

# The mainstream primary classroom as a language-learning environment for children with severe and persistent language impairment – implications of recent language intervention research

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**Many UK children with severe and persistent language impairment (SLI) attend local mainstream schools. Although this should provide an excellent language-learning environment, opportunities may be limited by difficulties in sustaining time-consuming, child-specific learning activities; restricted co-professional working, and the complex classroom environment.**

**Two language intervention studies in mainstream Scottish primary schools showed children with SLI receiving intervention from speech and language therapists (SLTs) or their assistants made more progress in expressive language than similar children receiving intervention from education staff. Potential reasons for this difference are sought in the amount of tailored language-learning activity undertaken; how actively school staff initiated contact with SLTs; and the language demands of the classroom. Tailored language learning appears to be a differentiating factor.**

**A language support model, reflecting views of teachers and SLTs about encouraging language development for children with SLI within the ecology of the mainstream primary classroom, is also outlined.**

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.

Relevant policies, specific curriculum guidance and co-professional working models are therefore in place to ensure that the primary classroom environment maximises language-learning opportunities for children with difficulties, and promotes generalisation and use of their developing language skills. However, the recent Bercow review of services for children and young people with speech, language and communication needs in England (DCSF, 2008, p. 61) found unacceptable variation and lack of

equity in the provision offered to such children, despite many examples of good practice.

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

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

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

### Recent language intervention research

The two studies were carried out in Scotland with the aim of developing the language skills of children with persisting language impairment: a randomised controlled trial (RCT) (Boyle, McCartney, Forbes et al., 2007) and a cohort study (McCartney, Boyle, Ellis 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-3<sup>UK</sup>) using the adjusted norms 2003, a standardised test of language understanding and use (Semel, Wiig and 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, McCartney, Forbes et al., 2007; Boyle, McCartney, O'Hare et al., 2009a in press; McCartney, Boyle, Ellis 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-3<sup>UK</sup> 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, Marshall, Boyle 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 [http://www.strath.ac.uk/media/departments/eps/docs/slt/tr/media\\_100682\\_en.pdf](http://www.strath.ac.uk/media/departments/eps/docs/slt/tr/media_100682_en.pdf).

A total of 161 children were randomly allocated and 152 children completed all pre- and post-therapy assessments. There was 'blind' assessment of outcomes by SLTs not

otherwise involved in the project who did not know which mode of therapy a child had undertaken. This ensured an unbiased evaluation of progress.

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

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

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

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

### **RCT results**

Full statistical analysis of results appears in Boyle, McCartney, Forbes et al. (2007), and only main the points are reviewed here. All four research intervention modes were acceptable to parents, teachers and project SLTs and SLTAs. Quantitative results showed no difference in language scores amongst the four research intervention modes (SLT individual; SLTA individual; SLT group; SLTA group), but did show benefits in expressive language as measured by the CELF-3<sup>UK</sup> 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, McCartney, O’Hare 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.

### **The cohort study**

The RCT used an ‘extract’ model of intervention for the four SLT- and SLTA-led modes, with the researcher going 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, Lindsay, Peacey 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-3<sup>UK</sup> 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.

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

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

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

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

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

### Cohort study results

Results were again measured by the CELF 3<sup>UK</sup>, and by surveys of the views of education staff, parents and participating children. Assessment was after about 16 weeks of intervention. It was carried out by SLTs not otherwise involved in the project who had not previously met the children, but who could not of course be blind to their participation in intervention. Analysis of their CELF 3<sup>UK</sup> 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 3<sup>UK</sup> 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-3<sup>UK</sup>) 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-3 <sup>UK</sup> receptive	CELF-3 <sup>UK</sup> expressive	CELF-3 <sup>UK</sup> receptive	CELF-3 <sup>UK</sup> 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 3<sup>UK</sup> 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 for three sets of children using classroom-based approaches support this interpretation: the control children during the RCT research intervention period; RCT children by follow-up 1 year after research intervention had ceased, and children in the cohort study.

## Why might this be?

### *Time spent on tailored language activities*

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

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

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

*‘More time!! – finding time was very difficult.’ (Teacher)*

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

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

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

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

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

Another possible factor that may relate to different outcomes could be the amount and type of contact between schools and the research teams. Assuming co-professional contact is important, as implied by current policies, if the two studies differed greatly in the amount of contact 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.

Much more evidence is needed about education professionals’ understandings of shared responsibilities and ownership of the problems of managing language learning for children with persisting impairments. These children

appear to be a group of learners who are trapped in the language demands of mainstream schooling. They were recognised (at least in the cohort study) as having difficulties in accessing the literacy curriculum, but despite prioritising their language needs in the research study, could not receive the continuing, focused language support they needed in sufficient quantity. If we are to plan appropriate intervention policies and strategies, we need further to consider the wider management and practices that affect their learning context.

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

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

#### **The LTS template**

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

#### *Enhancing the physical environment*

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

This is clearly desirable, but good visual and listening conditions may be difficult to contrive. Shield and Dockrell (2004) investigated 142 London primary schools, and 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 finished. 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 finished 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, Fujiki, Montague 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 social and behavioural profiles of language-impaired children influenced their ability to work

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

#### *Planning topics*

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

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

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

#### *Offering visual support and demonstration*

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

This advice is supported by, for example, the findings of Best, Dockrell and Braisby (2006), who suggest that combining visual illustration and pointing together with semantic information helped typically-developing school entrants to acquire fuller understanding of adjectives new to them compared with presenting verbal information alone. The primary classroom is of course characterised by the presence of illustrated books and pictorial materials, visual support and 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 need to change. However, research on teacher talk suggests

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

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

#### *Teacher communication: non-verbal and paralinguistic*

Teachers should make eye contact and ensure their own positive body language and positioning [8]. Provide natural spoken language for the child to hear and experience without speaking louder or more slowly or using exaggerated speech and lip patterns [9]. Maximise use of natural gesture, pointing, facial expression, body language and other visual clues [10]. Talk only when not facing and writing on the blackboard [17]. Teachers should limit their own movements around the classroom when talking to the whole group or class [18] LTS (2000, p. 23).

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

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

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

Such comments suggest that non-verbal and paralinguistic aspects of communication may become salient to some teachers, but these aspects of communication are as habitual as verbal aspects, and may be as difficult to identify or to change appropriately.

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

Although it is encouraging that teachers reported positive changes, the ‘cautionary’ research examples listed above 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 difficult 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 difficulties of making changes, the effects on the whole classroom, and the self-knowledge and professional commitment required must not be underestimated.

#### **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 and Boyle, 2006; McCartney, Ellis, Boyle et al., 2005).

Participants in the first 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 reflect 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 first phase.

The final 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>.



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

### Conclusions

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

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

It may be that insufficient differentiation is currently taking place, as language outcomes from school-delivered approaches proved less efficacious 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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