

1 The mainstream primary classroom as a language-  
2 learning environment for children with severe and  
3 persistent language impairment – implications of  
4 recent language intervention research  
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14 Key words: xxxx, xxxxx, xxxxx, xxxxx.  
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18 **Most children with severe and persistent language  
19 impairment in the UK attend their local mainstream  
20 school, in line with policies of social inclusion. The  
21 language curriculum and the social opportunities  
22 offered in the classroom should provide them with  
23 an excellent language-learning environment. However,  
24 their language-learning opportunities can also be  
25 limited by factors such as the need to sustain  
26 language-learning activities that are time-consuming  
27 and child-specific, and restricted opportunities for  
28 co-professional working. The mainstream classroom  
29 also offers a complex and challenging language  
30 environment that may be difficult to adapt to their  
31 needs. These factors raise issues about the mainstream  
32 primary classroom as an enabling language-learning  
33 environment for severely language-impaired children.  
34 These issues are explored in light of two recent research  
35 studies of intervention to develop the language of children  
36 with severe and persistent language impairment carried  
37 out in mainstream primary schools in Scotland.  
38 Results of these studies are outlined, and suggest  
39 that children who received language intervention  
40 delivered by speech and language therapists (SLTs)  
41 or their assistants (SLTAs) made more progress in  
42 expressive language than similar children who  
43 received intervention delivered by education staff.**

44 **Potential reasons for these differences in outcome are  
45 explored in terms of the amount of tailored language-  
46 learning activity the children undertook; how proactive  
47 were school staff in initiating contact with the SLTs,  
48 and the language demands of the primary classroom.**

49 **A model of mainstream language intervention  
50 validated by teacher and SLT perceptions is also  
51 outlined, giving the views of participating teachers  
52 and SLTs as to how language development might in  
53 future be encouraged within the ecology of the  
54 mainstream primary classroom for children with  
55 severe and persistent language impairment.**

In the UK, most children of primary school age with severe and persistent language impairment are educated in their local mainstream school, in line with policies of social inclusion. The rationale for this is that mainstream schooling provides social and educational benefits, and the legal responsibility for ensuring that each child's educational needs are met resides with the school (Department for Education and Skills (DfES), 2001; Scottish Executive, 2002). Education services have listening and talking curriculums designed to develop children's language skills (Learning and Teaching Scotland (LTS), 2008; Qualifications and Curriculum Authority (QCA), 2008). These provide advice for teachers on how to include and support children with difficulties (LTS, 2000; QCA, 1999).

Co-professional working is also expected (DfES, 2004; Scottish Executive, 2004) and the fostering of language and communication development for children with persisting difficulties is shared between education staff and health service staff, especially speech and language therapists (SLTs), and with families. The ability to sustain partnership working with other professionals is required of graduating SLTs (Health Professions Council (HPC), 2003, p. 8) and newly qualified teachers (Training and Development Agency for Schools (TDA), 2008).

The SLT profession has agreed to a position paper (Gascoigne, 2006) considering the SLT as part of the team supporting the child. This paper outlines a range of support packages that vary along two dimensions: where responsibility for leadership lies, on a continuum from SLT to others, including schools; and the focus of the intervention, on a continuum from targeting impairment to improving child participation (Gascoigne, 2006, p. 15). This model envisages that if intervention and support are effective a child will typically follow a trajectory from SLT-led to school-led provision and from an impairment to a participation focus. It is not, however, known how many children follow this route.

1 Relevant policies, specific curriculum guidance and  
2 co-professional working models are therefore in place to  
3 ensure that the primary classroom environment maximises  
4 language-learning opportunities for children with difficulties,  
5 and promotes generalisation and use of their developing  
6 language skills. However, the recent Bercow review of  
7 services for children and young people with speech,  
8 language and communication needs in England (DCSF,  
9 2008, p. 61) found unacceptable variation and lack of  
10 equity in the provision offered to such children, despite  
11 many examples of good practice.

12 Bercow's (DCSF, 2008, p. 31) distinguishes amongst  
13 universal services needed to support the language  
14 development of all children; supportive services for  
15 children who are struggling but are expected to 'catch up';  
16 and targeted and specialist services for children with  
17 difficulties such as language impairment where problems  
18 persist. When language impairment continues beyond the  
19 age of 6 years, it often continues into adult life (Young  
20 et al., 2002), affecting literacy and access to the school  
21 curriculum (Bishop & Adams, 1990) as well as social  
22 activity and well-being (Botting & Conti-Ramsden, 2000).  
23 Children with language impairment in primary schools  
24 therefore fall into Bercow's third category, requiring  
25 targeted and specialist services.

26 There are few controlled studies that assess outcomes for  
27 such children, and we do not know whether the mainstream  
28 primary classroom routinely achieves its potential as a  
29 'good' language-learning environment for them. There is,  
30 however, some evidence that a concentrated, normative  
31 language-focused curriculum may be designed for preschool  
32 settings to support children with language impairment. This  
33 capitalises on the classroom as an interesting, socially  
34 useful and meaningful language-learning environment for  
35 young children, offering many opportunities for  
36 generalisation whilst allowing for individual language  
37 targets (Rice, 1995, p. 32). American approaches in which  
38 SLTs work extensively within schools allow early language  
39 and literacy interventions to be embedded in classrooms for  
40 children at risk, with teachers and SLTs working together  
41 (Justice & Kaderavek, 2004; Kaderavek & Justice, 2004),  
42 but this does not reflect the current UK situation. Hatcher  
43 et al. (2006a) and Hatcher et al. (2006b) worked with  
44 reading-delayed primary school children in England using  
45 interventions delivered by teaching assistants within  
46 classrooms, but these children had normal vocabulary  
47 development and no diagnosis of language impairment, and  
48 the aim was literacy not language development.

49 There are, however, two UK studies specifically intended to  
50 develop language functioning in children with severe and  
51 persistent language impairment. Their findings will be  
52 outlined, and related to classroom-based language learning.

### 53 Recent language intervention research

54 The two studies were carried out in Scotland with the aim  
55 of developing the language skills of children with persisting  
56 language impairment: a randomised controlled trial (RCT)

(Boyle et al., 2007) and a cohort study (McCartney et al.,  
2004).

The children in both studies had a diagnosis of language  
impairment where their language difficulties interfered with  
academic achievement and/or social communication,  
causing functional difficulties in school. They were aged  
6–11 years, and attended their local mainstream primary  
school. They scored below –1.25 standard deviation (SD)  
on the receptive and/or expressive scales of the Clinical  
Evaluation of Language Fundamentals (CELF-3UK) using  
the adjusted norms 2003, a standardised test of language  
understanding and use (Semel, Wiig & Secord, 2000). They  
had documented normal hearing and no neurological  
impairment, pervasive developmental disorder or severe  
learning difficulties as measured by non-verbal IQ scores  
< 75 on the Wechsler Abbreviated Scale of Intelligence  
(WASI) (Wechsler, 1999). Importantly, they had no  
speech, fluency, swallowing or alternative/augmentative  
communication needs nor any other factors that would  
require the specific skills and knowledge of an SLT. They  
were therefore children whose language development needs  
could reasonably be accommodated in the primary  
classroom. Both studies are published elsewhere (Boyle  
et al., 2007, 2009a in press; McCartney et al., 2004) and so  
only brief outlines and relevant results are given here.

### 57 The RCT

58 SLT services are encouraged to adopt a skill-mix model of  
59 service delivery where professionals carry out those aspects  
60 of intervention that require professional skills, but delegate  
other tasks to assistant and support workers (The Royal  
College of Speech and Language Therapists (RCSLT),  
2006). The main purpose of the RCT was to discover  
whether language intervention would be equally effective  
when offered by an SLT or an SLT assistant (SLTA), and  
by each of these offered to children individually or in small  
groups. Research intervention was controlled by some  
children receiving their 'usual therapy'. Children were  
randomly allocated to one of the five modes (SLT  
individual; SLTA individual; SLT group; SLTA group; or  
control). The main outcome measure was language change  
as measured by receptive and expressive language scores  
on the CELF-3UK immediately after therapy, and at  
follow-up 12 months later. Other outcome measures were  
of parent and teacher satisfaction. A cost-benefit analysis  
was also carried out (Dickson et al., 2008).

Research children received language intervention delivered  
in school by an SLT or SLTA member of the research team,  
with some grouped children travelling by escorted taxi to  
another school. Children carried out language activities  
from a specially written therapy manual. The manual  
suggested a range of language-learning activities, but the  
selection of specific activities was made for each child by  
their SLT, who directed the SLTA for children receiving  
therapy in assistant modes. Advice was also given to their  
classroom teachers and families, including advice to  
teachers on how to create a 'communication friendly'  
classroom. The language therapy manual is available on

1 <http://www.strath.ac.uk/media/departments/eps/docs/slt/tr/>  
2 [media\\_100682\\_en.pdf](http://www.strath.ac.uk/media/departments/eps/docs/slt/tr/media_100682_en.pdf).

3 A total of 161 children were randomly allocated and 152  
4 children completed all pre- and post-therapy assessments.  
5 There was 'blind' assessment of outcomes by SLTs not  
6 otherwise involved in the project who did not know which  
7 mode of therapy a child had undertaken. This ensured an  
8 unbiased evaluation of progress.

### 9 **The amount of research language-learning activity** 10 **recorded in the RCT**

11 Children in the four research intervention modes received  
12 three 30–40-minute language-learning sessions weekly  
13 over 15 weeks (45 sessions), and on average undertook  
14 around 22 hours of language work, with only one child  
15 attending fewer than half of the maximum sessions  
16 possible. Teachers and families could also have been  
17 carrying out additional language work, but this was not  
18 logged.

19 Children in the 'control' mode received whatever amount  
20 of intervention their local services offered. Control children  
21 were, we understand, mostly receiving consultancy  
22 approaches, where SLTs give advice and guidance to school  
23 staff and families, who carry out any language-learning  
24 activities with the child. They received much less contact  
25 with SLT services than research intervention children. An  
26 audit of one school year (around 40 weeks) showed that  
27 half of the control children who remained in the study had  
28 received no SLT contact at all. The other half had averaged  
29 16 contacts with an SLT or SLTA from their local service  
30 during the school year. This equates to five or six contacts  
31 over 15 weeks. This low level of SLT input is particularly  
32 striking as the children were allocated at random to  
33 research intervention or control mode, and we could detect  
34 no differences on measures of language or other child  
35 characteristics amongst the five research modes at the start  
36 of the study.

37 Low levels of contact with an SLT were also reported for  
38 most of the RCT children during the 12-month follow-up  
39 period after project intervention had ceased. Of the 152  
40 RCT children, 36 who could be followed up (i.e., 24%) did  
41 not receive any contact with an SLT or SLTA during this  
42 period. One child entered a language unit (and recorded  
43 115 contacts!) and the remaining 115 children averaged  
44 around six contacts with an SLT or SLTA. The amount of  
45 SLT contact in the follow-up year did not relate to the RCT  
46 intervention mode the children had experienced.

### 47 **RCT results**

48 Full statistical analysis of results appears in Boyle et al.  
49 (2007), and only main the points are reviewed here. All four  
50 research intervention modes were acceptable to parents,  
51 teachers and project SLTs and SLTAs. Quantitative results  
52 showed no difference in language scores amongst the four  
53 research intervention modes (SLT individual; SLTA  
54 individual; SLT group; SLTA group), but did show benefits  
55 in expressive language as measured by the CELF-3UK  
56

immediately after intervention for children who received  
research intervention in the four modes combined,  
compared to the 'usual therapy' control children (an effect  
size of +55). This gain was detectable even after controlling  
for child language scores at the start of the study. However,  
by follow-up assessment 1 year later the expressive  
language scores of the children who had received research  
intervention had not continued to accelerate.

There was no significant benefit to receptive language at  
any point for any group of children. This result has been  
found in other studies; for further discussion and an update,  
please see Boyle et al. (2009b in press).

There were no significant receptive or expressive language  
gains for control children. These results will be compared  
to those in the cohort study, outlined next.

### 57 **The cohort study**

58 The RCT used an 'extract' model of intervention for the  
59 four SLT- and SLTA-led modes, with the researcher going  
60 into the child's school and discussing and feeding back  
information to their classroom teacher, but usually  
removing the child from the classroom to carry out  
language-learning activities. This is not the most common  
model in the UK, where children usually receive a  
'consultancy' package of language intervention (Law et al.,  
2002). This is where a SLT gives specific advice and  
guidance to education staff (and often parents) who  
implement language-learning activities in school. This  
approach should allow the child to access the rich  
language-learning environment of the primary classroom,  
to generalise and to incorporate language learning into  
curriculum activities. However, although this is the  
approach reported most widely in the UK, no full-scale trial  
of outcomes has been undertaken to determine whether it  
offers most benefit to children with severe and persistent  
language impairment.

A cohort study was therefore undertaken to investigate the  
outcomes of a classroom-based intervention. One local  
authority was involved, and children were referred by their  
SLT services and/or by their learning support teacher. They  
were recruited using the same language and other criteria  
as in the RCT. Unlike the RCT, where educational  
functioning was not an entry criterion, children in the  
cohort study were all receiving learning support for literacy  
difficulties, which further demonstrates the impact of  
language impairment on educational attainment.

Only children whose scores on the CELF-3UK adjusted  
norms and on the WASI (as detailed above) were the same  
as RCT participants are discussed here. Selecting children  
on the same language and non-verbal criteria as the RCT,  
and checking there are no differences after selection, allows  
comparison between the results of the two studies. In a  
cohort study children are not randomised, and every child  
who met participation criteria took part in intervention.  
Their progress was then compared to that of children in the  
RCT.

1 Each child was assessed by the project SLT. The resulting  
2 cohort comprised 38 children who received intervention  
3 within 19 schools and 33 classes. Their scores on the  
4 CELF-3UK adjusted norms were not distinguishable from  
those of the RCT children.

5 The project SLT wrote a set of language targets and  
6 planned language-learning activities in discussion with a  
7 child's classroom teacher. Language-learning activities  
8 were taken from the language therapy manual developed in  
9 the RCT, using materials provided by the research SLT.  
10 These were made available to school staff and backed up  
11 with further written information. There was also the  
12 opportunity for school staff to attend two explanatory  
13 sessions. The language-learning activities were delivered  
14 by school staff, including classroom teachers, classroom  
15 assistants (who in Scotland work to teachers' instructions)  
16 and learning support teachers. At times more than one staff  
17 member was involved with an individual child, and some  
18 staff members were involved with several children.

#### 21 **The amount of research language-learning activity 22 recorded in the cohort study**

23 It was requested that children would undertake language-  
24 learning activities on the same schedule as in the RCT,  
25 and classroom staff were asked to log activities as they  
26 were carried out. Language activity logs (including one  
27 late return) covering the research period were received for  
28 27 (71%) eligible children with comments included for  
29 17 (45%); remaining logs were not received or were  
30 incomplete. For these 27 children, the number of language-  
31 learning contacts that had been logged ranged from 8 to 70,  
32 with a mean of 26, over the 4-month intervention period.  
33 This was equivalent to one or two contacts per week. Seven  
34 of the 27 children worked with one learning support teacher  
35 for 30 minutes weekly; otherwise the length of a contact  
was not always recorded.

36 These findings represent a large difference amongst  
37 children. Those getting most contacts recorded almost nine  
38 times as many as those who got least. Some children  
39 therefore received a lot of language-learning activity, and  
40 others very little. School staff in the cohort study reported  
41 that activities were mostly planned to take place two or  
42 three times a week, as recommended, but the available  
43 activity logs suggested this did not always happen. It is  
44 possible that more language work could have been carried  
45 out in class without being logged, and no data are available  
46 on how long children spent in total on language work.  
47 However, it is unlikely that many children received the 22  
48 hours of language-learning activity achieved in the RCT.

#### 49 **Cohort study results**

50 Results were again measured by the CELF 3UK, and by  
51 surveys of the views of education staff, parents and  
52 participating children. Assessment was after about 16  
53 weeks of intervention. It was carried out by SLTs not  
54 otherwise involved in the project who had not previously  
55 met the children, but who could not of course be blind to  
56 their participation in intervention. Analysis of their CELF

3U K results both before and after the intervention period  
showed no statistically significant differences (two-tailed  
tests, all  $t$ -values  $\leq 1.54$ , all  $P$ -values  $< 0.133$ ). This meant  
that children in the cohort study did not improve their  
language scores after intervention.

Their scores before and after intervention were also  
compared to those of the children who entered the control  
group in the RCT, who had received their usual therapy.  
There was no significant difference between the studies in  
terms of gender, but the cohort study children were some 9  
months older than RCT children on average, although still  
within the same age range. Importantly, the pre-intervention  
scores for expressive and receptive language on the CELF  
3UK did not differ between studies (all  $t$ -values  $\leq 1.25$ ,  
all  $P$ -values  $> 0.20$ ). This means that the RCT control  
children's and cohort study children's language scores  
were very similar at the start of intervention.

Analyses of covariance in the cohort study showed that  
child pre-intervention scores were significant predictors of  
their post-intervention scores, but there was no significant  
advantage shown by the cohort study children compared to  
the RCT control group for either expressive language  
( $F < 1$ ,  $P = 0.460$ ) or receptive language ( $F = 2.861$ ,  
 $P = 0.095$ ). Table 1 summarises these findings.

**Table 1: Mean pre- and post-intervention scores  
(CELF-3U K) for cohort study and RCT historical  
control group receiving 'usual' therapy: intention to  
treat analysis**

Outcome measure (SS):	Mean pre-intervention scores (SD)		Mean post-intervention scores <sup>1</sup> (SD)	
	CELF-3U Receptive	CELF-3U Expressive	CELF-3U Receptive	CELF-3U Expressive
Cohort study (N = 38)	73.26 (7.79)	69.89 (5.73)	72.75 (7.63)	72.06 (7.90)
RCT control group (N = 31)	76.00 (10.01)	70.16 (4.57)	77.03 (10.00)	70.84 (5.96)

<sup>1</sup> Missing post-intervention scores for two pupils in the cohort study  
were replaced by pre-intervention scores.

Quantitative results did not show the same expressive  
language gains on the CELF 3UK for children in the cohort  
study that had been shown in the RCT. The RCT research  
intervention therefore showed better expressive language  
outcomes than the cohort study, although some individual  
children did make progress.

#### What these studies suggest

The RCT and cohort studies reported above suggest that  
children with severe and persisting language impairment  
made less progress in expressive language learning when  
receiving the common UK model of school-based  
approaches via classroom staff. Those receiving systematic  
language-learning activities in the RCT, albeit using a  
largely extract model and delivered at times through  
non-professional staff, made more progress. The outcomes

1 for three sets of children using classroom-based approaches  
 2 support this interpretation: the control children during the  
 3 RCT research intervention period; RCT children by  
 4 follow-up 1 year after research intervention had ceased, and  
 5 children in the cohort study.

#### 5 Why might this be?

##### 6 *Time spent on tailored language activities*

10 One possibly important difference between the two studies  
 11 is the amount of tailored language-learning activity that  
 12 was carried out. The RCT used one pattern of delivery and  
 13 amount of intervention. It is not known whether twice as  
 14 much intervention, or indeed half as much, or a different  
 15 pattern of delivery would have been equally effective.  
 16 Nonetheless, the relatively large amount of time spent on  
 17 language-learning activities by children in research  
 18 intervention modes may well have been a significant factor  
 19 in encouraging progress.

20 It clearly proved difficult for teachers in the cohort study to  
 21 match this amount of intervention. A total of 24 classroom  
 22 teachers returned questionnaires at the end of the cohort  
 23 study, and were asked ‘Can you list two or three things  
 24 about the project you would like to change?’ Eight  
 25 mentioned time problems:

26 ‘Too time consuming for a teacher to do.’ (Teacher)

28 ‘More time!! – nding time was very dif cult.’ (Teacher)

30 and another that the intervention worked well because the  
 31 activities were carried out by the learning support teacher:

32 ‘It worked well but I do wonder how it would have worked  
 33 if it had to be done totally by the class teacher.’ (Teacher)

35 The RCT control children, and most RCT children after the  
 36 research intervention ceased, received very little contact  
 37 with an SLT. Although their language learning will have  
 38 continued within classroom work, with SLTs offering  
 39 advice and guidance to schools, it is possible that their  
 40 teachers also found it difficult to include many tailored  
 41 language-learning activities.

42 Time recorded on specific language-learning activities does  
 43 differentiate the RCT and cohort interventions, the RCT  
 44 control children, and the intervention and post-intervention  
 45 phases of the RCT. This might be a relevant factor in  
 46 determining progress. If so, it implies the need to organise  
 47 and protect time for language-learning activities, which  
 48 may need to be carried out on an individual basis.

##### 50 *Contact between schools and the research teams*

51 Another possible factor that may relate to different  
 52 outcomes could be the amount and type of contact between  
 53 schools and the research teams. Assuming co-professional  
 54 contact is important, as implied by current policies, if the  
 55 two studies differed greatly in the amount of contact  
 56 recorded this might have influenced outcomes.

Both the RCT and cohort studies incorporated  
 predetermined information exchanges and contact between  
 SLTs and classroom staff, involving meetings, phone calls  
 and written communication. There were also opportunities  
 for schools and project staff to contact each other at any  
 point; SLTs or SLTAs came into schools to carry out  
 intervention in the RCT, and the cohort study SLT was  
 locally based and full-time. Full contact information was  
 exchanged and good secretarial support was available in  
 both projects. No information is available on whether or  
 how frequently schools and SLT services made contact  
 concerning children in the RCT control mode, but the low  
 number of contacts between SLTs and control children  
 would suggest that there was only a limited SLT presence  
 in the schools.

At the end of both the RCT and cohort studies, teachers  
 were asked by questionnaire if they had ever contacted the  
 relevant researcher working with the child, including  
 making phone calls or by writing. For the RCT, responses  
 were received from 93 teachers, representing 75% of the  
 124 children who had received research therapy.

A total of 48 (52%) teachers reported that they had not  
 contacted the person working with the child, with four  
 more (4%) giving no reply. Project researchers responding  
 on a more complete sample of 119 children (96% of the  
 total who had received research therapy) and responding  
 about schools in general reported that schools had not  
 initiated contact with them in respect of 90 (76%) children.

For comparison purposes, only the responses of class  
 teachers in the cohort study are reported here, although  
 information was also collected from learning support  
 teachers and classroom assistants where relevant. Class  
 teachers could work with more than one child in their class,  
 and some also held promoted posts. They were asked to  
 complete a questionnaire in respect of each child receiving  
 research intervention. Responses were returned for 24  
 (63%) children. Twelve (50%) reported they had not made  
 contact and four more (17%) gave no reply to the question.

In both studies therefore around half of the teaching staff  
 responding reported that they had not contacted project  
 staff.

Since the amount of contact initiated by schools and  
 teachers did not markedly differ between the RCT and  
 cohort studies, whilst expressive language outcomes did,  
 amount of contact initiated by teachers does not appear to  
 be as good a candidate as amount of language-learning  
 activity in accounting for the differences in outcome.  
 Nonetheless, the fact that more than half of teachers in  
 well-organised, school-based language intervention projects  
 did not initiate contact with researchers even when it was  
 readily available is noteworthy. It may suggest that despite  
 policies requiring co-professional working, the active  
 engagement of all teachers cannot be taken for granted.  
 Where SLT services offer more limited services, there may  
 be further barriers to class teachers making contact.

1 Much more evidence is needed about education  
 2 professionals' understandings of shared responsibilities and  
 3 ownership of the problems of managing language learning  
 4 for children with persisting impairments. These children  
 5 appear to be a group of learners who are trapped in the  
 6 language demands of mainstream schooling. They were  
 7 recognised (at least in the cohort study) as having  
 8 difficulties in accessing the literacy curriculum, but despite  
 9 prioritising their language needs in the research study,  
 10 could not receive the continuing, focused language support  
 11 they needed in sufficient quantity. If we are to plan  
 12 appropriate intervention policies and strategies, we need  
 13 further to consider the wider management and practices that  
 14 affect their learning context.

### 15 **The primary classroom as a language-learning** 16 **environment for children with severe and persistent** 17 **language impairment**

18 The primary classroom is a busy, complex language  
 19 environment, and the language demands of the curriculum  
 20 increase as a child moves through school. This presents  
 21 continuing challenges to children with language  
 22 impairment, and teachers are often asked to ameliorate  
 23 these by purposefully adapting the classroom. Specific  
 24 advice for education staff on how to manage the talking and  
 25 listening context and language demands of the classroom to  
 26 meet the needs of children with language impairments has  
 27 been published by Learning and Teaching Scotland (2000,  
 28 p. 23). This advice was given to teachers in both the RCT  
 29 and cohort studies. LTS's (2000) advice is therefore used  
 30 here as a template for considering the classroom as a  
 31 language-learning environment for children with severe and  
 32 persistent language impairments.

### 33 **The LTS template**

34 The 19 points listed in LTS (2000) are here reordered under  
 35 six headings, moving from aspects that are relatively  
 36 immutable, like the physical classroom environment,  
 37 through those which a teacher can adapt when planning and  
 38 managing learning; to aspects that must be adapted 'on  
 39 line', such as a teacher's own communication style. The  
 40 numbers in square brackets after each point refer to the  
 41 order of the original LTS list. Each heading is illustrated  
 42 where possible by quotations from respondents in the two  
 43 studies outlined above, and discussed alongside research  
 44 evidence.

#### 45 *Enhancing the physical environment*

46 Good listening conditions should be established in  
 47 acoustically treated classrooms with soft furnishings and  
 48 carpets and good lighting which is bright and evenly  
 49 distributed [3]. Teachers should ensure good quality  
 50 lighting in all teaching and learning contexts as children  
 51 with articulation difficulties may use lip-reading in addition  
 52 to listening to learn speech sounds [7] LTS (2000, p. 23).

53 This is clearly desirable, but good visual and listening  
 54 conditions may be difficult to contrive. Shield and Dockrell  
 55 (2004) investigated 142 London primary schools, and  
 56 discovered that noise levels within classrooms depended

largely upon the activities in which children engaged, but  
 that average background noise exceeded current  
 recommended levels. Children with articulatory difficulties  
 were explicitly excluded from the research studies  
 discussed above, and lighting may be more amenable to  
 teacher control than noise levels, but teachers' abilities to  
 adapt the physical environment are limited by the  
 architecture and permanent fittings within the classroom.

#### *Planning communication partners and opportunities for talk*

The focus should be on naturalistic settings [1]. Classroom  
 organisation should ensure and support interaction between  
 pupils and with the environment [2]. There should be  
 opportunities for sensitive supporting and encouraging of  
 the child's talk by partners responsive to the child's  
 learning style, extending their knowledge and encouraging  
 them to express their thoughts and feelings in words [5].  
 Peer conversational partners should be sensitively matched  
 to the child's language strengths and learning needs [6]. In  
 a language-enabling classroom, teachers should plan class  
 discussions – allow only one pupil to talk at one time to  
 promote optimum talking and listening for each child (the  
 circle-time approach promotes this) [19] LTS (2000, p. 23).

Implementing this advice involves managing the  
 contributions of other children in the class, so that they  
 become facilitative communication partners. In the RCT,  
 children grouped with other language-impaired children  
 made as much progress as those receiving individual  
 intervention, and some positive comments were recorded  
 about groups, including their small size:

*'Small numbers in [the] group made it very personal.'*  
 (Teacher)

*'Small group, [child's name] got more attention.'*  
 (Parent)

and child enjoyment:

*'I don't think [my child] actually really knew that it [the  
 group] was actually nished. He thought he would go  
 back after the summer holidays and he would continue.  
 He knew that he was having a party [i.e., at the last  
 group session], you know, and that kind of helped. But  
 it didn't really make him understand that it was nished  
 after the summer holidays. So I had to kind of explain to  
 him that it wasn't going to happen again and he didn't  
 really like that. He wanted to go back.'* (Parent)

However, a language-impaired child may or may not attend  
 a mainstream class with similar children. The RCT and  
 cohort studies uncovered some instances where this was the  
 case, but they will usually work in groups with typically-  
 developing children. Such grouping can provide very good  
 language models, but Brinton et al. (2000) found that even  
 when cooperative learning groups were specifically set up  
 in primary classes for language-impaired and typically-  
 developing children, they were not always successful. The

1 social and behavioural problems of language-impaired  
 2 children influenced their ability to work cooperatively with  
 3 peers. Teachers have little control over such child variables,  
 4 and forming groups of children who work well together  
 5 may be difficult in a mainstream class. Teachers will have  
 6 to play a highly skilled role in managing social aspects and  
 7 grouping in the classroom, and deal with communication  
 8 partners who may be less than sensitive and supportive at  
 9 times. And where teachers do set up group work and  
 10 encourage children to build and develop knowledge and  
 11 understanding together (cf. Littleton et al., 2005) the  
 12 language-impaired child's limited understanding and/or  
 13 ability to use 'key words' such as 'because', 'why' or 'if'  
 14 with their concomitant complex clause structure may limit  
 15 their effective participation. Groups may be difficult to  
 16 manage, with the needs of all children in a class to be  
 17 considered.

#### 18 *Planning topics*

19 Teaching and learning contexts should enable the child to  
 20 engage in exchanges sensitive to the child's perspective on  
 21 topics of interest to him or her [4]. Provide clear advance  
 22 warning of a change of topic [16] LTS (2000, p. 23).

23 This recommendation also may be difficult to fit into  
 24 normal classroom practice, where topics are less negotiable  
 25 than in conversational settings. Classroom talk differs from  
 26 conversational and informal talk (Cullen, 1998) in that  
 27 topics in school are usually set by the teacher with groups  
 28 of children encouraged to attend. It is difficult to see how  
 29 socially constructed knowledge such as science and  
 30 mathematics could otherwise be taught in a one-to-many  
 31 situation. However, this does affect both children's access  
 32 to personally relevant topics, and teachers' opportunities to  
 33 scaffold children's thinking, which are not common in  
 34 some classrooms (Bliss, Askew & Macrae, 1996).

35 Sturm and Nelson (1997) note that although teacher talk  
 36 becomes markedly more complex in the later primary  
 37 stages, teachers become more brief in their marking of new  
 38 content and topic changes. By the end of primary school,  
 39 new topics may be introduced by minor utterances such as  
 40 'okay', 'now' and 'well'. These may be difficult for a  
 41 language-impaired child to understand as marking topic  
 42 shifts, but changing these established patterns of classroom  
 43 discourse may once again prove difficult.

#### 44 *Offering visual support and demonstration*

45 Teachers should demonstrate what is expected of the child  
 46 or use pictorial representations [11] and use experiential  
 47 learning, role-play and games [12] LTS (2000, p. 23).

48 This advice is supported by, for example, the findings of  
 49 Best et al. (2006), who suggest that combining visual  
 50 illustration and pointing together with semantic information  
 51 helped typically-developing school entrants to acquire  
 52 fuller understanding of adjectives new to them compared  
 53 with presenting verbal information alone. The primary  
 54 classroom is of course characterised by the presence of  
 55 illustrated books and pictorial materials, visual support and  
 56

experiential learning techniques. However, Nash and  
 Donaldson (2005) taught primary school-aged children  
 with language impairment new words using explicit  
 teaching procedures that combined an illustration with a  
 verbal description and repetition of the target word.  
 Although this approach was more successful than hearing  
 new words repeated in illustrated stories, the children with  
 language impairment performed much less well than  
 typically-developing children in learning new words.  
 Specific teaching seems to be required, not just illustration,  
 but as Best, Dockrell and Braisby (2006) also point out,  
 'there are limited opportunities for direct instruction and/or  
 multiple teachings of word meanings in classrooms'  
 (p. 826). Visual support and experiential learning should be  
 helpful in letting children with comprehension problems  
 know what is expected of them (as the LTS (2000) advice  
 suggests) but does not substitute for explicit teaching of  
 language.

#### *Teacher communication: verbal*

Teachers should talk through everything they do using  
 statements which give the child examples of language they  
 might use [13]. Use simple sentence constructions with  
 fewest words as there may be auditory memory difficulties  
 where the child will not remember other speakers'  
 utterances [14]. Simplify instructions, if necessary, giving  
 instructions one at a time [15] LTS (2000, p. 23).

Class teachers in the cohort study responded by  
 questionnaire to the question 'How (if at all) have you  
 altered your communication in the classroom?' in respect  
 of each child receiving research intervention.  
 Questionnaires were returned for 24 (63%) children, and  
 14 (58%) of these noted some changes. The remaining 10  
 either did not reply to the question, or reported no  
 differences.

Teachers reported they had increased their checking and  
 monitoring of children's comprehension in class; had  
 changed their talk in some way; had encouraged children to  
 'repair' their own utterances, and/or gave other individual  
 responses. Some had made more than one adaptation:

*'Made me aware that instructions have to be kept  
 simple and as short as possible. That when a child  
 doesn't understand changing the vocabulary used does  
 not necessarily help.'* (Teacher)

*'I have tried to ensure I have [child's name]'s attention  
 before beginning class work. I try to go over it.'*  
 (Teacher)

*'Made me double check instructions are clear.'*  
 (Teacher)

*'The children feel confident to say when they haven't  
 understood everything.'* (Teacher)

Teachers who did not report changes may have considered  
 they were using sensible strategies already, and did not

1 need to change. However, research on teacher talk suggests  
 2 that it is not always adapted in the recommended way.  
 3 Sturm and Nelson (1997) noted more teacher ‘mazes’  
 4 (non- uencies and revisions) in end-primary compared to  
 5 early-primary classes in mainstream schools in the USA,  
 6 and Sadler and Mogford-Bevan (1997a,b) also observed that  
 7 some teachers of language-impaired children in language  
 8 units in England used high numbers of reformulations of  
 9 their own utterances, which were not always successful in  
 10 solving communication problems. These unit teachers  
 11 talked more to talkative children, and controlled the  
 12 classroom talk using open and closed questions. Further,  
 13 although they agreed on which features of teacher talk  
 14 should be most effective in promoting spontaneous verbal  
 15 contributions from children (such as reasoning, predicting  
 16 and evaluating), they overestimated the frequency with  
 17 which they used these features.

18 Sadler and Mogford-Bevan’s (1997a,b) results suggest that  
 19 teachers, like other adults, may be relatively unaware of  
 20 their language behaviours, and that even positive beliefs  
 21 about features of effective talk does not mean that these are  
 22 used in practice. It would not be safe to assume that  
 23 teachers can always use facilitating interaction styles, nor  
 24 that those who believe they do so are accurate, nor that  
 25 changes can be easily made on the basis of receiving  
 26 advice.

27 *Teacher communication: non-verbal and paralinguistic*  
 28 Teachers should make eye contact and ensure their own  
 29 positive body language and positioning [8]. Provide natural  
 30 spoken language for the child to hear and experience  
 31 without speaking louder or more slowly or using  
 32 exaggerated speech and lip patterns [9]. Maximise use of  
 33 natural gesture, pointing, facial expression, body language  
 34 and other visual clues [10]. Talk only when not facing and  
 35 writing on the blackboard [17]. Teachers should limit their  
 36 own movements around the classroom when talking to the  
 37 whole group or class [18] LTS (2000, p. 23).

38 Several teacher comments from the cohort study mentioned  
 39 changes in non-verbal and/or paralinguistic aspects of their  
 40 communication. A teacher in the cohort study wrote:

41 *‘It has made me more conscious of [for example] speed,*  
 42 *volume and amount of information I am delivering to*  
 43 *the children.’ (Teacher)*

44 *‘More aware of clarity and rate of speech.’ (Teacher)*  
 45

46  
 47 Such comments suggest that non-verbal and paralinguistic  
 48 aspects of communication may become salient to some  
 49 teachers, but these aspects of communication are as  
 50 habitual as verbal aspects, and may be as dif cult to  
 51 identify or to change appropriately.

### 52 **Changing and adapting the classroom**

53 Although it is encouraging that teachers reported positive  
 54 changes, the ‘cautionary’ research examples listed above  
 55 suggest that adaptation is not always straightforward. Many

features of the classroom as a language-learning  
 environment are resistant to change – they are the way they  
 are for powerful reasons. Although adaptations to physical  
 and communication aspects of classrooms may be  
 recommended, they may be dif cult for teachers to achieve  
 because they involve alterations to highly routinised aspects  
 of communication, or to intractable factors such as noise  
 levels, or to well-ingrained discourse features of the  
 classroom environment. To ask for changes to  
 accommodate children with persisting language  
 impairments is important but is not a trivial matter, and  
 the dif culties of making changes, the effects on the  
 whole classroom, and the self-knowledge and professional  
 commitment required must not be underestimated.

### 56 **Constructing a language support model for teachers**

The RCT and cohort studies outlined above suggested  
 that several issues should be further examined if children  
 with severe and persistent language impairment are to  
 receive optimal language-learning opportunities in school.  
 These include the provision of regular and tailored  
 language-learning activities, ownership by schools of  
 language interventions, and help for teachers to adapt the  
 classroom environment. In particular, it was considered  
 important to investigate the views of mainstream classroom  
 teachers who worked with language-impaired children  
 in more depth. A small-scale qualitative study using  
 participatory evaluation was therefore undertaken  
 (McCartney, Ellis & Boyle, 2006; McCartney et al., 2005).

Participants in the rst phase of this study were four  
 mainstream class teachers who had participated actively in  
 the cohort study outlined above and the research SLT who  
 had led it. They met as a group to re ect upon their  
 experiences, evaluate the written materials they had  
 received from the project team in the cohort study, and  
 revise and improve them towards the creation of a  
 teacher-friendly language support model.

The second phase involved 15 mainstream class teachers  
 and two community SLTs working in three further  
 education authority districts. They were new to the research  
 studies although they had previous experience of children  
 with language impairment. They met and undertook group  
 discussion, with summaries fed back for member checking  
 at later meetings; completed short questionnaires, and made  
 written comments to further critique and develop the  
 language support model and materials developed in the rst  
 phase.

The nal language support model documents created as a  
 result of this study outline the principles of creating a  
 communication-friendly classroom; of monitoring child  
 comprehension; and of teaching vocabulary, later grammar  
 and narrative. There is a detailed procedure for setting up  
 and monitoring intervention to ensure that time is available  
 for language-learning activities. Such activities are to be taken  
 from the language therapy manual. The language support  
 model may be downloaded from <http://www.strath.ac.uk/eps/centresdivisions/slt/teachingresources/lsm>.

1 The language support model therefore offers managerial  
 2 solutions to the ‘wicked issues’ of involving school  
 3 management levels to ensure language learning is  
 4 prioritised; of agreeing who will carry out language  
 5 activities and when; and of SLT/teacher teams monitoring  
 6 that language-learning activities are being systematically  
 7 delivered. It suggests joint SLT/teacher setting of language  
 8 targets, and gives advice about updating and changing  
 9 targets. It includes suggestions about involving parents, and  
 10 explains principles of teaching vocabulary, grammar and  
 11 narrative to teachers. It suggests ways to help children to  
 12 monitor their level of comprehension, and ways to get  
 13 relevant language-learning materials to the classroom at the  
 14 right time. It is in the UK context rather unusual in that it  
 15 has taken the views of at least some mainstream class  
 16 teachers into account, and used their critiques in its  
 17 formation. No cost implications have been as yet  
 18 considered, although the model does allow head teachers  
 19 and SLT managers to compute the staff time involved per  
 20 child, and therefore the resources required. And although  
 21 the model is being used in some schools and services, in  
 22 whole or in part, no controlled evaluation has as yet been  
 23 undertaken.

### 24 Conclusions

25 The studies reported asked specific questions, and used  
 26 standardised measures that only measure significant  
 27 language changes. However, they do suggest that  
 28 expressive language learning is possible, and provide a  
 29 baseline against which changes may be measured by other  
 30 studies. The studies combined suggest that school-based  
 31 ‘consultancy’ models need to be carefully monitored and  
 32 evaluated, with their outcomes measured, to ensure that  
 33 children are receiving optimal language-learning  
 34 experiences. This is an important role for both SLT services  
 35 and school management teams. Monitoring the amount of  
 36 time children actually spend on tailored language-learning  
 37 activities would appear to be one essential component.

38 When a child with severe and persisting language  
 39 impairment is educated in a mainstream school, the aim is  
 40 not to include them in their local class to sink or swim. The  
 41 aim is to provide an appropriately differentiated learning  
 42 experience, adapted to their needs. Education staff, SLTs  
 43 and families would hope to work together effectively so that  
 44 the classroom becomes an enabling environment and that  
 45 specific features of language are taught to the child.

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It may be that insufficient differentiation is currently taking  
 place, as language outcomes from school-delivered  
 approaches proved less effective than those achieved by  
 systematic and sustained language teaching outside the  
 classroom. If so, schools and SLTs have a particular role to  
 play in considering the experiences they are offering a child  
 with persisting impairment, and how their joint endeavours  
 may best be targeted.

This paper has also attempted to track a path through  
 difficulties. The expertise of teachers and SLTs has been  
 used to create a viable language support model that offers  
 language development opportunities to children with  
 persisting impairments, but nonetheless respects the  
 ecology of the mainstream primary classroom. It is hoped  
 that this model will help to create language learning that is  
 sustainable, and thus will have a positive impact upon the  
 opportunities offered to children with persistent language  
 impairments.

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Leave unchanged	... under matter to remain	Ⓜ
Insert in text the matter indicated in the margin	^	New matter followed by ^ or ^Ⓜ
Delete	/ through single character, rule or underline or   through all characters to be deleted	Ⓜ or ⓂⓂ
Substitute character or substitute part of one or more word(s)	/ through letter or   through characters	new character/ or new characters/
Change to italics	— under matter to be changed	↵
Change to capitals	≡ under matter to be changed	≡
Change to small capitals	== under matter to be changed	==
Change to bold type	~ under matter to be changed	~
Change to bold italic	≈ under matter to be changed	≈
Change to lower case	Encircle matter to be changed	⊖
Change italic to upright type	(As above)	⊕
Change bold to non-bold type	(As above)	⊖
Insert 'superior' character	/ through character or ^ where required	Y or X or Ẏ or Ẋ e.g. or
Insert 'inferior' character	(As above)	over ^ character e.g. under character
Insert full stop	(As above)	·
Insert comma	(As above)	˘
Insert single quotation marks	(As above)	Y OR X and/or OR Ẏ OR Ẋ and/or
Insert double quotation marks	(As above)	Y OR X and/or OR Ẏ OR Ẋ and/or
Insert hyphen	(As above)	—
Start new paragraph	↪	↪
No new paragraph	└	└
Transpose	⊖	⊖
Close up	linking characters	Y
Insert or substitute space	^ through character or   where required	↑
Reduce space between characters or words	between characters or words affected	