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The Quality in Education Centre

Evaluation of North Lanarkshire's Cooperative Learning Project

Final Report

April 2007

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Executive summary

This is the final report by the Quality in Education Centre (QIE) at the University of Strathclyde of an evaluation of the North Lanarkshire cooperative learning project. The project and the evaluation are funded as part of the Scottish Executive's Future Learning and Teaching (FLaT) Programme (<http://www.flatprojects.org.uk/>).

North Lanarkshire's cooperative learning project

Cooperative learning was introduced in North Lanarkshire in 2002 as part of a wider programme to raise aspirations and achievement and attainment (*Raising Achievement for All*, North Lanarkshire Education Department, 1998). The authority have made the commitment that all teachers and support staff will be trained in cooperative learning, if they wish, over a period of at least 5 years. Since the introduction of *A Curriculum for Excellence*, the authority has been emphasising the strengths of cooperative learning in supporting the development of the four capacities (successful learners, confident individuals, responsible citizens and effective contributors to society). They also believe that it provides a suitable medium for taking forward other national initiatives such as *Assessment is for Learning* and *Enterprise in Education*.

The five key aims of the cooperative learning project are to:

1. secure higher attainment in overall terms in line with the authority's strategy, *Raising Achievement for All*
2. address all national priorities by building social skills, developing citizenship and encouraging young people to be actively involved in their own learning
3. develop and promote the school as a "learning community" with a positive and inclusive ethos
4. increase teacher efficacy by adding to their toolkit of skills
5. increase pupil and teacher motivation.

The evaluation

The evaluation has five aims:

1. Describe the extent to which the five key aims of the North Lanarkshire cooperative learning Project have been met.
2. Identify strengths and any gaps in the support available to teachers using cooperative learning activities.
3. Assess the overall impact of the co-operative learning approach on teachers, pupils and parents in the study schools.
4. Identify any gender differences in relation to the impact of cooperative learning on pupils, including pupil attainment, social skills, participation and behaviour.
5. Establish conditions that support effective implementation and embedding of co-operative learning principles.

The evaluation activities took place in two stages: August 2004 to March 2005 and September 2006 to March 2007. The original invitation to tender had specified 5 schools, selected by the authority, 2 secondary and 3 primary, to be the focus of the evaluation activities, and these 5 schools were involved in both stages of the evaluation. In the second stage, the teacher sample was widened for the purposes of a teacher survey to gain the views of teachers from a wider range of schools. Data were gathered using both qualitative and quantitative methods including interviews, observations and surveys. Additionally local authority data in relation to attainment and attendance were obtained for the period 2001 to 2006; local authority evaluations of training events were also provided.

Cooperative learning

Cooperative learning has been extensively researched and it has been demonstrated that this method of delivering instruction and managing learning is an effective way to promote pupil learning, both in terms of academic achievement and social skill development. Different models of cooperative learning have emerged based on different underpinning theoretical assumptions. North Lanarkshire have

adopted Johnson & Johnson's social interdependence model, in which the 'dynamic whole' of groups is emphasised and through which 'promotive interaction' is encouraged.

For group work to be cooperative, certain key principles should be incorporated into the unit of learning. The social interdependence model of cooperative learning is built on 5 elements, all of which should be systematically structured into group learning situations: positive interdependence, promotive interaction, individual and group accountability, interpersonal and social skills and group processing.

Research has shown that where cooperative learning is promoted as a conceptual system as opposed to a series of strategies, it is likely to have a greater impact on achievement. This implies that cooperative learning needs to be implemented systematically, through rethinking learning and teaching and by using a conceptual framework to adapt lessons and activities into cooperative ones.

Implementation of cooperative learning in North Lanarkshire

Cooperative learning training for education staff in North Lanarkshire comprises a 3-day initial Academy and a range of ongoing support through Recall Days, twilight sessions, other focused training and an online resource through the authority's intranet. In addition, cooperative learning development officers are available for in-house support and development of resources.

Generally, the evaluation illustrated that the training and support provided by the authority is highly valued by participants. The Academy had provided them with useful strategies for managing cooperative group work and developing social skills in the classroom, although teachers reported finding some of the cooperative learning principles more challenging to implement. In particular, the principles of promotive interaction and group processing appeared to be implemented less effectively.

Networking with other teachers through Recall Days and in-house peer support is perceived to be a most helpful support mechanism and teachers emphasised that they would like more time for this. Whilst management recognise ongoing collegial support to be one of the 'best' conditions for promoting cooperative learning practice, they also feel that ensuring this happens can be a challenge.

In line with the literature and with respondents' views, other 'best' whole-school conditions include management commitment to a carefully planned, systematic implementation and whole-school use of cooperative learning practices. In the 5 schools selected by North Lanarkshire for the focus of the evaluation, these factors essential for facilitating and effectively developing cooperative learning are well addressed, but survey findings suggest there is room for development in this area in other schools across the authority.

The evaluation shows that there is potential for more priority to be given to continued professional dialogue. Revisiting the 5 principles of the model of cooperative learning adopted by North Lanarkshire and providing ongoing support in ways of including them on a regular basis would be beneficial and could be a focus for such networking sessions.

Impact of cooperative learning

The teachers who responded to the survey and the majority of those interviewed were positive about the effects of cooperative learning on their own teaching practice and their enthusiasm for teaching. They reported enhanced capacity through acquiring more teaching skills, better classroom management and a better knowledge of pupils.

The main benefits to pupils were reported in terms of social skill development, enhanced confidence, improved motivation and greater involvement in learning through the benefit of learning together. Less evident were the effects of promotive interaction, ie constructing knowledge and self-regulated learning via pupil and teacher dialogue. There is potential for greater emphasis to be given to this element, particularly as some of these features fit well with other initiatives such as formative assessment.

Cooperative learning appeared to be equally appreciated by boys and girls, with no substantial differences emerging in the data from pupils or in the views expressed in the focus groups.

The small sample of parents interviewed were positive about the benefits to the children from cooperative learning.

The perceived benefits with respect to cooperative learning enhancing the school community by encouraging a more inclusive and positive ethos were less reported than the benefits to teachers and pupils. This may be because, as was reported by the 5 schools that were the specific focus of the evaluation, the schools already had a positive and inclusive ethos which was reinforced through cooperative learning. However, a number of respondents to the survey indicated that cooperative learning approaches were not used in their school for wider school activities, suggesting that this is still a work in progress for some schools across the authority.

Discussion

This section discusses the findings in relation to the aims of the evaluation.

Aims 1 and 3:

Describe the extent to which the five key aims of the North Lanarkshire Co-operative Learning Project have been met and other benefits that might emerge from the evaluation

and

Assess the overall impact of the co-operative learning approach on teachers, pupils and parents in the study schools

On the whole, the evaluation findings show that the 5 schools selected for the focus of the evaluation are largely meeting the cooperative learning project aims. It has to be noted that the process of introducing change in secondary schools is more complex and therefore the implementation process needs to be carried out over a longer timescale.

In the 5 evaluation schools there was clear evidence of management commitment to cooperative learning and use of whole-school cooperative learning strategies throughout the school and in different contexts (eg for staff meetings, CPD etc). There were indications, however, that up to a third of respondents in schools authority-wide were not experiencing the benefits in a wider school context.

Teachers in the 5 schools were generally very positive about benefits to themselves in terms of developing new skills and improved motivation, although some felt that the approaches introduced through cooperative learning were not new.

They were also positive about the benefits to pupils in terms of encouraging better learning through pupils working together, the specific focus on social skills, and in pupils' motivation. Although important, there was less focus on raising attainment in terms of improved national assessment scores and examination results. It was considered that cooperative learning would contribute to these along with other measures.

The wider teacher survey also showed that the majority of respondents shared equally positive views, with an indication that cooperative learning approaches contribute to the development of the 4 capacities of *A Curriculum for Excellence*.

The evidence from the small number of parents who were interviewed showed that they were supportive of cooperative learning and some reported observing changes (for the better) in their children because of it.

Aim 2:

Identify strengths and any gaps in the support available to teachers using cooperative learning activities

Research illustrates that commitment to systematic training and support by authorities and schools leads to more effective implementation of cooperative learning. North Lanarkshire's commitment to provide training to all staff who are interested can therefore be seen as a strength.

Participants' views of the Academy training were very positive and many reported the benefits of attendance at Recall Days as they provided the opportunity to share experiences and learn from others. Continued professional dialogue was considered to be the most helpful support mechanism, with teachers emphasising they would like more time for networking and a number of respondents expressing the wish to attend (further) Recall Days. Whilst management recognise ongoing collegial support to be one of the 'best' conditions for promoting cooperative learning practice, they also feel that ensuring this happens can be a challenge. This indicates that there is potential for this area of ongoing collegial support to be further developed.

In relation both to training and observed practice, the aspect of promotive interaction which focuses on engaging in discussion and dialogue was given less emphasis, and the practice of group processing, which should engage pupils in reflective and constructive conversations, was weaker. The literature indicates not only that this is one of the most important aspects in helping learners to construct knowledge and gain understanding, but also that teachers find it more difficult to implement. Teachers benefit from additional training in monitoring the work of the groups, certain communication techniques such as appropriate questioning, and helping pupils ask questions for themselves. More emphasis on these aspects during cooperative learning training and ongoing support would be beneficial.

Aim 4:

Identify any gender differences in relation to the impact of co-operative learning on pupils, including pupil attainment, social skills, participation and behaviour.

Cooperative learning appeared to be equally appreciated by boys and girls, with no substantial differences emerging in the data from pupils or in the views expressed in focus groups. At the transition stage, girls were more likely than boys to say that some of the social skills had helped them when they moved to high school, but that may reflect more on what is important to them at transition rather than on cooperative learning. In data collected in 2004, boys were more likely to say that they looked forward to cooperative learning than girls and that it helped them do better at school.

Aim 5:

Establish conditions that support effective implementation and embedding of co-operative learning principles.

Conditions that support effective implementation and embedding of cooperative learning principles are those that support the introduction of any initiative or change in school contexts. The research and literature on this topic are extensive; however, 4 key factors are highlighted by Priestley and Sime (2005) and are as follows: proactive leadership, professional trust, creation of spaces for collaboration and starting small. These factors parallel the 'best' school conditions suggested by school management for the implementation and embedding of cooperative learning and can be summarised as follows:

- weight of authority commitment and links to underlying philosophy supported by policy
- proactive and committed leadership in schools
- teachers engaged by effective strategies which are seen as beneficial in the classroom
- initial training and ongoing development which engage teachers with underlying theories and principles and lead them to develop 'a conceptual system and use it to adapt current lessons and activities into cooperative ones' (Johnson *et al*, 2000)
- collaborative spaces and networking which allows teachers to share ideas and learn together.

1. Introduction

This is the final report by the Quality in Education Centre (QIE) at the University of Strathclyde of an evaluation of the North Lanarkshire cooperative learning project. The evaluation was conducted in two stages: August 2004 to March 2005 and September 2006 to March 2007. The project and the evaluation are funded as part of the Scottish Executive's Future Learning and Teaching (FLaT) Programme (<http://www.flatprojects.org.uk/>). This introduction outlines the aims of North Lanarkshire's cooperative learning project, the evaluation aims and methods and the structure of the report.

1.1 The aims of North Lanarkshire's cooperative learning project

The background to the introduction of cooperative learning in North Lanarkshire is reported below (section 2.2, p 6). It is part of a wider programme developed to raise aspirations, achievement and attainment in North Lanarkshire (*Raising Achievement for All*, North Lanarkshire Education Department, 1998).

The five key aims of the project are to:

1. secure higher attainment in overall terms in line with the authority's strategy, *Raising Achievement for All*
2. address all national priorities by building social skills, developing citizenship and encouraging young people to be actively involved in their own learning
3. develop and promote the school as a "learning community" with a positive and inclusive ethos
4. increase teacher efficacy by adding to their toolkit of skills
5. increase pupil and teacher motivation.

1.2 The aims and design of the evaluation

The evaluation has five aims:

1. Describe the extent to which the five key aims of the North Lanarkshire Cooperative Learning Project have been met in terms of improvements in the following areas, and in terms of other benefits that might emerge from the evaluation:
 - attainment, as described in the authority's strategy, *Raising Achievement for All*
 - attendance
 - pupils' social interaction skills
 - collaborative planning (pupils and teachers)
 - citizenship understandings
 - self-regulation of learning
 - teachers' efficacy in creating effective learning and teaching environments through expanding their repertoire of understandings and skills
 - indicators of a 'learning community'
 - motivation (pupil and teacher)
 - strategies used by pupils to manage the primary to secondary school transition.
2. Identify strengths and any gaps in the support available to teachers using cooperative learning activities.
3. Assess the overall impact of the cooperative learning approach on teachers, pupils and parents in the study schools.
4. Identify any gender differences in relation to the impact of cooperative learning on pupils, including pupil attainment, social skills, participation and behaviour.
5. Establish conditions that support effective implementation and embedding of cooperative learning principles.

Evaluation design

The evaluation activities took place in two stages: August 2004 to March 2005 and September 2006 to March 2007. The original invitation to tender had specified 5 schools, selected by the authority, 2 secondary and 3 primary, to be the focus of the evaluation activities, and these 5 schools were involved in both stages of the evaluation. In the second stage, the teacher sample was widened for the purposes of a teacher survey to gain the views of teachers from a wider range of schools. Data were gathered using both qualitative and quantitative methods including interviews, observation and surveys. Additionally, local authority data in relation to attainment and attendance were obtained for the period 2001 to 2006; local authority evaluations of training events were also provided. The data collection is summarised in Table 1.1

Table 1.1 Data collection for evaluation of NL cooperative learning project

| Stage 1 | | Stage 2 | |
|----------------|---|---------------------|---|
| Date | | Date | |
| June 2004 | Interviews with key local authority staff for context setting | Oct 2006 | Interviews with key local authority staff re ongoing developments |
| June 2004 | Interviews with headteachers (or depute headteachers) in 5 schools | Dec 2006 | Interviews with 8 senior management in 5 schools |
| Sept-Oct 2004 | Survey of teachers who had received cooperative learning training in 5 schools | Feb 2007 | Survey of teachers from 80 schools. All teachers who had been trained were invited to participate |
| Sept-Oct 2004 | Survey of a sample of primary and secondary pupils who had experienced cooperative learning | Jan 2007 | Survey of all S1 pupils in both secondary schools with a particular focus on transition |
| Oct 2004 | Interviews with teachers: 8 primary and 10 secondary teachers | Dec 2006 - Jan 2007 | Interviews with teachers: 13 primary and 9 secondary teachers |
| Nov-Dec 2004 | Observation of 20 lessons across the 5 schools | Dec 2006 - Jan 2007 | Observation of 9 lessons across the 5 schools |
| February 2005 | 12 pupil focus groups were carried out with pupils in the 5 schools | Dec 2006 - Jan 2007 | 7 focus groups with pupils in the 5 schools |
| | | Jan-Feb 2007 | Telephone interviews with parents |
| | | Feb 2007 | Three case studies with a focus on management and change, pupil leadership, and pupils with special needs |

This report focuses mainly on the findings from stage 2 of the evaluation, but where appropriate draws on data from stage 1.

Note on samples

Details of the survey samples are included in the appendices.

Teacher survey

The authority indicated that the following numbers of teachers had completed the 3-day Academy:

- Primary teachers 1026
- Secondary teachers 595
- Special school teachers 65
- Nursery teachers 5

A circular was sent to all schools with teachers trained in cooperative learning requesting teachers to complete the questionnaire: 207 responses were received as follows:

| | n | % of sample | % of CL trained teachers |
|-------------------|-----|-------------|--------------------------|
| • Nursery | 5 | 2% | 100% |
| • Primary | 99 | 48% | 10% |
| • Secondary | 90 | 43% | 15% |
| • Special schools | 13 | 7% | 20% |
| • Total | 207 | 100% | 12% |

To obtain a representative sample of each group, responses would be required from about 300 primary, 250 secondary and as many of the special school teachers as possible. This return, therefore, gives an indication of the views of teachers in North Lanarkshire who have received training in cooperative learning, but it cannot be taken as a truly representative sample. While there is nothing to suggest that it is unrepresentative, self-selection may mean that the more committed have chosen to respond.

Pupil surveys

The survey in December 2006 received 404 responses: from 205 boys (51%) and 199 girls (49%). There were 226 pupils (56%) from one school and 178 (44%) from the other. The whole year group was selected to ensure views on transition were captured across the associated school groups.

The survey in September/October 2004 received 459 responses: 214 primary and 245 secondary pupils. The primary pupils were from the following classes: P4 – 69 (32%); P6 – 66 (31%); P7 – 79 (37%). There were 112 boys (52%) and 102 girls (48%). The secondary pupils were from the following year groups: S1 – 97 (40%); S3 – 87 (35%); S5/6 – 61 (25%). There were 124 boys (51%) and 118 girls (48%).

1.3 Organisation of the report

Section 2 provides a brief introduction to cooperative learning drawing on a range of literature and reviews different approaches and theoretical underpinnings of cooperative learning. A brief explanation of the model adopted by North Lanarkshire is given. Section 2 also provides a brief narrative of the history of cooperative learning in North Lanarkshire.

Section 3 reports the findings of the research in relation to issues of implementation, including training and support (evaluation aim 2), school strategies for implementation, teachers' perceptions of the process of introducing cooperative learning and supportive school environments (relating to evaluation aim 5).

Section 4 reports on teachers' perceptions of the impact of cooperative learning on their own professional development and motivation. The findings from teachers, pupils and parents in relation to the impact in terms of pupil attainment, achievement, learning, social development and motivation are reported (evidence relating to evaluation aims 1, 3 and 4).

Section 5 discusses the findings in relation to the aims of the evaluation. Where appropriate, discussion is linked to relevant findings reported in published research.

Summaries or short extracts of data are used to support the findings presented in the report. Full data from the surveys and reports of the interviews and observations are provided in the separate Appendices document.

2. Cooperative learning

This section presents an overview of literature on cooperative learning and the background to the introduction of cooperative learning in North Lanarkshire.

2.1 Models and principles of cooperative learning

Cooperative learning is the term applied to a well documented approach to delivering instruction and managing learning in educational environments. It has been extensively researched and it has been demonstrated that it is an effective method for promoting pupil learning and academic achievement and developing social skills and relationships, particularly compared to whole-class approaches and individual working (Slavin, 1995 and 1996; Cohen, 1994; Johnson & Johnson, 1989). Reported benefits for the learner include academic gains, enhanced competence and self esteem, development of positive social relationships and interpersonal skills, increased motivation to learn, development of strategies to manage conflict and the use of sophisticated dialogue (Gillies & Boyle, 2005).

The term is applied broadly to a variety of methods and strategies in which learners are placed in small groups to help one another learn academic content; however, a major issue is that not all group work is cooperative and cooperative learning should encompass key principles. Research has shown that, in group work, pupils very often help each other with individual tasks or work and achieve alone within the group setting, in other words they work 'in' groups rather than 'as' groups (Veenman *et al*, 2000, p285). It is also acknowledged that principles of cooperative learning may be incorporated in managing learning contexts without the term cooperative learning necessarily being used.

Theoretical principles

Different models of cooperative learning have emerged based on different underpinning theoretical assumptions. Debate has existed between the supporters of different theoretical positions, though key proponents of cooperative learning would argue for approaches which integrate different theoretical perspectives (Slavin, 1996; Johnson, 1994). Slavin (1996) identifies 4 major theoretical perspectives – motivational, social cohesion, developmental and cognitive elaboration. Johnson and Johnson (2006) identify theoretical roots of cooperative learning in 3 fields – social interdependence, cognitive development and behavioural theories.

- The motivational and behavioural perspectives are related, in that the focus is on the reward or goal structures. Individual success is dependent on group success and this provides motivational incentive to work together to help each others' learning.
- Social cohesion or social interdependence further enhance motivation through building relationships. Teambuilding is important as preparation for cooperative working and group self-evaluation is emphasised.
- Johnson and Johnson encompass under the one heading of 'cognitive development' Slavin's 'developmental' and 'cognitive elaboration' perspectives. These have their roots in Piagetian and Vygotskian theories. The emphasis is that verbal interactions between learners will enhance learning and increase achievement through mental processing and knowledge construction as opposed to motivational or social goals. Theorists distinguish between Piagetian and Vygostkian approaches – but space does not permit us to pursue this here (see Slavin, 1996 and Vedder & Veendrick, 2003). Research has shown that the quality of pupil talk in groups and their ability to explain, to challenge and to elaborate their ideas is essential to improving learning and, therefore, cognitive development is a key purpose of cooperative learning (Gillies, 2004, citing Webb, 1992 and Webb & Farivar, 1994).

Various techniques and approaches have been developed and promoted as ways of implementing cooperative learning, with different emphases being placed on rewards and types of rewards, the nature of the task, the formation of groups (heterogeneous as opposed to homogenous), with research being carried out to investigate what works most effectively and which pupils gain most. For an overview of particular methods or techniques, refer to Slavin and Cooper (1999) and Johnson *et al* (2000).

Effectiveness of cooperative learning

Johnson *et al* (2000) have undertaken a meta-analysis of research into 8 such methods or techniques of cooperative learning and their impact on achievement. One key finding was that all cooperative learning methods studied produced significantly higher achievement than competitive or individualistic approaches. The conclusion is that teachers can confidently and 'comfortably' use cooperative learning on the basis of research evidence.

However, another important part of their analyses and findings related to different ways of implementing cooperative learning. They state:

'Among the researcher-developers of cooperative learning, there are those who believe that the best way to ensure implementation of cooperative learning is to devise very specific techniques that teachers can learn in a few minutes and apply immediately (direct approach) and those who believe that teachers must learn a conceptual system and use it to adapt current lessons and activities into cooperative ones (conceptual approach) (Johnson et al, 2000).

Their analysis indicated that the *'more conceptual the method of cooperative learning, the greater its impact on achievement tends to be'*. This implies taking a systematic approach which helps teachers rethink learning and teaching and provides a framework for development as opposed to introducing a few new strategies.

However, Leat and Higgins (2002) identify 'powerful pedagogical strategies' as a way of engaging teachers in making changes to their classroom practice. A key feature of such strategies is that they provide 'practical and manageable steps that can be undertaken by professional teachers in the course of their work' (p72). Curriculum development and change is more likely to be effective when teachers are engaged in developments which they see as manageable and over which they feel they have control. They can then see themselves as agents of change in improving the learning opportunities for their pupils, rather than as objects to be changed. There appears, therefore, to be value in training which includes strategies that teachers can use with immediate effect, but these need to be learned and developed in the context of conceptual and theoretical underpinnings.

According to Cohen (1994), in order to employ cooperative learning strategies, teachers need access to professional development that includes: (1) the theory and philosophy of cooperative learning; (2) demonstrations of cooperative learning methods; and (3) ongoing and collegial support at the classroom level.

Both Slavin and Johnson & Johnson have developed frameworks for whole-school development with cooperative learning at the heart of them. As the Johnson & Johnson approach of 'Learning Together' and the 'Cooperative School' (Johnson & Johnson, 1994) is the one adopted by North Lanarkshire, it will be explained more fully here. It was also used as one focus for the evaluation and for reporting. We simply note Slavin's 'Success for All', which seeks to provide a means for whole-school reform based on cooperative learning (in particular team recognition and individual accountability), with a focus on reading and literacy (see <http://www.successforall.net/about/index.htm>).

Social interdependence model

Johnson & Johnson have developed their model on theories of social interdependence, emphasising the 'dynamic whole' of groups which encourages 'promotive interaction' as opposed to 'oppositional interaction' (competition) and 'no interaction' (individualistic) (Johnson & Johnson, 2006). They promote the benefits of both competitive and individual learning as well as cooperative learning, and emphasise the importance of all being included within the classroom and school environment. However, they recommend that the majority of time be given to cooperative learning (Johnson & Johnson, 1994). Social interdependence and promotive interaction focus on the goals of social cohesion and its benefits; these include cognitive development and elaboration and the social construction of knowledge.

This approach to cooperative learning is built on 5 principles or elements, all of which should be systematically structured into group learning situations. These are, briefly:

Positive interdependence: This means that pupils see themselves linked to others in the group in such a way that they cannot succeed unless everyone in the group succeeds. They therefore have to work in a way that promotes the learning of all members of the group. This depends on having a shared goal (goal interdependence). Role interdependence is of particular importance: members are assigned complementary roles, all of which are required to complete the task. Roles can be allocated to suit the level of ability and skill of pupils in mixed-ability groups to ensure successful contributions, or they can be assigned to specifically encourage the development of new skills. Examples of roles commonly given are reader, writer, checker, time-keeper, noise-monitor, resource manager and reporter. Interdependence can be built around other aspects, for example, rewards and resources, ie shared rewards, or each member has resources and the task cannot be completed without all the resources.

Promotive interaction (face-to-face): This encompasses both the provision of social support to each other (as emphasised in the interpersonal and small group skills element) and the promotion of each others' learning through engaging in dialogue, questioning, constructive arguing, explaining and teaching each other. Through working cooperatively, pupils should learn and practise skills for working together in a positive way and also develop thinking and learning skills. Tasks should build in opportunities to practise these skills.

Individual and group accountability: The group is jointly responsible for meeting its goals, but each individual is responsible for his or her share of the work. Individual accountability may be through asking any one member to respond on behalf of the group or by assessment of individual work. Both types of accountability need to be structured in for cooperative learning to be effective; individuals need to know that they are required to learn and not just be dependent on others in the group (no 'free rides' or 'social loafing').

Interpersonal and small group skills: Social skills need to be taught explicitly. Social skills objectives and success criteria for each lesson need to be made clear. These are introduced progressively through stages of schooling and can be very basic – for example, being polite and saying 'please' and 'thank you' – through to complex negotiation, conflict resolution and decision-making skills.

Group processing: Group processing is when group members reflect on how well they are achieving their goals and maintaining effective working relationships. They need to identify both what is helpful and unhelpful as they work together.

Further research on effective implementation

Proponents of cooperative learning emphasise that success is not guaranteed. Weak implementation will lead to weak outcomes. In that respect further findings from research are worth noting. Summary conclusions only are presented here; some detail of the studies is given in Appendix K.

The findings of an experimental study with 223 junior high students (Gillies, 2004) emphasised the importance of implementing all aspects of the cooperative learning model and of schools' commitment to ensuring that teachers have adequate professional development and support to implement it. Implementation in an *ad hoc* fashion was found to be less successful.

Three further research reports emphasise the importance of the role of the teacher and the quality of the teachers' interactions with the learners in cooperative learning situations, in particular the quality of the dialogue that takes place between teacher and pupils and pupils and pupils; they suggest that this is one aspect of cooperative learning which is more difficult to implement and that a particular focus on this in both training and ongoing support can be beneficial (Hijzen *et al*, 2006; Gillies & Boyle, 2005; Veenman *et al*, 2000).

2.2 Cooperative learning in North Lanarkshire

The introduction of cooperative learning is part of North Lanarkshire's *Raising Achievement for All* strategy, which was drawn up and published in 1998 after a review of ways in which the link between deprivation and underachievement could be countered. At that time, North Lanarkshire was rated as the second most deprived authority in Scotland and a working group had been set up in 1996 to arrive

at an inclusive and overarching policy through which a curriculum and services would be offered which would enable all children, young people and adults to function to their full capabilities, irrespective of socioeconomic background, gender, race or levels of (dis)ability.

The aims of this policy were first and foremost to (re)define achievement to cover sports, arts and music and to focus on a wider set of achievements than academic success, in order to include and empower everyone and to provide an education 'fit for purpose'. In formulating this wider definition of achievement, research was drawn on which included Gardner's 'multiple intelligences' theory, Goleman's 'emotional intelligence' theory, Buzan's mind-mapping research and findings illustrating that emotional wellbeing qualities (self-esteem, motivation, determination and high aspiration) are 'more likely to be positively associated with success than cognitive abilities' (North Lanarkshire Education Department, 1998, p3).

As part of the *Raising Achievement for All* policy, input, experiential and outcome targets were set for broad age ranges in the education system (early years, primary and secondary). Input targets reflected the authority's commitment to maintaining or enhancing resources to reduce inequalities between those from an advantaged background and those at risk from social and economic deprivation. In this light, the importance of cross-sectoral training for (teaching) staff was recognised in order to raise achievement throughout all sectors and services. Ways in which teachers could be supported to improve learning and teaching in the classroom and how underachievement could be tackled were investigated.

Links were made with Durham County, Ontario, Canada, where young people face levels of economic and social disadvantage similar to those in North Lanarkshire. Representatives from North Lanarkshire Council and Durham County met when in 1996 the Bertelsmann Prize¹ was won by Durham County for their use of cooperative learning to improve life chances for pupils and teaching staff. North Lanarkshire, through St Aidan's High School, was also one of the nominated authorities for this prize for innovative work. From this initial contact, the relationship between North Lanarkshire and Durham was further developed and a number of North Lanarkshire officers visited Durham in 2001 to explore cooperative learning. Having seen the impact of cooperative learning in Durham County, cooperative learning was chosen as one of the ways to address the aims of the overarching *Raising Achievement for All* policy.

The first training Academy in North Lanarkshire was arranged in the summer of 2002, delivered by Canadian trainers, and from then on training and further support has been delivered on an ongoing basis. Chris Ward, one of the Canadian trainers, had the opportunity to be seconded from her post of Superintendent of Education for the Durham District School Board in Ontario to be Cooperative Learning Trainer and Coordinator in North Lanarkshire for a period of 2 years. The Canadian trainers have extensive experience with cooperative learning. Durham District School Board's journey with cooperative learning began in 1988 when Durham County school district joined with four other school districts and the Ontario Institute for Studies & Education and the University of Toronto to form a consortium looking at instructional strategies.

Chris Ward's secondment has helped accelerate the pace of the roll-out of cooperative learning in North Lanarkshire and has helped the Council to become self-sustaining in terms of delivery and support. In order to complete the roll-out and to enable continuation of back-up and support in schools, six development officers were appointed in 2006 following the earlier secondment of two development officers in 2005. Local development officers will eventually take over the training role.

North Lanarkshire Council have made the commitment that every teacher and also other support staff (for example, librarians, community learning and development workers,) will be trained if they wish to be trained over a period of at least 5 years.

Since the introduction of *A Curriculum for Excellence*, the authority has been emphasising the strengths of cooperative learning in supporting the development of its four capacities.

¹ For information on the Bertelsmann Foundation see <http://www.bertelsmann-stiftung.de/>

North Lanarkshire education authority officers state that they are committed to 'rolling out' the social interdependence model of cooperative learning to all staff. They believe that cooperative learning is the best way to enable all young people to become successful learners, confident individuals, responsible citizens and effective contributors, and that it creates the ideal medium for taking forward other national initiatives such as *Assessment is for Learning*, *Enterprise in Education* and *A Curriculum for Excellence*.

3. Implementing cooperative learning

This section reviews issues related to implementing cooperative learning, including: users' perceptions of the training and support; school approaches to implementing and monitoring cooperative learning; teachers and their development of cooperative learning practices; the challenges faced by schools and teachers; and participants' views on the best school conditions for introducing cooperative learning. The findings are drawn from interview, survey and case study data. More detailed reports of each of these are contained in the appendices to the report.

3.1 Training and support

As noted in section 2, North Lanarkshire education authority was committed to offering training to all education staff who wanted to participate over a period of at least 5 years commencing in 2002. This involved not only providing initial 3-day Academy training but also a range of ongoing support through Recall Days, twilight sessions, other focused training and the introduction of an online resource through the authority intranet using First Class software. The appointment of development officers was an important step in taking forward cooperative learning in the authority.

The five schools that were the main focus of this study had made a commitment at the outset to train all staff, which meant a commitment to dedicate staff development budgets for this purpose. Clearly, this is a longer term commitment for the secondary than for the primary schools. In the 3 primary schools all core staff had been trained and it was envisaged that training for new staff could be met within budgets. It was reported that staff were trained gradually and that they introduced cooperative learning gradually to their classes in ways in which they felt comfortable.

In one secondary the strategy had involved both sending teachers on the Academies and Recall Days and introducing staff to cooperative learning through in-house training. (In this school involvement in cooperative learning had preceded the development of the authority programme and therefore staff had been trained via other training programmes.) Two members of staff had completed the training for trainers course and, although one was on secondment to the authority at the time of the study, their role was to give short input about cooperative learning during in-service days, and within their timetables they had been allocated time to work with other departments, to team teach and to support cooperative learning developments. The view was expressed by teachers and one of the 'trainers' that, while in-house training was valuable as an introduction, it was preferable that people attended the Academy to gain a better understanding of the principles and the range of cooperative learning activities that could be used.

In the other secondary, after all senior management had been trained, there was a process of allowing interested staff to opt in and 'targeting' key staff through inviting them to attend, to ensure that all departments had staff who had attended the Academy and that in some departments all staff were trained. The preference in this school is for staff to attend the Academy and no in-house training in cooperative learning is delivered.

During interviews, school management and teachers all spoke very positively about the Academy training and the ongoing support for cooperative learning developments. Two of the primary headteachers stated that they felt they had not needed a lot of support but were confident that if they had needed it, it would have been there. All welcomed the appointment of the development officers, who were recognised for their own expertise as teachers. It was reported that they were coming into the school to work with more recently trained teachers and to see how cooperative learning was being delivered within the schools.

The questionnaire for teachers asked questions about the helpfulness of the Academy training, participation in other forms of training and support and how helpful each of these were found to be. Additionally, views were drawn from the local authority's evaluation forms completed by teachers after the Academies.

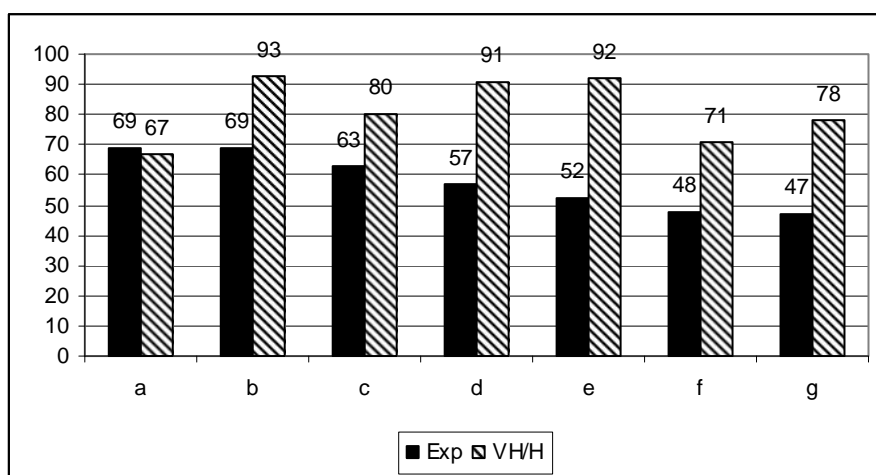
- Overall, 99% of respondents found the Academy training to be helpful or very helpful, with only one person selecting 'adequate'.

This is very much in line with responses derived from the local authority's own evaluation of the events, which indicated that 100% of participants thought the training was relevant and enjoyable. Feedback indicates that teachers enjoyed the interactive and participative nature of the training, with particular appreciation being expressed for the trainers in terms of interesting delivery, humour and the creation of a relaxed atmosphere. In addition to learning new strategies and techniques, participants emphasised that learning about the importance, power and value of groups and how to manage them effectively was particularly valuable. Teachers also reported that the training had taught them to recognise the importance of social skills and that these can be learned, and that they had learned ways of teaching them.

These views focus on aspects of training that, in Johnson and Johnson's definition (p5), relate to a 'direct' approach of specific strategies, as opposed to ways of helping pupil dialogue for the co-construction of knowledge, which the literature emphasises as being essential for effective learning (see Appendix K).

Teachers were asked to what extent they had experienced further training and support and how helpful they had found these. Chart 3.1 displays the responses. The black column represents the percentage of the whole sample that had experienced the activity; the striped column represents the percentage of those who had experienced it who thought it was helpful or very helpful. Therefore, while 69% of the sample said they had used the local authority intranet and First Class, 67% of these thought it was helpful or very helpful. Just over half had attended Recall Days, which 92% had found helpful or very helpful.

Chart 3.1: Participation in training and support activities and views on helpfulness of these activities



Key: a = LA intranet and First class
 b = networking with colleagues
 c = school meetings run using a cooperative learning approach
 d = using teacher produced materials
 e = Recall Days
 f = support from authority Development Officers
 g = in-house training

The most frequently reported forms of support were making use of the LA intranet and networking with colleagues. Almost two-thirds had experienced school meetings run in a cooperative way and the majority had shared other teacher produced materials. Just over half had participated in Recall Days. Almost half had worked with the authority development officers; and almost half had taken part in in-house training.

Overall, the majority of those who had experienced each kind of support found them helpful. The Recall Days were found to be beneficial by the majority, followed by those activities based in the school, ie networking with colleagues and using teacher produced materials.

When asked what further support would be helpful, around 30 of the respondents indicated they would like to attend the Recall Day and other in-service training. Given the lower percentage of respondents who had attended and the perceived benefits of these events, it should be highlighted as a priority for the authority and schools to facilitate this. The benefits of these linked to the opportunity to network with others and discuss both successes and problems of practice.

Teachers also indicated that they would like more time and opportunity to network with colleagues. When built into the implementation process within a school this was seen as particularly helpful, as in the case study of New Monklands Primary School (see Appendix J). Part of the networking process involved newly trained teachers working with more experienced teachers, joint planning of cooperative lessons and then reviewing them. Two of the other primary schools in the study had developed banks of lesson plans which were shared and reviewed during in-service days. As with all initiatives in schools, the opportunity to discuss successes and problems encountered is particularly valuable.

In the open comments section of the questionnaire, several teachers reported that the support of the development officers was extremely useful and ongoing support from them would be appreciated. At the time of the evaluation most of the development officers were in the early stages of their appointments and were seen to be having an effective role. As their roles develop they will be key in providing the support for networking and providing the professional dialogue and discussions which promote ongoing development.

Although the LA intranet had been reported as one of the most frequently accessed sources of support, it was found to be less helpful. This was in part due to the limited material available. During interviews in the schools it was emphasised that this was still in the early stages of development, but that there was potential for greater use of it and it was seen as a good forum for the sharing of lesson plans, ideas and experiences with colleagues in other schools.

3.2 School approaches to introducing and monitoring cooperative learning

In the two secondary schools that were the focus of this study, cooperative learning was a high priority in the development plan – it had been for some time and remained there. For one it was the ‘number one’ target within Learning and Teaching development priorities. In two of the primary schools it was no longer on the development plan as it was now considered to be embedded and on a maintenance programme; in the third it was still on the development plan.

In one of the secondary schools, every department had one person nominated with cooperative learning responsibility and they formed a committee to support cooperative learning developments within the school. In the other secondary school, management emphasised the importance of monitoring progress through faculty, departmental and individual review processes. This included reviewing who was trained in each department, plans for undertaking training and the extent to which cooperative learning was used in each department and where they are planning to use it in the coming term. There was classroom observation by senior management, both with and without prior warning ... *‘to check they are doing cooperative learning in the normal class, not a special show class’*. This was reportedly not seen as threatening as both teachers and pupils were keen to invite people in to see what they were doing. Interviews with teachers indicated that in some departments shared resources were being developed.

Interviews with primary school management highlighted a number of features used to promote cooperative learning. For example:

- in one school, in the first year they focused on social skills, then in the second year aimed to use it at least once a week in maths and language and thereafter to use it more widely in other areas
- in two of the schools teachers were asked to prepare lesson plans for cooperative learning lessons and these were kept for reference and sharing; in one school they were evaluated during in-service days. In the third school it was planned that during the current year teachers would begin to prepare a bank of lesson plans
- in 2 schools it was reported that teachers noted in forward planning when they were doing cooperative learning lessons and that the headteacher or principal teacher observed lessons on a regular basis

- one school emphasised the importance of having a whole-school programme with a plan for introducing progressively more difficult social skills across the different stages.

In the primary schools it was stated that effectiveness and impact was best monitored through observing the children working together and the changes in their behaviour and, in particular, their growth in confidence.

The management of all 5 schools reported that cooperative learning approaches were used in school management for activities such as staff meetings, board meetings and in-service days. One primary headteacher reported that a parents' event had been organised using some cooperative learning activities. This was reported as being successful, though teachers did indicate that some parents had expressed reservations about it.

In the survey, teachers were asked to indicate the extent to which they thought it was true of their school that cooperative learning approaches were used for example in staff meetings, planning meetings, for CPD. Sixty-one percent indicated that it was fairly to very true of their school (which is in line with the number who said they had experienced this in relation to training and support). However, overall 35% indicated that it was not true or only slightly true of their school, with 43% of secondary respondents stating this compared to 30% of primary respondents.

They were also asked to indicate the extent to which they thought it was true of their school that cooperative learning had enabled them to work more collaboratively with colleagues, either in their school or within their department (for secondary teachers): 36% indicated that it was not true or only slightly true of their school, with a higher proportion of secondary (50%) than primary (27%) respondents stating this.

Further investigation beyond the scope of the current work would need to be undertaken to explore the context of teachers' perceptions: for example, it is possible that in one secondary school teachers could represent the full extent of the scale from not true to very true, depending on departmental levels of involvement. It would appear, however, that in a number of schools represented by the survey respondents, the process of using cooperative learning as a whole-school strategy still needs to be promoted. Such whole-school use illustrates the commitment of the school management and may reinforce class use. The number of respondents indicating they are not experiencing more collaborative working may also suggest that the use of peer support and networking as a way of supporting developments needs to be promoted to a greater degree (though see section 3.4 below on the challenge of finding time).

3.3 Teacher approaches to implementation

'The training gave you ideas but the real learning took place as you tried to implement it in your classroom' (secondary teacher).

Feedback from the authority's own evaluations of the training suggested that at the end of the training teachers would have liked more specific, practical examples of how to 'get started' with their own pupils – at their age and stage and, for secondary teachers, subject specific ideas. Of the respondents to the survey, 8 indicated they had not yet started putting cooperative learning into practice in their classrooms. For most this was because they had just done the training and had not had time. However, one respondent who had been trained in 2005 indicated that *'despite training, I am still very unsure of how to actually go about selecting worthwhile activities to achieve maximum benefit from them. ... I do use a variety of group work ... but do not use the coop strategies as well as I should'*. This illustrates the point that the respondent has understood that orchestrating cooperative learning principles is complex but is finding it difficult to adopt the wider model as presented through the training. The authority is preparing a 'starter-pack' which may help teachers make this transition.

Once teachers get started, however, important questions are: how often are teachers using cooperative learning approaches and to what extent are they embedding the 5 cooperative learning principles? If we wish to examine the effects of using cooperative learning on teachers, pupils and the school community (section 4), it is important to know the extent of its use.

In the questionnaire, teachers were asked how often they used cooperative learning and how often they prepared a lesson or unit of learning that embedded all 5 cooperative learning principles. The responses of combined nursery and primary teachers and secondary teachers are given in Charts 3.2 and 3.3. There were only 13 special school/needs teachers who responded. They were more or less equally split on frequency of use of cooperative learning in general and on embedding the 5 principles.

Chart 3.2: Frequency of use of coop learning

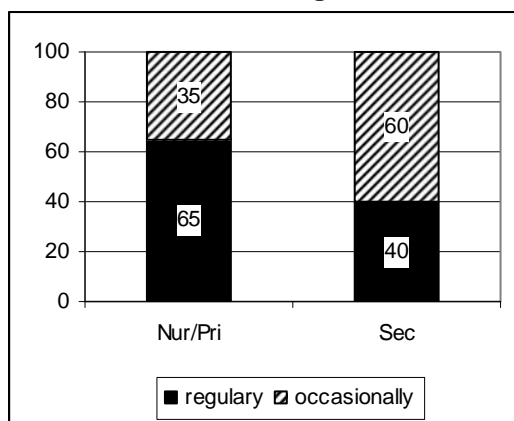
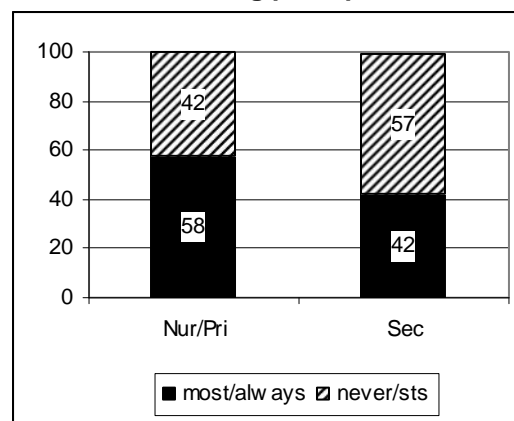


Chart 3.3: Frequency of embedding 5 coop learning principles



These figures are encouraging in that many practitioners indicated that cooperative learning was a regular feature of their classroom practice and around half reported that they were embedding all five principles most of the time.

They illustrate, however, that the primary respondents were more likely than secondary teachers to use cooperative learning on a regular basis and also more likely to embed all 5 principles most of the time when they were using cooperative learning. (Only 22 – about 10% of the sample – said they embedded the 5 principles **all** the time; 9 secondary teachers said they ‘never’ did this.)

A closer look at the secondary teachers who responded to the survey, in terms of subjects and classes they taught and the classes with which they used cooperative learning, showed that they used cooperative learning more frequently than not with their classes. (See Appendix G for more detail.) This suggests that in secondary schools where teachers are trained in cooperative learning they are more likely to use it than not with their classes, even if for some it is occasional rather than regular use.

It is interesting to note that a higher proportion of teachers who trained between 2002 and 2004 reported using cooperative learning regularly (primary = 84%; secondary = 66%) compared to those who trained later (primary = 56%; secondary = 31%) – possibly because they are reflecting over a longer period of time and have had more opportunity to use it, or that with use, practitioners use it more. Those who trained earlier were no more likely than those who trained later to indicate they embedded all 5 principles most of the time.

A question was asked about how challenging teachers found introducing elements of cooperative learning. The majority of respondents found introducing the principles of cooperative learning straightforward or very straightforward, though between a quarter and 45% found some aspects challenging. Sharing academic and social goals and providing opportunities for developing social skills provided the least level of challenge (with around a quarter finding these challenging). About a third found using team and group building challenging, while the more specific cooperative learning principles of individual accountability, group processing and positive interdependence provided the greatest challenges, with between 40% and 45% indicating these were challenging to develop and use.

Secondary teachers were more likely than primary teachers to indicate that some aspects were challenging, namely:

| | % challenging or very challenging | |
|--|-----------------------------------|---------|
| | secondary | primary |
| • sharing academic and social goals | 36% | 12% |
| • opportunities for developing social skills | 40% | 13% |
| • requiring individual accountability | 51% | 32% |
| • encouraging positive interdependence | 55% | 37% |

In the interviews with school management in both secondary schools, it was acknowledged that cooperative learning was used more in some departments than others; some departments were very committed and used it extensively, while others had some teachers that used it well. Both schools were focusing on progressing developments within departments.

One of the secondary managers took a particular view:

'Some of the teachers will take aspects of it, some of the strategies and that is good. However, if they are not using all 5 principles then they are not doing cooperative learning. I'll challenge them if they say they are doing cooperative learning and they have not introduced social skills or done group processing. Cooperative learning gives lots of different kinds of activities, different ways of doing tasks, but we want to ensure that all 5 elements are in as many lessons as possible, otherwise it isn't cooperative learning.'

One group of teachers in one of the secondary schools spoke unprompted about the 5 principles and the importance of including them for group work to be effective. An example was given by an art teacher who used 'a full-blown, meticulously planned and structured cooperative learning approach' for the theoretical and historical elements in the units of an arts course. As the course had 4 units, work would be undertaken in a fully cooperative way by the students on that course 4 times a year, each time over a series of lessons. Other teachers in the same school spoke of doing a cooperative learning lesson once a week with different classes, or about a quarter of the time. At other times they would use some cooperative learning activities.

In the primary schools it was reported by the headteachers that all core staff used it 'in some way' and that some teachers used it more than others. There were many aspects of cooperative learning which could be 'dipped into' which added to teachers' approaches to teaching and learning without doing 'full-blown cooperative learning all the time'.

In one of the primary schools, one teacher indicated that she never used these terms and would never write a lesson plan which checked that all were present; in the same school another teacher indicated that she did lesson plans with all 5 principles noted and checked to make sure they were included and did a 'full' cooperative learning lesson at least once a week. In another school, it was reported that 'it is about picking out the bits and elements of CL that work for you'.

One might expect that something new and unfamiliar is more challenging to introduce and embed within one's practice. It may, however, be helpful to focus on and revisit these principles on a regular basis through newsletters, in-service, in dialogue with the development officers and between managers and teachers and teachers and teachers.

The evaluation team arranged to observe some cooperative learning classes. We had requested specifically to see examples of good practice rather than selecting lessons ourselves. This was with a view to being able to provide illustration which others might find helpful. An account of these observations is given in some detail in Appendix F. Points relating to examples of the 5 principles are discussed here.

Most of the lessons observed included the 5 principles of the social interdependence model of cooperative learning. For the upper secondary lessons it was generally not possible to include everything within one timetabled period and therefore the lesson plans covered a series of lessons (similar to the approach described above). One class did cover a double period, which appeared to facilitate a more coherent learning experience for the pupils.

In all the lessons observed there was a clear statement of academic goals and, for the lower secondary and primary pupils, there was a clear statement of social skills goals. However, in the

lessons for the upper secondary pupils there was little or no emphasis on social skills. Discussion with teachers suggested that this was less of a priority for older pupils as they already had well-developed skills and they tended to work more individually in preparation for exams. The classes observed were all preparing for higher examinations and there was good use of cooperative learning principles to help them with their academic work and this was **the** priority. It is possible that at other times, or with other older pupils, greater attention would be paid to social skills. At that senior stage there is potential to focus on the application of social skills in more complex situations such as democratic decision making, conflict resolution, diplomacy and debating skills. (For an example of using cooperative learning within the democratic decision-making process, see the case study of Our Lady's High School, Cumbernauld – Appendix J.)

Positive interdependence was clearly displayed through appropriate tasks, sharing resources, groups receiving praise from the teacher and others and allocation of different roles to group members. In the pupil focus groups, pupils displayed an understanding of this principle and the importance of everyone contributing.

Individual accountability was demonstrated mainly by asking individuals at random to answer or report on behalf of their group. When individuals could not respond they were not made to feel 'bad' but could seek the support of their group.

All lessons observed had pupils working in face-to-face interaction. It should be noted that the classroom environment was not always conducive to this – tightly packed classrooms, fixed furniture and resources that were not easily accessible all featured. However, the staff and pupils seemed very willing and able to work cooperatively in these restricted environments. In other cases, tables had been purchased specially to suit the teacher's preference for classroom organisation to facilitate easy movement in and out of groups.

An important aspect of promotive interaction is the dialogue which occurs between pupils to explore and challenge thinking and help with the active construction of knowledge. Some constructive talk and interaction was noted amongst the children, including challenging each others' ideas and reaching compromises, but in some cases talk was mainly at the level of information sharing. The younger children were still learning the process of resolving different views and they tended to seek the teacher's input before trying to resolve issues themselves. In such cases it appeared that the teachers did ask questions which enabled the pupils to move forward without providing direct solutions for them. A pupil in one of the focus groups explained that the emphasis on talking was beneficial to learning as *'when you are talking about things it stays in your head but when you are writing it down you just scribble and don't realise what you are writing.'* It was noted amongst the secondary groups in particular that sometimes one person took a strong lead in completing the work with others being more passive and accepting that person's view. It was also observed that the older pupils were more likely to talk about other 'life events' alongside discussion of the task in hand. It is possible that more emphasis could be put on modelling and promoting constructive questioning, challenging and dialogue.

Although in the lesson plan, group processing was sometimes postponed because of lack of time. In some lessons group processing was embedded at each stage. During interviews teachers agreed that this was often something that got squeezed out and perhaps not enough time was spent on it. In one of the pupil focus groups primary pupils provided detailed evaluations of their performances during the lesson that had been observed, and another group spoke of prompt sheets they used at the end of the lessons, but generally pupils were less familiar with this process than with some of the other elements of cooperative learning.

3.4 Challenges

This section presents the challenges identified by management and teachers.

The main challenges reported by school management during interviews included:

- committing the finance for the training
- convincing some staff that it was worthwhile – *'older teachers were less keen, but once they had experienced the training they came back with enthusiasm'*
- maintaining momentum after initial enthusiasm and keeping cooperative learning in the forefront of people's thinking about teaching and learning
- ensuring that after training teachers took it forward – training was expensive and if teachers did not implement it money could be wasted
- making sure there was time and opportunity for teachers to discuss what they were doing – *'to engage in conversation with them and listen sympathetically to what they need to support them'*
- working with some groups of children was more difficult as they were less ready to participate and required greater help with social skills; perseverance was required.

Challenges reported by teachers during interviews included:

- helping children to concentrate on social skills, especially when these are not the norm in their lives outside school (pri)
- working with some classes of children who are less ready to work in groups and who may even find pair working difficult (pri)
- helping older children, especially the more academic ones, realise that they are learning when they work cooperatively – this can include encouraging those who prefer to work on their own to work with others (sec)
- finding sufficient planning time (both).

These views were also found in the open questions in the teacher survey, particularly finding time to plan for cooperative learning lessons; two respondents specifically mentioned that it was time consuming to remember to include all 5 principles. In the interviews, teachers explained the challenge of getting the right 'mix of pupils' in the mixed-ability groups, allocating roles, preparing materials and getting the task right. All of this was time consuming and required good knowledge of the pupils, though the effort and time spent led to positive results. Finding time to work collaboratively and network with colleagues was also mentioned (and links potentially to the reasons for some of the negative responses reported in section 3.2).

In the survey a small number of teachers commented that cooperative learning was low in priority compared to other curriculum requirements and suggested the need for whole-school policies. Such comments reflect the different stages of development within schools and would suggest that their management had not adopted the same kind of commitment to cooperative learning as that found in the schools selected for closer study. While committed management may be challenged by unconvinced teachers, it must surely be a greater challenge to interested and possibly committed teachers with unconvinced management.

3.5 Best whole-school conditions

Supportive school contexts are those which provide resources and opportunities to overcome the challenges. Several broad issues were highlighted by school management in terms of the school environment which facilitates the introduction of cooperative learning:

- a supportive senior management, who are trained in cooperative learning and who use it within their own classroom practice and also 'model' it in school management practices
- a school ethos which encourages openness and sharing, where teachers are encouraged to think about their practice and performance as teachers and are given the opportunity to engage with current thinking about learning and teaching
- lots of opportunities for discussion and professional dialogue about teaching and learning in general and cooperative learning in particular.

None of the school managers who were interviewed claimed to have arrived, but they aimed to create such learning environments for both staff and pupils. Where the managers are leading by example, it is more likely that reluctant staff will be convinced; where teachers talk about how children learn in the context of different theories of learning, they will be able to evaluate their application of cooperative learning in the classroom; where there is professional openness there should be opportunities to talk about both what works and what doesn't work, problems encountered and how to overcome them; how to work with the 'difficult' children, how to build in all 5 principles of the cooperative learning model, or whatever the issues are for teachers.

3.6 Summary

Based on the feedback of participants, the 3-day Academy training was highly valued and provided important strategies for managing cooperative group-work and developing social skills. It is less clear that it engaged teachers in developing approaches to assist pupils in the construction of knowledge through dialogue – an important element of promotive interaction.

Teachers reported the benefits of attendance at Recall Days as they provided the opportunity to share experiences and learn from others. However, only around a half of the respondents to the survey had had this opportunity and a number expressed the wish to attend. It is therefore a priority for schools and the authority to facilitate this for those who wish it.

Teachers emphasised that they would like more time to network with other teachers in both their own and other schools to benefit from peer support. Ensuring this happened was seen as a challenge by management though it was recognised as a feature of the 'best' conditions for promoting cooperative learning practice. It would appear to be a way of addressing other challenges mentioned, for example, making sure teachers take cooperative learning forward after training and 'maintaining the momentum' after initial enthusiasm. Such ongoing collegial support is emphasised as essential in the literature (Cohen, 1994, see p6 above).

In the 5 schools selected by North Lanarkshire Council for the focus of the evaluation, there was a clear management commitment to a carefully planned, systematic introduction of cooperative learning and to monitoring progress in developments. Some comments in the teacher survey suggest that not all schools have this level of commitment and are not structurally promoting cooperative learning as a whole-school strategy.

In the survey, teacher responses indicated that they found the more specific cooperative learning principles more challenging to implement, and interview and observation data highlighted in particular the challenges of implementing promotive interaction and group processing. Around half of teachers indicated that they were embedding the 5 principles most of the time. Revisiting these principles with staff and providing ongoing support in ways of including them on a regular basis would be beneficial. This could be a focus for the continued professional dialogue referred to above.

4. Impact of cooperative learning

Five aims were identified by North Lanarkshire Council for the cooperative learning initiative – aims for the development of teachers, pupils and the school community. This section reports firstly on the impact on teachers in terms of enhanced teacher efficacy and motivation; it then reports on findings from teachers, pupils and parents on the impact on pupils and their learning in relation to the aims of the project, namely, pupil attainment, social skills, citizenship understandings, involvement in learning and motivation. In particular, views were sought from teachers on the extent to which they thought cooperative learning was contributing to the development of the 4 capacities emphasised in *A Curriculum for Excellence* – successful learners, confident individuals, responsible citizens and effective contributors. Finally, it reports on participants' perceptions of the impact on the wider school community.

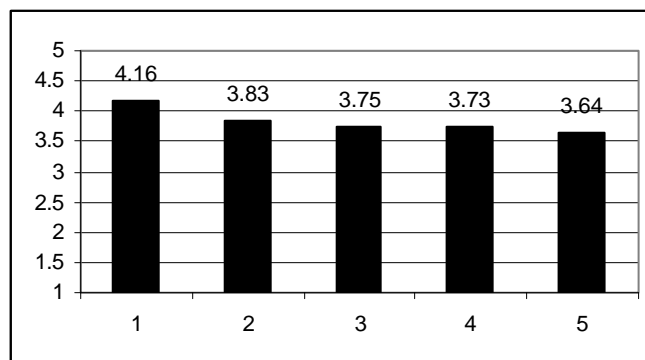
In the teacher survey, primary teachers consistently responded more positively than secondary teachers. The responses of primary and secondary teachers were investigated further as separate datasets; in both cases, generally, those who had reported using cooperative learning 'frequently' as opposed to 'occasionally' and those who indicated that they embedded the 5 principles 'most times or always' when they used cooperative learning, compared to those who said 'sometimes or never', were more positive in their responses. Space does not permit full reporting of these findings within this report but the details of these results are given in Appendix G.

As with many initiatives, the primary school environment appeared to be more favourable to the introduction of cooperative learning than secondary schools and primary teachers generally were more positive regarding the benefits. This might be because benefits are more likely to arise from proper application of the method, which might be easier in primary schools where academic goals are less complex than in secondary schools and there are less constraints imposed through timetabling. However, it is evident that with more frequent use and with the application of all aspects of the model of cooperative learning, teachers' perceptions were also more positive. This may be because, as teachers gain greater experience of proper application, benefits do emerge.

4.1 Impact on teachers

In the survey, teachers were asked to indicate on a 5-point scale the extent to which certain benefits applied to them. The mean scores are presented in chart 4.1.

Chart 4.1: Teachers' views on the extent to which cooperative learning has enhanced their teaching practice (mean score)



Key: Cooperative learning has ...

1. provided me with a wider range of teaching skills
2. increased my motivation and enthusiasm for teaching
3. assisted me with classroom management
4. helped me develop better relations with pupils
5. helped me get to know pupils better

Overall, respondents were very positive about the contribution of cooperative learning to their own development as teachers, in particular in relation to developing a wider range of teaching skills. On the other items, between 10% and 15% of the sample selected the negative end of the scale.

During the interviews with both management and teachers in the 5 study schools it was explained that, for most teachers, group working was not new but that cooperative learning had introduced a more structured framework and a more explicit focus on social skills. The training materials had also provided lots of new ideas for classroom activities. In one primary school, however, it was stated that *'cooperative learning has always been going on in primary schools but not under this name'*.

In the open-ended section on the questionnaire many respondents took the opportunity to express how valuable they had found cooperative learning, using expressions like 'a breath of fresh air', 'energised', 'galvanised', and developing a 'new outlook' on their jobs. One stated: *'Cooperative learning has had a huge impact on my teaching. Now I can't teach without using cooperative learning. I am an avid fan and so are my pupils'*. On the other hand it was also reported: *'It hasn't improved my teaching skills and it hasn't improved my interaction with pupils, but it is very interesting'*. This respondent did not explain but the assumption is that teaching skills and interaction are already strong.

During the interviews teachers' views about motivation were mixed; as with the survey respondents, the majority talked in terms of it providing a 'new impulse', 'it restores and rejuvenates'. *'I hope it never stops, hope it never changes and I hope the local authority doesn't decide it is now not working'*. A small number thought that it had not made any difference to the motivation of teachers.

4.2 Impact on pupils

4.2.1 Attainment

North Lanarkshire's policy, *Raising Achievement for All*, emphasises the development of the whole person and takes a broad view of achievement with an emphasis on inputs and experiences for children that go beyond academic learning and academic outcomes. Outcome targets are set both in terms of measurable progress, ie national assessment and examination success, and qualitative indicators relating to softer skills and personal development.

Throughout interviews with authority, school management and teachers, the view was that it was not necessarily appropriate to use attainment indicators as a measure of success of cooperative learning. The authority representatives indicated that progress should only be tracked over the long term as it was important that children experience cooperative learning consistently throughout their educational career. There was, however, anecdotal evidence of raised attainment. For example, at the Recall Days some participants reported improved test results as evidence of 'benefits and successes' they had experienced from using cooperative learning.

The research team obtained from the local authority statistics service examples of national assessment results displaying the 3 primary schools' performances on reading, writing and mathematics at the stages used as National Priority indicators for the academic years 2001/02 to 2005/06. A summary of SQA results was also obtained for the 2 secondary schools. The figures indicated that there appeared to be progress in some areas at some stages, more particularly at P6 and P7, but there were also some noticeable dips in performance. In one secondary school there was notable progress in mathematics in S2. Each school representative was asked to comment on the results for their own school.

The following points were made:

- national assessment results were not seen as a good way of monitoring the impact of cooperative learning; some children made good progress but they still may not reach the level the government says they should be at for their age
- everything schools did was about raising attainment and improvements could not be attributed to one initiative; cooperative learning was one influence amongst many. In the secondary maths department where progress was noted there would be *'several strategies "on the go" – one could not lay claim to improvement courtesy of cooperative learning'*
- there were fluctuations between year groups and some years do have higher attainment; the aim was for a long-term general upward trend and cooperative learning would be part of that trend
- in schools where attainment in national assessments was already high, there was little room for manoeuvre

- while better results were being achieved in some subjects in secondary schools, on the whole it was too early to make a claim that cooperative learning was having an impact on test and examination results.

The teacher survey included a statement relating to 'increased academic attainment' with teachers responding on a 5-point scale from 1 = I have not observed this to 5 = this is very evident (see table G13 in Appendix G). Of all the statements relating to both pupil and teacher benefits of cooperative learning, this one had the lowest mean score (3.03). Percentage responses for the ratings were:

1 & 2 = 25%

3 = 39%

4 & 5 = 31%

Some teachers believed that cooperative learning was impacting on attainment, while others were more ambivalent.

The pupils were not asked directly about success in tests or examinations, but there was a statement with which they were asked to agree or disagree: 'I feel I can do better at school when we do cooperative learning'. Across all pupil datasets (primary and secondary pupils in 2004 and S1 pupils in 2006), approximately three-quarters of pupils agreed with this statement.

To investigate how people perceived the relationship between attainment and cooperative learning, school management interviewees were asked what factors they felt influenced attainment and, where these were negative, how cooperative learning might address these. Primary head teachers referred to home and social background where there were low expectations and little encouragement to do well at school; the children often had poor social skills because they did not experience the development of such skills outside school. Both primary and secondary representatives spoke of poor quality teaching leading to underachievement, for example, *'not sharing learning outcomes and assessment criteria and setting up tests expecting some to fail'*.

Cooperative learning could address some of these factors because:

- it emphasised the development of social skills which enabled the children to participate
- it encouraged the development of good quality relationships with other pupils and also with the teacher
- working with their peers allowed the children to learn from each other
- having a role which was essential to the whole group gave them a sense of worth and achievement.
- outcomes (both social and academic) were clear.

One headteacher indicated that talking with others about what they were learning encouraged pupils to think about what they knew and what they wanted to learn.

The benefits of cooperative learning were expressed more strongly in terms of developing social skills and developing the whole child's self-esteem and confidence and increasing motivation; it was believed that these should all contribute to better learning for the children. The importance of learning together and helping each other was emphasised, though the importance of dialogue and discussion as part of that process, a factor that is highlighted in research literature, was mentioned less frequently.

4.2.2 Social skills, citizenship understandings, involvement in learning

All school interviewees were strongly in agreement that cooperative learning was achieving the aim of developing social skills. Both management and teachers indicated that they had always focused on social skills but that cooperative learning had made this explicit. Although some pupils did not work well together, this was addressed as part of cooperative learning. In one of the primary schools it was noted that benefits could be seen across the whole school and in the playground. There was a sense of respect and the pupils were solving problems for themselves. *'In situations where they would have become physical they now talk about it. Enabling them to stop and talk before raising the fist is fantastic.'* It was recognised, however, that it was difficult to maintain that behaviour outside school if the environment they came from did not respect the same skills.

In the teacher survey, the following items were given the highest ratings (1-5 scale):

| | mean score |
|--|-------------------|
| • learning as part of a group | 4.16 |
| • ability to work in partnership and teams | 4.12 |
| • willingness to participate | 3.92 |
| • ability to relate to others | 3.91 |
| • improved inter-group relationships | 3.84 |

The charts on page 22 display the responses from the S1 pupils who were surveyed in 2006/07 across the themes of social skills, learning and motivation. The percentage agreeing with each statement is given and these illustrate the relative importance given to the benefits of cooperative learning by the pupils.

It is clear that the pupils agreed that the skills of working with others and encouraging others were gained through cooperative learning, though they were more ambivalent about learning to be nice to others. Comparison with the data gathered in 2004 shows that the responses for the S1 pupils remained much the same over time (see Appendix I for 2004 data). However, in 2004 the findings were that, while 70% of primary pupils and 68% of S1 pupils thought that cooperative learning helped them to be nice to others, only 46% of S5/6 pupils thought this. This relates to views reported in section 3 (p14): the older pupils thought that their skills were already well developed and perhaps 'being nice to each other' was not a priority at this stage of learning.

During interviews and in the teacher reports of 'benefits and successes' at the Recall Days, the development of confidence and self-esteem was a recurrent theme. Having responsibility and a clear role made children feel important, but ensuring they had a role in which they could be successful enhanced confidence – *'everyone achieves and feels good about themselves, not just the more able children'*. Taking on the role of reporter, for example, and being asked to respond on behalf of the group at any time, also increased confidence. The social attitude of respect for each other and 'no put downs' created an environment where pupils could contribute without fear of making mistakes. During the focus groups, the pupils also talked of increased confidence, particularly in relation to being able to 'make friends' and getting to know new people, which could be when making the transition to high school or on holiday.

In the teacher survey, respondents were largely in agreement that cooperative learning contributed to a number of indicators of confident individuals as defined in *A Curriculum for Excellence* (see Table G10 in Appendix G).

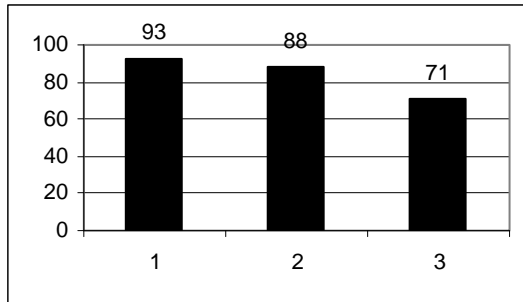
Citizenship understandings may be taken to include the understanding by the pupils that they are part of a community and this is addressed in section 4.3. In the teacher survey there was broad agreement that cooperative learning contributed to developing values associated with being a 'responsible citizen' (see Table G11 in Appendix G).

Involvement in learning can be considered from two perspectives for pupils: firstly, engagement in the classroom in the learning activities and learning along with other pupils and, secondly, greater awareness of strategies for learning, the ability to monitor their own learning and to assess the quality of their own output achievements – or 'self-regulated' learning.

As noted above in relation to social skills, learning together is one of the most appreciated aspects of cooperative learning by both teachers and pupils. During interviews and in open comments, teachers emphasised that the task structure and different roles for pupils ensured that all pupils took part; teachers spoke of more on-task behaviour and less disruption (although working with some classes of difficult pupils has also been noted). In the teacher survey, 60% of respondents indicated that 'more on-task behaviour' was evident or very evident.

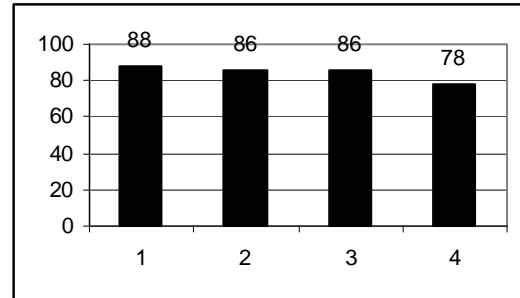
There was also general agreement that cooperative learning was contributing to a range of indicators identified as features of successful learners in *A Curriculum for Excellence* (see Table G9 in Appendix G). In particular, 75% thought that they had observed fairly high and high progress in pupils' enthusiasm for learning because of cooperative learning.

Chart 4.2: Pupils' views on social skills (percentage agreeing)



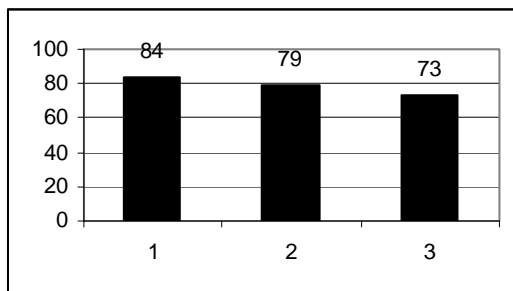
- Key: Cooperative learning ...
1. helps me to work with others
 2. helps me to encourage others
 3. teaches me how to be nice to everyone

Chart 4.3: Pupils' views on learning benefits (percentage agreeing)



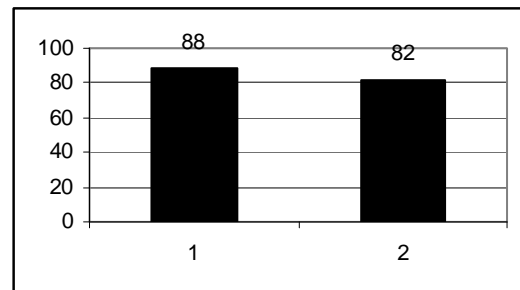
- Key: Cooperative learning ...
1. helps me work things out with the help of my friends without asking the teacher
 2. helps with hard work
 3. (helps with) problem solving because we share our ideas
 4. (helps me) understand things better

Chart 4.4: Pupils' views on 'self-regulated' learning (percentage agreeing)



- Key: When we do cooperative learning ...
1. I know when I have made a good contribution
 2. I learn what I could do better next time
 3. I am better at planning answers

Chart 4.5: Pupils' views on enjoyment of cooperative learning (percentage agreeing)



- Key:
1. I really look forward to cooperative learning
 2. I would like to do more cooperative learning

While still positive, fewer thought that progress had been made in thinking and learning independently (55% indicating fairly high or high progress) and in the ability to apply learning in new situations (47% indicating fairly high or high progress). Some teachers spoke of some younger children finding it difficult to work on their own after having worked cooperatively; others indicated that working together led to better individual work, for example in story-writing as they had shared and discussed ideas, or in giving solo talks. Generally the emphasis was that cooperative learning had to be balanced with individual work, so that pupils also learned to work on their own – an important ability for assessments and examinations.

The benefits of learning together were emphasised by the pupils in focus groups and in comments on their questionnaire about what they liked about cooperative learning. If 'stuck' they could rely on others for support, or if they did not understand something, for example in maths, 'someone else can work it out and maybe you can understand it their way'. Older pupils felt it was particularly useful in subjects where they were exploring different views.

The data from the S1 questionnaire (as illustrated in Charts 4.3 and 4.4 on page 22) suggest that the pupils were strongly in agreement about the benefits of working and learning together, although between a fifth and a quarter were slightly less sure of it helping them understand things better and in relation to knowing about their own learning.

4.2.3 Motivation

As indicators of improved motivation, school attendance and exclusion data were obtained from the local authority statistics service for the five schools which were the focus of the evaluation. However, it was difficult to identify any particular changes in these data. Two of the primary schools showed consistently higher attendance than the other, and in 2 of the schools attendances had shown slight increases at P5, P6 and P7. In one of those schools, however, one cohort was a particularly poor attending group notably different from those who preceded and those who followed. Both secondary schools showed improvement in attendance in S4, S5 and S6. The issue of attendance was discussed with senior management in each of the 5 schools. As with attainment data, it was felt that cooperative learning might contribute as part of a wider range of initiatives to address attendance. For some primary schools attendance was not a problematic issue.

Evidence of increased motivation in pupils was reported by school managers as being the enjoyment children displayed in working cooperatively and observing them as being busy and on task during lessons. In one of the secondary schools it was reported that when children were asked which subjects they liked they tended to talk about the ones where cooperative learning was well embedded. Teachers talked about similar signs of enjoyment, though a few thought that it did not motivate all children and that it did not always work. Feedback from the authority's Recall Days highlighted similar instances of increased enthusiasm for school.

As illustrated in Chart 4.5 on page 22, the majority of the S1 (2006) pupils looked forward to cooperative learning and wanted to do more. When compared with the S1 pupils in the 2004 survey, it appears that the later cohort is more positive about cooperative learning, especially in relation to looking forward to doing it – 88% compared to 65% agreeing (see Tables 15 and 16 in Appendix I).

4.2.4 Transition to secondary school

The S1 pupils who completed the questionnaire in 2006 were asked specifically about making the transition from primary to secondary schools. They had taken part in a range of activities organised by the schools to assist in transition and their views on these are reported in detail in Appendix H.

A direct question about whether they thought cooperative learning had helped during the time of changing school (answered only by those who had experienced cooperative learning) showed that 69% thought it had helped them, 10% thought it had not, and 18% did not know.

An open question about how cooperative learning had helped resulted in around 220 comments. These represented 4 themes: getting to know people (123 comments); improved confidence (40 comments); working with others (31 comments) and improved work (27 comments).

A selection of skills which cooperative learning should help develop was presented in the questionnaire and pupils were asked if they thought these skills were helpful in settling in to high school. Unsurprisingly, the skills perceived as being most helpful were getting to know people and getting on with other pupils, with three-quarters saying these were very helpful and almost all the remainder saying they were a little helpful. The responses as to what was **very helpful** were:

- getting to know people 75%
- getting on with other pupils 74%
- reaching agreement 52%
- asking for help 44%
- saying kind things 42%
- listening to everyone 40%
- resolving conflict 39%

For the most part, the others said that these things were a little helpful, though it is interesting to note that 10% thought 'saying kind things' was not helpful, 11% thought 'asking for help was not helpful' and 'resolving conflict' was not helpful. For some of the pupils there was a degree of uncertainty around the relevance and use of the skills (and at this stage possibly uncertainty about knowing how to resolve conflict, although P7 pupils had spoken about the skill of 'disagreeing agreeably'); however, in broad terms, cooperative learning was reported to be making a contribution in easing pupils' transition from primary to high school in the schools studied.

4.2.5 Gender differences

There were few differences in the responses between boys and girls. In relation to transition, girls were more likely than boys to agree that cooperative learning helped with 'getting to know people', 'getting on with other pupils' and 'saying kind things'.

| | % indicating very helpful | |
|--------------------------------|---------------------------|------|
| | girls | boys |
| • getting to know people | 83% | 70% |
| • getting on with other pupils | 82% | 67% |
| • saying kind things | 49% | 38% |

Generally, both boys and girls have similar perceptions of the benefits of cooperative learning. At the transition stage girls may be more focused on developing relationships and applying social skills, which could explain the difference in the responses above.

In the data collected in 2004 it is interesting to note that at secondary school boys were more likely than girls to agree that cooperative learning helped them do better at school (82% compared with 67%) and that they wanted to do more cooperative learning (75% compared with 62%).

4.2.6 Parents' views

A small sample of 12 parents were interviewed by telephone. They had a total of 20 children across both primary and secondary schools. A number said initially that they did not know what cooperative learning was and had not received information from the school, but when the interviewer explained, most could recount instances of their children talking about it.

The parents were positive about these experiences, for example, in helping shy children take part, developing self-esteem, reassurance about learning and pupils being able to support each other. The only reservation was that very young children might find it unsettling if they move from group to group. They all agreed about the importance of being able to work cooperatively and that it was important to learn this in school.

The parents' words speak for themselves:

'My little girl has got a lot out of it. She's been involved in classroom discussions and has actually now spoken solo. She used to be really shy and wouldn't talk at all in the classroom, but she now contributes to these discussions. She used to hate group work but the teacher has really encouraged her and she's now quite confident' (parent of primary pupil).

'I have seen my eldest son going to [school] a nervous wreck and he's now a completely different person because the school picked up on it [on his low self-esteem] and put him into lots of different projects and linked him up with others and put him in different groups and he's really come out of himself. I think the school has done that with others too – sussed out which children have low esteem and involved them and brought them out of themselves' (parent of secondary pupil).

'It enables them to share different experiences. I know that my daughter finds it reassuring that other kids sometimes experience difficulties with the same things she does. I think it helps them to know that others don't always find it easy either' (parent of primary pupil).

'And now that they're revising I think working together is helpful because they can support one another and share information. I think it's helpful for kids like R who tend to hold back when in a group and it encourages them to speak and take part more' (parent of secondary pupil).

4.3 Impact on the school community

One of the aims for the cooperative learning initiative is to develop and promote the school as a learning community with a positive and inclusive ethos. This includes the open, learning environment referred to in section 3.5 (p16) which was put forward as representing the conditions required to allow cooperative learning to be successful.

In the teacher interviews, most reported that their schools already had a positive and inclusive ethos and this enabled cooperative learning to fit in.

The school managers agreed that cooperative learning contributed to the development of a learning community with a positive ethos. They agreed with the teachers that it was important that such an ethos was already part of the school culture and in that context cooperative learning would *'find a home'*. However, many aspects of cooperative learning continued to build the sense of community. Cooperative learning:

- emphasised that everyone was part of a team; positive interdependence was essential; everyone was needed
- made children more aware of the need to support each other and that to succeed they needed to work together
- emphasised that behaviour learned was not just for the classroom but for the whole school
- meant that children with additional support needs could be given a role and that role was just as important as any other for success.

In open comments on the questionnaire and in feedback from the authority's Recall Days evaluations on 'benefits and successes', teachers refer to the fact that pupils with additional support needs can be given a role which includes them and allows them to contribute equally.

In the case study of Pentland Primary and Fallside High School (schools with specialist provision for pupils with social, emotional and behavioural difficulties), it is noted that cooperative learning has been used on a whole-school basis (or is planned to be used) as the class sizes are small. In Pentland school it is considered that cooperative learning has contributed to maintaining 'a happy and secure family ethos'.

In the survey, teachers were asked to indicate the extent to which they had observed that cooperative learning had led to improved integration of special needs students (on a 5-point scale where 1 = not observed; 5 = this is very evident). The small number of special needs teachers in the sample were positive about integration, with 10 out of 13 rating towards the positive end of the scale.

Primary teachers were more positive than secondary teachers:

| Rating | Primary | Secondary |
|---------|---------|-----------|
| • 1 & 2 | 18% | 30% |
| • 3 | 28% | 35% |
| • 4 & 5 | 54% | 35% |

However, many were still reporting that there was evidence of benefits in relation to inclusion and integration of special needs learners.

Findings from the survey about the use of cooperative learning approaches within the wider school community and the extent to which this was encouraging more collaborative working have already been reported in section 3.2 (p11). In summary, respondents were less positive about the benefits to the whole school compared to the benefits to teachers and pupils. While over a third indicated that cooperative learning approaches were in use more generally within schools and were encouraging more collaborative working, at the other end of the scale over a third indicated that these were not true of their schools. Additionally, in secondary schools, almost a half indicated that cooperative learning was not encouraging collaboration across departments and subjects. While the schools

which were the focus of the evaluation study presented themselves as learning communities with a positive and inclusive ethos, data from the teacher survey indicate that in the wider authority this is a 'work in progress'.

4.4 Summary

The teachers who responded to the survey and the majority of those interviewed were positive about the effects of cooperative learning on their own teaching practice and their enthusiasm for teaching. They reported enhanced capacity through acquiring more teaching skills, better classroom management and a better knowledge of pupils.

The main benefits to pupils were reported in terms of development of social skills and the opportunity to develop confidence and self-esteem. The specific focus on social skills with clearly stated social skills outcomes was seen as a strength of the model of cooperative learning used by North Lanarkshire. Although important, there was less focus on raising attainment in terms of improved national assessment scores and examination results. It was considered that cooperative learning would contribute to these along with other measures.

Involvement in learning is enhanced through the structured group working approach provided by the social interdependence model. Learning together was one of the most highly rated benefits of cooperative learning by both teachers and pupils. It is less clear that pupils were becoming more aware of their own learning processes which might emerge from pupil and teacher dialogue. As these are features of teaching and learning which have been highlighted through other approaches to change, such as formative assessment, there is potential for greater emphasis to be given to this.

In interviews and in the local authority training evaluation data, teachers reported evidence of an increased motivation in pupils, which is supported by the finding that the majority of S1 pupils look forward to cooperative learning lessons and want to do more. Nevertheless, school attendance and exclusion data, as indicators of improved motivation, did not show any particular changes. As with attainment, cooperative learning is considered to contribute to addressing attendance as part of a wider range of initiatives.

According to the pupils who were asked, the social skills they had developed as part of cooperative learning were very helpful when they moved from primary to secondary.

Cooperative learning appeared to be equally appreciated by boys and girls, with no substantial differences emerging in the data from pupils or in the views expressed in focus groups. At the transition stage, girls were more likely than boys to say that some of the social skills had helped them when they moved to high school, but that may reflect more on what is important to them at transition rather than on cooperative learning. In data collected in 2004, boys were more likely to say that they looked forward to cooperative learning than girls and that it helped them do better at school.

The small sample of parents interviewed was positive about the benefits to the children from cooperative learning.

The perceived benefits with respect to cooperative learning enhancing the school community by encouraging a more inclusive and positive ethos were less reported than the benefits to teachers and pupils. This may be because, as in the case of the 5 schools that were the specific focus of the evaluation, it was felt that schools already had a positive and inclusive ethos to which cooperative learning certainly added. However, a number of respondents to the survey indicated that cooperative learning approaches were not used in the school for wider school activities, indicating that this was still a work in progress.

Although views are largely positive, amongst the teachers interviewed there was a small core whose conversation followed the line that cooperative learning was not new, they had always been doing it, you pick out bits that suit you, it doesn't suit all children and hasn't made much difference to teachers. It is perhaps important for the authority to investigate such views. These may not necessarily indicate cynicism or a reluctance to become involved, but rather that through other staff development opportunities teachers have developed a repertoire of skills that they find equally valuable.

5. Discussion

This section of the report discusses the findings in relation to the aims of the evaluation.

5.1 Describe the extent to which the five key aims of the North Lanarkshire Cooperative Learning Project have been met and other benefits that might emerge from the evaluation

and

5.3 Assess the overall impact of the cooperative learning approach on teachers, pupils and parents in the study schools

These two aims have been addressed in section 4.

It is evident that, in respect to the 5 schools selected by the authority for the focus of the evaluation, the 5 aims are largely being met. Although the process of introducing change in secondary schools is more complex and needs to be carried out over a longer timescale, there was clear evidence of management commitment to cooperative learning and to other current important curriculum developments. Teachers were generally enthusiastic about benefits to themselves in terms of developing new skills and enhanced motivation, though some felt that the approaches introduced through cooperative learning were not new. They were also positive about the benefits to pupils in terms of encouraging better learning through pupils working together, the specific focus on social skills which was very important where some of the skills were not encouraged outwith the school community, and in pupils' enjoyment of learning. Although important, there was less focus on raising attainment in terms of improved national assessment scores and examination results. It was considered that cooperative learning would contribute to these along with other measures. The evidence from the small number of parents who were interviewed showed that they were supportive of cooperative learning and some reported observing changes (for the better) in their children because of it.

The evidence obtained from the wider teacher survey also showed that the respondents were largely positive about the benefits of cooperative learning, with an indication that the approaches it encourages contribute to the development of the 4 capacities of *A Curriculum for Excellence*.

There were indications, however, that up to a third of the respondents were not experiencing the benefits in a wider school context, with some indicating that it seemed to be low priority and that there was a need for it to be included in the school policy. This suggests that some schools have not shown the same commitment as the 5 study schools. However, it is not possible to comment on the wider implementation within the authority beyond these suggestions from the survey. This was not part of the remit of the evaluation.

5.2 Identify strengths and any gaps in the support available to teachers using cooperative learning activities

This aim is addressed in section 3 of this report.

Research reported in Appendix K (Gillies, 2004) shows that commitment to systematic training and support by authorities and schools leads to more effective implementation of cooperative learning, resulting in teachers using structured groups with improved learning outcomes for pupils. Thus North Lanarkshire's commitment to offer training to all who want it over a period of years can be seen as a strength.

Based on the feedback of participants, the 3-day Academy training was highly valued and provided important strategies for managing cooperative group work and developing social skills. Teachers reported the benefits of attendance at Recall Days as they provided the opportunity to share experiences and learn from others. However, only around half of the respondents to the survey had had this opportunity and a number expressed the wish to attend. It is important that schools and the authority ensure that teachers have the opportunity to participate in these events.

Teachers emphasised that they would like more time to network with other teachers in both their own and other schools to benefit from peer support. Ensuring this happened was seen as a challenge by management, though it was recognised as a feature of the 'best' conditions for promoting cooperative learning practice. Such ongoing collegial support is emphasised as essential in the literature (Cohen, 1994).

The appointment of a team of development officers in 2006-2007 to support schools was appreciated by respondents and provided the opportunity for further support that teachers suggested they would like. The ongoing development of the local authority intranet would in time provide more sharing of examples of work and the opportunity to discuss both successes and challenges.

Teachers found the more specific cooperative learning principles of the social interdependence model more challenging to implement, although around half of survey respondents indicated that they were embedding the 5 principles most of the time. Revisiting these principles with staff and providing ongoing support in ways of incorporating them on a regular basis would be beneficial. This could be a focus for the continued professional dialogue referred to above and a particular focus for the work of the development officers.

Evidence from various data sources (survey, interviews and observations) indicates that the principles of positive interdependence, individual accountability and developing social skills have been embraced by cooperative learning practitioners. Talk around 'promotive interaction' tended to focus on the fact that children were working 'knee to knee' or 'eye to eye' and as a means of putting social skills into practice.

The aspect of promotive interaction which focuses on engaging in discussion and dialogue was less emphasised, and the practice of group processing, which should engage pupils in reflective and constructive conversations, was weaker. From the feedback on the 3-day Academy, it was not clear that teachers had developed an understanding of these aspects of promotive interaction and group processing. Research literature indicates that this is one of the most important aspects in helping learners to construct knowledge and gain understanding (see Appendix K, eg Bereiter, 2002; Brophy, 2002; Gillies & Boyle, 2005). The literature also indicates that it is something which teachers find more difficult to implement and that teachers benefit from additional training in monitoring the work of the groups, certain communication techniques such as appropriate questioning, and helping pupils ask questions for themselves (Veenman *et al*, 2000; Gillies & Boyle, 2005).

Such social constructivist approaches are, of course, not unique to cooperative learning and are fundamental features of many other current developments (when effectively implemented) such as formative assessment (under the auspices of the Assessment is for Learning Programme), critical thinking skills, creativity across the curriculum, enterprise in education, and the Harvard 'Teaching for Understanding' course, which some of North Lanarkshire's teachers have been undertaking as part of their CPD. The research suggests that it is the quality of dialogue and talk that leads to better learning and raised levels of attainment; therefore a stronger focus on this within cooperative learning training and ongoing support would be beneficial.

5.4 Identify any gender differences in relation to the impact of cooperative learning on pupils, including pupil attainment, social skills, participation and behaviour

Cooperative learning appeared to be equally appreciated by boys and girls, with no substantial differences emerging in the data from pupils or in the views expressed in focus groups. Only at the transition stage did some of the girls emphasise that some of the social skills had helped them when they moved to high school, but that may reflect more on what is important to them at transition rather than on cooperative learning. In data collected in 2004, boys were more likely to say that they looked forward to cooperative learning than girls and that it helped them do better at school.

5.5 Establish conditions that support effective implementation and embedding of cooperative learning principles

Conditions that support effective implementation and embedding of cooperative learning principles are those that support the introduction of any initiative or change in school contexts.

It is not possible here to review the extensive literature that exists on educational change. However, Priestley and Sime (2005) review relevant literature and highlight four factors which were associated with the effective implementation of formative assessment in a school as part of the Assessment is for Learning Programme. These factors are relevant to cooperative learning and parallel the 'best' school conditions suggested by school managers for the implementation and embedding of cooperative learning.

The first factor is proactive leadership, supported by the 'official weight' of the initiative. In the case of AiFL, the weight came from it being a national initiative supported by research evidence and also local authority support. In the case of North Lanarkshire's cooperative learning, 'official weight' comes from the authority, its commitment and the underlying philosophy of the policy, *Raising Achievement for All*. Proactive leadership in the main 5 schools was evident from their willingness to be trained, to put cooperative learning into practice in their own teaching and in supporting teachers through the provision of training and materials.

The second factor is professional trust. Teachers need to be trusted to adapt teaching in the light of their own experience. In line with Leat and Higgins (referred to in section 2, p5), pedagogical strategies are introduced and teachers build them into their practice, rather than providing them with a large curriculum package to be delivered to the letter. This links to Priestley and Sime's fourth factor: starting small. Approaches or strategies that teachers can apply immediately in their classroom and see the benefits (Leat and Higgins 'powerful pedagogical strategies') are important. These benefits lead to teachers reflecting and adapting their approaches to learning and engaging in greater depth with the underlying principles.

Feedback in relation to cooperative learning indicates that teachers were given many strategies that were immediately usable in the classroom, providing them with the opportunity to introduce small changes. The authority indicated that it was important for teachers to be allowed to *'experiment with cooperative learning activities, in order to be able to internalise the working model and develop a framework in which cooperative learning is embedded'*. For those who engaged more deeply with the underlying principles there was enthusiasm to commit the time and effort required to prepare materials, organise roles and manage heterogeneous groups, all of which were seen to be time consuming. For both cooperative learning and formative assessment, the challenge is to ensure that teachers are engaging with the underlying principles and theories and the implications for teaching and learning and not just adopting a few strategies.

Priestley and Sime's third factor is essential to ensuring that the transformation takes place: the creation of spaces for collaboration. This allows for constructive dialogue amongst teachers – allowing them to engage in the social constructivist paradigm of learning promoted as beneficial for pupils within cooperative learning. Creating space and time for teachers to discuss and network was seen both as essential and as a challenge by the school managers in the schools studied.

Thus, in summary, conditions that support effective implementation and embedding of cooperative learning are:

- weight of local authority commitment and links to underlying philosophy supported by policy
- proactive and committed leadership in schools
- teachers engaged by effective strategies which are seen as beneficial in the classroom
- initial training and ongoing development which engage teachers with underlying theories and principles and lead them to develop *'a conceptual system and use it to adapt current lessons and activities into cooperative ones'* (Johnson *et al*, 2000)
- collaborative spaces and networking which allows teachers to share ideas and learn together.

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The Quality in Education Centre

Evaluation of North Lanarkshire's Cooperative Learning Project

Appendices to Final Report

April 2007

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Evaluation of North Lanarkshire's Cooperative Learning Project

Summary of interviews with key local authority staff

Semi-structured interviews were undertaken with key local authority staff during October and November 2006. The purpose of the interviews was to gain an up-to-date overview of the programme and to investigate key factors in its implementation from the authority perspective. Some of the data from these interviews has been reported in Chapter 1 of the report. Those interviewed were:

- Michael O'Neill, Director of Education
- Alison Cameron, Policy Adviser
- Chris Ward, Cooperative Learning Trainer and Coordinator
- Jacqueline Burton, Cooperative Learning Development Officer
- Brendan McCloskey, Cooperative Learning Development Officer

Key factors for successful introduction and implementation of cooperative learning

Various key factors for successful introduction and implementation of cooperative learning were mentioned in the interviews:

1. It is crucial for the initiative of cooperative learning to be part of an underlying philosophy, which in this case is the *Raising Achievement for All* policy and *Aiming Higher* motto. Staff (particularly Senior Management Teams) need to believe in this underpinning vision and work towards it
2. Persevering with cooperative learning and ongoing support is essential. It has been made clear to staff in North Lanarkshire that they are in this for the long haul and that it is not a one-off initiative and CPD training. It is necessary for follow up to the training and support to be available – it should be an ongoing process
3. Cooperative learning training should be made available to everyone (Senior Management Teams, teachers and also support staff). First hand training experience is preferred to a 'watered down' version that may be delivered through dissemination. Training should take place in a cooperative manner and address heterogeneous, cross-sectoral groups. Teachers need to have the opportunity to experiment with cooperative learning. In North Lanarkshire, training has an opt-in model and participation is voluntary
4. Senior Management Teams at both local authority and school level need to be supportive and believe in the initiative and its underlying principles
5. Visible differences in pupil learning and teacher motivation make the experience worthwhile and satisfying.

Ideal local authority and school conditions for effective introduction and implementation of CL

Following on from key factors for successful implementation, local authority and school conditions for effective introduction and implementation of CL include a supportive, enthusiastic Senior Management Team that also uses cooperative learning activities in a wider sense and is prepared to commit time and resources for teachers to be trained on an ongoing basis. Leadership, commitment and drive from the top are paramount. Teachers need to be able to experiment with cooperative learning activities in order to be able to internalise the working model and develop a framework in which cooperative learning is embedded. Working hard, collaboratively and wanting to learn something new are important for taking on new initiatives and will also require courage; thinking big and out of the box is therefore essential.

Support and resources

In addition to the conferences, training sessions, Academies and Recall Days, support and resources made available to teachers include websites, textbooks, resource materials, training videos, newsletters, teacher journals and the intranet (First Class system for sharing resources, lessons, comments, etc). Colleagues and Senior Management Teams can also have an important support role.

The Canadian trainer and the six Development Officers are available for in-house support and a starter pack for teachers is currently being developed. However, key local authority staff feel that few resources are needed, as Cooperative Learning is a generic tool and approaches are adaptable to the topic and aims of particular lessons.

Local authority support requested on a frequent basis is to help structure Senior Management Teams to deliver in-service sessions and staff training cooperatively.

Cooperative learning activities – learning communities

Cooperative learning activities are used widely and across the board; eg staff meetings and in-service days, parent meetings, (parent) conferences, school council activities, local authority induction days and corporate management meetings have all been known to run in a cooperative manner.

Practical use of cooperative learning and incorporation into other initiatives

Cooperative learning is a set of strategies that can be used as a vehicle through which different strands of initiatives can be pulled together. The authority is involved in various initiatives, including Mind Mapping (Tony Buzan), Howard Gardner's work, reasoning and reacting, restorative practice, Determined to Succeed, AifL and A Curriculum for Excellence, and cooperative learning has proved to be an umbrella strategy which can be used as a vehicle for these initiatives and to reduce the workload.

Cooperative learning is a useful and applicable way to translate appealing theory into practice. It is a style or strategy of teaching which provides the format for planning your lessons and is part of what a teacher would do on a daily basis – including reflection, self assessment and group assessment, which are all built in. In addition, cooperative learning ensures professionals have a common language.

Monitoring of the project and the project aims

Informal monitoring of process, roll-out and strategy has been undertaken throughout the process of introduction and implementation. Actions have been taken to improve this roll-out process where necessary; eg it was identified early on that secondary schools were slower in taking up cooperative learning, so more was done to include them through Head Teacher meetings, etc. In addition, teachers are now required to give up less of their own free time to come to the training as it now takes place on a Monday, Tuesday and Wednesday, rather than Thursday, Friday and Saturday or Sunday, Monday and Tuesday as at the beginning of the project.

No formal monitoring of the project aims and success of cooperative learning has been done so far, but anecdotal evidence, informal feedback and personal experience show that there has been a big impact on attainment, social skills and teacher and pupil motivation (examples of schools given for each of these).

(Head) Teachers' and parents' perceptions are being evaluated after training and conferences rather than measurable outcomes which may not (yet) be possible. It will take more time to track children's progress and it is also important for children to be exposed to cooperative learning consistently throughout their educational career. The 'Raising Achievement for All' strategy targets a wider development than academic outcomes so quantitative measuring may not always be appropriate and/or possible.

Ongoing developments and next steps for North Lanarkshire

Ongoing developments in North Lanarkshire include the completion of roll-out, continuation of back-up and support (eg through Development Officers), continuation of building confidence in schools, development of monitoring skills in Head Teachers, enhancement of technological support (intranet) and exploring new avenues (including Initial Teacher Education; subject specialists; Early Years focus; and national developments).

A start has been made on drawing up a further strategy which will address resource and capacity issues and an exit philosophy and strategy for the Canadian Trainer after she concludes her secondment.

Evaluation of North Lanarkshire's Cooperative Learning Project

Summary of interviews with senior management in 5 schools

Senior staff (8 in total) in 3 primary and 2 secondary schools were interviewed during December 2006 and January 2007. The purpose of the interviews was to establish the status of cooperative learning in the school, discuss issues of implementation and to seek the staff's view on the extent to which the local authority's objectives for cooperative learning were being achieved.

Involvement with cooperative learning and numbers of staff trained

The schools participating in this part of the research had been involved since the early stages of the initiative; high levels of teaching staff in the secondary schools had attended North Lanarkshire's training and the majority of the primary school teachers were trained. One of the secondary schools had been involved in developing cooperative learning since 1998, prior to North Lanarkshire introducing cooperative learning as an authority initiative in 2002. The other secondary school and two of the primary schools had been involved since 2002 and the third since 2003. In one secondary, two-thirds of the 90 teaching staff had attended the North Lanarkshire Academy Training while the rest had experienced in-house training; support staff had been included in in-house training and the librarian was due to attend special training in cooperative learning for librarians. In the other secondary, over half of the teaching staff had attended training and there was a commitment to have all staff trained by 2008; in this school the librarian had attended a 3-day Academy. In the 3 primary schools, all permanent/core teaching staff had attended the authority training; in one there was a new teacher who was soon to attend; in another there were some 'gaps' due to staff on leave and secondment and supply staff were not trained; in the third all staff were trained and there had been no turnover of staff.

Implementation of cooperative learning in schools

Links to development planning

In the secondary schools cooperative learning was a high priority in the development plan – it had been for some time and remained there. For one it was the 'number one' target within Learning and Teaching development priorities. In two of the primary schools it was no longer on the development plan as it was now considered to be embedded and on a maintenance programme; in the third it was still on the development plan.

Strategies for implementation and monitoring

All schools had made a commitment at the outset to train all staff, which meant a commitment to dedicate staff development budgets for this purpose. Clearly for the secondary schools this is a longer term commitment than for the primary schools. Each school adopted slightly different strategies; key points are highlighted here.

In one secondary the strategy has involved both sending teachers to the Academy and Recall Days and introducing staff to cooperative learning through in-house training. Two members of staff had completed the training for trainers course and, although one was on secondment to the authority at the time of the interview, their role was to give short input about cooperative learning during in-service days and, within their timetables, they had been allocated time to work with other departments, to team teach and to support cooperative learning developments. Every department had one person nominated with cooperative learning responsibility and they form a committee to support cooperative learning developments. (In interviews with teaching staff and one of the 'trainers', it was suggested that while in-house training was valuable as an introduction, it was preferable that people attended the Academy to gain a better understanding of the principles and the range of cooperative learning activities that could be used.)

In the other secondary, after all SMT had been trained, there was a process of allowing interested staff to opt-in and 'targeting' key staff through inviting them to attend, to ensure that all departments have staff who have attended the Academy and that in some departments all staff are trained. The preference is that staff attend the Academy and no in-house training in cooperative learning is delivered.

In both secondary schools trained staff had also attended Recall Days, though no details of numbers were provided.

In both secondary schools, cooperative learning approaches are used widely in school management and events; for example, for in-service days, board of studies meetings and departmental meetings. It is a 'high profile' feature of school life and is talked about a lot and referred to in newsletters. All staff, therefore, should be aware of cooperative learning even if they have not yet been trained.

One secondary interviewee emphasised the importance of monitoring progress in cooperative learning through the faculty, departmental and individual review process. This includes a review of who is trained in each department and the extent to which CL is used, where the department and teachers are planning to use it, classroom observation by members of SMT – both with prior warning and, in the third term, without warning ... *'to check they are doing CL in the normal class, not a special show class'*. This was not seen as threatening, as both teachers and pupils were keen to invite people in to see what they were doing in cooperative learning.

Key points from the primary school approaches to implementing cooperative learning were:

- staff were trained gradually and they introduced it gradually to their classes in ways in which they felt comfortable; in two of the schools all staff had attended Recall Days and in the other some had, though attendance was planned
- in one school, in the first year they focused on social skills, then in the second year aimed to use it at least once a week in maths and language and thereafter to use it more widely in other areas
- in two of the schools, teachers were asked to prepare lesson plans for cooperative learning lessons and these were kept for reference and sharing; in one school they were evaluated during in-service days. In the third school it was planned that during the current year teachers would begin to prepare a bank of lesson plans
- in two schools it was reported that teachers noted in forward planning when they were doing cooperative learning lessons and that the headteacher or principal teacher observed lessons on a regular basis
- one school emphasised the importance of having a whole school programme with a plan for introducing progressively more difficult social skills across the different stages
- effectiveness and impact was best monitored through observing the children working together and the changes in their behaviour and, in particular, their growth in confidence
- all three primary schools used cooperative learning approaches as a way of organising staff meetings and in-service days and included all staff, ie administrative staff, support staff, classroom assistants – even, in one case, the janitor. One had organised an event for parents using some cooperative learning activities.

Issues related to training, development and resources

The secondary senior managers and one of the primary headteachers spoke of local authority training and support in very positive terms – 'great', 'really good', 'tremendous'. Two of the primaries indicated that they felt they had not needed a lot of support but they were confident that if they had needed it, it would have been there. All welcomed the appointment of the development officers, who were recognised for their own expertise as teachers, and indicated that arrangements were being made for the development officers to come into the school to work with more recently trained teachers and also to see how cooperative learning was being delivered within the schools. It was also noted that the development of the online resource would be helpful, and while that had taken longer to establish than they had hoped, it should be of benefit as resources and example lesson plans were developed and shared.

In-house resources were important and in one of the secondary schools there had been a commitment to purchase materials to help teachers; for example, for two departments, new tables had been purchased to enable them to arrange the class more flexibly for the formation of groups.

Departments were encouraged to develop their own resources for sharing and some were developing banks of lesson plans. As noted above, example lesson plans for sharing were established in two primaries, with the third planning to do this.

It was noted by two of the headteachers that even long-term supply teachers were not trained – the school could not afford to train someone who then moved on. Probationers would be introduced to cooperative learning when working with teachers who already used it and would be given an introduction as part of their probationer training. If they remained within the authority, it would be a priority for them to attend the Academy. One DHT commented that some students were coming with knowledge of cooperative learning and were keen to ask for help to use it in their classes. As with all initiatives in schools (eg Assessment is for Learning, enterprise, a Curriculum for Excellence), it would help schools if the teacher education institutions covered cooperative learning in their initial training courses.

Once the initial commitment to training all staff had been achieved, it was felt that the training of new permanent teachers appointed through natural turnover of staff could be absorbed by the school budgets.

Links to other school developments and initiatives

All felt that cooperative learning fitted well with all aspects of teaching and learning and the ongoing developments in enterprise, Assessment is for Learning, health promotion and citizenship. In one person's view it fitted 'beautifully'. It was stated that the four capacities of a Curriculum for Excellence are well catered for when cooperative learning is embedded as an approach to teaching and learning.

Extent to which cooperative learning is used

In both secondary schools it was acknowledged that cooperative learning was used more in some departments than others. Some departments were very committed and used it extensively, while others had some teachers who used it well. In one school it was reported that 'maths is not as far forward as other departments', while in the other 'some maths teachers used it well, but some may have expressed the view that it was more difficult to do in maths'. Both schools were focusing on progressing developments within departments.

In the primary schools it was noted that all core staff used it 'in some way'; some teachers used it more often than others.

Challenges in implementing cooperative learning

Challenges included:

- convincing some staff that it was worthwhile – *'older teachers were less keen, but once they had experienced the training they came back with enthusiasm'*
- committing the finance for the training
- maintaining momentum after initial enthusiasm and keeping cooperative learning in the forefront of people's thinking about teaching and learning
- ensuring that after training teachers take it forward – training is expensive and if teachers do not implement it money can be wasted
- making sure there were time and opportunity for teachers to discuss what they were doing – *'to engage in conversation with them and listen sympathetically to what they need to support them'*
- working with some groups of children was more difficult as they were less ready to participate and required greater help with social skills; perseverance was required.

Best whole school conditions to encourage implementation of cooperative learning

'Good' whole school factors were:

- support and commitment of SMT
- SMT trained in cooperative learning and using it for school management purposes; this modelled it and encouraged teachers to use it
- a school ethos of openness and sharing; lots of opportunities for discussion and professional dialogue; in this dialogue people need to be able to use the language of learning and teaching

and cooperative learning gives them that language (as do other approaches to teaching and learning which can be developed and used alongside the language of cooperative learning, eg formative assessment, the Harvard University course on 'Teaching and Understanding').

Meeting local authority aims for cooperative learning

Securing higher attainment

Interviewees were asked, firstly, what factors they felt influenced attainment and, where these were negative, how cooperative learning might address these. Primary head teachers referred to home and social background where there were low expectations and little encouragement to do well at school; the children often had poor social skills because they did not experience the development of such skills outside of school. Both primary and secondary representatives spoke of poor quality teaching leading to underachievement, for example, *'not sharing learning outcomes and assessment criteria and setting up tests expecting some to fail'*.

Cooperative learning could address some of these factors because:

- it emphasised the development of social skills which enabled the children to participate
- it encouraged the development of good quality relationships with other pupils and also with the teacher
- working with their peers allowed the children to learn from each other
- having a role which was essential to the whole group gave them a sense of worth and achievement
- outcomes (both social and academic) were clear.

One headteacher indicated that talking with others about what they were learning encouraged pupils to think about what they knew and what they wanted to learn

The research team had obtained from the local authority statistics service examples of national assessment results displaying the schools' performances on reading, writing and mathematics at the stages used as National Priority indicators for the academic years 2001/02 to 2005/06. A summary of SQA results was also obtained for the secondary schools. The figures indicated that there appeared to be progress in some areas at some stages, more particularly at P6 and P7, but there were also some noticeable dips in performance. In one secondary school there was notable progress in mathematics in S2. Each school representative was asked to comment on the results for their own school.

The following points were made:

- national assessment results were not seen as a good way of monitoring the impact of cooperative learning; some children made good progress but they still may not reach the level the government says they should be at for their age
- everything schools did was about raising attainment and improvements could not be attributed to one initiative; cooperative learning was one influence amongst many. In the secondary maths department where progress was noted there would be *'several strategies "on the go" – one could not lay claim to improvement courtesy of cooperative learning'*
- there were fluctuations between year groups and some years do have higher attainment; the aim was for a long-term general upward trend and cooperative learning would be part of that trend
- in schools where attainment in national assessments was already high, there was little room for manoeuvre
- while better results were being achieved in some subjects in secondary schools, on the whole it was too early to make a claim that cooperative learning was having an impact on test and exam results.

The benefits of cooperative learning were expressed more strongly in terms of developing social skills and developing the whole child in terms of self-esteem and confidence and in increasing motivation (see sections which follow); it was believed that these should all contribute to better learning for the children.

Developing social skills, developing citizenship and encouraging active involvement in learning

All interviewees were in agreement that cooperative learning had clearly contributed to this aim. Although some indicated that they had '*always done a lot of work on social skills*', cooperative learning made it explicit and more structured; social objectives were highlighted more. Giving the children responsibility for completing the tasks increased confidence. Taking on different roles helped the development of both quiet children, as they were encouraged to say more, and also the ones who were more troublesome.

One DHT spoke of a group '*who treated each other abominably and spoke to one another in an appalling way. They had developed these "alternative strategies" as a kind of defence mechanism because they felt vulnerable but it was imperative that they learned that they couldn't behave that way in the outside world. Using cooperative learning and introducing social skills made them think about it – they took the "mick" out of it but they learned to use the right words and we could work at bringing it to a more natural level, and they got there.*'

In one of the primary schools it was noted that benefits could be seen across the whole school and in the playground. There was a sense of respect and the pupils were solving problems for themselves. '*In situations where they would have become physical they now talk about it. Enabling them to stop and talk before raising the fist is fantastic.*' It was recognised, however, that it was difficult to maintain that behaviour outside the school if the environment they came from did not respect the same skills.

Developing a learning community with a positive and inclusive ethos

All agreed that cooperative learning contributed to the development of a learning community with a positive ethos. For some it was important that such an ethos was already part of the school culture and in that context cooperative learning would '*find a home*'. However, many aspects of cooperative learning build the sense of community. Cooperative learning

- emphasised that everyone is part of a team; positive interdependence is essential; everyone is needed
- made children more aware of the need to support each other and that to succeed they needed to work together
- emphasised that behaviour learned was not just for the classroom but for the whole school
- meant that children with additional support needs could be given a role and that role was just as important as any other for success.

Increasing teacher efficacy by adding to their toolkit of skills

Interviewees indicated that for the most part, they and their teachers had always used group work (more in some departments in secondary schools than others). However, this had not been with all the elements of cooperative learning. For most, the explicit teaching of social skills was a new dimension.

Applying the '5 principles' was also a new aspect introduced through cooperative learning and this provided a more structured way of planning and delivering lessons. However, the view was expressed that cooperative learning '*adds to a teacher's methodology even if they are not doing "full-blown" cooperative learning all the time*'. One primary headteacher indicated that all teachers would use fully structured cooperative learning lessons for topic work or maths problem solving and would 'dip into it' at other times. One of the secondary interviewees held a particular view on this: '*Some of the teachers will take aspects of it, some of the strategies and that is good. However, if they are not using all 5 principles then they are not doing cooperative learning. I'll challenge them if they say they are doing cooperative learning and they have not introduced social skills or done group processing. Cooperative learning gives lots of different kinds of activities, different ways of doing tasks, but we want to ensure that all 5 elements are in as many lessons as possible, otherwise it isn't cooperative learning.*'

Increasing pupil and teacher motivation

Interviewees were asked to indicate if they felt that there had been any improvement in attendance or reduction in exclusions as a result of cooperative learning. As with attainment, it was felt that cooperative learning might contribute as part of wider initiatives to address these issues. For some schools these were not major issues to be addressed.

Evidence of increased motivation in the children could be observed through their enjoyment of working in a cooperative way and their being busy on task during the lessons. In one of the secondary schools it was noted that when children were asked which subjects they liked, they tended to talk about the ones where cooperative learning was well embedded.

Evidence of increased motivation amongst teachers included

- teachers talking more about *how* children learn than *what* they learn
- teachers wanting to showcase what they were doing and inviting management to observe their classes
- good practitioners used it best, but even the less enthusiastic used cooperative learning.

Evaluation of North Lanarkshire's Cooperative Learning Project

Summary of interviews with teachers in 5 schools

Group discussions were held with teachers in the 5 study schools. In total, 22 teachers took part – 9 secondary teachers and 13 primary teachers. Their experience as teachers ranged from those who had been teaching over 30 years to teachers in their second year of teaching. Experience of using cooperative learning varied widely from those who had been trained at the beginning of the NL programme in 2002 to some who had been trained the week prior to interview, and in one of the secondary schools 2 teachers who had received some in-house training and had been working with trained teachers in their departments. The range of experience was clearly reflected in the responses, with some teachers showing greater understanding of the principles and also of the effectiveness of using it in their classrooms.

Training, support and resources

All the teachers who had attended the Academy spoke positively of their experience, but some explained that *'the training gave you ideas but the real learning took place as you tried to implement it in your classroom'*. Teachers in more than one school expressed the view that it could not be done without attending the Academy as this was necessary to understand why cooperative learning was important and why the school was doing it. Two teachers who had been introduced to cooperative learning within their departments had recently attended the Academy. One explained that *'it is good to get the theory behind the practice; I now feel I have more understanding and now know why I am doing it.'* However, the Recall Day was more useful for helping to implement cooperative learning as you could discuss what you had been trying to do and share ideas with others who had also been implementing it.

While all the senior management had been aware of the development of online resources and the use of First Class, this was mentioned in only one school in the interviews with teachers. In this school they thought it would be helpful if there was more information, such as lesson plans, available through the online resources, but it was acknowledged that it is time consuming to write up lesson plans and to develop an online resource. The teachers were aware of the appointment of the development officers and some had worked with, or were planning to work with, the development officer for their area.

In one of the secondary schools, the teachers indicated that management had been very supportive in the purchase of resources, including resource packs with ideas for activities for forming groups and organising suitable tasks and other materials. In both schools there was a focus on each department developing resources – the extent of this varied between departments. In the primary schools sharing took place informally, often between stage partners; and, in two of them, more formally during in-service days and through a bank of sample lesson plans.

Introducing cooperative learning into the classroom

In the view of some of the primary teachers, introducing cooperative learning and, especially, introducing social skills, was like introducing anything to pupils – in the words of one, *'you just do it!'*. The vocabulary was used and explained; social skills were discussed with exploration of why they were important. Both primary and secondary teachers explained the use of T-charts to help with this, where the chart displayed *'what it sounds like'* and *'what it looks like'*.

However, the explanations of how the teachers prepared for the group work and roles clearly indicate that it is not really *'just doing it'*, as this was not only time consuming but also required a lot of planning and knowledge of the individual pupils:

- *'the challenge is getting the right mix of pupils as you are aiming for mixed ability groups of pupils who don't usually work together and that doesn't always work so you need to "rejig" it.'* (sec)

- *'it takes a lot of planning time, it is all about differentiation, grouping them correctly, getting the task right, both physical and mental preparation takes time.'* However, *'sometimes you get through the work quicker; for example, working in expert groups they did in two lessons what would have taken 4 lessons. My time was invested in setting it up.'* (sec)
- *'you need careful management of the groups to ensure each group has a good mix. You don't want groups where there is no stimulus – you want the more able ones to help the less able ones.'* (pri)
- *'you need to think about the different groups and the roles to be assigned.'* (pri)

The cooperative learning training materials present different kinds of groups – informal cooperative learning groups, formal cooperative learning groups and base groups¹. Teachers were asked about the extent to which these approaches were incorporated into their practice. In most cases teachers tended to focus on formal groups which were formed, for example, in both secondary schools for the completion of a project during which the pupils would return to that group over a period of weeks, maybe once or twice a week.

In one primary school they had 'base groups' in which the children sat all the time, with each desk numbered according to the child's role for working in cooperative learning; these groups became their 'formal groups' for cooperative learning tasks. The groups were re-formed with different children 'from time to time' so that they worked with different children. This had become an embedded approach to classroom management. In this school, informal groups might be used in PE, music and drama. A teacher in another primary gave the following description: *'Base groups are used for a term for long term projects in subjects like RE and Environmental Studies; formal mixed ability groups are used for maths, story writing and language; informal groups are used in PE, expressive arts and Environmental Studies'*.

It was felt that pupils quickly became familiar with cooperative learning practices; they learned the vocabulary and what they were expected to do when they were being asked to work cooperatively. Not all teachers in secondary school used it as not all had been trained, and some used it more than others, but pupils were familiar with teachers' teaching styles and with some teachers *'they just expected it'*. Children became familiar with the roles and sometimes asked what their role was going to be. In one of the secondary schools, it was reported that sometimes the pupils asked if they could work cooperatively even when it wasn't planned, although this was more likely in S1 and S2 than in S3 and S4.

The teachers interviewed all believed that cooperative learning could be used in any subject or area of the curriculum - *'it was an issue of classroom management not curriculum'*. One secondary teacher (RE) had thought that perhaps it was more difficult in mathematics until he heard two maths teachers talking about how they used it. In primary schools where setting is used, mixed ability groups cannot be formed and therefore that aspect of cooperative learning cannot be applied.

All teachers emphasised that cooperative learning was something that they used as appropriate – they looked at the objectives of what they were teaching first and then decided if cooperative learning was an appropriate way to deliver that aspect of the curriculum/subject. For example, *'you don't make lessons up to suit cooperative learning; cooperative learning has to fit in'*. A variety of approaches were required – *'it was about balance – working individually and working cooperatively'*.

Challenges of introducing cooperative learning included:

- helping children to concentrate on social skills, especially when this is not the norm in their lives outside of school (pri)

¹ Informal groups: (temporary, ad hoc groups, last for only one discussion or class period; focus student attention, create expectations, set mood conducive to learning, ensure cognitive processing of material and provide closure to instructional session.)

Formal groups: (pupils work together for one or several class sessions, shared learning goals to complete specific tasks and assignments. Structured through pre-instructional decisions, setting task and cooperative structure, monitoring groups while they work and intervene to improve taskwork and teamwork and evaluating student learning and processing group functioning)

Base groups: (long-term – term to a year; stable membership; give each member support, encouragement, assistance for academic progress, cognitive development and social development.)

- working with some classes of children who are less ready to work in groups and who may even find pair working difficult (pri)
- helping older children, especially the more academic ones, realise that they are learning when they work cooperatively – this can include encouraging those who prefer to work on their own to work with others (sec)
- finding sufficient planning time (both).

Meeting local authority aims for cooperative learning

Securing higher attainment

The views of both primary and secondary teachers were in line with the views of senior management:

- raising attainment was a long-term issue and it was too early to consider whether cooperative learning might influence this
- cooperative learning was only one initiative amongst many aimed at raising attainment
- the main gains from cooperative learning are the social benefits and the development of confidence and self-esteem: *'it gives them self-worth, pride in themselves, they want to do better ... these parallel raising attainment'*
- working together leads to better individual work – for example in story writing, if they share ideas, they individually write better stories; in secondary schools, they are better at doing solo talks as they are used to reporting back.

Developing social skills, developing citizenship and encouraging active involvement in learning

All were in agreement that cooperative learning contributed to these areas. Not only were social skills specifically addressed, children who did not like sharing or working with others had to learn to do it and they did make progress. It was noted that there could be animosity between children coming from the environment outside the school but they had to learn to respect and appreciate each other. As noted above, groups did not always manage to work together and this had to be addressed. They had to learn to work with people they didn't like or get on with, which was important preparation for life. With regard to involvement in learning, when they have a role to play they have to do it as they do not want to let their group down; if they didn't contribute it was obvious.

Developing a learning community with a positive and inclusive ethos

All teachers reported that they already saw themselves as having a positive and inclusive ethos and that cooperative learning fitted in with this ethos.

Increasing teacher efficacy by adding to their toolkit of skills

All the teachers interviewed indicated that they had previously used group working but that cooperative learning had introduced a more structured framework and a more explicit focus on social skills. The training and materials had also given new ideas for classroom activities, eg appointments clock, fist of five, gallery walk; they also talked of using graffiti sheets and expert groups.

One group of teachers, in one of the secondary schools, spoke unprompted about the 5 principles and the importance of including them for group work to be effective. An example was given by an art teacher who used *'a full-blown, meticulously planned and structured cooperative learning approach'* for the theoretical and historical elements in the units of an arts course. As the course had 4 units, work would be undertaken in a fully cooperative way by the students on that course 4 times a year, each time over a series of lessons. Other teachers in the same school spoke of doing a cooperative learning lesson once a week with different classes, or about a quarter of the time. At other times they would use some cooperative learning activities.

In one of the primary schools, one teacher indicated that she never used these terms and would never write a lesson plan which checked that all were present; in the same school another teacher indicated that she did lesson plans with all 5 principles noted and checked to make sure they were included and did a 'full' cooperative learning lesson at least once a week. In another school, it was reported that *'it is about picking out the bits and elements of CL that work for you'*.

The view was also expressed by more than one teacher that *'it was only one approach among many'; 'it is just another strategy – not the be all and end all'; 'it is just another tool – a good one, motivating and fun'*.

It was stated in one primary school that *'cooperative learning has always been going on in primary schools but not under this name'* and in another *'It is not new. We have always been doing it'*.

Increasing pupil and teacher motivation

Responses to a question about how effective cooperative learning was in motivating both pupils and teachers were mixed.

Pupils:

- *'children who work would do so anyway' (pri)*
- *'it does not motivate all children' (pri)*
- *'it doesn't always work – it isn't all singing, all dancing' (pri)*
- *'it is particularly helpful for the poorer child – they can be actively involved and feel as though they have contributed as much as the child who shines' (pri)*
- *'pupils look forward to it an enjoy it' (pri)*
- *'children feel that are not actually doing work – they enjoy it' (pri)*
- *'children who used to sit back and say "I can't do it" now realise "I can do this bit and someone else can do that bit" ' (pri)*

Teachers:

- *'it gives a new impulse if you are bored' (sec)*
- *'motivating especially for those stuck in a rut' (pri)*
- *'I hope it never stops, hope it never changes and I hope the LA doesn't decide it is now not working' (pri)*
- *'it hasn't really made any difference to the motivation of teachers' (pri)*
- *'it boosts me as a teacher, especially when you get a wee bit dry. We get caught up in the mundane things – assessment and meeting targets. Just to take the time out and do something really well you get it back and it gives you a real boost. It restores you and rejuvenates you' (sec)*
- *'you never stop for a second in a CL lesson; you can't sit back. You are right in there – it is great' (sec)*
- *'what I love about it is that you can never crack it ... it goes on and on. I go off to an in-service and there is something new. It is lifelong learning for us. It is exciting' (sec).*

Evaluation of North Lanarkshire's cooperative learning project

Summary of pupil focus groups

A number of focus groups were carried out with pupils, in order to access their views and attitudes towards cooperative learning. In total, 7 focus groups, each lasting 30-40 minutes, were held with pupils from 5 schools. Three focus groups were held with primary school pupils (P3, P4, and P7) and 4 focus groups were held with secondary school pupils (2 x S1, S3 and S5). Each group was attended by between 5 and 10 pupils and opened with a discussion of a cooperative learning lesson which the researcher had previously observed. The cooperative learning tasks observed by the researcher ranged from deciding on a group name, ordering and discussing a series of pictures and critically assessing pupils' own written work (in terms of grammar and punctuation). Pupils reported being assigned to a number of distinct roles, including time-keeper, reporter, mediator, scribe, reader, encourager and resource manager. After discussing these roles, pupils' experiences and views of cooperative learning were explored. Analysis of the focus group discussion gave rise to a number of themes which are discussed below with illustrative quotations.

The meaning of cooperative learning for pupils

Pupils reported having used cooperative learning either since primary school or from the first year of high school and mostly in subjects including English, drama, PE and music. Their understanding of cooperative learning was demonstrated across all focus groups in the definitions that they articulated and in the skills that they perceived to be necessary in order to engage effectively in cooperative learning. When asked what cooperative learning meant to them, typical responses from pupils included "working with others", "group work", "putting your heads together", "working in teams", and "getting to know new people and finding out how other people work." Other features of cooperative learning that were mentioned included being assigned roles, sharing ideas, listening, encouraging everyone to participate and assisting less able pupils.

Skills required in cooperative learning

Pupils listed a number of attributes necessary for working effectively with others. The most commonly reported attributes included listening, patience, having respect for other people's ideas and being able to "disagree agreeably." Being good at "speaking out" and "encouraging and giving praise" were also mentioned. Secondary school pupils understood that cooperative learning does not require any special talents and that anyone can take part "as long as [they] can work together and have patience with people." These pupils also recognised that some individuals would be naturally more competent than others at skills such as listening, and that "you have to work on it" to develop these skills. In general, pupils perceived the skills developed in cooperative learning to be important in order to "get on with people", "be liked", and "make new friends."

Pupils' grasp of cooperative learning principles

All pupils, with the exception of those in one secondary school focus group, who provided very shallow responses to questions, demonstrated a reasonably strong grasp of the principles of cooperative learning. Pupils in one P7 group spoke of the 5 elements of cooperative learning and explained these in their own words. For example, individual accountability was defined as "everybody having a job to do", such as being the resource manager or encourager. Group processing was described as "working together and going over work to see if it makes sense. If you don't agree you can then go back and fix it". [Note: this sounds more like discussion which takes place as part of promotive interaction as opposed to reviewing how they worked together as a group; within the time limitations of this particular focus group it was not possible to probe in greater detail.] They did, however, also talk of using prompt sheets at the end of lessons to evaluate how they worked together. According to these pupils, social skills comprised talking and listening, sharing opinions, being polite and not interrupting, and face-to-face interaction was defined as "looking at each other. It is really pretty much the same as social skills".

Pupils' endeavours to define the principles of cooperative learning were less explicit in other focus groups but could be identified in their articulations of how they would typically respond to specific situations. For example, demonstrating positive interdependence, pupils understood the importance of role assignment as then "everyone has a part to play" and "no-one is left out" or able to "mess about". Moreover, swapping roles was viewed positively as, according to pupils, "it gives you new experiences" and taught them to give up roles they liked and adopt less favourable ones. One P3 pupil stated: "Some people like their role very much but sometimes it changes and they get grumpy about it but then they start liking it."

Pupils' understanding of individual and group accountability was evidenced in their comments that groups would "lose points" if the whole group did not perform. Furthermore, they were aware of the need to prevent social loafing, as the following quote from a P3 group suggests: "You make sure no one is sitting back and other people doing the work. You encourage them."

As stated above, the pupils were aware of the interpersonal skills required in cooperative learning and there was evidence that they were also familiar with the small group skills typically used in cooperative learning. For instance, on being asked how to resolve disagreement among a group, S1 pupils demonstrated their decision-making skills: "You could ask everyone and draw like a graph thing and show it...and let the most popular view win."

Understanding of promotive interaction was demonstrated in pupils' accounts of their endeavours to assist less able pupils, to support those who lacked confidence to "speak up" and through their explanation that discussion and talking "helps things stay in your head".

Evidence for understanding of group processing was weaker than for the other cooperative learning elements. When asked to reflect on their group performances, the majority of pupils provided shallow responses, suggesting that they were not overly familiar with such reflective processes. S5 pupils claimed that they had not been asked to reflect on cooperative learning group work and did not see the value in group processing. As far as these pupils were concerned, it was important that they had learned rather than worked together. On the other hand, P3 pupils provided detailed evaluations of their performances, scoring themselves out of 5 and identifying ways in which they could have improved their performance. Similarly, the P7 group who supplied their definitions of the 5 cooperative learning elements mentioned group processing with minimal prompt and spoke of the evaluation sheets that they typically complete at the end of cooperative learning lessons.

Teacher support

In terms of teacher support, pupils noted teachers encouraging independent work but also being on hand to help if needed: "She comes round and if stuck, she helps you out. She organises it all, she tells us what we are doing and introduces and explains the lesson and also encourages. She gives us hints." An S1 group explained that the teacher typically employed strategies to facilitate development of skills. The strategies included circle time, not being allowed to talk unless holding an object and submitting problems anonymously in a 'problems box' and then discussing problems in groups. The P3 group also mentioned strategies that the teacher had provided to help them deal with frustration over not being allocated preferred roles: "if someone else had a number that we wanted and we felt that we could like punch them, the teacher said we should turn turtle, sit quiet and count to 10, and then say, 'it's ok, you can have that number because they are all important jobs to do.'" Finally, members in an S1 group mentioned how their teacher would endeavour to explore pupils' feelings about the work they were undertaking and attempt to "cheer them up." One pupil stated: "We used to have like cards on a key ring – sad, happy, excited and whatever you were feeling you sat it out and the teacher came and asked you about it."

Perceived benefits of cooperative learning

Pupils across all focus groups reported a number of gains associated with cooperative learning. They felt that generally the assignment of roles meant that tasks were finished more quickly and targets reached, and "if stuck" they were able to rely on others for support or "learn from each other". For example, one S1 pupil stated: "It is good in maths – if something you don't understand, someone else

can work it out differently and maybe you can understand it their way.” It was also felt across all groups that cooperative learning facilitated the learning process through sharing of ideas and the notion that “more brains is better than one.” Pupils explained that the greater emphasis on discussion was also beneficial to learning as “when you are talking about things it stays in your head but when you are writing it down you just scribble and don’t realise what you are writing.”

Pupils also recognised that the interpersonal skills developed through cooperative learning had enhanced their social confidence. This was highlighted among both groups of S1 pupils, who reported that their participation in cooperative learning had made the transition from primary to secondary school easier for them. Specifically, pupils were less fearful about starting secondary school and more confident about approaching new people. One pupil stated: “When you were just up and didn’t know people you just started to talk to them.” Other reported benefits of cooperative learning included the enjoyment that pupils gained.

Several pupils talked about how cooperative learning was “fun” and that it was “more interesting” than standard classes. One S1 pupil stated: “When you go to English you have to write all the time and I don’t like it but in his class he talks about it and you work in big groups and you learn a lot.” Others liked the fact that such group work ensures “no one is sitting back and letting other people do the work.”

Pupils across focus groups talked about the transferability of the benefits of cooperative learning that they gained in the classroom. For example, S1 pupils spoke of the social skills that they used when meeting new people on holiday and when playing team sports, while P7 pupils spoke of their compromising skills, as illustrated in the following quote: “...when you are in a shop with a friend and you are getting a big bottle of juice to take home and watch a movie and your friend wants salt popcorn but you want sweet – so then you have to agree and maybe go for chocolate.”

Challenges of cooperative learning

While pupils’ views of cooperative learning were generally very positive, some difficulties were reported. For example, P3 and P7 pupils highlighted difficulties associated with dealing with conflict and disagreement within the group. One pupil specified an instance where another group member was writing something down that she disagreed with. Similarly, a P4 pupil said: “Working together can be a bit hard at times if other ideas are not as good or if they only think of ordinary phrases and I know better ones.” Avoiding argument emerged as another challenge, with members of the P3 focus group recalling, “we didn’t work as a team, we got into an argument”, and members of a P7 group stating: “It is difficult if you have an answer, and the other person has a different answer and you need to agree as you can only have one answer; it is difficult to agree. And also if two people have two good answers but they are different and you need to agree, it can get into an argument.”

S5 pupils deviated somewhat from the other groups in terms of their views of cooperative learning. Specifically, they felt that cooperative learning often encouraged them to do less work as typically they would work for a while and then “just start talking”. When asked whether they work more effectively when using cooperative learning, one member of the group stated that she preferred to work on her own, 6 members were not sure and one member stated that it depended on the subject. The group did, however, agree that they would like to do more cooperative learning, but added, “in balance; you would just skive if you did it all the time.” The S5 group also felt that cooperative learning worked better in subjects where people could express different views (e.g. English) than in subjects that involved teaching facts (e.g. science).

Summary

All pupils had a general understanding of the concept of cooperative learning and most had a good grasp of the cooperative learning principles. Pupils valued the skills that they had developed in cooperative learning and there was some evidence to suggest that they were using these skills in other life domains. Teachers were seen to promote independent group work and assist only where necessary and, in some schools, teachers provided strategies to facilitate skill development. Pupils across focus groups were generally very positive about cooperative learning and perceived numerous benefits, including enhanced social confidence and more effective learning, which was more interesting and fun than standard lessons. At the same time, however, a number of disadvantages

were highlighted relating to resolving conflict within groups and dealing with different ability levels. Older pupils (S5) were more reserved about the benefits and perhaps felt that they had already developed many of the interpersonal skills promoted in cooperative learning.

Evaluation of North Lanarkshire's Cooperative Learning Project

Summary of parent interviews

One hundred parents of pupils across four schools were sent a letter inviting them to participate in a short telephone interview at a time which suited them about cooperative learning and its perceived impact on their children. Nineteen parents indicated they were willing to be contacted for interview. Telephone interviews were eventually carried out with 12 parents of pupils at 2 primary and 2 secondary schools. (Table 1 shows the year groups and gender mix of pupils.) Attempts were made to contact all parents who were willing to be interviewed but not all were able to be contacted.

Table 1: Year group and gender of pupils

| Year group of children | Boy | Girl |
|------------------------|-----|------|
| Primary 2 | | 1 |
| Primary 3 | 2 | |
| Primary 4 | | 4 |
| Primary 5 | | 1 |
| Primary 6 | 1 | 1 |
| Primary 7 | 1 | 1 |
| 2 nd year | 1 | |
| 3 rd year | 3 | 1 |
| 6 th year | 3 | |

Parental knowledge about cooperative learning

The interviews showed that parental knowledge about cooperative learning is somewhat limited. Of the 12 parents interviewed, eight claimed that they knew “nothing at all” or “not much” about cooperative learning, or that their knowledge was limited to what was conveyed in the letter from Strathclyde University, requesting their participation in this piece of research. Although two parents stated that they knew a “little bit” about the concept, it emerged that they thought it referred to establishing a partnership between parents and schools, as the following quote illustrates:

It's getting parents involved, you know. I mean I've got a really good relationship with the school; I can go up at anytime. And I think it's important for parents to be involved because that's the only way to help your kids.

Only a minority of parents (n=2) claimed to know what it entailed and described the concept in terms that reflected the information that had been provided to them:

It's where the children partner up and work in different groups with different children.

Quite a lot actually, because when my son's school started to use it they sent us information to read through and they also arranged a conference for parents. I'm on the parent teacher school board and they arranged a conference for us that was set up in the style of cooperative learning, so we could actually experience it. That was really useful.

Dissemination of information from schools to parents

A number of parents (n=7) claimed to have received no information about cooperative learning from schools ("I haven't had anything from the school", "I haven't received anything from the school"), or thought that they "probably had" but that they hadn't read it; "they probably have given me something, but I don't remember".

Of those who did remember having been briefed about the concept (either at a Parents' Night or via the letter from researchers at Strathclyde University), most then requested some clarification about what the concept entails: "Well, on Parents' Night we got told a bit about it, but what is it exactly?"

Parent/child talk about cooperative learning

Although the dissemination of information about cooperative learning seems to have been problematic, once the concept was explained, parents could recount instances of their children talking about their experiences with them. Furthermore, five parents said that when their children spoke about cooperative learning, they did so in very positive terms. One parent told how her child "really enjoys working with others", and is getting "a lot out of the interaction with other kids". Another related how her very shy (primary aged) daughter had developed confidence and self-assurance through such work:

My little girl has got a lot out of it. She's been involved in classroom discussions and has actually now spoken solo. She used to be really shy and wouldn't talk at all in the classroom, but she now contributes to these discussions. She used to hate group work but the teacher has really encouraged her and she's now quite confident.

Similarly, another parent spoke of her (teenaged) son's increasing self-esteem as a direct consequence of teacher involvement and of cooperative learning:

I have seen my eldest son going to [school] a nervous wreck and he's now a completely different person because the school picked up on it (on his low self esteem) and put him into lots of different projects and linked him up with others and put him in different groups and he's really come out of himself. I think the school has done that with others too – sussed out which children have low esteem and involved them and brought them out of themselves.

If parents mentioned negative aspects of cooperative learning, these were associated with the younger age of pupils, with some parents suggesting that early primary school students may find such work stressful:

I think my youngest finds it a bit unsettling. I think Primary 2 is too young really to be moving from group to group.

Overall, the interviews suggest that parents and their children were talking in positive terms about cooperative learning. When children were *not* discussing cooperative learning, this seemed to be a consequence of a general reticence to discuss issues with parents, rather than a reluctance to discuss cooperative learning *per se*, as the following quotes illustrate:

He's like all typical teenage boys; if I get a one word grunt I'm lucky! So no, he hasn't talked about it really.

I said to him 'Jason I've got this questionnaire, I'm willing to have an interview, what should I know?' And he just said, 'It's what goes on in the classroom', as if I should know all about it already.

Impact of cooperative learning on children

Overall, parents were very positive about cooperative learning, highlighting a number of positive impacts on children. Parents reported children gaining in confidence and overcoming barriers to classroom participation:

It's had a big impact. My little girl used to be really shy and now she isn't and is joining in and learning something.

They noted an increased enthusiasm for learning as a consequence:

It's definitely made my son more enthusiastic about what he's doing at school.

Parents noted benefits from sharing the learning experience, in terms of facilitating team-work, increasing awareness of different abilities and developing awareness of their own abilities in relation to others:

It enables them to share different experiences. I know that my daughter finds it reassuring that other kids sometimes experience difficulties with the same things she does. I think it helps them to know that others don't always find it easy either.

I think it makes them more able to work as a team and to share – share what they know as well as share tasks and resources.

Perceived importance of working cooperatively

Cooperative working was perceived to be very important by the sample of parents interviewed, with all 12 describing it as “important” or “very important”.

A number of parents (n=4) mentioned the benefits associated with developing social skills ('I think it's important for developing social skills and how to get on with people') and 'learning from others':

I think it's a good way to learn from others and gain support and also develop social skills at the same time.

This peer support was perceived to be important throughout a child's schooling; from primary to secondary, as this quote from a parent of a secondary school pupil shows:

And now that they're revising I think working together is helpful because they can support one another and share information. I think it's helpful for kids like Rebecca who tend to hold back when in a group and it encourages them to speak and take part more.

The ability and opportunity to work cooperatively was seen to be valuable for children in the long term, as they progressed through their school careers, and then later on in the workplace:

Very much so, particularly in this day and age, I think in any working environment nowadays it's imperative to have these skills – being able to work with others and able to communicate your own ideas effectively.

Cooperative learning was also seen as important in the short term, as it sustained motivation and enthusiasm for schoolwork:

I think it's really important. I think it teaches them about how to get on with others and work with others and they enjoy it, which is important at school too.

Conclusion

In these interviews with 12 parents, cooperative learning was perceived positively by parents themselves and by their children. Parents recounted instances of their children speaking with them about this form of learning, and described the ways in which it had increased their confidence and enthusiasm for learning. Parents themselves rated cooperative learning as very important, with perceived benefits including learning from others, developing social skills, increasing awareness of pupils' own and others' abilities, increasing confidence and overcoming barriers to classroom participation. Parents emphasised both the long- and short-term benefits of cooperative learning, in terms of facilitating pupils' education and developing transferable skills for the workplace. Although the dissemination of information about the concept (from schools to parents) was problematic, with the majority of parents claiming either not to have received information or not to have read it, cooperative learning was seen to be a valuable teaching strategy and numerous instances of the concept in action were recounted.

Evaluation of North Lanarkshire's cooperative learning project

Report of classroom observations

Purpose and rationale for observations

The main purpose of the classroom observations was to write up a descriptive analysis of a number of good practice cooperative units of learning. A semi-structured approach was taken and a fairly open observation framework was used, focusing on exemplification of the 5 cooperative learning principles in practice. In addition, the observation also took account of the appropriateness of the classroom environment, the resources used and the role of the teacher in facilitating the cooperative nature of the lesson.

Description of classes observed

During the period between 6 December 2006 and 23 January 2007, 9 classroom observations were undertaken by 2 members of the evaluation team. The majority of observations were conducted in cooperative learning lessons from start to finish; on 3 occasions only part of the lesson was observed. Where it was not possible to observe all lesson components (e.g. objective and purpose sharing or closure/extension), lesson plans were looked at or discussed with the teacher.

The observations were spread across the 5 case study schools as follows:

Secondary A - 4 observations
Secondary B - 1 observation
Primary A - 1 observation
Primary B - 1 observation
Primary C - 2 observations

The observations in Secondary A took place over 2 days.

The following stages were observed:

Primary 3
Primary 4
Primary 5
Primary 6
Secondary 1
Secondary 3
Secondary 5 (x 3)

Based on data from 8 classes, class sizes varied from 13 to 30 pupils, with the average class size being 22 (this information was not collected in 1 observation). In these 8 classes there was a total of 175 pupils. In 5 of these classes there was a total of 48 boys and 56 girls (this information was not collected in 3 observations). All classes were mixed gender, with the majority of classes having a higher number of girls. The greatest difference between genders was to be found in two S5 classes which respectively had 7 boys to 19 girls (ratio of 1:2.7) and 6 boys to 14 girls (ratio of 1:2.3).

The subjects addressed in the lessons were:

| | |
|---------------------------|------------------------------------|
| Higher Physical Education | Problem Solving |
| Higher English | Religious Education (x 2) |
| Higher History | Writing/Language |
| Chemistry | Environmental Studies – Technology |

The majority of the observations lasted between 50 minutes and one hour; 3 observations were of different lengths: one hour and 20 minutes, 30 minutes and 15 minutes.

The teachers and pupils observed had a wide range of cooperative learning experience: one teacher had been using cooperative learning approaches for about 2 to 3 years but was using it for the first time with the class which was observed; another class had started cooperative learning this academic year; while a number of other classes had been using the approach for about 2 years.

Learning objectives

A range of subjects and topics was observed. Curriculum foci and learning objectives of the lessons observed included:

- theories of three stages of skill learning – the ‘whys’ and ‘whats’ of the preparation or cognitive stage, practice or associative stage and automatic stage
- revision of close reading skills – synthesis (drawing out what is the same from two passages), demonstrating understanding by drawing out ideas in your own words, and showing how the writer used language to express ideas by quoting examples
- appeasement – in addition revision for forthcoming assessment and improvement of recall strategies (mind maps, mnemonics, rap, etc.)
- element bonding and formulae writing without diagrams
- problem solving – read the problem and put it into your own words, listen to each other, explain your own thinking, report back accurately and evaluate work as a group
- language/RME – academic tasks: sequencing and sentence writing; social tasks: listening and taking turns
- writing, language and conferencing – building on children’s vocabulary and improving story writing skills
- technology – academic task: understanding physics of balance and force; social task: teamwork
- one lesson was designed to introduce the class to cooperative learning for the first time – learning objectives covered were sharing ideas, taking roles and social skills (e.g. being polite).

In the vast majority of the lessons observed, the teacher introduced the unit of learning by explaining the learning and/or teaching goals and success criteria verbally. In some lessons, learning targets were shown on a flip chart or whiteboard and throughout the lesson they were referred to. A number of lessons observed were part of a sequence of units of learning; on these occasions it was generally sufficient to remind pupils of the objectives as outlined in a previous lesson and to explicitly link these to their past learning experiences. A number of primary teachers made use of the WALT (We Are Learning To...) technique, where learning intentions for each task were written on the whiteboard. The majority of primary and early secondary lessons were introduced as having both an academic and social task. Examples of social skills addressed include listening, being polite, working together and using quiet voices. Various teachers asked their pupils to consider what the particular social skills mean or why they are important. In one lesson a list of what it means to be polite was drawn up and in another lesson criteria for listening and talking skills were reviewed verbally with the children through question and answer sessions. These stages are in line with Bennett’s Mental Set and Objective and Purpose Sharing lesson design components as outlined in the Cooperative Learning Resource Booklet.

Some teachers noted that, although the benefits of cooperative learning are acknowledged, a lot of secondary school work in higher classes and at Higher level is done more individually and social skills are not always explicitly pointed out for these children. One secondary teacher specifically emphasised the importance of communication and social skills (e.g. talking to each other, all taking part and not getting angry) in addition to the learning skills.

Where a lesson had a number of distinguishable tasks, the activities were mostly introduced separately by the teacher or in an instruction sheet which was handed out. Sometimes instruction was given to a specific role (‘Now all reporters should come to the front of the class and read their segments in order to compose a story’) or pupil number (‘Please could all number threes pick up the sheets and pencils for their group’). In several lessons it was noted that after instructions had been explained or read, any child in a group could be asked to explain what the task was, so there was ongoing checking of understanding of task. In the lesson where cooperative learning was used for the

first time, the icebreaker activity of personal storytelling was used. This task promotes storytelling about personally significant events, experiences or concerns and can be powerful for teambuilding (Craigie & Green in Cooperative Learning Resource Booklet). In the lesson name badges were created with some of the pupils' favourite things written on them (e.g. place, food, singer); to the pupils' enjoyment, the teacher exemplified the activity by demonstrating her own preferences with supportive materials (e.g. Cliff Richard calendar!).

In many cooperative learning activities and particularly at primary school level, roles were assigned in order to promote positive interdependence amongst group members, e.g. one group consisted of a resource manager, timekeeper, reporter, air-traffic controller and social skills monitor while another one had a word finder, writer, checker and reporter.

A number of teachers explicitly listed evaluation as part of the lesson targets. Some made use of evaluation and group processing sheets in order for the pupils to evaluate the group successes and areas for improvement.

Cooperative learning activities and resources used

A number of cooperative learning lessons were part of a lesson sequence and therefore followed on from a previous lesson. On these occasions, the teacher referred to previous units of learning and according objectives.

Most cooperative group forming was predetermined by the teacher, mainly to make the most of the given group dynamics and to ensure a mixed ability setup (also refer to 'Role of the teacher'). With regard to group formation, different activities were observed; e.g. coloured cards, numbers or chocolate bars were given out and pupils had to find others with the same card, number or chocolate bar respectively. Other group formation activities included allocated seating, the use of the appointment clock (where each child has a drawn up clock in which peers' names are written at 3, 6, 9 and 12 o'clock and the teacher specifies which appointment needs to be worked with) and the jigsaw activity (where the pupils are handed part of a picture and need to find the other 'jigsaw' parts).

A number of the observed lessons used the 'expert group' approach. The pupils started in their base groups, then went on to learn a new element of a particular topic in an expert group and subsequently had to go back to their base group or the whole class to disseminate and teach the newly learnt skill or knowledge. For example, in a Higher Physical Education lesson, expert groups were formed with each focusing on one stage of learning a skill, i.e. the cognitive, associative and automatic stages. Pupils then returned to their base group and each had to teach their particular stage to the rest of the group. Interestingly, in the same class this approach was used as an energiser half-way through a double period. The expert groups each learned a few moves/steps of a dance, after which they then taught the others in their base group to eventually put all moves together in a sequence – an activity which appeared to be greatly enjoyed by the class. A Higher History lesson used graffiti sheets to facilitate the process of brainstorming. In the base groups, one sheet for each of five topics was passed around and each person in each group was required to write down as much as they could think of in relation to the topic. The pupils were then re-grouped and each expert group focused on identifying the key points of a particular topic and ways of remembering them, after which the pupils went back to their initial base groups to teach the rest of the group what they had learned. The objective of expert groups is to reach higher order learning, i.e. thinking that occurs at higher levels of abstraction. By teaching what they have learned, pupils will reinforce their own learning and improve retention of content, as illustrated in the learning pyramid (Craigie & Green in Cooperative Learning Resource Booklet).

In one observed Higher English lesson 'placemats' were used; pupils had to brainstorm ideas on two text passages after which they were required to write facts and a set of agreed opinions in the placemat. A sorting exercise was also undertaken by these pupils and a grid was used to help them justify their choice of which text passage was more favourable. They had to support their choice by referring to language used in the text and by generating ideas on both texts in their own words. A similar sorting task was done in a language and conferencing lesson at primary level; here the children made use of 'my text detective boards' ('I like this word because...' or 'It is an adjective because...').

To further reinforce the learning with regard to the 'whats' and 'whys' of the three stages of learning a skill in the PE lesson, blank concept maps were completed by the students (a concept map is a diagram showing the relationships between different concepts or abstract ideas).

In a primary language and writing lesson, children participated in a peer-assessment exercise in which they had to read other's story in pairs and check its spelling, punctuation and vocabulary by using a dictionary and thesaurus. Another cooperative learning activity in this lesson revolved around reading the big book in which the teacher had blanked out some words for the pairs to guess and discuss.

One lesson was specifically designed to introduce cooperative learning to this class for the first time in the particular subject. Activities were:

- organising the class into groups (group-formation)
- getting to know each other by discussing favourite things (personal story-telling)
- joint task deciding on a group name and logo (team-building)
- a brief whole class group processing activity.

In a small number of lessons competition between groups was encouraged. An observed technology lesson outlined two main objectives: firstly, pupil groups had to try and build a tower with art straws that could stay upright and secondly, the groups had to compete with each other to make the tallest tower.

Role-assignment to promote positive interdependence was evident, particularly at primary school level. In most lessons individual accountability was structured into the lesson by asking any one member to respond on behalf of the group or through individual assessment. In some lessons 'spot checks' – quick fire question and answers – were run and individual group members were asked to answer a question ('Please could number 2 of this group tell us what the key stages of learning a skill are?'). In one lesson the group was allowed to 'huddle' and give a group answer if the particular individual did not know the answer (also refer to 'Exemplification of the five principles').

Materials and resources used in the cooperative learning lessons observed were task-specific; e.g. sheets of paper with placemat and grid pre-drawn, question & answer cards, mapping sheets, instructions, sequence boards, word mats, 'My text detective boards', masking tape and art straws. In most lessons resources used also included topic materials (e.g. chemistry booklet with listing of all elements) and work or notes from previous lessons.

Classroom environment

The beneficial educational outcomes of cooperative learning groups are due to the interaction patterns and verbal exchanges that take place among pupils (Johnson & Johnson & Smith in Cooperative Learning Resource Booklet). The basic element of face-to-face interaction ensures that group members are close in proximity to each other and take part in dialogue that promotes continued progress (Rolheiser-Bennett, Bennett and Stevahn in Cooperative Learning Resource Booklet). In a number of classroom environments in which observations took place, this interactive process was facilitated by enabling pupils to work face-to-face, knee-to-knee and eye-to-eye. In other cooperative learning setups, the children were instructed to work with their 'shoulder partner' and tables were often laid out in a way for pupils to see both each other and the teacher easily. In a number of classrooms, available space and furniture was limited. Tightly packed classrooms with little room to manoeuvre, fixed furniture and resources not easily accessible for all may not be conducive to cooperative learning. However, despite these practical limitations, staff and pupils seemed to be very willing and able to work cooperatively in the restricted physical environment available to them.

In some classrooms, displays relating to cooperative learning were observed. Pupil work from previous cooperative lessons was seen in the form of 'mind map galleries'. These mental pictures enable children to reflect on visually recorded relationships between different concepts and promote fluency and organisation of thoughts (Rolheiser-Bennett, Bennett and Stevahn in Cooperative Learning Resource Booklet). Colourful overviews of cooperative learning activities and benefits, including a number of social skill displays (e.g. 'encouraging phrases'), were also noted.

Exemplification of the five principles

To accomplish effective cooperative group work it is essential for the lesson to be structured around the 5 basic elements of positive interdependence, individual and group accountability, face-to-face promotive interaction, social skills and group processing. Our observations focused on seeing these elements in practice.

Positive interdependence

This element refers to the fact that team members need each other to succeed in completing the group's task. Pupils must feel that they 'sink or swim together'. One way of instilling this principle is through the establishment of mutual goals in which pupils must learn something and then teach it to others. This was demonstrated in a number of lessons observed through the use of expert and base groups, as reported above. The objective was for the students to reach higher order learning by reinforcing their own learning and improving retention of content through teaching on their expert area.

Another method of promoting positive interdependence that was observed is the provision of materials that need to be shared amongst group members, e.g. art materials or a text book.

Joint rewards for group achievement, another method of encouraging positive interdependence, consisted mainly of general praise and well-done remarks by the teacher. Inter-group cooperation was encouraged in one primary class where groups rewarded each other with a number of different claps, e.g. the crocodile clap or royal wave. Positive outside force interdependence exists when groups are placed in competition with each other: this was encouraged in an observed primary task where groups were competing with one another to build the tallest tower.

Finally, a high number of cooperative group members had been assigned roles which encouraged the contribution of all individuals. Assigned roles were mainly observed in primary classes and included both work and skill roles such as manager, resource boss, word finder, encourager, writer, time-keeper, checker and reporter. In some of the lessons observed, the role of the general manager and encourager was to monitor if everybody was playing their part in completing their task. In most groups the responsibility assignment seemed to work well, but at times a child seemed to be confused or unhappy about their role, e.g. in one lesson disagreement between a writer and his reporter partner occurred when the reporter was allowed to choose a particular word for feedback which the writer was unhappy with. In another lesson the cooperative learning group blamed the writer during the feedback stage, even though they should all have been telling him what to write. On both of these occasions, the teacher addressed the issue. One teacher advised after the lesson that she ensures she regularly changes role formation to provide variety and let all children experience the different responsibilities.

Individual accountability

This element needs to be structured into the cooperative learning lesson to ensure that each pupil feels responsible for learning the material, helping the group and demonstrating the accomplishment of the learning. In the lessons observed this was promoted through random whole-class checking, where individuals were asked to report on behalf of their group to the class and their teacher. The role of reporter was often used and in one classroom this process was referred to as 'stand and deliver'. A number of lessons used the learning-teaching principle, where pupils must learn the material in expert groups and then teach it to others in their base groups. This also promotes individual accountability, as all pupils need to learn and record the material in some way for it to be re-taught.

On some occasions the observed lesson was part of a series in which a later lesson was specifically organised for individual reporting or assessment. In some lessons the teacher asked the pupils to reflect on their individual contributions and, if they were unhappy with their contribution, to consider why this might be. In another lesson formative assessment was ongoing through the use of small white-boards on which pupils were to write their answers and thoughts and show them to the teacher and class.

Peer assessment was also endorsed in a number of lessons through correction and support provided by the group or rest of the class. The focus of one primary lesson was self and peer evaluation

through proofreading, correcting, conferencing and justifying their work. The task required them to read each other's story and edit their spelling, punctuation and vocabulary by using a dictionary and thesaurus. Another activity involved the writer to be peer-assessed, e.g. the checker had to ensure that capitals, full stops and the word 'because' had been used.

Face-to-face and promotive interaction

As outlined in the 'Classroom environment' section, the interactional process is facilitated through enabling pupils to work face-to-face and eye-to-eye; for example, in one classroom this was encouraged by letting pupils work at round tables. On some occasions constructive talk and interaction amongst pupils was noted but in most cases, particularly at primary level, the teacher's constructive remarks were needed to help the teams challenge each other or identify alternatives. One primary group, who were building a tower as part of a technology lesson, attempted to get their tower to stand up by taping it to the floor, which was quite inventive!

Checking for understanding within groups was observed occasionally, although at primary level the children tended to go to the teacher for help and instructions. We observed pupils actively listening to each other and agreeing or, when appropriate, coming to a compromise when challenged by a group member's point of view. Some primary pupils did challenge each other during the cooperative learning task, but had not yet mastered talking it through or resolving it.

A lot of on-task working was seen, although a number of groups had one or two pupils discussing things unrelated to the activity.

Generally most children worked well together and there were occasions where children actively helped each other, e.g. with the spelling of a particular word. In some groups more reflection or discussion took place, whereas in others one particular pupil took a strong lead in completing the work and other team members took on a more passive role. Appropriate support and task assistance from the teacher meant that all children could eventually contribute and learning was progressed.

Some praise and acknowledgement of each other's contribution was observed (e.g. "Well done", "That is a good idea").

Interpersonal and social skills

In the majority of lessons the pupils were displaying general cooperative behaviour, although some groups and individuals were better than others at taking turns, pacing group work, including everyone and saying kind things. Some competitiveness was noted during the task in which the groups were encouraged to build the tallest tower ("He is looking at our tower!! Don't look but build your own!!" "Your tower is rubbish, anyway"). However, not many disagreements or conflicts arose during the work. At times the specific setup of the task ensured all children were allowed to have a say, e.g. in a language activity both pair members were encouraged to pick 3 words from a story. In some pairs or groups observed there clearly was a more 'dominant' child leading on the work to be done; it is possible that at times the other children just accepted their view rather than challenging this and working to reach a consensus.

The majority of primary and early secondary lessons were introduced as having both an academic and social task. Examples of social skills addressed include listening, being polite, working together and using quiet voices and these objectives were mainly met. Intermittently, teachers had to remind pupils to use their quiet voices, to encourage each other and to share resources, but mostly pupils seemed to work well together and reach agreement on the task as required.

As noted above, the S5 lessons put less explicit emphasis on social skills. One teacher did remind the class that the social skill they would be focusing on was listening and sharing information (but that was possibly for the benefit of the observer!). Discussions with the teachers after the lessons indicated that it was considered less necessary by this stage as the students had a good understanding of what was required. At Higher level there was also generally more emphasis on individual work in preparation for examinations and so cooperative learning might be used less often.

Group processing

In order to progress their learning and improve, pupils need time and procedures for analysing how well their group is functioning and how well they are using collaborative skills (Johnson, Johnson &

Smith in Cooperative Learning Resource Booklet). Group processing can be done individually, in small groups or with the whole class and in many lessons observed this evaluation was an explicit part of the learning targets and lesson plans. At times the group processing was embedded within the activity, which meant evaluation was ongoing during the cooperative learning task.

On one occasion individual pupils were asked to complete an evaluation sheet, but in most lessons it was reviewed verbally how the children had succeeded with the activity, how well they had worked together and what could have been done better. In addition to these evaluation questions for the children, a number of lessons or scrutinised lesson plans specifically included assessment foci for the teacher, e.g. did the children succeed with the activity on hand, did they work well together and did they stick to their individual roles?

A number of the observed lessons ran out of time, so that the group processing stage was moved to the next lesson – this time lapse between the task and its evaluation may not be as effective as group processing immediately following the cooperative learning activity.

Role of the teacher

The role of the teacher in facilitating effective collaborative group work is of paramount importance. One of the teachers interviewed as part of this evaluation said: “Planning for cooperative lessons may take time, but during implementation you can take a more facilitative role which enables you to more effectively monitor pupils’ behaviour and learning”. The teacher’s role in establishing effective cooperative learning groups starts with the lesson design process and continues from implementation of the cooperative learning activities to evaluation of the lesson.

Before the cooperative lesson

The teacher has to make a number of decisions before the cooperative lesson is offered. Academic and social objectives need to be chosen, group size, membership and structure needs to be decided upon and the material and physical environment needs to be planned.

In the observed lessons, most of the group formations had been predetermined by the teacher to enable heterogeneity (see also ‘Cooperative learning activities and resources used’). Some of the schools in which we observed made use of cooperative learning lesson plan templates, which enabled the teachers to easily record and structure the lesson framework and embedding of the 5 principles.

At the start of and during the cooperative lesson

Most teachers in the lessons observed specified academic and collaborative objectives and linked these to pupils’ past learning experiences to establish meaning and interest – this develops a ‘mental set’ in the pupils (Bennett in Cooperative Learning Resource Booklet). Throughout the lesson the majority of teachers referred to and emphasised the purpose of the activities.

In all lessons the teacher interacted with the groups or with individuals within the groups. The teachers monitored the different groups and moved around the room to answer questions for separate groups. To ensure the children understood the task, teachers asked different individuals to report their answer. Checking for understanding is a process that assists teachers to monitor the learning and determine if the students have attained an appropriate level of competence, which can help them to make adjustments to their teaching (Bennett in Cooperative Learning Resource Booklet). Where pupils were having trouble with an activity, the teacher provided task assistance and helped with knowledge aspects of the task.

All teachers identified and resolved difficulties and most encouraged pupils to share and help each other. When a problem in the group occurred, younger children tended to go to the teacher for help rather than talking it through and resolving it in the group. Reminders were given to encourage pupils to share resources, and inter-group cooperation was promoted by encouraging children to listen to other group reporters during the feedback stage.

In some lessons expected behaviours were clearly specified, e.g. in one of the primary observations children were asked and reminded about the skill of using quiet voices.

Besides monitoring and facilitating effective group work, we also saw some good examples of teachers building on what the children were doing by identifying and utilising opportunities for further learning. Examples include the suggestion for children to use a ruler to measure which tower is the tallest.

At the end of the cooperative lesson

Group processing was done by a majority of the teachers observed. At times, evaluation was ongoing during the cooperative learning tasks. A small number of primary teachers used the fist of 5 in order for children to indicate their opinion by showing a fist or a number of fingers. Whole-class checking was done on a number of occasions and individuals were asked to give answers on behalf of their group. To reinforce pupil learning and provide closure to the lesson, most groups were encouraged to share and discuss answers. Some teachers ended with explicit praise on how the children's knowledge in the curricular area or on the lesson topic was improving.

After the classroom observations, teachers were asked to reflect on what went well and how the particular lesson observed compared to other lessons they had run cooperatively. Most spoke of the pupils' improvement in the area of cooperative learning. It was felt that the more often cooperative learning was used, the more effective pupils became in compromising, reaching agreements and group processing. Most pupils were said to be engaged in constructive dialogue, although some (primary) teachers said pupils needed to be actively encouraged to resolve problems arising in the group rather than immediately turning to them for help. Some early primary teachers felt that young children work better in pairs than in groups and although most teachers reported on the benefits of cooperative learning, the need to balance it with individual teaching approaches was emphasised.

Summary of strengths and challenges

In the 9 lessons observed, the main strengths can be identified as follows:

- Some good lesson planning was observed and lesson plan recording covered the lesson design stage right through to the processing and evaluation phase
- In the vast majority of the lessons observed, the unit of learning was introduced by linking it to pupils' previous knowledge – from this linking process, clear and meaningful objectives were outlined
- The majority of lessons were introduced as having both an academic and social task
- Heterogeneous groups are the most powerful and pupils were assigned to cooperative learning groups accordingly
- Peer assessment was used and well structured into the cooperative learning units
- Learning was consolidated and reinforced through a number of activities, e.g. re-teaching and the use of concept maps
- In most lessons (some of) the 5 basic principles were embedded
- Evaluation was listed as an explicit part of the learning targets for a number of lessons
- Group processing was strong in a number of lessons.

Some challenges that were noted are:

- There are some practical limitations with regard to physical environment.
- The inclusion of social skills is promoted as an essential component of cooperative learning. However, the need for explicit reference to social skills was considered less of a priority at upper secondary level as pupils had well-developed skills and also tended to work more individually in preparation for exams. Observation of other classes may have shown instances of higher level social skills; at that senior stage there is potential to focus on the application of social skills in more complex situations such as democratic decision-making, conflict resolution, diplomacy and debating skills.
- There is a need to promote constructive dialogue within cooperative learning groups, e.g. to encourage children to resolve problems and think through alternatives with their peers (i.e. the promotive interaction principle).
- Time limitations do not consistently allow for all lesson stages to be implemented, e.g. formal lesson plan recording or the group processing phase sometimes get overlooked, but are essential for teachers and pupils to progress their respective teaching and learning processes.

Reference

Ward, C. & Craigen, J. (1999). Cooperative Learning – A Resource Booklet

Evaluation of North Lanarkshire's Cooperative Learning Project

Report of teacher survey

This survey was carried out online in February 2007. Invitations to complete the survey were sent by the local authority to all schools that had teachers trained in using cooperative learning. The request was sent in a letter signed by the Director of Education. In discussion with the local authority it was agreed that the survey should focus on classroom practice and therefore, although other people had been trained, the questionnaire should be addressed to teachers; secondly, as the authority were particularly interested in the benefits of the support provided by the authority, only those who had completed the authority's 3-day training academies should be asked to complete it. The authority indicated that the following numbers of teachers had completed the 3 day academy:

- Primary teachers 1026
- Secondary teachers 595
- Special school teachers 65
- Nursery teachers 5

To obtain a representative sample of each group, responses would be required from about 300 primary, 250 secondary and as many of the special school teachers as possible. Despite a reminder being sent to all schools and an extension to the closing date, only 207 responses were received. This was disappointing. This return gives an indication of the views of teachers in North Lanarkshire who have received training in cooperative learning, although it cannot be taken as a truly representative sample. There is nothing to suggest that it is unrepresentative, although self-selection may mean that the more committed have chosen to respond.

The data are presented in this annexe following the questions in the survey. Where totals do not add up to the total sample, this is because of a small number of missing responses. Where percentages do not add up to 100, it is because of the missing responses and rounding to the nearest whole number. Any variations from this pattern are explained in the text.

In most cases, the figures represent the sample as a whole. The data were investigated to see if there were any differences between subsets of the sample; for example, primary teachers and secondary teachers, frequency of use of cooperative learning since training, frequency of embedding cooperative learning principles in lessons and time since initial training. These were investigated using t-test and ANOVA or equivalent non-parametric tests (Mann-Whitney and Kruskal-Wallis) as appropriate to the data. Significance level was set at $p < 0.05$. Relationships and differences have been highlighted, although the details of the inferential statistics have not been reported.

The sample

Out of the 207 respondents, 8 indicated that they had not used cooperative learning at all since they had attended the academy. These 8 were extracted from the main dataset and analysed separately. The results presented first are based on 199 respondents, with the views of the 8 given at the end.

1. Name of school

The respondents represented:

- 23 of the authority's 25 secondary schools
- 50 of the authority's 127 primary schools
- 4 of the authorities 23 nursery schools/centres*
- 3 of the authority's 11 special schools.

* As noted above, only a small number of nursery teachers had been trained.

2. Which sector do you teach in?

Responses were received from the different sectors as follows:

| | n | % of sample | % of CL trained teachers |
|-------------------|-----|-------------|--------------------------|
| • Nursery | 4 | 2% | 80% |
| • Primary | 96 | 48% | 9% |
| • Secondary | 86 | 43% | 14% |
| • Special schools | 13 | 7% | 20% |
| • Total | 199 | 100% | 12% |

Of the special school teachers, 4 were primary, 6 were secondary and 3 were from 'all through' schools. The special teachers in secondary provision were all based in mainstream secondary schools. For the purposes of analysis, the nursery respondents have been combined with the primary responses.

3. Question about stage of teaching for primary teachers

Table G1: Classes taught by primary teachers

| stage | P1 | P1/2 | P2 | P2/3 | P3 | P3/4 | P4 | P4/5 | P5 | P5/6 | P6 | P6/7 | P7 | 3+ yrs | not given | total |
|-------|----|------|----|------|----|------|----|------|----|------|----|------|----|--------|-----------|-------|
| n | 11 | 4 | 1 | 4 | 3 | 2 | 8 | 4 | 9 | 1 | 7 | 3 | 12 | 10 | 17 | 96 |

Primary teachers in the sample represented a wide spread across the different stages of primary school. Of the 69 who were teaching a specific age and stage, approximately half were from P1 to P4 and half from P5 to P7. The 17 for whom specific year groups were not recorded were principal teachers, head teachers and deputy head teachers. Of the 10 involved in 3 or more years, 5 indicated they were class teachers and so may have been support staff, but this category of staff was not an option offered in the survey. The others were principal teachers or deputy head teachers.

4. Secondary teachers – year groups and subjects taught

Secondary teachers were asked to indicate which subjects they taught, the year groups they taught and whether or not they used cooperative learning with these classes.

The 86 secondary teachers reported teaching the following subjects:

| | |
|--------------------|-------------|
| • Science | 15 teachers |
| • PSE | 15 teachers |
| • RME | 14 teachers |
| • English | 14 teachers |
| • Mathematics | 11 teachers |
| • History | 7 teachers |
| • ICT | 7 teachers |
| • Modern Studies | 6 teachers |
| • Geography | 6 teachers |
| • Music | 6 teachers |
| • Modern languages | 5 teachers |
| • Tech Studies | 5 teachers |
| • Drama | 2 teachers |
| • Art & Design | 2 teachers |
| • Home Economics | 1 teacher |
| • PE | 1 teacher |
| • Other | 14 teachers |

These add up to more than the total number of teachers in the sample because some teach more than one subject. While these figures suggest that cooperative learning has been introduced across all subject areas in secondary schools in North Lanarkshire, they cannot be taken to be representative of the extent to which cooperative learning is used; they merely represent the teachers who chose to respond to the survey.

The 86 teachers reported 325 occurrences of cooperative learning in use across all year groups and all the above subject areas. They reported 94 occurrences of cooperative learning not being used. The details according to subject area are given in table G2.

Table G2: Reported occurrences of classes by subject area – including and not including cooperative learning

| Subject area (No of teachers) | total number of classes taught | number of classes in which CL is used | number of classes in which CL is not used |
|----------------------------------|-----------------------------------|---|---|
| Science (15) | 65 | 56 | 9 |
| PSE (15) | 30 | 27 | 3 |
| RME (14) | 32 | 32 | 0 |
| English (14) | 38 | 33 | 5 |
| Maths (11) | 31 | 18 | 13 |
| History (7) | 19 | 19 | 0 |
| ICT (7) | 17 | 14 | 3 |
| Modern Studies (6) | 21 | 19 | 2 |
| Geography (6) | 24 | 18 | 6 |
| Music (6) | 33 | 16 | 17 |
| Modern Languages (5) | 23 | 14 | 9 |
| Tech Studies (5) | 26 | 17 | 9 |
| Drama (2) | 6 | 6 | 0 |
| Art & Design (2) | 11 | 7 | 4 |
| Home Economics (1) | 5 | 3 | 2 |
| PE (1) | 4 | 2 | 2 |
| Other (14) | 34 | 24 | 10 |
| Total | 419 | 325 (78%) | 94 (22%) |

The teachers reported using cooperative learning more frequently than not using cooperative learning with their classes. Mathematics and music are the only two subjects where teachers in this sample were not using cooperative learning with a high proportion of classes (42% of maths classes and 52% of music classes). A tentative conclusion is that where teachers are familiar with cooperative learning principles they are more likely to use it than not across their classes.

Table G3: Reported occurrences of classes by year group – including and not including cooperative learning

| Year group | total classes | number of classes in which CL is used | number of classes in which CL is not used |
|------------|---------------|---|--|
| S1 | 73 | 70 (95%) | 3 |
| S2 | 77 | 68 (88%) | 9 |
| S3 | 83 | 62 (75%) | 21 |
| S4 | 77 | 52 (68%) | 25 |
| S5 | 68 | 47 (69%) | 21 |
| S6 | 41 | 26 (63%) | 15 |
| total | 419 | 325 (78%) | 94 |

The 86 teachers reported teaching across all year groups with a slightly higher representation of S3 classes and a lower representation of S6 classes. This sample reported a very high use of cooperative learning with S1 and S2 classes (95% and 88% respectively). The other years had over two-thirds of classes where cooperative learning was used. The lowest use was in S6, where just over 60% usage was reported.

5. Gender

There were 35 male teachers (18%) and 163 female teachers (82%) in the sample. They represented the sectors as follows:

| Sector | male | female |
|-------------------|----------|----------|
| • nursery/primary | 8 (8%) | 91 (90%) |
| • secondary | 24 (28%) | 62 (72%) |
| • special | 3 (23%) | 10 (77%) |

6. How long have you been teaching?

- 1 – 5 years 33 (17%)
- 6 – 10 years 42 (21%)
- 11 – 15 years 32 (16%)
- 16+ years 91 (46%)

Just under half the sample had been teaching for more than 16 years, with less than a fifth in the first 5 years of teaching.

7. What is your main role in school?

Table G4: Main role of participants by sector

| | Class teacher | Principal teacher | Deputy head | Headteacher |
|-----------------|---------------|-------------------|-------------|-------------|
| nursery/primary | 60 (60%) | 18 (18%) | 10 (10%) | 12 (12%) |
| secondary* | 39 (46%) | 33 (39%) | 19 (12%) | 2 (2%) |
| special | 8 (62%) | 4 (31%) | 1 (8%) | 0 |
| total | 107 (54%) | 55 (28%) | 21 (11%) | 14 (7%) |

* 2 missing responses

Note: where responses are analysed to investigate if the people in different roles had a different perspective, the DHT and HT roles were combined to represent one senior management role.

Training and development for cooperative learning

(Note: 5 respondents from one secondary school did not answer the questions on training and development although they responded to the remainder of the questionnaire; the responses in this section are, therefore, based on the 194 who did respond.)

8. When did you attend the 3-day academy training?

- 2002 8 (4%)
- 2003 18 (9%)
- 2004 32 (16%)
- 2005 69 (36%)
- 2006 56 (29%)
- 2007 11 (6%)

The majority of the respondents (71%) had completed the 3-day academy training since 2005.

9. Please indicate which of the following you have attended.

- Recall Day 1 101 (52%)
- Recall Day 2 16 (8%)
- CL in every lesson 25 (13%)
- Social Skills Day 9 (5%)
- Other 17 (9%)

While just over half of the respondents had attended the first recall day, only a small number had attended a second recall day. Other training that had been attended included twilight sessions (4), school staff meetings run in cooperative way (3) school inset (2), 2006 conference (2), training for trainers (2), a 2-day course (1), course for supporters (1), EU course (1).

10. Please indicate how helpful you have found the following activities. If you have not participated in some of them then please choose 'not relevant' as appropriate.

The options given in this question included both the most frequent formal training, ie the 3-day academy and the recall days. The other options represented a range of potential sources of support, and therefore, the 'not relevant' option is important as it is an indicator that people had not experienced them.

With respect to how helpful people had found the 3-day academy, the responses were:

- Very helpful 170 (88%)
- Helpful 22 (11%)
- Adequate 1 (0.5%)
- Not at all helpful 0

It is therefore safe to say that all respondents found the 3-day academy a very satisfactory experience. There was some difference between primary and secondary respondents, with 94% of primary teachers indicating the training was very helpful, compared to 80% of secondary teachers.

The responses of the 101 (52%) who attended the recall days were:

- Very helpful 68 (67%)
- Helpful 25 (25%)
- Adequate 7 (7%)
- Not at all helpful 1 (1%)

Again the majority found the recall days a positive experience, though with a smaller proportion opting for very helpful; 78% of primary teachers thought the recall day was very helpful, compared to 52% of secondary teachers, who were more likely to indicate it was helpful.

The numbers and percentages (of the 194 who responded to the question about training) who reported taking part in other activities were:

- LA intranet and First Class 134 (69%)
- networking with my colleagues 133 (69%)
- school meeting on coop lines 122 (63%)
- teacher produced materials 110 (57%)
- support from authority DOs 93 (48%)
- in-house training 92 (47%)

The most frequently reported forms of support were making use of the LA intranet and networking with colleagues. Almost two-thirds had experienced school meetings run in a cooperative way and

the majority had shared other teacher-produced materials. Almost a half had worked with the authority development officers; and almost a half had taken part in in-house training.

The respondents' views on how helpful each of these were are given in table G5. The percentages are based on those who had participated in the named activity.

Table G5: Perceived helpfulness of various types of development activities

| | Not at all helpful | Adequate | Helpful | Very helpful | m (sd) |
|--|--------------------|----------|----------|--------------|-------------|
| Networking with school colleagues (133) | - | 9 (7%) | 72 (54%) | 52 (39%) | 3.32 (0.60) |
| Teacher-produced materials (110) | 2 (2%) | 8 (7%) | 71 (65%) | 29 (26%) | 3.15 (0.62) |
| In-house training (92) | 2 (2%) | 18 (20%) | 37 (40%) | 35 (38%) | 3.14 (0.81) |
| School meetings on coop lines (122) | 7 (6%) | 18 (15%) | 56 (46%) | 41 (34%) | 3.07 (0.85) |
| Support from authority development officers (93) | 8 (8%) | 19 (20%) | 36 (39%) | 30 (32%) | 2.95 (0.94) |
| LA intranet and First Class (134) | 9 (7%) | 35 (26%) | 66 (49%) | 24 (18%) | 2.78 (0.82) |

Overall, the majority of those who had experienced each kind of support found them helpful. However, the activities most likely to be found beneficial were those based in the school, with networking with colleagues found to be the most helpful. Although using the LA intranet had been reported as one of the most frequently accessed sources of support, it was the one found to be least helpful.

Primary teachers were more positive than secondary teachers with regard to the benefits of in-house training (60% v 31% very helpful) and school meetings run using cooperative learning approaches (63% v 31% very helpful). Senior management were more positive than class teachers on the benefits of in-house training (67% v 26% very helpful) and support from the development officers (55% v 27% very helpful).

11. What support would you like to take forward your use of cooperative learning?

One hundred and twenty-nine teachers answered this question. While three teachers commented that they had received sufficient support to implement cooperative learning techniques, the others identified support that could enhance their use of cooperative learning. Their responses represented the following themes: training opportunities, internal support, provision of resources and policy development.

In terms of training opportunities, the most frequently mentioned suggestions included provision of recall days/refresher courses and increased opportunities to shadow and network with internal and external cooperative learning practitioners. Recall days and further in-service training were seen to be particularly useful, with 30 teachers reporting that they would like to attend such courses in the future. Typical comments included the following: *I'd like to be given the opportunity to attend a recall day just to refresh my mind on what I learned during the initial 3 day training course and to discuss successes with other teachers.* Three teachers also reported their interest in attending a social skills training day.

Eleven teachers commented that they would appreciate the chance to observe, either in person or by video, other teachers or development officers to gain an insight into how they implement the techniques. Several teachers (7) commented that they had found support provided by local authority development officers to be extremely useful and that continued support through school visits would be appreciated. One teacher felt that collaborative opportunities with specialist practitioners would be particularly helpful: *It would be useful if a specialist in cooperative learning came in to co-teach a few co-operative learning lessons (would help consolidate theory covered on the course).* More time to network with other teachers to discuss materials and share ideas was mentioned by a number of teachers (20). It was generally felt that high volumes of preparation time were required and that

consultation with teachers internally as well as liaison with teachers from other schools would help to lessen the workload through sharing of resources.

Several teachers felt that more internal support was required for them to successfully implement co-operative learning techniques. As mentioned above, it was perceived that more time was required to network with and observe other practitioners. Due to the perceived time-consuming nature of lesson preparation, nine teachers reported that they required more time to develop materials. One school appeared to have resolved this issue to some extent through provision of a monthly 'drop-in clinic' for co-operative learning. Another teacher suggested that it would be useful to have a committee within the school that cascades ideas and materials.

One of the most common themes concerned provision of cooperative learning resources. Twenty teachers reported that the provision of a resource bank of tested materials would be useful. Such a resource might contain examples of good practice and ways of solving problems. One teacher, for example, noted that it would be helpful to have *resources produced and explained by other teachers that have used the techniques. These could be volunteered by teachers all over Scotland and put into a booklet that schools could buy.* A further 8 teachers identified the need for more subject-specific materials for lesson use and an additional 9 teachers suggested that it would be helpful if teachers submitted lesson plans and resources to support cooperative learning activities on the intranet. Finally, 2 teachers identified the need for more resources to assist in lesson planning and 1 teacher suggested that a forward plan checklist would be useful to ensure that teachers use a balanced range of cooperative learning activities.

In addition to the time taken to develop cooperative learning materials, it was felt that curriculum requirements present competing demands that often result in activities such as cooperative learning being low priority. In the light of this, some teachers saw the need for policy development relating to cooperative learning. Specifically, 4 teachers felt that all teachers should be trained in cooperative learning. A further 6 teachers suggested that cooperative learning should be embedded in the curriculum by way of whole school policies that ensure cooperative learning is implemented in every class.

Using Cooperative Learning

Note: in some of the tables that follow there are a small number of missing responses. In the open section at the end a few teachers explained that they had not responded to all questions as they had only recently been trained and, although they had tried a few lessons, felt they did not have enough experience to respond to the questions.

12. How often have you used cooperative learning since completing the Academy?

Table G6: Frequency of use of cooperative learning by sector

| Sector | Regularly | Occasionally |
|-----------------|-----------|--------------|
| Nursery/Primary | 65 (65%) | 35 (35%) |
| Secondary | 34 (40%) | 52 (60%) |
| Special | 7 (54%) | 6 (46%) |
| Total | 106 (53%) | 93 (47%) |

Primary teachers are more likely to report using cooperative learning on a regular basis than secondary teachers, though around one-third of primary teachers report occasional use. The responses were analysed to see if people in different roles responded differently, but just over 50% of class teachers, principal teachers and senior managers reported regular use. All 3 groups were more likely to use CL in primary school than secondary.

(Note: questions 13 and 14 were for those who responded to a third option, 'I've not used it'. As indicated above, 8 people chose this option. Their views are reported at the end of this appendix.)

15. Please indicate how you have found developing and using cooperative learning principles with your pupils.

Table G7: Extent of challenge to teachers in using cooperative learning principles

V Ch = very challenging; Ch = challenging; Sf = straightforward; V Sf = very straightforward*

| | V Ch | Ch | Sf | V Sf | m (sd) |
|--|--------|----------|-----------|----------|-------------|
| Sharing academic and social goals | 2 (1%) | 44 (22%) | 109 (55%) | 41 (21%) | 2.96 (0.69) |
| Opportunities for developing social skills | 3 (2%) | 47 (24%) | 108 (54%) | 36 (18%) | 2.91 (0.69) |
| Team and group building | 6 (3%) | 59 (30%) | 92 (46%) | 36 (18%) | 2.82 (0.76) |
| Requiring individual accountability | 4 (2%) | 74 (37%) | 103 (52%) | 15 (8%) | 2.66 (0.65) |
| Group processing activities | 4 (2%) | 81 (41%) | 92 (46%) | 19 (10%) | 2.64 (0.68) |
| Encouraging positive interdependence | 6 (3%) | 83 (42%) | 84 (42%) | 24 (12%) | 2.64 (0.73) |

* V Ch = 1 to V Sf = 4; therefore the higher the mean, the more straightforward respondents found using the principle.

The majority of respondents found introducing the principles of cooperative learning straightforward or very straightforward, though between a quarter and 45% found some aspects challenging. Sharing academic and social goals and providing opportunities for developing social skills provided the least level of challenge (with around a quarter finding these challenging). Around one-third found using team and group building challenging, while the more specific cooperative learning principles of individual accountability, group processing and positive interdependence provided the greatest challenges, with approximately 2 in 5 indicating these were challenging to develop and use.

Secondary teachers were more likely to indicate that some aspects were challenging compared to primary teachers, namely:

| | % challenging or very challenging | |
|--|-----------------------------------|---------|
| | secondary | primary |
| • sharing academic and social goals | 36% | 12% |
| • opportunities for developing social skills | 40% | 13% |
| • requiring individual accountability | 51% | 32% |
| • encouraging positive interdependence | 55% | 37% |

16. How often do you prepare a lesson or unit of learning that embeds all 5 cooperative learning principles?

Table G8: Frequency of embedding all 5 cooperative learning principles

| Sector | Never | Sometimes | Most times | Always |
|-----------------|---------|-----------|------------|----------|
| Nursery/primary | 0 | 42 (42%) | 45 (45%) | 13 (13%) |
| Secondary | 9 (11%) | 41 (46%) | 29 (34%) | 7 (8%) |
| Special | 0 | 6 (46%) | 5 (39%) | 2 (15%) |
| Total | 9 (5%) | 89 (45%) | 79 (40%) | 22 (11%) |

Primary teachers are more likely than secondary teachers to indicate that they embed all 5 cooperative learning principles when preparing a lesson or unit of learning – 58% compared to 42% who do it most times or always.

Effects of cooperative learning

Note: In the tables in this section, items that are asterisked are those where there is a statistically significant difference in responses between primary and secondary respondents. In all cases, primary teachers respond more positively than secondary teachers. This is discussed at the end of this section. (Note: analysis done using t-test; $p < 0.05$)

Pupils

17 - 20. A Curriculum for Excellence emphasises the importance of developing 4 capacities in young people which will lead them to be successful learners, confident individuals, responsible citizens and effective contributors. In your experience of using cooperative learning so far, how much does it contribute to developing these capacities in your pupils?

Please rate the following aspects of pupils' development from 1 to 5:

1 = I am not aware of cooperative learning helping with this, to 5 = I have noticed high levels of progress in pupils in relation to this aspect through the use of cooperative learning.

The statements for these questions were derived from the attributes listed in *A Curriculum for Excellence* documents in relation to the 4 capacities to be developed through the curriculum. [Scottish Executive (2004) *A Curriculum for Excellence: The Report of the Review Group*]

The responses to these statements are reported in tables G9 to G12.

Table G9: Contribution of cooperative learning to developing successful learners

1 = no contribution to 5 = high levels of progress

| Q17 Successful learners | 1 | 2 | 3 | 4 | 5 | m (sd) |
|---|-------------|-------------|-------------|-------------|-------------|----------------|
| learning as part of a group | 0 | 3 (2%) | 32 (16%) | 93 (47%) | 69 (35%) | 4.16 (0.74) |
| enthusiasm for learning | 0 | 6 (3%) | 42 (21%) | 89 (45%) | 59 (30%) | 4.03 (0.80) |
| thinking creatively | 0 | 10 (5%) | 55 (28%) | 83 (42%) | 48 (24%) | 3.86 (0.85) |
| openness to new ideas | 0 | 7 (4%) | 57 (29%) | 88 (44%) | 42 (21%) | 3.85 (0.80) |
| aiming for high standards of achievement* | 0 | 15 (8%) | 61 (31%) | 92 (46%) | 28 (14%) | 3.68 (0.81) |
| thinking and learning independently | 0 | 9 (5%) | 79 (40%) | 73 (37%) | 35 (18%) | 3.68 (0.82) |
| ability to apply learning in new situations | 1 (0.5%) | 22 (11%) | 81 (41%) | 67 (34%) | 25 (13%) | 3.47 (0.87) |

Table G10: Contribution of cooperative learning to developing confident individuals

| Q18 Confident individuals | | | | | | |
|---|-------------|-------------|-------------|-------------|-------------|----------------|
| | 1 | 2 | 3 | 4 | 5 | m (sd) |
| ability to relate to others* | 0 | 6 (3%) | 56 (28%) | 82 (41%) | 50 (25%) | 3.91 (0.82) |
| communicate their own beliefs* | 1 (0.5%) | 11 (6%) | 63 (32%) | 96 (48%) | 24 (12%) | 3.76 (0.78) |
| self-respect* | 3 (2%) | 10 (5%) | 63 (32%) | 88 (44%) | 31 (16%) | 3.69 (0.86) |
| ability to manage themselves* | 0 | 11 (6%) | 75 (38%) | 85 (43%) | 25 (13%) | 3.63 (0.78) |
| a sense of well-being* | 3 (2%) | 13 (7%) | 69 (35%) | 81 (41%) | 29 (15%) | 3.62 (0.87) |
| self-awareness* | 0 | 16 (8%) | 80 (40%) | 77 (39%) | 23 (12%) | 3.55 (0.81) |
| development of secure values and beliefs* | 7 (4%) | 23 (12%) | 89 (45%) | 55 (28%) | 21 (11%) | 3.31 (0.94) |

Table G11: Contribution of cooperative learning to developing responsible citizens

| Q19 Responsible citizens | | | | | | |
|--|-------------|-------------|-------------|-------------|-------------|----------------|
| | 1 | 2 | 3 | 4 | 5 | m (sd) |
| willingness to participate* | 0 | 9 (5%) | 46 (23%) | 94 (47%) | 49 (25%) | 3.92 (0.81) |
| respect for others* | 0 | 11 (6%) | 57 (29%) | 94 (47%) | 35 (18%) | 3.78 (0.80) |
| making informed choices* | 1 (0.5%) | 11 (6%) | 85 (43%) | 82 (41%) | 18 (9%) | 3.53 (0.76) |
| understanding of beliefs and values of others* | 0 | 21 (11%) | 84 (42%) | 77 (39%) | 14 (7%) | 3.43 (0.78) |

Table G12: Contribution of cooperative learning to developing effective contributors

| Q20 Effective contributors | | | | | | |
|--|-------------|-------------|--------------|-------------|-------------|----------------|
| | 1 | 2 | 3 | 4 | 5 | m (sd) |
| ability to work in partnerships and teams | 0 | 3 (2%) | 36 (18%) | 93 (47%) | 65 (33%) | 4.12 (0.75) |
| ability to communicate in different ways and in different settings | 0 | 10 (5%) | 58 (29%) | 94 (47%) | 35 (18%) | 3.78 (0.79) |
| problem-solving abilities* | 0 | 8 (4%) | 61 (31%) | 94 (47%) | 32 (16%) | 3.77 (0.77) |
| ability to lead | 0 | 15 (8%) | 65 (33%) | 81 (41%) | 35 (18%) | 3.69 (0.85) |
| developing enterprising attitudes* | 3 (2%) | 17 (9%) | 83 (42%) | 63 (32%) | 29 (15%) | 3.50 (0.91) |
| self-reliance* | 1 (0.5%) | 14 (7%) | 97 (49%) | 64 (32%) | 17 (9%) | 3.42 (0.77) |
| resilience* | 0 | 25 (13%) | 102 (51%) | 54 (27%) | 15 (8%) | 3.30 (0.79) |

Overall, it is clear that respondents are largely in agreement that cooperative learning is making a strong contribution to the development of the 4 capacities identified in *A Curriculum for Excellence*. Those where the strongest effect was noted were, unsurprisingly, learning as part of a group and ability to work in partnerships and teams, and also enthusiasm for learning. While still being seen to

have a generally positive effect, the attributes less likely to be seen as being developed were the ability to apply learning in new situations, development of secure values and beliefs, understanding of beliefs and values of others, self-reliance and resilience.

21. The following are some of the researched benefits of cooperative learning. To what extent have you observed these benefits in relation to your pupils?

Table G13: Observed benefits to pupils

1 = I have not observed this to 5 = this is very evident

| | 1 | 2 | 3 | 4 | 5 | m (sd) |
|---|-------------|-------------|-------------|-------------|-------------|----------------|
| improved inter-group relations* | 3 (2%) | 9 (5%) | 47 (24%) | 90 (45%) | 43 (22%) | 3.84 (0.88) |
| more on-task behaviour | 4 (2%) | 16 (8%) | 54 (27%) | 80 (40%) | 39 (20%) | 3.69 (0.96) |
| better attitudes to teachers | 12 (6%) | 15 (8%) | 65 (33%) | 65 (33%) | 31 (16%) | 3.47 (1.06) |
| better attitudes to school | 13 (7%) | 20 (10%) | 64 (32%) | 65 (33%) | 26 (13%) | 3.38 (1.07) |
| improved integration of special needs students* | 26 (13%) | 17 (9%) | 54 (27%) | 62 (31%) | 21 (11%) | 3.19 (1.21) |
| increased academic attainment* | 15 (8%) | 34 (17%) | 77 (39%) | 52 (26%) | 9 (5%) | 3.03 (0.99) |

While respondents were largely indicating that they observed the reported benefits of cooperative learning with regard to their pupils, several items revealed more disagreement across the sample, namely better attitudes to teachers, better attitudes to schools and the improved integration of special needs students. There were no differences between sectors with respect to attitudes to teachers and schools, but primary respondents were more likely than secondary respondents to report improved integration of special needs students. The small sample of special needs teachers were positive about integration, with 10 out of 13 rating towards the positive end of the scale. The respondents were less convinced about evidence of increased academic attainment, with primary teachers more likely to agree they had observed this than secondary teachers.

22. We are interested in the extent to which you think cooperative learning has enhanced your teaching practice. This does not mean that these things were not true of you as a teacher before you took part in cooperative learning training, but that cooperative learning has allowed you to develop them further. Please indicate the extent to which you think CL has helped you develop in the following ways:

Table G14: Benefits to teachers from cooperative learning

1 = not at all to 5 = very much

| Cooperative learning has | 1 | 2 | 3 | 4 | 5 | m (sd) |
|--|-------------|-------------|-------------|-------------|-------------|----------------|
| provided me with a wider range of teaching skills | 1 (0.5%) | 8 (4%) | 31 (16%) | 73 (37%) | 81 (41%) | 4.16 (0.88) |
| increased my motivation and enthusiasm for teaching* | 9 (5%) | 13 (7%) | 45 (23%) | 64 (32%) | 64 (32%) | 3.83 (1.10) |
| assisted with classroom management* | 10 (5%) | 19 (10%) | 40 (20%) | 64 (32%) | 60 (30%) | 3.75 (1.15) |
| helped me develop better relations with pupils* | 5 (3%) | 17 (9%) | 50 (25%) | 73 (37%) | 47 (24%) | 3.73 (1.01) |
| helped me get to know pupils better* | 8 (4%) | 20 (10%) | 50 (25%) | 73 (37%) | 44 (22%) | 3.64 (1.07) |

Overall, respondents were very positive about the contribution of cooperative learning to their own teacher development, in particular in relation to developing a wider range of teaching skills. Views, although still broadly positive, were more widespread with respect to impact on motivation, classroom management and developing relationships with pupils. Primary teachers tended to be more positive in their responses than secondary teachers.

23. Cooperative learning can have an impact on the whole school. Please indicate the extent to which you think the following is true of your school.

Table G15: Benefits to schools from cooperative learning

1 = this is not true of our school to 5 = this is very true

| | 1 | 2 | 3 | 4 | 5 | m (sd) |
|--|-------------|-------------|-------------|-------------|-------------|----------------|
| Cooperative learning approaches are used within the school, for example, in staff meetings, planning meetings, CPD | 26 (13%) | 43 (22%) | 51 (26%) | 36 (18%) | 34 (17%) | 3.05 (1.30) |
| Cooperative learning approaches have enabled me to work more collaboratively with colleagues in my school or department* | 26 (13%) | 45 (23%) | 51 (26%) | 47 (24%) | 25 (13%) | 3.00 (1.24) |
| <i>For secondary teachers only (n = 86)</i> Using cooperative learning has encouraged collaboration across departments and subjects | 20 (22%) | 24 (26%) | 26 (28%) | 13 (14%) | 9 (10%) | 2.64 (1.25) |

Overall, respondents were less positive about the benefits to the school compared to benefits to teachers and pupils. While over a third indicated that cooperative learning approaches were in use more generally within schools and were encouraging more collaborative working, at the other end of the scale over a third indicated that these were not true of their schools. In secondary schools, almost half indicated that cooperative learning was not encouraging collaboration across departments and subjects.

Differences between subsets of the sample

As noted throughout, there were numerous items on which primary respondents were more positive than secondary respondents. When the data were investigated to see if there were differences in responses based on the frequency of use since training and the frequency of embedding the 5 principles in lesson planning, significant differences emerged in both cases. However, as noted above in Tables G6 and G8, primary teachers reported using cooperative learning more frequently and they were also more likely to embed the 5 principles in their lessons. There is clearly a relationship between sectors, frequency of use and opportunity to embed all 5 principles. To investigate the effect of frequency of use and embedding of the principles, primary and secondary data were investigated separately. Length of time since training was also used as a basis for comparison.

Both primary and secondary respondents who indicated that they had used cooperative learning regularly since their training were no more likely to indicate that they embedded all 5 principles most of the time than those who indicated they used cooperative learning occasionally.

However, a higher proportion of those who trained between 2002 and 2004 reported using cooperative learning regularly (primary = 84%; secondary = 66%) compared to those who trained later (primary = 56%; secondary = 31%) – possibly because they are reflecting over a long period of time and have had more opportunity to use it. Those who trained earlier were no more likely than those who trained later to indicate they embedded all 5 principles most of the time.

In the following tables, items have been marked with a tick where they have shown statistically significant differences between groups on the independent variables noted in the column heading. In relation to all items where differences were noted, the **more positive responses** were given by:

