level. Halliday (2004a: 108) defines *questions* as one of the 'speech functions', realised in a particular grammatical structure traditionally described as 'the interrogative'. The various ways in which questions are structured in the English language form part of the functional, semantic and lexicogrammatical resources EAL pupils need to develop. Anticipating where the most natural opportunities lie in relation to subject learning goals can assist teachers in organising their planning to develop pupils' resources for *ASKING questions*.

APPENDIX F

List of verbs used to indicate linguistic behaviour in curriculum goals

The verbs in the list below are derived from a corpus analysis of ten national curriculum subject orders. In their original forms and contexts they were used to indicate linguistic behaviour in curriculum learning objectives and assessment outcomes. Some recognisably refer to linguistic behaviour through their own primary polysemes e.g. *SPEAK*, *EXPLAIN*. Others are more semantically general e.g. *DEVELOP*, *ESTABLISH*. Where a verb's polysemic range is broader, the linguistic nature of the curriculum goal was indicated in the subject content elements they were collocated with in the original text. The verbs indicate linguistic behaviours of both 'expression' e.g. *DISCUSS*, *WRITE*, and 'access' or 'reception' of language e.g. *LISTEN*, *RECOGNISE*.

Of the total of 405 verbs identified in the corpus analysis to indicate all kinds of physical, cognitive, graphic and linguistic behaviour, 262 were used to indicate linguistic behaviour. The righthand column indicates the complete list of 262 verbs. The column on the left groups them into a more manageable list of 52 broad categories of 'synonym'. As with any semantic classification exercise, these groupings are not precise, the boundaries are 'fuzzy' but, when grouping them, attention has been paid to the particular polysemes of the verbs in the context of curriculum goals.

The grouped categories in column 1 have been arranged in a sequence from low to high order skills with reference to Bloom's taxonomy of educational objectives simply to impose some form of organisational structure on the list. The way curriculum demands occur in lessons across the KS3 curriculum means such a developmental progression will not actually be reflected in any chronological sequence through KS3. Pupils will be expected to engage in behaviours throughout the spectrum of skills in lessons across the curriculum and across the age-range.

Grouped categories	Verbs indicating linguistic behaviour
<i>1. LEARN or STUDY</i>	<i>ENGAGE IN</i>
	<i>FOCUS ON</i>
	<i>KNOW</i>
	<i>LEARN</i>
	<i>MEMORISE</i>
	<i>PAY ATTENTION TO</i>
	<i>REMEMBER</i>
	<i>STUDY</i>
	<i>TRY</i>
	<i>UNDERSTAND</i>
	<i>UNDERTAKE</i>
	<i>WORK</i>
	<i>2. APPLY or USE</i>
<i>ASSIST</i>	
<i>DEPLOY</i>	
<i>HANDLE</i>	
<i>MANIPULATE</i>	
	<i>USE</i>

3. <i>EXTEND or DEVELOP</i>	<i>ADD TO</i>
	<i>BUILD ON</i>
	<i>DEVELOP</i>
	<i>EXTEND</i>
	<i>INCREASE</i>
	<i>PROGRESS TOWARDS</i>
	<i>TAKE FORWARD</i>
	<i>WIDEN</i>
4. <i>EXPERIENCE</i>	<i>ENCOUNTER</i>
	<i>EXPERIENCE</i>
	<i>HEAR</i>
	<i>OBSERVE</i>
	<i>VIEW</i>
	<i>WATCH</i>
5. <i>LISTEN</i>	<i>LISTEN</i>
6. <i>READ</i>	<i>READ</i>
7. <i>SPEAK</i>	<i>INTONATE</i>
	<i>SAY</i>
	<i>SING</i>
	<i>SPEAK</i>
	<i>TALK</i>
8. <i>WRITE</i>	<i>ANNOTATE</i>
	<i>CITE</i>
	<i>DRAFT</i>
	<i>LABEL</i>
	<i>LIST</i>
	<i>MARK</i>
	<i>NOTATE</i>
	<i>PUNCTUATE</i>
	<i>REFER TO</i>
	<i>SCRIPT</i>
	<i>SPELL</i>
	<i>TAKE NOTES</i>
	<i>WRITE</i>
9. <i>FOLLOW INSTRUCTIONS</i>	<i>FOLLOW INSTRUCTIONS</i>
10. <i>RESPOND TO</i>	<i>ADDRESS</i>
	<i>ENGAGE WITH</i>
	<i>RESPOND TO</i>
11. <i>RECOGNISE</i>	<i>BE AWARE OF</i>
	<i>DETECT</i>
	<i>ESTABLISH</i>
	<i>PERCEIVE</i>
	<i>RECOGNISE</i>
12. <i>IDENTIFY</i>	<i>IDENTIFY</i>
	<i>NAME</i>
13. <i>ACQUIRE or GATHER</i>	<i>ACCESS</i>
	<i>ACQUIRE</i>
	<i>CAPTURE</i>
	<i>COLLECT</i>

	<i>FIND</i>
	<i>GATHER</i>
	<i>LOCATE</i>
	<i>OBTAIN</i>
	<i>RECALL</i>
	<i>RETRIEVE</i>
	<i>USE</i>
<i>14. ANSWER QUESTIONS</i>	<i>ANSWER QUESTIONS</i>
<i>15. MAKE OBSERVATIONS</i>	<i>OBSERVE</i>
<i>16. RECORD</i>	<i>ENTER</i>
	<i>LOG</i>
	<i>RECORD</i>
	<i>STORE</i>
<i>17. DESCRIBE</i>	<i>DESCRIBE</i>
	<i>NARRATE</i>
	<i>RECOUNT</i>
	<i>REPORT</i>
<i>18. DISCUSS</i>	<i>COMMENT ON</i>
	<i>DISCUSS</i>
	<i>POINT OUT</i>
	<i>SPECIFY</i>
<i>19. CALCULATE</i>	<i>ADD</i>
	<i>CALCULATE</i>
	<i>COMPUTE</i>
	<i>COUNT</i>
	<i>DETERMINE</i>
	<i>DIVIDE</i>
	<i>FIND</i>
	<i>MULTIPLY</i>
	<i>QUANTIFY</i>
	<i>ROUND</i>
	<i>SQUARE</i>
	<i>SUBTRACT</i>
<i>20. INTERPRET</i>	<i>APPRECIATE</i>
	<i>INTERPRET</i>
<i>21. ASK QUESTIONS</i>	<i>ASK</i>
	<i>ENQUIRE</i>
	<i>INTERROGATE</i>
	<i>REQUIRE</i>
<i>22. EXPLAIN</i>	<i>CLARIFY</i>
	<i>EXPLAIN</i>
	<i>OFFER REASONS</i>
	<i>PROVIDE EXPLANATIONS</i>
<i>23. SUMMARISE</i>	<i>OUTLINE</i>
	<i>SUMMARISE</i>
<i>24. GENERALISE</i>	<i>GENERALISE</i>
<i>25. CONSIDER or TAKE INTO ACCOUNT</i>	<i>BASE</i>
	<i>BE INFORMED BY</i>
	<i>CONSIDER</i>

	<i>DRAW ON</i>
	<i>TAKE INTO ACCOUNT</i>
<i>26. SOLVE PROBLEMS</i>	<i>CLOSE</i>
	<i>FINISH</i>
	<i>FULFIL</i>
	<i>MEET</i>
	<i>REALISE</i>
	<i>SOLVE</i>
	<i>SUCCEED</i>
<i>27. PRODUCE</i>	<i>ASSEMBLE</i>
	<i>COMPOSE</i>
	<i>CONSTRUCT</i>
	<i>CREATE</i>
	<i>DEVISE</i>
	<i>FORM</i>
	<i>GENERATE</i>
	<i>MAKE</i>
	<i>ORIENTATE</i>
	<i>PRODUCE</i>
	<i>SHAPE</i>
	<i>STRUCTURE</i>
<i>28. PRESENT or COMMUNICATE</i>	<i>ARTICULATE</i>
	<i>COMMUNICATE</i>
	<i>CONVEY</i>
	<i>DEMONSTRATE</i>
	<i>DISPLAY</i>
	<i>EXPRESS</i>
	<i>GESTURE</i>
	<i>ILLUSTRATE</i>
	<i>INDICATE</i>
	<i>MODEL</i>
	<i>PERFORM</i>
	<i>PORTRAY</i>
	<i>PRESENT</i>
	<i>REPRESENT</i>
	<i>ROLEPLAY</i>
	<i>SHOW</i>
	<i>SIMULATE</i>
	<i>VISUALISE</i>
<i>29. GIVE INSTRUCTIONS</i>	<i>CONTROL</i>
	<i>DIRECT</i>
	<i>ENSURE</i>
	<i>INSTRUCT</i>
	<i>TAKE RESPONSIBILITY FOR</i>
<i>30. PLAN</i>	<i>DECIDE</i>
	<i>DESIGN</i>
	<i>ESTABLISH</i>
	<i>FORMULATE</i>
	<i>FRAME</i>

	<i>INITIATE</i>
	<i>OPEN</i>
	<i>PLAN</i>
	<i>PREPARE</i>
	<i>START</i>
<i>31. INVESTIGATE</i>	<i>EXAMINE</i>
	<i>EXPERIMENT</i>
	<i>EXPLORE</i>
	<i>IMPROVISE</i>
	<i>INVESTIGATE</i>
	<i>PURSUE</i>
	<i>SURVEY</i>
	<i>TEST</i>
	<i>TRIAL</i>
<i>32. MEASURE</i>	<i>MEASURE</i>
<i>33. ESTIMATE</i>	<i>APPROXIMATE</i>
	<i>ESTIMATE</i>
<i>34. ANALYSE</i>	<i>ANALYSE</i>
	<i>ASCERTAIN</i>
	<i>DETERMINE</i>
	<i>REASON</i>
<i>35. INFER or DEDUCE</i>	<i>DEDUCE</i>
	<i>DERIVE</i>
	<i>EXTRACT</i>
	<i>FIND</i>
	<i>INFER</i>
<i>36. DISTINGUISH or DIFFERENTIATE between</i>	<i>DIFFERENTIATE</i>
	<i>DISCRIMINATE</i>
	<i>DISTINGUISH</i>
<i>37. COMPARE & CONTRAST</i>	<i>COMPARE</i>
	<i>CONTRAST</i>
<i>38. CLASSIFY</i>	<i>CLASSIFY</i>
	<i>GROUP</i>
	<i>MATCH</i>
	<i>SORT</i>
	<i>SUIT</i>
<i>39. SELECT</i>	<i>CHOOSE</i>
	<i>LIMIT</i>
	<i>SELECT</i>
	<i>SIFT</i>
<i>40. SEQUENCE</i>	<i>ARRANGE</i>
	<i>COLLATE</i>
	<i>DISTRIBUTE</i>
	<i>ORDER</i>
	<i>ORGANISE</i>
	<i>SEQUENCE</i>
<i>41. DRAW CONCLUSIONS</i>	<i>DRAW CONCLUSIONS about</i>
<i>42. EXPRESS PREFERENCES</i>	<i>EXPRESS DISLIKES</i>

	<i>EXPRESS LIKES</i>
	<i>EXPRESS PREFERENCES</i>
<i>43. CRITICISE</i>	<i>CHALLENGE</i>
	<i>CRITICISE</i>
	<i>DEBATE</i>
<i>44. SUGGEST</i>	<i>ARGUE</i>
	<i>PERSUADE</i>
	<i>PROPOSE</i>
	<i>PUT FORWARD</i>
	<i>SUGGEST</i>
<i>45. JUSTIFY</i>	<i>JUSTIFY</i>
	<i>SUPPORT</i>
<i>46. REVIEW or CHECK</i>	<i>CHECK</i>
	<i>MONITOR</i>
	<i>PROOFREAD</i>
	<i>REFLECT ON</i>
	<i>REVIEW</i>
<i>47. EVALUATE</i>	<i>APPRAISE</i>
	<i>ASSESS</i>
	<i>EVALUATE</i>
	<i>GIVE FEEDBACK</i>
	<i>JUDGE</i>
<i>48. HYPOTHESISE</i>	<i>CONJECTURE</i>
	<i>HYPOTHESISE</i>
	<i>IMAGINE</i>
	<i>THEORISE</i>
<i>49. PREDICT</i>	<i>PREDICT</i>
<i>50. LINK</i>	<i>ASSOCIATE</i>
	<i>COMBINE</i>
	<i>CONNECT</i>
	<i>CORRELATE</i>
	<i>INTEGRATE</i>
	<i>INTERRELATE</i>
	<i>JOIN</i>
	<i>LINK</i>
	<i>RELATE</i>
	<i>SYNTHESISE</i>
<i>51. ADAPT</i>	<i>ADAPT</i>
	<i>ADJUST</i>
	<i>AMEND</i>
	<i>CHANGE</i>
	<i>CONVERT</i>
	<i>MODIFY</i>
	<i>TRANSFORM</i>
	<i>VARY</i>
<i>52. REDRAFT or IMPROVE</i>	<i>IMPROVE</i>
	<i>REDRAFT</i>
	<i>REFINE</i>
	<i>REVISE</i>

