

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.

The RCT

SLT services are encouraged to adopt a skill-mix model of
 service delivery where professionals carry out those aspects
 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 ≤ 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 ≤ 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 ¹ (SD)	
	CELF-3UK Receptive	CELF-3UK Expressive	CELF-3UK Receptive	CELF-3UK 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)

¹ 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 though
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 difficult.’ (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.

57 *Planning communication partners and opportunities* 58 *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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